Worst Practices in ICT Use in Education, Low-Cost Gadgets, e-Books in Africa and a Hole in the Wall:

Learning from the use of educational technologies in developing countries

Excerpts from the World Bank’s EduTech blog (Volume II)

Michael Trucano

with

Robert Hawkins
Galina Voytsehovska
Michael Foley
Harsha Aturupane
Sheila Jagannathan

World Bank
2011
Worst Practices in ICT Use in Education, Low-Cost Gadgets, e-Books in Africa and a Hole in the Wall:

Learning from the use of educational technologies in developing countries

Excerpts from the World Bank's EduTech blog (Volume II)

Michael Trucano

with

Robert Hawkins
Galina Voytsehovska
Michael Foley
Harsha Aturupane
Sheila Jagannathan

World Bank
2011
To cite this publication:


This work is made available under a Creative Commons Attribution 3.0 Unported (CC BY 3.0) license.

You are free:

to Share — to copy, distribute and transmit the work
to Remix — to adapt the work
to make commercial use of the work

Under the following conditions:

Attribution — You must attribute the work in the manner specified by the author or licensor (but not in any way that suggests that they endorse you or your use of the work).

For more information, please see http://creativecommons.org/licenses/by/3.0/

©2011

The International Bank for Reconstruction and Development/
The World Bank
1818 H Street, N.W.
Washington, D.C. 20433
U.S.A.

The findings, interpretations and conclusions expressed herein are entirely those of the author(s) and do not necessarily reflect the view of the International Bank for Reconstruction and Development/The World Bank and its affiliated organizations, the Board of Executive Directors of the World Bank or the governments they represent. The World Bank cannot guarantee the accuracy of the data included in this work. The boundaries, colors, denominations, and other information shown on any map in this work do not imply on the part of the World Bank any judgment of the legal status of any territory or the endorsement or acceptance of such boundaries.
CONTENT

Notes and disclaimers

1. Top World Bank EduTech blog posts of 2010

January

2. A new education sector strategy -- what role for ICT?
3. 10 Global Trends in ICT and Education (Bob)
3. The UNESCO Prize on ICT use in education
4. In Search of the Curious Doer (Bob)
5. ICT & Education: Eleven Countries to Watch -- and Learn From

February

6. Evaluating the One Laptop Per Child Initiative in Sri Lanka (Harsha)
7. EVOKE -- a crash course in changing the world (Bob)
8. Ten comments on 1-to-1 computing in education
9. 1-to-1 educational computing initiatives around the world

March

11. Technology Use and Educational Performance in PISA
12. EVOKE -- When spider webs unite, they can tie up a lion (Bob)
13. Building national ICT/education agencies
14. PPPs, ICTs & Education: Lessons from India

April

15. The $10 computer for education?
16. Educational Technology in India: Boon or Bust?
17. New horizons in educational technology
18. The Second Digital Divide
19. Mobile Phones and Literacy in Rural Communities

20. Worst practice in ICT use in education

May

21. Interactive Radio Instruction : A Successful Permanent Pilot Project?

22. What happens when *all* children and teachers have their own laptops

June

23. NRENs: Accessing the connectivity revolution for education (Michael)

24. Learning from Becta

25. Searching for India's Hole in the Wall

July

26. How would you design an ICT/education program for impact?

27. Does having a computer at home improve results at school?

August

28. Laptops for education: $10, $35, $100 and points in between (but not above!)

29. Surveying ICT Use in Education in India and South Asia

30. Failing in public -- one way to talk openly about (and learn from) 'failed' projects

31. More on e-books in Africa

32. EVOKE Reflections: Results from the World Bank's on-line educational game (part 1)

33. EVOKE Reflections: Results from the World Bank's on-line educational game (part 2)

34. Crowdsourcing, ICTs and Education

September

35. One Mouse Per Child

36. Learning the Queen's English ... on your mobile phone?

37. Cataloguing low cost ICT devices used in education

38. School computers not working? There's an app for that!
October

39. Stuffing the Internet in a box and shipping it to schools in Africa
40. Evaluating the evaluating of the Millennium Villages Project
41. On the lookout for cool educational technology projects

November

42. Learning from national ICT/education agencies
43. Is there a role for ICTs in international donor aid strategies for the education sector?

December

44. Learning from a randomized evaluation of OLPC in Peru
45. Sharing experiences on building national ICT/education agencies (Galina)
46. Online Educa – Where e-learning practitioners go to learn and network (Sheila)

About the authors
**Notes and disclaimers**

This electronic publication collects together featured essays and posts from 2010, the second year of the World Bank's EduTech blog. The blog is one small part of larger efforts to increase the transparency of the activities of the World Bank around related topics by providing insight into emerging World Bank thinking at early stages, inviting comment and criticism. Initially conceived of as a 12-month experiment of sorts, the EduTech blog seeks to "explore issues related to the use of information and communication technologies to benefit education in developing countries". By doing so, it is one modest attempt to highlight particular initiatives, studies and emerging trends that we think, based on our regular interactions with government officials, NGOs, researchers and companies active in this area in developing and developed countries around the world, might be of interest to a wider audience. Strong and growing readership during the first year of publishing led to the decision to continue publishing in 2010. The blog, which featured many new voices in 2010, remains an experiment in informal knowledge sharing. Posts and essays are not intended to be exhaustive in their consideration of a given topic, but rather to point to interesting developments and raise questions of emerging interest. **They should not be mistaken for peer-reviewed research or World Bank policy papers. The views expressed on the EduTech blog are those of the author(s) alone, and not those of the World Bank.**

At the heart of many blogs – and EduTech is no exception – are comments from readers (and occasional responses from blog authors). As was done with the first collection of essays from the World Bank EduTech blog, all comments on individual posts have been omitted from this collection due to a variety of sourcing rights issues. Readers are invited to visit the blog itself to participate in the often informative discussions around various topics, as well as the EduTech Debate site maintained by our partners at infoDev, which features essays and comments from a different set of people each month and functions as a sort of ‘sister site’ to the EduTech blog, [http://www.edutechdebate.org](http://www.edutechdebate.org).

Readership on the blog grew steadily over 2010, with each Friday post typically reaching 2500 people via the web and RSS, although some posts (like the essays on 'worst practice' and 'laptops for education' contained in this volume) were widely re-posted and syndicated through other channels, reaching many more readers (in some cases via translation by volunteers). We actively encourage re-posting and re-distribution of the items from the EduTech blog, and make available all blog content under a Creative Commons Attribution 3.0 Unported (CC BY 3.0) license and include all blog content in our related RSS feed. EduTech blog readership numbers are decidedly modest when viewed against the wider ‘blogosphere’, but, as one of the few regular blogs on this topic, our goal has been to appeal to a rather narrow niche: professionals engaged in exploring the use of ICTs to aid a variety of developmental objectives in the education sectors of so-called ‘developing countries’.

The short essays are collected and repurposed here to enable off-line reading of the entire collection, plus access via a variety of new devices (like e-readers and mobile phones), based on requests from readers in developing countries with poor access to the Internet. (It also helps ensure access to ‘older' essays which are no longer indexed by the Bank’s own internal search engine.) That said, each blog entry contains multiple links to resources on the Internet, and this collection is best sampled when Internet connectivity is at hand.
Most weeks, the EduTech blog features images that are made available via a variety of Creative Commons licenses for broader re-use. We consciously utilize such images not only because it is easy to do so (although that of course is true as well), but also to highlight the fact that different approaches and mechanisms for the sharing of information and media resources are emerging that may be of special relevance to our counterparts and partners working in the education sector in developing countries. Please let us know if you feel that any of the images reproduced here have been used in ways contrary to such licenses.

The EduTech blog can be accessed directly via http://blogs.worldbank.org/edutech. To be notified when new items are posted, please follow us on Twitter via @WBedutech or subscribe directly to our RSS feed, http://blogs.worldbank.org/edutech/rss.xml.
1. Top World Bank EduTech blog posts of 2010
by MICHAEL TRUCANO | published on 4 January 2011

The World Bank EduTech blog recently had its second birthday. As we did last year, we thought we'd gather together an idiosyncratic collection of 'top posts' and themes from the past year exploring issues related to the use of information and communication technologies to benefit education in developing countries.

Every week, the blog informally attempts to highlight particular initiatives, studies and emerging trends that we think -- based on regular interactions with government officials, NGOs, researchers and companies active in this area in developing and developed countries around the world -- might be of interest to a wider audience. It is also one small part of a larger movement at the World Bank -- symbolized perhaps most potently by the institution's Open Data initiative -- to provide greater transparency to some of the sorts of information, conversations and discussions that previously were accessible only to limited groups of stakeholders and partners. At least in the case of the World Bank's work related to ICT use in education, blogging has proven to be a useful mechanism to share perspectives and 'think aloud in public' along with our partners, expert practitioners and our critics, as well as with people who are simply interested in a particular topic.

Without further ado ...

10. Mobile phones
While not as popular a topic on the blog in 2010 as it was the previous year, the theme of using mobile phones as a learning tool continued to be popular with readers, as evidenced by posts like Mobile Phones and Literacy in Rural Communities and Learning the Queen's English ... on your mobile phone?

9. India
A number of posts looked at issues related to the use of educational technology in India, including Educational Technology in India: Boon or Bust?, PPPs, ICTs & Education: Lessons from India and Surveying ICT Use in Education in India and South Asia, which announced the publication of infoDev's latest regional survey. (India was also the setting of item #5 below.)

[extra] EduTech Debates
Our companion web site featuring monthly EduTech Debates continued -- and grew! -- in 2010, and some of the discussions were excerpted in blog posts on this site. Instead of linking to these posts, we suggest you head over to the EduTech Debatesite itself.

8. ICT/education strategies
While meant for a pretty narrow audience, two posts on the World Bank's search for new new
education sector strategy -- and the proper role of ICT within such a strategy -- generated large numbers of page views in 2009: A new education sector strategy -- what role for ICT? and Is there a role for ICTs in international donor aid strategies for the education sector? Thanks to all of the people who provided useful feedback as a result of these posts. Sometimes speaking publicly about a topic helps to provoke action within an organization -- in this regard, these two posts were pretty successful.

7. Countries
While more blog posts were written about India than any other country (see item #9 above), ICT & Education: Eleven Countries to Watch -- and Learn From was reproduced in a number of widely-read newsletters and was a popular post for re-tweeting.

6. Evaluation
Perhaps not surprisingly, given the World Bank's technocratic bent, there were a number of posts related to monitoring and evaluation in 2009, including How would you design an ICT/education program for impact?, Technology Use and Educational Performance in PISA, Does having a computer at home improve results at school? and the rather complicatively titled Evaluating the evaluating of the Millennium Villages Project.

[extra] National ICT/education agencies
Much like a post on e-books in Africa in 2009 helped give birth to a related study in 2010, the strong response to a 2010 post on Building National ICT/education Agencies led to action as well. A global symposium in Seoul was one result -- as featured in follow-up posts on Learning from national ICT/education agencies and Sharing experiences on building national ICT/education agencies.

5. Innovative approaches: One Mouse Per Child & Hole in the Wall
The Twitter-friendly (and rather cheeky) title of the One Mouse Per Child post, which looked at an alternative approach to low cost technologies, helped drive a lot of traffic to the EduTech blog and inspired a great deal of follow-up inquiries. A free afternoon in Delhi led to a widely-read post on Searching for India's Hole in the Wall, which looked at a long-running experiment in providing access to computers in an urban slum in India. While increasingly short attention spans, and an unquenchable thirst for novelty, may lead us to continually search for the newest 'new thing', re-visiting innovative initiatives like Hole in the Wall that once were media favorites, but which have fallen off the radar screen for many people, will be something that we will try to explore more often in the coming year. (For those of you who regularly and passionately write to us advocating that more attention be paid to the well-known One Laptop Per Child project -- never fear, this will no doubt provide fodder for many posts in 2011.)

4. Low cost devices for education
While increasingly people think of the mobile phones (item #10 above) as perhaps the most relevant 'low cost educational technology' device going forward, innovative uses of other low-cost gadgets and products remained a popular topic with readers in 2010. In addition to device-specific posts on the The $10 computer for education?, Stuffing the Internet in a box and shipping it to schools in Africa and
the One Mouse Per Child project (#5 above), two posts took a more general view of the topic: Cataloguing low cost ICT devices used in education and Laptops for education: $10, $35, $100 and points in between (but not above!).

[extra] New voices in 2010

The EduTech blog welcomed a number of new voices in 2010. In addition to Bob Hawkins (see items #3 and #2 below), Galina Voytsehovska (on crowdsourcing), Michael Kelly (on NRENs), Harsha Aturupane (on evaluating OLPC in Sri Lanka) and Sheila Jagannathan (on Online Educa Berlin) contributed posts on a variety of topics. We hope to feature additional World Bank contributors in 2011.


A series of posts on the educational on-line 'on-line social entrepreneurship game' sponsored by the World Bank, Urgent Evoke, created much buzz in circles that do not normally consider the World Bank to be a source of technological innovation or ambition (when the Bank is considered by such groups at all!). Reports from the early days of the 'game' (perhaps more accurately seen as a time-limited, purpose-driven social network), as well as two wrap-up posts generated much enthusiasm among readers. Let's hope that we can continue to forge productive partnerships with visionary figures like Jane McGonigal and support pockets of young social entrepreneurs around the world by finding funding for a follow-up initiative in 2011!

2. Trends

Perhaps the most Twitter-friendly post of 2010, 10 Global Trends in ICT and Education marked the debut of Bob Hawkins on the EduTech blog, generating over 20,000 unique readers in short order. New horizons in educational technology explored similar themes.

1. Worst practice

Sometimes you learn the most not from success ... but rather from what isn't so successful. That was the premise behind 2010's most popular post, Worst practice in ICT use in education, which listed a set of the preeminent 'worst practices' related to the large scale use of ICTs in education in developing countries, based on first hand observation over the past dozen or so years.... The criterion used for selection was simple: The given worst practice was easily observable in multiple prominent initiatives, with (one fears) a high likelihood of re-occurrence, in the same or other places. For whatever reason, this topic really struck a chord with many readers, and it was reproduced on many other widely read blogs and heavily re-tweeted. (We even got a nice mention from the New York Times!) This topic was featured in the World Bank's first FAILfaire, as documented in Failing in public -- one way to talk openly about (and learn from) 'failed' projects. While we should perhaps know better, we hope that none of these 'worst practices' will be re-visited in posts on the EduTech blog in 2011.

OK, that's all for 2010.

Going forward, we're unsure of the direction that the EduTech blog will take in 2011 -- or even if it will survive in its current form. (We may, for example, be incorporated into the World Bank's general, and increasingly excellent, Education for Global Development blog.) The fact that a number of World Bank
blogs begun as modest 'experiments in utilizing social media' -- including this one -- seem to have garnered loyal readerships and lots of page views has certainly caught the attention of management, and there may be some changes as a result. We estimate, for example, that the top EduTech blog post for 2010 on 'worst practice' (item #1 above) has been read over 75,000 times. While efforts to estimate readership, and reach, of on-line publications can be notoriously difficult, numbers like this are leading some in the World Bank education sector to re-think some of our approaches to sharing information and engaging with diverse sets of stakeholders in ways that may have broader reach and be more transparent.

Thanks to everyone who took time out of their busy schedules in 2010 to listen what we've had to say on the EduTech blog and who've sent in feedback. Thank you also to everyone who sent in (unsolicited) books and manuscripts in 2010. We're sorry that we were not able to devote individual blog posts to most of them (there simply wasn't enough time), but we do hope to feature more commentary on publications in 2011.

Happy New Year!

A reminder: You can follow us on Twitter @WBedutech. Please feel free to take our RSS feed and re-publish our posts -- we include the full text of each post in the feed in order to make it easy to do so (just please remember to credit where you got the material and link back to us!).
2. A new education sector strategy -- what role for ICT?
by MICHAEL TRUCANO | published on 8 January 2010

The World Bank is developing a new ten-year strategy to guide its work in the education sector. This new strategy will replace the World Bank Education Strategy paper of 1999, which was updated in 2006 [note: link is to a pdf].

Fair enough, you are probably saying, but why should we care? (If you haven't already registered your disinterest by clicking over to another web page, that is!)

I am anticipating that this post will not attract the large readership of recent posts about e-books in Africa, the OLPC project in Uruguay, or come anywhere near generating the types of traffic we see for posts about the use of mobile phones in education. (Note: Newcomers to this blog as a result of the Learning and Technology World Forum are directed to our list of top EduTech posts from 2009, which might be of greater interest.)

That said, I hope that this blog posting is more than just institutional navel gazing:

---

While its role within the international aid and development community has changed considerably in the last twenty years, the World Bank remains one of the most significant international actors supplying funding and doing research to promote the development of education in developing countries. Some quick data points:

- The active World Bank education portfolio totaled $8.8 billion in FY09.
- 20 education projects were co-financed by bilateral and multilateral agencies, representing total funding of $1.2 billion
- About half of the World Bank’s total education lending supports activities in the world's poorest countries (i.e. those eligible for support through IDA)
- Last year alone, the World Bank published 100 knowledge products on education

In other words: The World Bank continues to play an important role in helping to set developmental agendas in the education sector in many countries around the world. Its strategy for engagement in and support for the education sector can have profound consequences, both directly and indirectly, on the education (or lack thereof) of hundreds of millions of children and young people around the world.

A lot has certainly changed since the last full World Bank education strategy was articulated in 1999. Even if we still have far to go in many places, there can be no denying progress made in getting millions of children, especially girls, into formal schooling as a result of Education For All initiatives. Forces for
globalization continue to bind us all closer together, in ways both good and bad. Armed conflict, both across and within national borders, remains all too prevalent, with devastating impacts on the livelihoods and education of millions of children. The threats and instabilities caused by pandemic disease have not been eradicated -- and indeed may well be increasing. Expensive toys for well-heeled executives only two decades ago, the explosion of mobile phone use in even some of the world's poorest communities demonstrates just how quickly -- and pervasive -- information and communication technologies of various sorts are becoming to the lives of much of the world's population. While attempting to predict where things will stand in 2019 may be a fool's quest, there is no denying that the impact of technological change will continue to have profound impact on societies around the world. Preparing for future generations to be able to adapt to, harness, and drive such changes will no doubt be a critical challenge for education systems around the world, rich and poor, in both industrialized and emerging economies.

A country's wealth -- and its prospects for development — depends on the quality of its people — the skill and creativity of its workforce, the capability of its leaders to govern well and to manage its resources, and the ability of its adult generation to raise healthy, educated and happy children. The new ten-year World Bank education sector strategy will outline how this particular institution will work with its developmental partners to support the development of skills for life and work that will reduce poverty and promote long-term growth and good governance.

How, specifically, should the World Bank incorporate, anticipate, and respond to the opportunities and challenges presented by technological changes over the next decade -- of various sorts, with consequences both predictable and surprising -- into its new strategy for engagement in the education sector?

This is a theme to which this blog will occasionally turn in 2010, and about which we hope to receive comments, feedback, suggestions and criticism.

The World Bank hopes to utilize various 'multi-media approaches' as part of a broad consultation process around the development of the strategy. The mechanisms for this consultation are still being worked out. On the social media side, I note that this remains the only blog focusing on education issues at the World Bank, a fact that I hope will change soon -- both as a mechanism for and symbol of a greater degree of openness and transparency in the consultative process to develop the new strategy, as well as a means to more quickly and more efficiently involve a wider number of stakeholders in the process.

---

Some background:

For those of you still reading, I thought I'd briefly review how and where issues related to 'technology' were presented, discussed and prioritized in the last education sector strategy update [link to pdf], in case doing so might be of any interest.
Some may argue that it is a bit unfair to use the search utility to see just how often certain terms and concepts were mentioned in the last paper ... but I will do so anyway! To begin, I note that the body of the last education strategy update contains but two brief mentions of 'computers' (and none of 'phones'). While 'innovation' is mentioned numerous times, there are only three quick mentions of what many people feel is an important ingredient in promoting and reaping the rewards of innovation -- the promotion of entrepreneurs and entrepreneurialism. And I wonder if I should read any significance into the fact that the only mention of 'ICT' in the paper is in the list of acronyms and abbreviations on p. iv?

This is not to say that ICTs are not discussed at all. On p.35, for example, we read that:

> Countrywide policies related to information and communications technologies are crucial for education as well. For policymakers aiming to tackle the growing digital divide, the challenge comprises massive investments in information infrastructure and equipment—and a lot more. There is a need to go beyond inclusion of technology components in projects and focus support on the full range of efforts needed to effectively integrate information and communication technologies in education systems, including in the area of curriculum and pedagogy, institutional readiness, teacher and principal training, long-term financing, and establishment of an enabling environment for technology investments. National policy for information technologies must be rewritten to incorporate the needs of the education sector, including sustainable low-cost access to the Internet. Moreover, it is essential that such support be informed by evaluation of previous information and communications interventions, at the country-specific as well as global level

On p.46, we read that "More countries use knowledge and technologies to leapfrog toward faster growth." (Use of the term 'leapfrog' has been quite common in many policy papers over the past decade ... even if what exactly this might mean on a practical level is often left to the imagination -- to say nothing of leaps in the wrong direction.)

Reading these passages, and the ones that follow, it is clear that many elements of the last strategy have not lost their relevance today (and one can imagine with a fair degree of confidence that they could probably be included in a strategy paper written in 2019 as well):

> As knowledge accumulation and application begin to play a bigger role in economic development and as comparative advantage among nations becomes more and more a function of technical innovation and use of knowledge (rather than natural resources), the priority for building up an educated and skilled workforce escalates greatly. [p.47-48]

> Information and communication technologies, in particular, have the potential to multiply access to learning opportunities to those who most need them, including hard-to-reach populations, students with disability, and out-of-school youth. Such technologies can also play an important role in improving the quality of teaching—and thus learning—outcomes. [p.48]
There is a succinct discussion of "Using Education to build knowledge economies" that begins on p.56. One excerpt:

“To ensure their full participation in knowledge-driven development, countries need to build their human capital and adapt their entire education system to the new challenges of the “learning” economy. Education plays a critical role in supporting knowledge-driven economic growth strategies in two complementary ways: (a) through the formation of a strong human capital base and (b) by contributing to the construction of an effective national innovation system." p.58

There is a short pronouncement of the importance of "Using information technologies to strengthen education outcomes." [p.86]

All of these statements and assertions remain as accurate and relevant today as they were when the past strategy update was published -- if not more so.

Is this attention sufficient -- or is it just lip service? Does the nature and power, opportunities and challenges that new information and communication technologies are having on societies around the world merit more attention, or a different sort of attention -- in the new World Bank Education Sector Strategy Paper? If so, how and in what regard?

These are just a few of the myriad questions that we will be wrestling with in 2010 -- and we are happy to invite you to join us in this process.

Note: The image at the top of this blog postings is from the World Bank photostream on Flickr and is used according to the terms of its Creative Commons license.
3. 10 Global Trends in ICT and Education

by ROBERT HAWKINS | published on 11 January 2010

In the spirit of the new year and all things dealing with resolutions and lists, I submit below my first blog posting for the EduTech blog (checking off a resolution) with a discussion of 10 Global Trends in ICT and Education for 2010 and beyond (joining the crowded space of lists in this new year).

The list is an aggregation of projections from leading forecasters such as the Horizon Report, personal observations and a good dose of guesswork. The Top 10 Global Trends in ICT and Education are:

1. **Mobile Learning.** New advances in hardware and software are making mobile “smart phones” indispensible tools. Just as cell phones have leapfrogged fixed line technology in the telecommunications industry, it is likely that mobile devices with internet access and computing capabilities will soon overtake personal computers as the information appliance of choice in the classroom.

2. **Cloud computing.** Applications are increasingly moving off of the stand alone desk top computer and increasingly onto server farms accessible through the Internet. The implications of this trend for education systems are huge; they will make cheaper information appliances available which do not require the processing power or size of the PC. The challenge will be providing the ubiquitous connectivity to access information sitting in the “cloud”.

3. **One-to-One computing.** The trend in classrooms around the world is to provide an information appliance to every learner and create learning environments that assume universal access to the technology. Whether the hardware involved is one laptop per child (OLPC), or -- increasingly -- a net computer, smart phone, or the re-emergence of the tablet, classrooms should prepare for the universal availability of personal learning devices.

4. **Ubiquitous learning.** With the emergence of increasingly robust connectivity infrastructure and cheaper computers, school systems around the world are developing the ability to provide learning opportunities to students “anytime, anywhere”. This trend requires a rethinking of the traditional 40 minute lesson. In addition to hardware and Internet access, it requires the availability of virtual mentors or teachers, and/or opportunities for peer to peer and self-paced, deeper learning.

5. **Gaming.** A recent survey by the Pew Internet and American Life Project per the Horizon Report found that massively multiplayer and other online game experience is extremely common among young people and that games offer an opportunity for increased social interaction and civic engagement among youth. The phenomenal success of games with a focus on active participation, built in incentives and interaction suggests that current educational methods are not falling short and that educational games could more effectively attract the interest and attention of learners.
6. **Personalized learning.** Education systems are increasingly investigating the use of technology to better understand a student’s knowledge base from prior learning and to tailor teaching to both address learning gaps as well as learning styles. This focus transforms a classroom from one that teaches to the middle to one that adjusts content and pedagogy based on individual student needs – both strong and weak.

7. **Redefinition of learning spaces.** The ordered classroom of 30 desks in rows of 5 may quickly become a relic of the industrial age as schools around the world are re-thinking the most appropriate learning environments to foster collaborative, cross-disciplinary, students centered learning. Concepts such as greater use of light, colors, circular tables, individual spaces for students and teachers, and smaller open learning spaces for project-based learning are increasingly emphasized.

8. **Teacher-generated open content.** OECD school systems are increasingly empowering teachers and networks of teachers to both identify and create the learning resources that they find most effective in the classroom. Many online texts allow teachers to edit, add to, or otherwise customize material for their own purposes, so that their students receive a tailored copy that exactly suits the style and pace of the course. These resources in many cases complement the official textbook and may, in the years to come, supplant the textbook as the primary learning source for students. Such activities often challenge traditional notions of intellectual property and copyright.

9. **Smart portfolio assessment.** The collection, management, sorting, and retrieving of data related to learning will help teachers to better understand learning gaps and customize content and pedagogical approaches. Also, assessment is increasingly moving toward frequent formative assessments which lend itself to real-time data and less on high-pressure exams as the mark of excellence. Tools are increasingly available to students to gather their work together in a kind of online portfolio; whenever they add a tweet, blog post, or photo to any online service, it will appear in their personal portfolio which can be both peer and teacher assessed.

10. **Teacher managers/mentors.** The role of the teacher in the classroom is being transformed from that of the font of knowledge to an instructional manager helping to guide students through individualized learning pathways, identifying relevant learning resources, creating collaborative learning opportunities, and providing insight and support both during formal class time and outside of the designated 40 minute instruction period. This shift is easier said than done and ultimately the success or failure of technology projects in the classroom hinge on the human factor and the willingness of a teacher to step into unchartered territory.

These trends are expected to continue and to challenge many of the delivery models fundamental to formal education as it is practiced in most countries. It will be interesting to reflect back on this list at the end of the year to see which ideas have gained the most traction; and what new ideas will make a list for 2011....
In 2010 we welcome a new blogger to the team! Robert Hawkins is a Sr. Education Specialist in the World Bank with a focus on science and technology as well as the role of technology in education.
4. The UNESCO Prize on ICT use in education  
by MICHAEL TRUCANO | published on 23 January 2010

The UNESCO King Hamad Bin Isa Al-Khalifa Prize is perhaps the highest profile international award given to acknowledge excellence in the use of ICTs in education around the world. Created in 2005 following a donation made by the Kingdom of Bahrain, it is meant "to reward projects and activities of individuals, institutions, other entities or non-governmental organizations for excellent models, best practice, and creative use of information and communication technologies to enhance learning, teaching and overall educational performance".

The winners for 2009, announced back in December, will receive their awards in a ceremony at UNESCO headquarters in Paris next week. The latest winners are Dr. Alexei Semenov, Rector of the Moscow Institute of Open Education, Russian Federation, and Jordan’s Ministry of Information and Communications Technology (acknowledging its work in leading the Jordan Education Initiative).

In its short history, the Prize has done a good job in drawing attention to important work being done related to the use of technologies in the education sector that is, in many cases, largely unknown outside the borders of the host country.

(It is not my place or intention here to discuss the merits of individual prize winners from this or past years, or to peer into my crystal ball and try to divine possible candidates for next year … but you are certainly free to do so in the comments section below!)

While we have yet to see a winner based in Sub-Saharan Africa (will 2010, the year of the first FIFA World Cup in Sub-Saharan Africa, also see the first award to an organization or person in the region?), a quick look at current and past awardees provides an interesting tour of notable activities from around the world related to the use of information and communication technologies in education.

Other finalists for the 2009 award were Thailand Cyber University (TCU) and to the Red de Profesores Innovadores (Network of Innovating Teachers) of Fundación Chile.

In 2008, the top prizes went to the project on Turning the Digital Divide into Digital Opportunity: The Project for Building the Digital Lifelong Learning System in Shanghai from Shanghai TV University and Dr. Hoda Baraka for her work with at the Ministry of Communications and Information Technology of Egypt, with honorable mentions awarded to the Schools Online Curriculum Services (SOCS) of Western Australia’s Department of Education and Training and to the One Laptop Per Child Programme of the Ministry of Education of Peru.
2007 saw awards go to Claroline Project / Consortium in Belgium and to the US-based Curriki, pioneers in the open education resources movement, with honorable mentions Mexico's Enciclomedia project and the Sésamath Project / Association in France.

One of our close collaborators here at the World Bank on initiatives related to the use of ICTs in education, the Korea Education Research & Information service (KERIS) received the initial prize in 2006 for that country's innovative Cyber Home Learning System, shared with the eDegree Programme in Lapland (Finland). Kuwait University's Dedicated Civil Law-Teaching Website for Arab Law Students received an honorable mention in 2006.

For more information on these laureates, please see the related yearly prize announcements.

UNESCO King Hamad Bin Isa Al-Khalifa Prize prize announcements:  

---

Related UNESCO ICT/education news:

- To stay up to date on what UNESCO is doing related to ICT use in education, your best source of information is the UNESCO-Bangkok web site. The ICT/education team at the regional UNESCO office in Bangkok has been a global leader for almost a decade in its investigation and promotion of the use of ICTs in education in developing countries. (If you are struggling to get an overview of what UNESCO is doing on this topic globally, infoDev's Quick guide to ICT and Education at UNESCO may be helpful).

- Subscribing to UNESCO’s regular "ICT in Education Announcement e-Newsletter" and/or visiting the ICT/education database on the UNESCO-Bangkok web site is highly recommended. (Sorry, there are no official RSS or Twitter feeds that I know about ... although perhaps someone from UNESCO may correct me on this.) One highlight from this month's newsletter is the announcement that UNESCO's popular e-learning CD on ICT in education is now available on-line as well.

- Those of you regularly contact this blog seeking job opportunities may be interested to know that there are two open positions currently posted with UNESCO related to ICT use in education: one in Paris (link is to a PDF), and one in Bangkok. (A side note: the best way to stay in-the-loop on opportunities like these is not to contact us by email -- to be frank, we receive far too many such unsolicited approaches to be able to respond to them individually -- but rather to subscribe to the RSS feed for this blog and/or the World Bank EduTech Twitter feed).

Please note: The use of the image of the medal awarded to winners of the UNESCO King Hamad Bin Isa Al-Khalifa Prize used at the top of this blog posts comes courtesy of its copyright holder, UNESCO.
5. In Search of the Curious Doer
by ROBERT HAWKINS | published on 27 January 2010

What is the profile of the type of student who we hope will emerge from our schools? Many have argued that our schools are stuck in a 19th century mindset and education for the knowledge age requires a complete rethink of teaching and learning for a globalized, connected, and rapidly changing world. Educators around the world have been debating and working to define these skills and what has emerged is a set of “21st century skills” – the types of skills deemed essential to work creatively; problem solve; communicate; identify and analyze existing information; and create new knowledge.

The partnership for 21st Century skills has defined a framework for these skills which focuses on:

- Creativity and Innovation
- Critical Thinking and Problem Solving
- Communication and Collaboration
- Information, Media, and ICT Literacy
- Ability to be a flexible learner; a self-starter; and someone who understands other cultures and societies.

The profile that emerges from this work is a student who is curious about his world; has a thirst for knowledge; is acutely in tune with the world around him; identifies challenges and problems; thinks creatively about solutions; is a self-starter driven by a hunger to learn; is someone who applies his knowledge to real world problems; takes action; tinkers, fails, learns and tries again – perseveres.

He is in two words, a curious doer.

So who is this curious doer? One of the best examples that I’ve come across is a young man in rural Malawi. You may have heard his story. His name is William Kamkwamba. William is from a small remote Malawian village with no electricity. After seeing a picture of a windmill in a textbook, he decided to build one himself to power his family’s home. He learned as much as he could from the book, then he started into the job, tinkering and hacking together his first windmill. It worked. The power generated from the windmill was enough to power a radio in the house to play reggae music. His story spread across the internet on YouTube; it is captured in a book – The Boy Who Harnessed the Wind; and highlighted at international conferences such as TED.

William however is not a product of a formal education system – he is a drop out who could not afford school fees.
So what about the other side of the educational spectrum -- higher education institutions such as MIT? In thinking about William and his success in taking knowledge and applying it in the real world, I was reminded of a documentary called “Minds of Our Own” in which MIT and Harvard engineering graduates are asked to light a bulb with a battery and a wire – a principle taught in many primary school class rooms. The video is shot at the MIT graduation – students still in caps and gowns. The documentarian approaches individuals and asks them if they could light the bulb with the three materials. Most say yes. But when given the materials they obviously can’t. One of the students hands back the battery, wire and bulb and says “I’m a mechanical engineer, not an electrical engineer”.

While extreme examples, what motivates a rural teenage drop out from rural Malawi to learn about and build and windmill while MIT graduates are not able to turn on a light? What are the issues at the root of this inability to apply knowledge – too much memorization without understanding?; learning devoid of practical real world applications?; Too much focus on learning for the test?; An overcrowded disjointed curriculum?; etc.

Obviously these are specific anecdotal examples meant to be provocative. But if we want to affect change in our educational systems from primary schools in Malawi to MIT, what changes are needed and how do we go about implementing these changes?

The 21st century schools site provides a good synopsis of the reforms and changes that many schools are seeking to make to create an enabling environment for development of 21st century skills. I summarize some of them here:

<table>
<thead>
<tr>
<th>Old Paradigm</th>
<th>New Paradigm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passive Learning</td>
<td>Active Learning</td>
</tr>
<tr>
<td>Memorization of discrete facts</td>
<td>Focus on what students know, can do, and are like after facts are forgotten</td>
</tr>
<tr>
<td>Textbook driven – single source</td>
<td>Research driven – multiple sources</td>
</tr>
<tr>
<td>Emphasis on knowledge, comprehension, and application</td>
<td>Also, emphasis on synthesis, analysis, and evaluation</td>
</tr>
<tr>
<td>Fragmented curriculum</td>
<td>Integrated; interdisciplinary curriculum</td>
</tr>
<tr>
<td>Teacher – centered pedagogy</td>
<td>Student-centered pedagogy</td>
</tr>
<tr>
<td>Isolated Learning</td>
<td>Globally connected collaborative learning</td>
</tr>
<tr>
<td>Teacher assessment based on averages</td>
<td>Multiple assessments – peer; self; others based on what is learned</td>
</tr>
</tbody>
</table>
Needless to say, these reforms are not easy nor straightforward. I hope to spend some time in upcoming blog entries to try to unpack how different countries are thinking about these reforms and more importantly implementing them. I look forward to sharing perspective and experiences on what is being done and what is working with this community. And hopefully discovering more William Kamkwamba's along the way.

Please note: The image used at the top of this blog post from one of William Kamwamba's first windmills was shot by Tom Rielly and comes courtesy of whiteafrican via Flickr and is used according to the terms of its Creative Commons Attribution 2.0 Generic license. You may also wish to visit William Kamkwamba's blog.
As part of engagements with ministries of education around the world, I am often asked to provide lists of countries considered to be 'best practice examples of ICT use in education'. I am asked this so often that I thought I'd provide a representative list here to help point people in some useful directions, in case doing so might be of any interest.

But before I get to the list ...

First, I'd like to say that I prefer the term 'good practice' to 'best practice'. This may seem to be unnecessary semantic nitpicking, but in many if not most cases and places, learning from and adapting 'good' practices is often much more practical -- and more likely to lead to success.

And: Given that many initiatives seem immune to learning from either 'best' or even 'good' practice in other places, I am coming to the conclusion that it may be most practical to recommend countries that have had 'lots of practice' (of any kind). Is this ideal? Obviously no -- but it tends to yield better results. For whatever reason, there appears to be a natural learning curve that accompanies large scale adoption of ICTs in the education sector in many countries, and that there is an important element of 'learning by doing' that appears to be important, even if this means 'repeating the mistakes' of others. (This is a process often known in international development circles as 'capacity building'.)

Second, some caveats:

- Given how much is widely known about what is happening in North America, Western Europe and Australia, and the World Bank's focus on low and middle income countries, I am deliberately excluding the United States, Finland, Canada, Australia, etc. There are other good sources for information about what is happening in such places.

- Because we deal primarily with national governments in our work at the World Bank, I have concentrated here on highlighting countries with national programs. There are of course scores of interesting initiatives occurring within pockets in countries, and/or across borders (fodder for future blog posts).

- I have tried for reasonable geographic diversity.
Given that most visitors to this blog are (presumably) English language readers, I have focused on places where there is documentation available in English to enable follow up for readers here.

With all of that out of the way, and in alphabetical order ...

**Chile**
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 and studied.

**Costa Rica**
The partnership between the Ministry of Education and Fundación Omar Dengo in Costa Rica is seen by many as a model for introducing, implementing and evaluating technology use in education.

**India (Kerala)**
*OK, here’s an admitted exception to the caveats listed above.*
With a population of over 31 million, the Indian state of Kerala -- home to the IT@school initiative -- has more people than all but two of the countries listed here. IT@school, which provides ICT-enabled education to 1.6 million students per year in the state, is considered by some to be the largest educational program of its kind utilizing primarily free and open source software.

**Jordan**
Efforts have been made in numerous countries to replicate and adapt the model behind the innovative public-private partnership driving the forward-looking Jordan Education Initiative, perhaps the highest profile initiative of its kind among developing countries -- and one of the better evaluated ones.

**Macedonia**
Macedonia’s Primary Education Project (PEP) contains a large ICT in Education Component supporting the computerization of Macedonia’s primary schools by training teachers, developing maintenance solutions, providing digital content, and introducing innovative uses of ICT such as computer control, robotics, electronic music, video & audio recording. Supported by USAID and a variety of public and private sector partners, Macedonia became the world’s first “wireless country” of its size or larger.

**Malaysia**
Now entering its second decade, the Smart School project is the flagship example of what has been happening in Malaysia, considered a global leader in the use of technology in education.

**Namibia**
TECH/NAI, Namibia’s ICTs in Education Initiative, is a comprehensive strategy for the integration of ICTs across the entire education sector, and a model for many countries in Africa (and beyond).

**Russia**
At the World Bank, no ICT/education project has been larger than the Russia E-Learning Support Project, and we expect to publish additional findings from this project in 2010.
Singapore
Singapore's Masterplan for ICT in Education (now in its third edition) is perhaps the model for forward-thinking, holistic and flexible policymaking in this area. A tiny city-state that has moved from 'developing' to developed' status in just one generation, Singapore is in many ways an exceptional case, but that doesn't mean that its experience is not instructive for other countries.

South Korea
50 years ago per capita GDP in South Korea was on par with Ghana. Last November this East Asian Tiger became first former aid recipient to join the OECD Development Assistance Committee and become a donor country, in large part to its successful achievements in both the technology and education sectors. Since the late 1990s, the Korea Education Research & Information Service (KERIS) has been the focal point for the country's ambitious efforts to integrate technology throughout the education sector, and is now 'exporting' lessons from this experience to developing countries.

Uruguay
In a sign of just how fast things are changing, Uruguay would not have been on anyone's list of the countries to watch only five years ago. Now, through its ambitious Plan Ceibal, this small South American country, by providing free laptops to all primary school students in public schools (among other initiatives), is increasingly the focus of the attention of practitioners and scholars alike.

What's missing?
Most obviously, there is ... China. In my opinion, what is happening in China (in its developed coastal cities, its emerging urban conglomerations in the interior and its rural areas) is perhaps the most interesting and relevant experience for many other developing countries. (This is true for the use of ICT in education, as in so many other areas.) It is especially true given China's emergence as an important developmental partner for many countries (in Africa and elsewhere) and the fact that the center of production of most ICT equipment used in the world's schools is in Southern China. That said, there has not been much be written about the breadth of Chinese experience in English in recent years, which is why I have omitted it here. (This will be the focus of a series of EduTech blog entries later this year.)

OK, but what about [insert country name]?, you might also ask. Limiting examples to eleven is admittedly (and purposefully) artificial, and striving for geographic diversity means that places like Mexico and Brazil and Thailand (subjects of future posts to this blog) are not listed here. Feel free to chime in with other notable omissions below.

---

An announcement of potential interest to readers of this blog:

International Conference on 1-to-1 Computing in Education

Together with our co-organizers, the Organization for Economic Cooperation and Development (OECD) and the Inter-American Development Bank (IDB), we are proud to announce an International
Conference on 1-to-1 Computing in Education hosted by the government of Austria from 22-24 February 2010 in Vienna.

Results from this event will be covered on the World Bank EduTech blog beginning in March.

For more information and event registration, please see www.bildung.at/nml-conference2010.

Please note: The image of the headquarters of the Korean Education & Research Information Service (KERIS) used at the top of this blog post comes via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution-Share Alike 3.0 Unported license.
The Sri Lanka Ministry of Education (MOE) recently decided to pilot the One Laptop Per Child (OLPC) program by purchasing laptops from the OLPC Foundation, with funding from the World Bank, and distributing them to 1,300 students in selected primary schools throughout the country. The scheme may eventually be scaled up, depending upon the educational benefits of the pilot stage. To evaluate the impact of the OLPC scheme, we worked with the MOE to randomize the intervention across schools. In May 2009, a baseline survey of 973 students in grades 1-3, drawn across eight treatment and eight control schools, was conducted. The baseline includes surveys of the students, their families, and their schools, principals, and teachers. The laptops were distributed by the MOE to all the students in the treatment schools in November 2009. A survey of schools, teachers, principals, students and student families is planned for the end of the current school year (December 2010), and resources permitting, an endline survey will be conducted in December 2011.

The objective of the impact evaluation, which is being led by Professor Anil Deolalikar of the University of California at Riverside, is to understand the effects of the OLPC program on educational outcomes of students. Since the students are allowed to take the laptops home, it is also expected that there will be spillover effects on other family members, especially the students’ school age siblings who might be enrolled in a non-OLPC school. The study will attempt to measure these spillover effects on primary school-age siblings. The study will additionally analyze the effects of the OLPC scheme on school attendance, learning practices and processes (such as homework and other class assignments), and extracurricular and co-curricular activities, including the degree of interaction between children from different cultural backgrounds, to which the laptops can be an effective aid.

The baseline student survey included grade-specific learning assessments based on Piaget’s theory of cognitive development as well as on the mathematics syllabus and assessments administered in government primary schools. The household survey included extensive socioeconomic information.

Preliminary results from the baseline surveys show large variations in student cognition and study habits across provinces, ethnic groups, income quintiles, and parental education backgrounds. Students in schools having at least one (school) computer showed higher learning outcomes than students in schools having no computer, although this could be the result of other factors associated with a computer facility in the school. Only a before-and-after comparison of student learning outcomes across control and ‘treated’ schools (“difference in difference” estimator) will indicate the causal impact of computers on student learning and other outcomes. We hope to have the impact evaluation completed by 2011.
For more information:

- The World Bank’s Sri Lanka education website
- One Laptop Per Child

Guest blogger Dr. Harsha Aturupane, a Senior Economist with the World Bank, is the Lead Education Specialist in the World Bank’s office in Colombo.

Please note: Image used at the top of this blog post is used with permission of the NELC project in Sri Lanka, hosted at the University of Colombo.
7. EVOKE -- a crash course in changing the world
by ROBERT HAWKINS | published on 11 February 2010

In 10 Global Trends in ICT and Education, I included gaming as a trend to keep an eye on. The gaming industry has been growing faster than the movie industry in the past number of years and is occupying an increasing number of hours of time in a young person’s day. Educational games it can be argued have the potential to reach students outside of the classroom where some traditional educational methodologies are failing. This genre of “serious games” has indeed mushroomed over the past number of years. A number of “serious games” have been developed in the fields of education, business, health, politics, engineering, defense, etc. In order to better understand the impact and potential of such games, we decided to develop and evaluate an educational game focused on youth social innovation and development – Evoke: a crash course in changing the world.

EVOKE trailer (a new online game) from Alchemy (If you are having trouble playing this video in your browser, you can also view it directly on the Vimeo site)

Evoke emerged from discussions with universities in Africa who increasingly wanted to find avenues to encourage their students to engage in local communities and develop innovative solutions to local development challenges. The universities were searching for ways to engage students in real world problems and to develop capacities for creativity, innovation, and entrepreneurial action that many believe will be the engine for job creation now and in the future.

Evoke therefore is designed to empower young people all over the world, and especially in Africa, to start solving urgent social problems like hunger, poverty, disease, conflict, climate change, sustainable energy, health care, education, and human rights.; to collaborate with others globally; and to develop real world ideas to address these challenges.

Players will be challenged to complete a series of ten missions and ten quests -- one per week, over the course of the ten-week game. The “text book” for this course is an online graphic novel written by Emmy-award nominated producer Kiyash Monsef. Art for the graphic novel is by Jacob Glaser, who Monsef describes as "an extraordinary visual storyteller who has been working at the leading edge of the comic world doing motion comics for Stan Lee."
Set in the year 2020, the story follows the efforts of a mysterious network of Africa’s best problem-solvers. Each week, as players unravel the mystery of the Evoke network, they will form their own innovation networks: brainstorming creative solutions to real-world development challenges, learning more about what it takes to be a successful social innovator, and finding ways to make a difference in the world.

Players who successfully complete ten online missions in ten weeks will be able to receive a special distinction: World Bank Institute Social Innovator – Class of 2010. Top players will also earn mentorships with experienced social innovators and business leaders from around the world, and scholarships to share their vision for the future at the EVOKE Summit in Washington DC.

The game’s creative director, alternate reality pioneer Jane McGonigal, is debuting the game at this week’s TED conference in Long Beach, California. As she describes the game, "An evoke is an urgent call to innovation. When we evoke, we look for creative solutions. We use whatever resources we have. We get as many people involved as possible. We take risks. We come up with ideas that have never been tried before. That's what we're asking players to do in this online game. To learn how to tackle the world's toughest problems with creativity, courage, resourcefulness and collaboration."

For the World Bank Institute and our partners infoDev and the Korean Trust Fund for ICT and Development, we very much hope to learn from this game. The evaluation component will try to better understand how serious games such as Evoke could help develop 21st century skills, encourage young people to learn about local development issues, foster social networks and collaboration to brainstorm creative solutions to development challenges, think critically about the future and what actions are needed today to create tomorrow's world; and create an engaging learning environment that is interactive, engaging, and well.....fun.

Evoke will launch on March 3, 2010 and the site is now open for pre-game registration at www.urgentevoke.com. Please join us in this adventure!
For the next three days, representatives from most of the prominent initiatives rolling out '1-to-1 computing' initiatives in education systems around the world are gathering in Vienna, Austria. This meeting is believed to be the first global event of its kind to bring together the principals from such projects together in one room to share knowledge and experiences. Until recently, most initiatives of this type have taken place in Europe and North America, but some middle income and developing countries are beginning to make (or seriously considering) massive investments in providing every student with her/his own personal computing device (usually a laptop).

While many initial investments in this area were, truth be told, based more on faith in a concept than on hard evidence, lessons and models are emerging to help answer questions such as:

* What does this cost?
* What is the impact of these sorts of initiatives (and how should we measure such impact)?
* What useful implementation and procurement models are emerging?
* What challenges do these sorts of initiatives present for policymakers, and what are some useful policy responses?
* What technologies should we be considering?
* To what extent -- and how -- do we need to re-engineer our education systems (teacher training, curricula, content, assessment) if we want to take advantage of such investments?

If you want to follow this event live, see the live webstream at http://ustream/2YTBand/or search for Twitter tag #1to1Viena (note the single 'n' - the tag was first adopted by people liveblogging the event in Spanish).

To help kick off the event this morning, I presented "Ten comments on 1-to-1 computing in education". These comments were meant to be brief, and were presented to help catalyze, provoke and animate discussion at the event:

1. Larger educational and developmental objectives
Discussions of investments in '1-to-1 computing' in education should always be anchored within considerations of larger educational and developmental goals. This belief (which is at the core of the ICT in education toolkit) is central to the World Bank’s approach to the potential use of education technologies of all types -- including 1-to-1 computing. Such objectives need not be limited to those of the 'education sector'; indeed, in many places, investments in this area are pursued as part of larger
initiatives to build so-called 'e-societies', with the education sector seen as an important vector to address issues related to a set of challenges often lumped together and referred to as the digital divide.

2. How to? not Should you?
Given that the strong political support for 1-to-1 initiatives in many places makes such investments seemingly inevitable, it may be more useful to adopt an approach of "how should you implement 1-to-1 computing in education?" rather than "should you do it at all?" This change in tactics may be useful to many funding organizations as a way to ensure that the dialogue around 1-to-1 remains open while exploring what, in concrete terms, investments in 1-to-1 would mean (and cost). Participating in such discussions at a practical level may, in the end, shed light on whether or not such investments should be made at all; starting from an adversarial position may unnecessarily antagonize people and institutions that have, for better or worse, already decided to move along this path, ending opportunities for constructive engagement.

3. Techno-utopianism has a long history in the education sector
Since the introduction of motion pictures, a succession of technologies (continuing through radio, TV, computers, PDAs, laptops, whiteboards, and soon, undoubtedly, mobile phones) have been heralded as offering exciting new opportunities for use in education, if only we are visionary enough to embrace them. One of the best books ever written about ICT use in education (Bold Experiment) looked at the introduction of educational television in American Samoa in the 1960s. Substitute 1-to-1 computing or laptops for educational television in many places in the early parts of that book that discuss the promise and potential for this 'new technology', and it would read much like many documents today extolling the virtues of investments in '1-to-1 computing'.

4. Reform (and re-engineering)
Given their high costs, and the disruptions that accompany 1-to-1 initiatives, it is often best to think of them only within the context of larger educational reforms and the (sometimes radical) re-engineering of various educational practices and processes. Indeed, given the high-level political support that such initiatives often have, 1-to-1 initiatives can be important vehicles to build momentum for and implement various reforms (this is true for many educational technology initiatives more broadly). Where countries are thinking of using 1-to-1 as a mechanism for simply extending existing processes or making existing practices more effective on the margins, it may well be difficult to justify the large costs of investments in 1-to-1.

5. 1-to-1 is (potentially) transformative
In many places, the trend towards 1-to-1 computing represents movement towards an 'ideal' ratio of user to device. There can be little doubt that providing each student with her/his own personal device is categorically different than providing them access to shared sets of devices. That said, there is a danger that many 1-to-1 approaches prioritize the mere existence of technology over other vital issues. The vision of the state of Maine (USA), widely acknowledged as the pioneering 1-to-1 computing initiative worldwide, is instructive here: "A personal digital device, at the point of learning, as defined by the student." Many places concentrate only on the first component of the Maine vision, neglecting the other two items, which are what are what are truly (potentially) transformative.
6. More than just laptops
While most of today's 1-to-1 initiatives involve the use of laptops (often so-called 'netbooks'), for much of the developing world, something that looks today a lot like what we are currently calling the 'mobile phone' may well be the most relevant device for deployment as part of 1-to-1 computing initiatives going forward.

7. Environmental liabilities
Investing in '1-to-1 computing' in education typically implies an order-of-magnitude increase in the number of computers available for use in schools. Used appropriately, such devices should no doubt be considered assets for learning. At the same time, they represent serious potential environmental liabilities. This is especially true in places with inadequate laws and regulations related to the make-up and disposal of such items, and where there are insufficient numbers of local organizations and processes to handle such disposal. Earlier today, the UN released a new report (Urgent Need to Prepare Developing Countries for Surge in E-Wastes) documenting just how serious this issue is becoming. Responsible policy making related to the roll-out of '1-to-1' technologies, whether they are laptops, mobile phones, or some other device not yet invented, should include serious consideration to such end-of-life issues.

8. Teachers are fundamental
Core to the World Bank's approach to education is a belief in the importance of teachers to the learning process. While some groups feel that 1-to-1 computing offers the opportunity for students to learn by themselves, obviating (in whole or in part) the need for teachers, there is no compelling evidence to support such approaches system-wide. In fact, World Bank experience, and the experience of many other organizations, highlights just how vital teachers are if roll-outs of educational technologies are to be effective. A recent special issue of the peer-reviewed Journal of Technology, Learning and Assessment focusing on 1-to-1 computing appears to support this belief; eSchool News characterizes its main take-away from this collection of scholarly articles as "One-to-one computing programs only as effective as their teachers". It is wishful thinking that all would be well if only students were "left to their own devices ...."

Let's be clear: There is much we still do not know about the impact of investments in this area, and the related costs. We do not have a good handle on how to measure the types of impacts we hope to bring about through the introduction of '1-to-1 computing', which often go beyond what is measured through existing standardized assessments of learning. With very few exeptions, there are very limited data published to help us understand the costs of such initiatives, especially those related to the total cost of operation over time, and the way such costs are calculated are often not very transparent. This means that, collectively, we are often unable to answer a basic question posed by finance ministries seeking to discriminate between numerous worthy projects and initiatives contending for investment: how much impact will this get me, and what will this impact cost me?

10. ___
The tenth comment is left intentially blank, as both a gesture of humility, acknowledging that there is
much we at the World Bank still do not know about this topic, and to signal the interest and willingness of the World Bank to learn from the groups and people leading initiatives of this area, and from those studying them.

There is much more I could say about this topic at this point, but I'll stop here. We look forward to learning more about the nuts-and-bolts operational modalities and challenges of the dozens of individual 1-to-1 computing initiatives represented here in Vienna, and to the comments, perspectives, insights and lessons that are emerging from implementing such initiatives on-the-ground.

*Please note: The image of Vienna taken from 'on high' used at the top of this blog post comes from Wikipedian [Bangin via Wikimedia Commons](https://commons.wikimedia.org/wiki/Category:Vienna) and is used according to the terms of its Creative Commons Attribution 3.0 Unported license.*

**Note (1 March 2010):** This blog entry was originally posted on Monday, 22 February. It later disappeared from this site due to database corruption issues with the World Bank blog servers. I have done my best to reproduce it from memory; there will undoubtedly be differences between this version and the version which was originally posted. We apologize for this.
The **One Laptop Per Child** program has brought much attention to issues related to '1-to-1 computing' (each child has her/his own personal computing device). While perhaps the most prominent initiative of this sort in public consciousness, OLPC is just one of many such programs around the world. At a recent event in Vienna, the OECD, the Inter-American Development Bank and the World Bank brought together representatives from these programs, the first such face-to-face global gathering of leaders in this area to share information and insights about their experiences.

In putting together this event, it was clear that there was no consolidated list of leading '1-to-1 educational computing initiatives'. Here's a first attempt at such a list, based on participants in this event (links are meant as pointers to more related information; not all lead to the specific project sites):

- Argentina: [San Luis Digital](#)
- Australia: [Anytime, Anywhere](#)
- Austria: [Netbooks in Education](#)
- Brazil: [Piraí Digital](#)
- Canada: [Eastern Townships](#) (Quebec)
- Canada: [New Brunswick](#)
- Colombia: [OLPC Colombia](#) (Fundación Pies Descalzos)
- European Schoolnet: [EUN-Acer Netbook Project](#)
- Israel: [Time To Know](#)
- Nepal: [OLE Nepal](#)
- Paraguay: [Paraguay Educa](#)
- Peru: [OLPC-Peru](#)
- Portugal: [e-escolinha, e-escola](#)
- Rwanda: [OLPC Rwanda](#)
• South Korea: Digital Textbook & u-Learning (KERIS)

• Spain: Junta de Aragón, Catalunya

• United Kingdom: Becta Home Access

• United States: Maine Laptop Technology Initiative (related blog post)

• Uruguay: Plan Ceibal (related blog post)

All presentations and videos from these (and other) initiatives are now being uploaded to the Vienna event web site, and the complementary sites maintained by the OECD, Inter-American Development Bank and the World Bank; all should be available by the end of the first week of March. Until then, you may wish to consult the daily summaries posted by OLPCnews.com (day one, day two, day three) or on the IDB ICT/education blog (day one, day two, day three).

This list, with its emphasis on geographic diversity and large scale programs, is meant to be both representative and reasonably comprehensive. There are of course many small school- and district-level initiatives, especially in North America and Europe, that are not listed here -- please feel free to add to this list in the comments below.

For more information on this topic in general, from a largely American (USA) perspective (the site of most such initiatives to date), here are a few places to get started:

• The Journal of Technology, Learning and Assessment recently published six papers on this topic in a special edition on Educational Outcomes and Research from 1:1 Computing Settings. eSchool News provides its take on the highlights from this edition of the JTLA in "One-to-one computing programs only as effective as their teachers".

• A list of papers from Mark Warschauer, one of the leading American scholars on this topic. See also here and here (link to PDF).

• The always insightful Larry Cuban has provided a useful reality check on the claims of some of the biggest proponents of '1-to1 computing'.

Please note: The image used at the top of this blog post of a young gymnast comes courtesy of Wikipedian Nevit Dilmen via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution ShareAlike 3.0 License.
The excellent EduTech Debate (ETD) site is wrapping up a month of online discussions around the topic of assistive technologies.

For those of you who haven't visited the site: ETD seeks to promote a substantive discussion of how low-cost information and communication technology (ICT) device initiatives for educational systems in developing countries are relevant to the very groups they purport to serve – the students, teachers, and their surrounding communities.

'Discussants' in this month-long debate included Cliff Schmidt, Fernando Botelho, Mike Dawson, Paul Lamb, Tom Babinszki, and Yasmina Sekkat (with Wayan Vota moderating).

To dig deeper into this monthly discussion (or to browse archived past 'debates'), head over to the ETD web site. Here's a flavor of how the discussion has gone so far:

Many of the comments include calls for a re-examination of the way we frame discussions about 'assistive technologies', especially in the context of communities and individuals in developing countries. Cliff notes that

"Children who are challenged by disability and extreme poverty face the greatest danger of being deprived of their right to education and freedom of expression. For this population, technology must not only be accessible; it must also fit within a context of severe limitations in infrastructure and income. The right solution will address the presence of numerous languages within the same region and will empower local people, disabled or otherwise, to contribute to their own knowledge and culture repository.

In We Need an Assistive Technology Strategy not Devices, Fernando argues that the technology focus of many initiatives in this area, while certainly well intentioned, is not enough.

The biggest challenge in bringing access to the digital realm to kids with disabilities in developing countries, and with it access to education and eventually employment, is the adoption of public policy and NGO strategies that are truly scalable. Traditional strategies have no chance of fundamentally changing the horrible statistics that prevail among persons with disabilities given the relatively minuscule resources available to help this community.

Right now, some initiatives run by departments of education and most initiatives run by NGOs spend some of their very limited resources on software-based assistive technologies such as screen readers or virtual keyboards that are extremely expensive. As a result, a very small minority of kids with disabilities get access to technology and then they do, they become dependent on software that they, their families, and future prospective employers cannot afford. Such an approach is just as ineffective whether one is talking about software that runs on PCs,
netbooks, or cell phones since the best-known cell phone assistive technologies are extremely expensive.

Finally, Yasmina points out that

When most think of disability, they think of it in terms of extremes. To be disabled is to be in a wheelchair or being unable to see light. They don’t think of the spectrum on which your impairment can reside. While the nuances of ability are better delineated in North America, they don’t always seem to be applied in technology. It’s great to have accessible technology designed for learning, but if the accessibility options aren’t integrated on basic products, than who will use them? Never mind that much of the technology is unaffordable (even in Western terms), the cultural barriers won’t help the implementation.

For more of this discussion, please visit the ETD site.

---

The next EduTech Debate is on the promise of e-learning. Here’s a teaser:

Improving access to education is one of the best investments that donor agencies and governments can make. Now what if it were possible to nearly double the number of secondary and university seats in a developing country overnight and with relatively little investment from the public sector? eLearning – the provision of educational opportunities via information and communication technologies – could have that kind of scale with recent advances in electronic content creation and the proliferation of technology devices. Agree? Disagree? Join the conversation & submit your own thoughts (as a comment or post) at http://edutechdebate.org.

Some previous recent topics addressed on the EduTech Debate site (note that 'ICT4E' is an abbreviation for 'information and communication technologies for education'):

- 2010 ICT4E Trends
- Assessing ICT4E Evaluations
- Gender Equality in ICT Education
- One Laptop Per Child Impact

Please note: The image used at the top of this blog entry, representing the mathematical principles of inclusion and exclusion, comes from Wikipedian Collette via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution ShareAlike 3.0 License.
Every three years, students around the world participate in an international assessment of their competencies in reading, mathematical and scientific literacy as part of the Programme for International Student Assessment, more commonly known as PISA. In 2006, schools from 58 countries were randomly selected to take part in the effort, overseen by the OECD, to test how well students can apply the knowledge and skills they have learned at school to real-life challenges. (When you read a press report about a given country being highly ranked -- or doing poorly -- in comparison to other countries on how its students do in reading, math, or science, quite often this a reference to the so-called 'league tables' that are published by the OECD in this regard.)

PISA provides a goldmine of data for researchers interested in many topics, and the OECD has just its analysis of Technology Use and Educational Performance in PISA, which notes that "OECD countries [here's the list of them] have undertaken significant investments to enhance the role of technology in education. What are the results of these investments? Are they fulfilling expectations? PISA 2006 provides a wealth of comparative data to begin answering these questions ..."

While the full report, Are New Millennium Learners Making the Grade?, is not available for free download on-line at this time, you can read an 11-page summary from here (in PDF) or a related earlier paper here (pdf, 2.3MB). This work, part of the OECD's initiative looking at 'New Millennium Learners (NML), is a follow-up to a 20006 study, Are Students Ready for a Technology-Rich World? What PISA Studies Tell Us.

(Side note: The recent event on '1-to-1 computing in education', featured on this blog here and here, was also part of the NML project.)

There is much food for thought in the 205 pages of charts, graphs, data tables and analysis contained in this eagerly anticipated report (even if, as the authors state, "data availability remains one of the main handicaps for understanding the role of ICT in education."). If there is a 'headline message' here, it is probably that:

One of the most striking findings of this study is that the digital divide in education goes beyond the issue of access to technology. A second digital divide separates those with the competencies and skills to benefit from computer use from those without.
More concretely,

*even accounting for a student's socio-economic status, there is a significant correlation between computer use at home and educational performance, a correlation that does not appear for computer use at school. Some analysts have rightly pointed out that in a school setting what matters is the use of computer in the wider context of a particular educational strategy. According to this view, gains in educational performance would only appear in the presence of a successful educational strategy. Therefore, the amount of use, i.e. the time a computer is used, would not matter at all. This certainly makes sense from a strictly educational perspective, but fails to explain why substantial gains in educational performance are correlated with the frequency of computer use at home. This is even more striking in view of the mostly leisure or entertainment-oriented nature of computer activities performed by students at home.*

*Are New Millennium Learners Making the Grade?* concludes by examining a set of policy implications, which appear (to me at least) relevant for all countries, not just those in the OECD:

- Raise awareness among educators, parents and policy makers of the consequences of increasing ICT familiarity
- Identify and foster the development of 21st century skills and competences
- Address the second digital divide
- Adopt holistic approaches to ICT in education
- Adapt school learning environments as computer ratios improve and digital learning resources increase
- Promote greater computer use at school and experimental research on its effects

This report provides a valuable service in providing hard data against which we can test the many hypotheses and claims put forward in this area -- even if, as with so much research into the impact of technology use in education, the deeper one delves, more questions are often raised than answered. I expect that the release of this valuable report will generate a lot of comment and discussion in the coming years, as its findings are circulated widely.

---

Visitors to this blog may also be interested in an OECD publication that came out late last year, the culmination of a [multi-year OECD project on digital learning resources](http://example.com):

- **Beyond Textbooks: Digital Learning Resources as Systemic Innovation in the Nordic Countries**
  A few years ago, I put together a quick guide for infoDev cataloguing what the OECD was doing related to ICT and education. While a little out of date now, it still might be of interest:
  - Quick guide: ICT and education at the OECD
Please note: The image used at the top of this blog entry of the Italian city of Pisa (seen from its famous Leaning Tower) comes from the Wikipedian Blorg via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution ShareAlike 3.0 License.
12. EVOKE -- When spider webs unite, they can tie up a lion
by ROBERT HAWKINS | published on 16 March 2010

As a follow up to my last post on educational games, I wanted to provide an update on EVOKE – nearly two weeks into the game. For those of you who missed my last post, Evoke is a social networking game that is free to play and open to anyone, anywhere. The "text book" for this course is an online graphic novel. Set in the year 2020, the graphic novel follows the efforts of a mysterious network of Africa’s best problem-solvers. Each week, as players unravel the mystery of the Evoke network, they will form their own innovation networks: brainstorming creative solutions to real-world development challenges, learning more about what it takes to be a successful social innovator, and finding ways to make a difference in the world.

Two weeks ago, I had a number of questions about what would happen after launching this initiative. Some basic questions have been answered.

**Question 1 – Would they come?**

As of the afternoon of March 16, over 9,800 participants from over 130 countries have registered to play. This figure is almost double what we had projected for the entire 10 weeks of the game. Just under 20% of total visitors to the site (50,457 unique visitors) have registered to play. The site has garnered 663,887 page views with an average time on site of 8 minutes and 9 seconds – very favorable compared to the average of 2 minutes and 20 seconds for most sites.

**Question 2 – Would they participate?**

One of the challenges in game design was to create a favorable balance between academic work and fun. Would participants engage in a serious game which asks them to think about big issues like food security and water and take the time to provide quality reflections on these issues?

The answer is YES.

One of the interesting early reflections on EVOKE is that it seems to be filling a niche for participants to engage and share ideas on the big questions and big issues which may not fit or be appropriate to discuss on other social networks such as Facebook. On average players are looking at 7.2 pages on the site. In just less than two weeks, 5,266 blog posts have been submitted (around 375 per day); 1,823 photos have been shared; and 555 videos have been posted. They quantity and more importantly the quality of the engagement has been impressive.
Questions 3 – Would participants in developing countries – particularly Africa – participate?

The participation numbers from Africa are right about where we anticipated with around 10% of total participants coming from Africa. The team has been trying to boost these numbers however through targeted outreach to players in the developing world. It is still unclear how many are using cell phones to engage with the site, but one strategy to boost participating is the development of a much lighter version the site – stripping the home page down to 7k and 2 server requests, compared to 500k and 73 requests. Access to the site is a large focus of our evaluation and we hope to learn how players in countries with poor Internet connectivity, engage with the game.

Question 4 – What happens when you bring 10,000 players together in an open innovation platform?

A lot! There have been many highlights these past 14 days and below are some of the more outstanding unexpected outcomes of how the game has taken on a life of its own:

- **Players are forming their own networks**
  Player initiated guilds have formed (people with similar interests or goals) in education, makers, librarians, etc.

- **An Evoke Wiki has been started by players**

- **Daily challenges have been initiated**
  One idea is to “plant from seed (or grocery refuse) and grow something edible in the 68 days left until the end of the first season of Evoke”.

- **Food Security survival kits have been proposed**

- **Librarians have emerged to donate time to do research for other players**

- **A map of all players/agents was created by a player to map where others live**

- **A reading group/book club has been formed by the players**

- **Collaborative projects have begun among players**

- **Avatar development ideas have been shared**

- **Incredible interpretations of the graphic novel story have taken place**

- **Great response to the African proverb used as the story headline**

These answers have spawned new questions: Will this pace and interest be maintained over 10 weeks? What ideas for concrete projects will emerge? How will collaborative networks between players in the north and south be formed? What new innovations will emerge?

Stay tuned for the answers.
A reminder: It’s not too late to get involved -- visit EVOKE to register and start playing!
13. Building national ICT/education agencies
by MICHAEL TRUCANO | published on 19 March 2010

Many developing countries have embarked upon – and others are seriously considering – large-scale roll-outs of information and communications technologies (ICTs) in their education sector. Similar processes began in most OECD countries 10-20 years ago, in many middle income countries more recently. Structurally, education systems organize themselves in various ways to fund, implement and oversee these sorts of initiatives, which are typically quite expensive – and complex – and the related organizations evolve, in ways incremental and radical, over time.

Despite the highly varied local contexts, in most countries, a single institution is core to the implementation of ICT/education initiatives.

What do we know about how such institutions work, and what suggestions might we have for governments creating such institutions for the first time, supporting these sorts of agencies over time, and/or restructuring such organizations to meet future challenges?

These ICT/education institutions take various forms. Most prominent in the global consciousness are probably the quasi-autonomous ICT/education agencies under the general direction or guidance of the ministry of education (examples include KERIS in Korea, Becta in the UK, NCET in China). In other countries, foundations or NGOs serve some similar functions, in coordination with units at the ministry of education (examples include the Omar Dengo Foundation in Costa Rica and the Pilipinas School at FIT-ED in the Philippines). In yet other places, related responsibilities are assumed almost entirely by a special department or division of the MOE; in still others, universities (or even the private sector) assume such roles.

A study of such institutional arrangements over time is complicated by the fact that formal place of such institutions can change within the structure of a country’s education system. Examples of this mutability can be found in Chile, where the Enlaces program began as a university-centric initiative and was later folded into the MOE in Chile; in Thailand, where the MOE assumed the schoolnet-related functions originally performed by NECTEC, which operated under the general direction of the MoIT; in Uganda, where the staff of the independent Schoolnet Uganda were absorbed into the MOE; and in Jordan, where the Jordan Education Initiative was rolled out of its home in the MoIT to become a separate NGO.

In addition to taking various forms, such institutions can assume different formal and informal roles and responsibilities integral and vital to the success of ICT use in education. Most commonly, such
institutions oversee the roll-out and maintenance of the technical infrastructure (hardware, software, networking) upon which ICT use in schools depends. In addition to fundamental responsibilities around technical infrastructure (including procurement of equipment, installation, tech support, development of technical specifications, and maintenance of educational networks and portals, to name just a few) many institutions slowly accrete additional responsibilities over time – sometimes by design, often by default. These responsibilities can include delivery of (or oversight of) the training of technical staff; technical training for students, administrators and/or teachers; the development of education content (digital learning resources); pedagogical training for teachers; research and development, including piloting of new approaches and practices; the management of community ICT resources and outreach; educational and/or ICT strategy or policy development; and monitoring and evaluation.

Independent or quasi-independent institutions can have complicated relationships with government departments, which act (variously) as their key clients, overseers and/or, in some cases, even their ‘competitors’. The staffing of such institutions can be challenging, especially as they may be populated by a mix of employees, civil servants, seconded staff from other organizations and (especially in very technical areas) private contractors. In some instances, organizations are established independent of existing government structures expressly to be able to employ people with certain skills not typically found within government agencies – and to pay these people salaries out of sync with existing government civil service guidelines. Leaders of such organizations can be drawn from various specialties, possessing a variety of skill sets.

Institutions can draw on a variety of funding and financing mechanisms, such as dedicated or discretionary government budgets or earmarks; contracts; user fees; special revolving funds (sometimes made possible by dedicated monies from universal service provisions); philanthropic donations; revenue-sharing arrangements with private companies; and subsidies from sponsoring or partner organizations.

Managing relationships with vendors can be an important – and difficult role – for such institutions. In some cases, such institutions are deliberately set up at “arm’s-length” from existing government units or agencies to allow for a greater flexibility in dealing with the private sector; in others they are expressly established as a special public-private partnership.

The enabling legislation and governing regulations for the activities of such institutions vary by country, as do models for institutional oversight. Over time, such institutions typically evolve, sometimes quite dramatically, in form, function, size and legal identity. A common challenge for many institutions occurs when their responsibilities shift from providing mainly technical support services related to ICT infrastructure to assume additional responsibilities related to pedagogical training, content development, R&D and impact evaluation. The staff – and leadership – at the core of such institutions in the early years may not be well-suited to delivering, managing or planning for a broader range of such activities. In addition, by slowly accreting a variety of new responsibilities over time (whether desired or not), such organizations can experience existential challenges when political leaders question the suitability of the institution to deliver on an expanded set of responsibilities (the public hullaballoo in
the UK in fall 2009 about the role of Becta – considered one of the model global agencies of this sort – is one such example of this phenomenon).

With all of this in mind, the World Bank, together with a number of its development partners, is investigating how it might play a useful role in (1) documenting and analyzing real-world experiences; (2) bringing together leaders and key personnel to share lessons and challenges across countries; and (3) providing useful input into policy decisions going forward in which such institutions play a critical implementation role.

Some key questions related to the development of ICT/education agencies (and their functional equivalents) in developing countries include:

- How should an education system structure itself to meet new challenges in this area, and what roles and responsibilities could/should a dedicated ICT/education agency or unit play?
- What global and regional models for ‘good practice’ exist?
- How should such an institution be organized and staffed?
- What funding mechanisms exist for such institutions, and what are their advantages and disadvantages?
- How have such organizations evolved over time, and what implications might there be for the future?

We are currently talking with numerous countries to assess the usefulness of such work, and how to make it immediately relevant and actionable to current problems and challenges in various contexts. We are most happy to hear from key people at such institutions (whether through the comments below, or through other channels) and to receive suggestions for places and organizations for whom such work might be especially relevant.

---

Links to some prominent (and not-so-well-known) national ICT/education agencies (or their functional equivalents):

- Becta (UK)
- Enlaces (Chile)
- Jordan Education Initiative
- KERIS (South Korea)
- Omar Dengo Foundation (Costa Rica)
- Schoolnet Thailand

- **Schoolnet Toolkit**
- **Integrating ICTs into Education: Lessons Learned (Volume 1)**
- **SchoolNetworking: Lessons Learned (Volume 2)**
- **Initiating and Managing SchoolNets: Lessons Learned Vol. 3**

---

**Event reminder:** Next week the World Bank kicks off a new seminar series called *EduRadicals: Education Innovators & Thinkers*. The first discussion, featuring Roger Shank, will take place on 25 March in the World Bank main complex building from 3:30 - 5pm. **It is open to the public, but space is limited, so please see the event web site for more information and to register.** For those not in DC: Video from the event will be archived and published on the [World Bank's education web site](http://www.worldbank.org) in a few weeks.

**Please note:** The image use at the top of this blog post comes from László Szalai via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution ShareAlike 3.0 License.
Next week the World Bank is holding a forum on public-private sector partnerships (PPPs) in the education sector as part of its ongoing initiative investigating this increasingly important topic.

Consideration of the formation and use of PPPs is especially relevant in many countries when the use of ICTs at scale in the education sector is considered. There a variety of reasons for this, but two of the most common reasons that governments give in support of the use of PPPs in this area are related to (1) cost and financing issues ("this stuff is expensive, so we need to find creative ways to share costs"); and (2) the perception that competence and experience in new, 'innovative' areas like the use of ICTs is best found in the private sector, and not government ("the IT people are more advanced than we are in government, so partnering with them is a way for us to 'catch up'”). While developing countries as diverse as Kenya and the Philippines are exploring this in a variety of ways, some of the most interesting and varied cases of PPPs to support the use of ICTs in education can be found in India.

India is currently exploring how to equip all of its secondary schools with computer labs, and discussions of the appropriate use of PPPs in this process are an explicit part of this exploration. (India’s Second National Consultative Meet on Public-Private Partnerships in Education occurred in November 2009. A useful general overview of various approaches, based on actual experiences in India, can be found in ICT-based Education in Schools: Emerging Business Models in India [pdf].)

One such PPP initiative in India with a high international profile is the Rajasthan Education Initiative (REI), which the state government has directed since 2005 targeting girls, rural children, urban underprivileged children, and children with special needs through various ICT and non-ICT interventions. The REI has been implemented in close partnership a number of partners, most prominent of which are the Confederation of Indian Industries (CII), the Global e-Schools and Communities Initiative (GeSCI) and the World Economic Forum (WEF).

Late last year, GeSCI released a very candid Review of the Rajasthan Education Initiative [pdf], which began by stating that

It is important to note that there is no real precedent to the REI. At some point the REI did derive inspiration from the Jordan Education Initiative, but as the REI started to take shape it soon
became clear that the REI was pitted differently and the expectations and outcomes would vary considerably.

In terms of its vision, its ambitious plan, the scope of partnerships and international access set against a traditionally anemic education system with more than 90,000 schools, beleaguered with intricate socio-economic challenges, there was no model that the REI could replicate. Its mistakes and its achievements are all its own.

The GeSCI report is to be commended for its directness in assessing the difficulties that PPP initiatives of this sort can face. While the report does enumerate the various achievements of the REI, which it labels a "unique model of public-private partnership in education", perhaps more relevant to other places are the list of 'challenges' that the project found difficult to overcome in the first stage of its activities. Key lessons learned from the first stage of the REI in this regard are, according to GeSCI, that

- Managing a public-private partnership of the magnitude of REI is a very complex task.
- Providing leadership for such a complex project requires significant fiscal and human resources.
- Leading such a project requires superb project management expertise, extraordinary attention to facilitating communication between the partners and clearly articulated objectives.

The institutional and human resource requirements to make such a set of complicated series of interlocking public-private partnerships work are, to borrow a common term of many engineers, 'non-trivial'. The GeSCI report pulls no punches in its assessment of the project's 'failures' in this regard. To cite just one example:

*Over time the REI began to accumulate a huge list of partners, and this list became large and unwieldy. Moreover there were no clear criteria for partnering, such as the minimum size of a collaborative project. The situation was compounded by periodic transfer of officers from the REI with the result that every time a new officer took charge of the REI he or she took time to develop an understanding of the initiative which slowed progress. Much of the Partners energy went into establishing their credentials with the new officers.*

This phenomenon is not unique to Rajasthan, of course. As India moves forward with its plans to increase the use of ICTs in its education sector through a variety of public-private sector partnerships, it would do well by studying the Rajasthan experience, for PPPs of this sort are complex undertakings. GeSCI concludes its report by stating that,

*While the implementation of the REI to date has been uneven, the vision and objectives of the initiative continue to be of critical importance to schools across the continent. The vision may well have exceeded the practical bounds of its reach but the REI remains a 'work in progress', in which lessons are being learned and applied and the catalytic effects of the Initiative on schools, communities and Ministries of Education is already evident.*
Irrespective of the net outcome of REI after the first phase, it cannot be denied that the REI helped to create awareness about Rajasthan all over the world and at the same time it helped to bring the world to Rajasthan.

Related information:

- The flagship World Bank publication on this general topic of PPPs in education is *The Role and Impact of Public-Private Partnerships in Education*. In support of this work, the Bank held a special event focusing on *Public-Private Partnerships for ICT in Education and Contracting for Improved Service Delivery* back in 2008.

- USAID commissioned a series of reports on the lessons from the JEI, which included a synthesis report of the *Overview and Recommendations to the Jordan Education Initiative* [pdf].

- A useful short general discussion of this topic is *Public-private partnerships in ICT for education* [pdf].

- India’s *Annual Status of Education Report 2009* provides a wealth of information about the challenges that India is facing in its education sector. (Thanks to Ashish from GeSCI for passing this along.)

  Of potential general interest:

- The World Bank's youth-oriented "youthink!" blog sometimes turns its attention to ICT/education issues, as it does this week with a post on *Beyond Innovative Technology: Teaching Internet*.

Please note: The image used at the top of this blog post of recent double-hundred batsman Sachin Tendulkar and a teammate ("a public view of one particularly successful Indian partnership") is used according to the terms of its *Creative Commons license, via Wikimedia Commons*. 
15. The $10 computer for education?
by MICHAEL TRUCANO | published on 2 April 2010

One of the first ever posts on the World Bank EduTech blog was about a purported US$10 computer for education in India. While the hype around that effort has considerably cooled, efforts to provide a $10 educational computer have not gone totally cold. PlayPower is exploring such a device -- and you may be surprised at how they are going about it.

As Derek Lomas explains in the accompanying video, one of the ways that PlayPower is able to cut costs is to utilize a technology available even in some of the poorest communities in developing countries -- a television.

(The idea to cut the cost of basic computing in such places by utilizing TVs as the display mechanism is not new; industry pioneers like Raj Reddy and Ashok Jhunjhunwala, among others, have championed efforts in this regard through the years, with varying degrees of success.)

Go to most any large market anywhere in the world, Derek explains, and you will find very inexpensive videogaming devices -- usually manufactured by companies in China that few have ever heard of -- that you can connect to a TV and play the type of 8-bit videogames that he grew up on in the 1980s. If you could make available for free a suite of educational games for manufacturers to include on such devices, which can cost as little as US$10, you could quickly reach a very large potential audience of learners in poor communities. Derek notes that, for such people, the development of basic keyboarding skills can mean the difference between earning $1/day at manual labor and $1/hour as a back office worker.

[Video courtesy PopTech, used according the the terms of its CC license]
It may be hard for many to believe that, in 2010, we can be talking about 'innovation' in the context of '8-bit computing' from the 1980s. In exploring appropriate, cost-effective solutions to providing low cost ICT devices for education in developing countries, it is clear that there is no 'silver bullet', one-size-fits all solution. Variety is the spice of life, and lots of complementary, piecemeal solutions can, in aggregate, add up to a lot. By riding on top of existing technologies already in wide use, and benefiting from existing sales and distribution channels, PlayPower is testament to the fact that there are many creative and inexpensive ways to utilize computers to aid learning.

Indeed --> One of my first reactions when I learned about PlayPower was to wonder:

*What if mobile phones came with a set of pre-installed self-paced learning applications?*

Perhaps even more than televisions, mobile phones are already owned by people in some of the poorest, most remote places in the world -- places greatly underserved by existing education systems.

One of the people affiliated with PlayPower -- Matthew Kam, a professor at Carnegie Mellon University (USA) -- asked himself the same question a few years ago. Matt, whose MILLEEP project investigates the use of educational games on mobile phones, will be speaking at the World Bank on 12 April on Mobile Phones and Literacy in Rural Communities, sharing the results of some of his research.

*For more information on PlayPower:*

- Here is an article that appeared in Wired Magazine last year about PlayPower and one from ABC News; the project has its skeptics too.

*Please note: The image used at the top of this blog post comes from Mangesh Mayangade via the Playpower Foundation account on Flickr; it is used according to the terms of its Creative Commons Attribution 2.0 Generic license.*
16. Educational Technology in India: Boon or Bust?
by MICHAEL TRUCANO | published on 9 April 2010

On 21 April 2010 infoDev will launch the first draft of its *Survey of Information and Communication Technology for Education in India & South Asia*.

The launch, to take place at the World Bank office at Lodi Estate in New Delhi, India, will be accompanied by a lively Oxford-style debate on the motion:

"Most investment in technology in schools is wasted. Discuss."

The event is open to the public and will be webcast (visit the event web page to register to attend the event and/or to receive webcast details via email).

The Survey

The first draft of infoDev's *Survey of Information and Communication Technology for Education in India & South Asia* was commissioned from Price Waterhouse Coopers India. The report is the latest in a series of regional surveys of the current state of the use of technology in education, following on past efforts examining Africa and the Caribbean. The report compares Indian and South Asian experiences and expertise on such topics as policy coherence in the use of ICTs for Education, use of ICTs in non-formal education and capacity building for effectiveness. The report includes detailed case studies of eight South Asian countries and several local surveys.

The Debate

The Oxford-style debate will line up discussants for and against the motion "Most investment in technology in schools is wasted" and invite the audience to vote for the winning side. There is a general consensus among education practitioners that ICTs such as radio, TV, computers, the Internet, and mobile phones can be leveraged to increase the educational experience of learners. But is this opportunity being overhyped?

Dr. Tim Kelly, Lead ICT Policy Specialist for the World Bank's infoDev program, will chair a lively discussion on the following key topics in ICT and education:

- Are the educational systems South Asian nations ready for large-scale use of ICTs?
- If so, what are the organizational and financial preconditions for success?
• What changes are needed in systems, practices and oversight arrangements?
• How should we measure success?
• What are the existing good practice experiences in the region that can guide us?

Each discussant will start with only five minutes and the power of their arguments to sway the audience. There will then be a panel and audience discussion before each panelist gets a final three minutes to conclude their arguments. The audience will have the last word, voting FOR, AGAINST or UNDECIDED on the motion both before and after the debate. The side that swings the most votes during the course of the debate will be declared the winner.

Invited Discussants:

• **Ashish Garg** is the Asia Regional Coordinator for Global eSchools and Communities Initiative, and based in New Delhi

• **Atanu Dey** is a noted speaker on ICT in education and an economist at Netcore Solutions in Mumbai, India

• **Benjamin Vergel De Dios** is a Programme Officer for ICT in Education projects at UNESCO Asia-Pacific Regional Bureau for Education in Bangkok, Thailand.

• **Nilaya Varma** is Director of PricewaterhouseCoopers India which has written the Survey of Information and Communication Technology for Education in India & South Asia

• **Sam Carlson** is a World Bank Lead Education Specialist and project team leader for Sarva Shiksha Abhiyan in India

• **Wayan Vota** is an ICT in education consultant to infoDev and the moderator of the [online Educational Technology Debate](#)

---

A reminder: Matthew Kam of Carnegie Mellon University will be speaking at the World Bank in DC on Monday, 12 April on "Mobile Phones and Language Literacy in Rural Communities". This event is open to the public, but you must RSVP to attend. You can also participate via [online webinar](#) beginning at 12:20 pm DC time that day.
Later today the 2010 Horizon Report: K-12 Edition will be formally released, the latest in a series of influential annual publications identifying "emerging technologies likely to have an impact on teaching, learning, research or creative expression within education around the globe". Where there are references in the popular press to 'key trends in technology use in education', the Horizon Reports are quite often, directly or indirectly, the source. Previous editions of the Horizon Report influenced the selection of global educational technology trends discussed on this blog by Bob Hawkins in a heavily read post back in January.

This latest Horizon Report, a collaboration between the New Media Consortium and the Consortium for School Networking (CoSN) [disclaimer: I served on the project advisory board for this year's edition], is short and easy to read, and helpfully contains pointers to many examples/illustrations of projects representative of the various emerging educational technology trends. And the trends themselves? Here are the ones that made this year's list:

**Time to adoption: One year or less**
---> Cloud computing
---> Collaborative environments

**Time to adoption: Two to three years**
---> Mobiles
---> Game-based learning

**Time to adoption: Four to five years**
---> Augmented reality
---> Flexible displays

One of the comments on the Horizon Report that we at the World Bank hear from our partner ministries of education in developing countries is that the viewpoints and perspectives represented in the report are very 'OECD-centric', i.e. that they are more immediately relevant for schools in Boston or Brisbane than they are for those in (for example) Lagos or Lusaka. This is a fair criticism. The time to adoption for cloud computing in education in most developing countries, for example, is probably the furthest out on the event horizon of any of the trends noted above, even if, for OECD countries, a time to adoption of less than one year is reasonable in many circumstances.
(A side note: Even in schools that I visit with very poor connectivity, I regularly see perhaps the oldest example of cloud computing used in abundance: web-based email is the de facto default tool for asynchronous communication via the Internet in most rural schools. This is almost always the consequence of the lack of alternative tools on the local school network, of course -- and testament to the enduring utility of email -- and not a conscious decision of policymakers, but it does perhaps highlight the fact that the horizons for adoption can be viewed in different ways in different places.)

At the same time, however, we hear that the insight into emerging trends for educational technologies in 'developed' countries that the Horizon Report provides is very valuable in helping educational planners in emerging economies orient themselves to trends that are perhaps relevant in different ways -- and usually along different (longer) time horizons -- than they are for planners in OECD countries. This tension points to one of the fundamental challenges facing even the most well-informed, far-sighted and holistic educational planners engaged in this area: governments often feel the need to make large, multi-year 'bets' on various technologies, knowing at the same time that the pace of technological innovation in this area outruns the pace of institutional (and related policy) innovation.

(For what it's worth: Two projects that have received support from the World Bank, and which have been profiled on this blog in the past, were included in the lists of representative initiatives illustrating emerging trends in this year's Horizon Report: Urgent Evoke, in game-based learning, and the International Children's Digital Library, which the World Bank helped to support in Mongolia, in mobiles.)

For those interested in just how the report was put together, I'd strongly urge you to have a look at the tools used to facilitate the extensive on-line collaboration with a gloabally dispersed set of advisors on the related project wiki. Related deliberations and discussions have been documented and are fully available to the public at http://k12.wiki.nmc.org. This model of collaboration may be quite relevant for those exploring consultative processes when developing joint knowledge products with multiple partners, and when seeking input from a geographically diverse group of experts and practitioners in a given field.

CoSN and NMC have put together a helpful accompanying Discussion Leader’s Guide (pdf) and Presentation (warning: PPT file) to help continue the conversation around these issues at face-to-face gatherings. The release of each Horizon Report typically unleashes an avalanche of discussion on blogs and message boards on the Internet soon after it is published (if not in the comments section below).

Please note: The image used at the top of this blog entry ("your event horizon depends on your perspective") comes from the Wikipedian named Solitude via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution ShareAlike 3.0 License.
One of the key findings from a recent report by the OECD was that "the digital divide in education goes beyond the issue of access to technology. A second digital divide separates those with the competencies and skills to benefit from computer use from those without."

Most visitors to this blog will be quite familiar with the term digital divide, which was popularized in the 1990s as the Internet exploded into public consciousness, but which has been around in concept for a few decades. Much of the related dialogue, and certainly most of the action by governments in developing countries, has so far treated unequal access to ICTs (especially the Internet) as a largely technical challenge at the core of digital divide initiatives, and as a result technical solutions have been explored and implemented (usually led by very technical people) all over the world.

What's different about a 'second' digital divide?

First, some acknowledgements and disclaimers: This concept of a 'second digital divide' that the OECD puts forward is not new (the authors make no claim to novelty; here's a paper written almost a decade ago [pdf] on the topic, one of many). Some would argue that the types of inequities and challenges bundled under the concept of a second digital divide were actually part of many early dialogues about the 'digital divide'. Others contend that 'digital divide' arguments are specious, or miss the point, and still others have identified a 'third', 'fourth' or even 'fifth' digital divide. I'll leave it to the academic community to argue about definitions and parse the semantics -- while there is vigorous related discussion about all of this, it is not my intention to revisit it, or attempt to summarize it, here. (On a related note, and to anticipate a likely comment on this post, I note that, in many places, the digital divide is as much about access to reliable power as it is about access to ICT.)

My intention here is to suggest that it is only now that a practical awareness, with potential consequences for action, is beginning to build in some ministries of education outside the OECD about the extent and importance of this second, and far greater, challenge, prodded in many instances by forward-thinking civil society groups, both intentionally and locally, and to some extent by companies demanding ICT-related skills and competencies that are in short supply.

(This is, sadly, is also consistent with the larger 'typical' evolution in thinking and action that characterizes a second stage of large-scale investments in ICT in education in many if not most countries. The first, exciting stage, involves buying lots of cool new equipment. The second stage is
figuring out what to do with it -- and how. Many people find this to be a rather unfortunate, and backward, approach to planning for the use of technology in education -- but this is a reality that one sees time and time again, in place after place.)

At a practical level, the responsibility for bridging the first digital divide in the education sector, especially in developing countries, was (has been) delegated to the 'ICT people'. To be sure, much still needs to be done in many places, especially in rural communities and especially in Africa, to ensure an adequate access to computing, connectivity and communication tools, and the "ICT people" have important roles to place in this process.

That said, this second digital divide lies at the core of the educational challenge faced by many countries today. Even critics of 'one laptop per child' and 'the $100 laptop' marvel at the rhetorical power behind such seemingly simple slogans, which succinctly encapsulate a larger set of ideas, concepts and beliefs, to provoke debate -- and action. The OECD warning about a 'second digital divide' is perhaps not noteworthy in 2010 for its novelty or newness (although my discussions with many policymakers with oversight in this area suggests that it is indeed new to them). Rather, it may prove to be a useful rhetorical device to help open additional discussions and debates, especially for those people and groups fearful that current approaches to the use of ICTs in the education sector in many places can further marginalize groups already excluded or marginalized from existing educational practices and environments.

ICT use holds very real promise for facilitating greater inclusion of such groups into existing educational practices and environments as well -- but such inclusion is by no means automatic, despite what countless pictures of happy children with computers from all walks of life might imply.

For more information:

- Browsing through the studies and policy documents on topics related to 'digital literacy' -- a term which means different things to different people -- is a quick way to immerse yourself in debates related to this concept of a 'second digital divide', and expose yourself to a rich and varied bibliography. The best single source global resource for information on topics related to digital literacy is the ICT Digital Literacy portal.

- A short chapter from infoDev's Monitoring and Evaluation of ICT in Education Projects: A Handbook for Developing Countries attempts to describe where and how monitoring and evaluation practices might be able to play a role in supporting pro-equity approaches to the use of ICT in education.

Please note: The public domain image used at the top of this post ("a different sort of digital divide") comes via Wikimedia Commons.
Given their low costs and increasing ubiquity, even in very poor communities, much has been written about the potential for mobile phones to aid in the delivery of 'anytime, anywhere' education. But what might such educational practices look like in practice? The MILLEE project (Mobile and Immersive Learning for Literacy in Emerging Economies) has been examining this issue for the last six years, beginning with low-income communities in the urban slums and villages in India.

In a recent presentation at the World Bank, Matthew Kam, the founder of MILLEE, shared experiences from ten rounds of iterative small pilot field studies in developing and testing mobile phone gaming applications that enable children to acquire language literacy in immersive, game-like environments. One goal of this work is to investigate how to make localized English language learning resources more accessible to underprivileged children, at times and places that are more convenient than schools. (A short video profile of the project is available here; it is not embedded for direct viewing on this blog because it features a 15-second commercial at the beginning.)

Matt’s presentation was very rich, and touched on a wide variety of issues, including (for example) mobile phone usage scenarios and equity issues based on gender and socio-economic and caste status, cultural issues in videogame design, foreign language literacy acquisition and electricity in Indian villages.

The presentation was full of fascinating detailed ethnographic observational data. Some examples from just one case study:

- Most use was in the home during evening hours, and *not* outside -- although high caste boys would use them when 'working' (in practice, this meant supervising, presumably at times rather absentmindedly) in the fields.

- Girls would often hide their phones to prevent their brothers from finding them (believing, presumably, that parents would be hesitant to take the phone away from boys to return it to lower status girls).

- Worries about theft, and electricity surges, meant that phones were not typically left to charge unattended.

- The use of educational games on the mobile phones facilitated new ties between participants across gender, caste and village boundaries, and the new social relationships that developed transferred to real world, non-gaming settings.
Building on its initial work, MILLEE is now beginning a controlled experiment with 800 rural children in 40 villages in India, with early replication underway in Kenya and China.

Those interested in learning more about this work are directed to the following list of Matthew Kam's related academic publications, which includes new papers on An Exploratory Study of Unsupervised Mobile Learning in Rural India (in which the authors argue that "cellphones are a perfect vehicle for making educational opportunities accessible to rural children in places and times that are more convenient than formal schooling") and Let’s Play Chinese Characters – Mobile Learning Approaches via Culturally Inspired Group Games (both presented at the recent CGI 2010 event). Practical lessons from initiatives like MILLEE are invaluable as we try to untangle the hope around the potential for the use of mobile phones to aid a variety of educational objectives from much of the general hype around this topic.

Related notes:

- If you are looking for a good primer on issues related to this topic, check out the syllabus from the course on "Human-Computer Interaction in the Developing World" that Matthew Kam teaches at Carnegie Mellon.

- MILLEE is not the only project investigating the use of mobile phones to aid language acquisition in a developing countries. Others include Mobile Phones as a Literacy Platform in Niger, the m4Lit project in South Africa, Jokko in Senegal and, in slightly different ways, Nokia Life Tools in India and the BBC's Janala project in Bangladesh.

---

We have a bunch of interesting talks in May at the World Bank on ICT education issues:

- On 5 May a group from EDC will be talking about Interactive Radio Instruction (IRI) in Zanzibar.

- On 13 May Alicia Casas de Barran, the National Archivist of Uruguay, will be talking about the digitization of her country's national heritage to take advantage of Plan Ceibal, that country's program which has provided a free laptop to all public school students, and how the architecture of schools is being re-imagined as a result of the ubiquitous availability of computers and the Internet.

- On 20 May the partner groups involved in the Escuelat initiative will be sharing results from that initiative to bring educational television to students in rural areas in Latin America.
• On 24 May Miguel Nussbaum will be speaking on 'One Mouse Per Child', a multi-country investigation of how up to 50 computer mice can be connected to one computer and projector for use cooperatively in a classroom.

Information about these events is being posted on the World Bank's ICT/education events page. RSVP information for each event will be available soon through that page, and via our Twitter account, @WBedutech.

Please note: The image of a boy participating in the MILLEE project used at the top of this blog post ("mobile learning while sitting") is copyrighted and used with permission.
In business and in international development circles, much is made about the potential for 'learning from best practice'. Considerations of the use of educational technologies offer no exception to this impulse. That said, 'best practice' in the education sector is often a rather elusive concept (at best! some informed observers would say it is actually dangerous). The term 'good practice' may be more useful, for in many (if not most) cases and places, learning from and adapting 'good' practices is often much more practical -- and more likely to lead to success. Given that many initiatives seem immune to learning from either 'best' or even 'good' practice in other places or contexts, it may be most practical to recommend 'lots of practice', as there appears to be a natural learning curve that accompanies large scale adoption of ICTs in the education sector in many countries -- even if this means 'repeating the mistakes' of others.

But do we really need to repeat the mistakes of others? If adopting 'best practice' is fraught with difficulties, and 'good practice' often noted but ignored, perhaps it is useful instead to look at 'worst practice'. The good news is that, in the area of ICT use in education, there appears to be a good deal of agreement about what this is!

Here's a list of some of what I consider to be the preeminent 'worst practices' related to the large scale use of ICTs in education in developing countries, based on first hand observation over the past dozen or so years. I have omitted names (please feel free to fill them in yourself). The criterion I used for selection was simple: The given worst practice was easily observable in multiple prominent initiatives, with (one fears) a high likelihood of re-occurrence, in the same or other places. In no particular order:

1. Dump hardware in schools, hope for magic to happen
This is, in many cases, the classic example of worst practice in ICT use in education. Unfortunately, it shows no sign of disappearing soon, and is the precursor in many ways to the other worst practices on this list. "If we supply it they will learn": Maybe in some cases this is true, for a very small minority of exceptional students and teachers, but this simplistic approach is often at the root of failure of many educational technology initiatives.

2. Design for OECD learning environments, implement elsewhere
With the best of intentions, and often 'assisted' by vendors, many groups (including many governments) have sought to simply transfer ICT-related models and practices from classrooms in industrialized countries to less developed education systems in other parts of the world. Sometimes this works, but unfortunately many places roll out programs and products that have at their core sets of assumptions (reliable electricity and connectivity, well-trained teachers, sufficient available time-on-task, highly literate students, space to implement student-centric pedagogies, relevant content, a variety of cultural
norms, etc.) that do not correspond with local realities. The result is often (and not unsurprisingly) not very good.

3. Think about educational content only after you have rolled out your hardware
Deploying lots of computer infrastructure in schools is expensive (and complicated). So expensive, in fact, that many critical complementary investments (in training, in tech support, in content, etc.) are 'postponed' until a later date. Sometimes this is a calculated bureaucratic maneuver/risk -- the thinking is that, once the hardware is in place, the need for content will be more clear, and it will be easier to make the case for related funding at that time) -- and other times this is simply a lack of good planning. But it is a fact that, in many places, only once computers are in place and a certain level of basic ICT literacy is imparted to teachers and students is the rather basic question asked: What are we going to do with all of this stuff?

Related to this ...

4. Assume you can just import content from somewhere else
Some places recognize the need for quality educational content from the start, but assume they can simply import it from somewhere else. In addition to obvious potential cultural issues, the successful integration of content developed elsewhere into daily teaching and learning practices is inhibited by a lack of clear understanding by teachers of the relevance of such materials to the required curricula. Much effort typically needs to be expended to map this content to explicit objectives and activities in the local curricula. (And of course: Teacher training helps too!)

5. Don't monitor, don't evaluate
This should be self-evident. That said, there are only a handful of really credible, rigorous impact evaluation studies done of educational technology initiatives in developing countries. Most evaluation work focuses on (perceptions of) changes in attitudes as the result of the use of educational technologies, and the success (or lack of success) in meeting various simple metrics (number of computers installed, number of teachers trained, etc.). Such information is important, of course, but it is hardly sufficient. What is the impact of ICT use in education? If we don't evaluate potential answers to this question, rigorously and credibly, all we are left with is well-intentioned guesswork and marketing dross.

6. Make a big bet on an unproven technology (especially one based on a closed/proprietary standard) or single vendor, don't plan for how to avoid 'lock-in
Let's acknowledge that the speed of technological changes almost always outpaces the ability of educational planners to keep up. In response, some policymakers seek to get 'ahead of the curve' by placing large bets on new, largely unproven technologies in an effort to 'leapfrog' what is happening in other education systems. In other cases, education systems effectively outsource most of the capacity to manage activities in this area to a vendor or other third party. There are potentially valid reasons to pursue such courses of action in some cases, but they are inherently very risky, especially if clear plans are not made on how to 'exit' such decisions and relationships.
7. Don’t think about (or acknowledge) total cost of ownership/operation issues or calculations

What does ICT use in education cost? Some people would have you believe it is only the initial cost of hardware. Businesses have long known that this is not the case, but many education policymakers seem not to have grasped (or willfully ignore) this fundamental issue. We know that “total cost of ownership or operation” (TCO) is often underestimated, sometimes grossly, when calculating costs of ICT in education initiatives in developing countries. Estimates of initial costs to purchase equipment to overall costs over time vary widely; typically they lie between 10-25% of total cost. That said, there is a dearth of reliable data, and useful tools, to help guide education decisionmakers in their assessments of the true costs of educational technology initiatives.

8. Assume away equity issues

One compelling justification for large-scale investments in the use of ICTs in education is that they can help address equity issues related to the 'digital divide'. That said, introduction of ICT in schools often exacerbate various entrenched inequities in education systems (urban-rural, rich-poor, boy-girl, linguistic and cultural divides, special needs students -- the list is long). Things can be done to mitigate such challenges, and indeed pro-equity approaches of utilizing ICTs are possible, but they don’t happen without careful proactive attention to this issue.

9. Don’t train your teachers (nor your school headmasters, for that matter)

If there is one clear lesson from the introduction of educational technologies in schools around the world, it is that teacher training is critical to the success of such initiatives. Outreach to teachers, through both regular technical and pedagogical support and on-going professional development, should be seen as cornerstones of any large ICT investment in schools. And: Targeted outreach to school principals is often crucial if teachers are to have the necessary freedom to take advantage of new opportunities offered through the use of ICTs.

10. ___

[I thought I would leave #10 blank as an acknowledgement that there are many additional worst practices that merit mention, but I have run out of space. Do feel free to submit your candidates below.]

For those who work in educational technology, none of these will be new. For many others new to this topic, the items on this list may appear to be so obvious that they need not even be mentioned. Even if indeed they are 'obvious', that unfortunately hasn't stopped them from occurring (and re-occurring) around the world with depressing regularity.

---

Other recent items related to ICT/education of potential interest from the World Bank:

1. infoDev has released a preview of the key findings [pdf] from its upcoming Survey of ICT & Education in India & South Asia.

2. You can now RSVP to wbeducation@worldbank.org for the following two events at the World Bank in DC in May (both start at 12:30pm and are open to the public):
• 5 May: Interactive Radio Instruction: Increasing Access to Quality Early Childhood Development Programs in Developing Countries

• 13 May: Uruguay's Plan Ceibal: What happens when every student and teacher has their own free laptop
21. Interactive Radio Instruction : A Successful Permanent Pilot Project?
by MICHAEL TRUCANO | published on 11 May 2010

Despite their increased diffusion through rich and poor communities around the world, many people still have serious reservations about large scale investments in information and communication technologies (ICTs) within education systems. Spirited and long-running related debates related to their costs ("too expensive", their critics say), appropriateness ("students needs lots of things before they need computers") and impact on learning outcomes ("we haven’t seen any") continue in many places, and reasonable people can (and do!) take different sides of such debates. There is, however, a low-cost educational technology with a long history that has demonstrated positive impact in many developing countries -- educational radio, specifically what is known as interactive radio instruction (IRI).

According to a World Bank toolkit published on the topic in 2005,

*Interactive radio instruction (IRI) is a distance education system that combines radio broadcasts with active learning to improve educational quality and teaching practices. IRI has been in use for more than 25 years and has demonstrated that it can be effective on a large scale at low cost. IRI programs require teachers and students to react verbally and physically to questions and exercises posed by radio characters and to participate in group work, experiments, and other activities suggested by the radio program.*

The key difference between IRI and a conventional use of broadcast radio to deliver education audio content is suggested by the term interactive. In this context, radio instruction is considered interactive because it prompts specific actions by teachers and students in a classroom. Walk into an IRI classroom (at least a well-functioning one) and you will not find students or teachers passively sitting and listening to the radio. Instead, you should expect to see teachers and students engaged in songs, question-and-answer activities and various types of physical movement, as ‘instructed’ (or directed) by an audio program delivered via a radio (or increasingly, via CD or MP3).

The research literature around the positive, cost-effective impact of IRI in a variety of low-income communities in developing countries is pretty solid -- especially when compared with the still-weak
evidence base we have demonstrating positive, cost-effective uses of other ICTs in educational settings in these places. The World Bank toolkit declares that:

There is consistent and significant evidence that IRI can increase learning across subject matter, age, gender, and rural or urban location. Students show progressively greater learning with time.

A group from the Education Development Center (EDC), the U.S.-based NGO regarded as the global leader in IRI, visited the World Bank last week to present findings from recent work with IRI in Zanzibar, among other places. The story EDC told us last week is consistent with previous conclusions*: that IRI continues to demonstrate a positive impact at low cost in some very challenging educational environments.

Many of the criticisms of the use of educational technologies stem from the poor evidence base on which related decisions for investment are made. In comparison, such criticisms are quite muted when discussing the suitability of investments in IRI programs in developing countries. Yet, given what we know about is cost-effectiveness, and almost 40 years after USAID funded the first experiments with IRI in Nicaragua, why do we not see more sustained large-scale IRI programs? It is true that IRI has been used (quite successfully, most would argue) in almost 35 countries around the world, but IRI programs often wither after donor funding for them expires and foreign experts move on to another program in another place. A widely respected, former senior World Bank education official who is a passionate, long-time advocate for IRI put the question a little more bluntly in response to last week's standing-room-only presentation:

Why, despite repeated apparent successes, do IRI programs seem to be permanent pilot projects?

Now some may argue with the characterization of IRI programs as 'permanent pilot projects'. In fact, statements on this issue put forward in the World Bank toolkit, as well as in a paper on this topic by an IRI pioneer, suggest that such a formulation, while nicely alliterative, is a bit too strong.

Many potential explanations have been offered for why many IRI programs make for successful pilot projects at scale but are nonetheless not sustained over time. Here are a few of the commonly-mentioned ones:

- **Investments in educational technologies are driven not by the evidence, some will say, but rather by ‘fads’, interest in the latest fashionable gadget or educational approach.** Support for IRI, which has at its core an 'old' technology like radio, naturally suffers as a result.

- **IRI investments are not expensive enough to be supported by donors.** *In other words:* Donors -- especially places like the World Bank -- like big expensive projects, and IRI programs aren't 'expensive enough'. *(Note: The IDB did fund an IRI project in Guyana [pdf]). This is a clever argument ... but is it too clever? In some ways IRI investments are ideal for donors, as they have (relatively, or at least comparatively) large upfront costs, but low recurrent costs.
• **IRI programs are often closely associated with a particular government; when the government changes, the program is abandoned.**

Given USAID's critical role in supporting IRI around the world, IRI programs can become a political casualty of preceptions of a country's relationship with the United States. USAID has been *by far* the largest source of funds in support of IRI programs around the world, and it is difficult to imagine that we would know today what we do about the usefulness of IRI without the pioneering support of USAID.

• **Institutional constraints make it difficult to sustain IRI once a large donor leaves.**

IRI programs are often located inside small units in the Ministry of Education and often have little institutional weight, especially once donor funding disappears. Negotiating with radio stations for broadcast time can become difficult once an initial 'novelty' period wears off, absent clear institutional frameworks and processes to ensure access to the airwaves.

• **IRI programs are predominantly directed toward poor, rural areas.**

The implication here is that, if IRI were also used more widely in wealthier, urban areas, they might achieve a greater level of buy-in from political elites that can help sustain them over time.

During last week's question-and-answer session, I asked the room for examples of how IRI programs have been sustained by countries themselves once USAID support and EDC expertise moves on. This question was perhaps a little unfair, given that most of the focus of the people in the room, and the presentation, was on the evaluation of the impact of IRI programs, not on their long-term sustainability. That said, the accumulated experience and expertise of many of the event attendees was quite vast, dating all the way back to the first project led by SRI in the mid-1970s, and the examples put forward rather tepidly were not terribly encouraging.

Let's say, for the sake of argument, that we are convinced of the cost-effective postive impact of IRI interventions (EDC certainly gave a compelling presentation in this regard, at least in my opinion):

• Is it really that people don't believe that IRI is effective, or are there other issues at play here complicating prospects for sustainability?

• To what extent should efforts be directed toward convincing institutions of the effectiveness of IRI programs versus tackling issues related to the long-term sustainability of such programs?

• Does the nature of current support for IRI programs in some way make it more difficult to sustain such programs over time?

• Despite our rhetoric about documenting cost-effective impact, are other factors more important to enable investment in this area?

• Do the challenges of sustainability of IRI programs after donors leave suggest that countries do not value the successes of IRI programs, especially those related to early childhood development, as much as donors themselves do?
Are we -- including those of us at the World Bank -- somehow not understanding a key piece of the puzzle here?

---

*Critics may note that such consistency of conclusions is perhaps not surprising, given that two EDC staff authored the World Bank IRI toolkit. This criticism is noted, but there is strong and wide consensus about the value of IRI in the development community -- at least among those who know of it. The EDC staff people who authored the toolkit are globally acknowledged experts in this topic, both very highly regarded in the global educational technology community, and the Bank did do its own due diligence and peer review before publishing the toolkit.

---

For more information on EDC's work with IRI, please see the papers below. The video shown during last week's presentation follows here:

- [EDC IRI web site](#) (includes links to project descriptions and key documents)
- [Tuned in to Student Success: Assessing the Impact of Interactive Radio Instruction for the Hardest-to-Reach](#) (pdf; please note that is is a 10.4 mb download!)
- [Radio Instruction to Strengthen Education (RISE) in Zanzibar Learning Gains Assessment](#) [pdf]
- More videos of IRI programs can be accessed through the [EDCflix](#) channel on YouTube.

---
Please note: Limited numbers of spaces are still available for what looks to be a fascinating presentation about the OLPC program in Uruguay at the World Bank on 13 May: Uruguay's Plan Ceibal: What Happens When *all* Students and Teachers Have Their Own Laptops.
What happens when *all* children and teachers have their own laptops

by MICHAEL TRUCANO | published on 14 May 2010

What happens when *all* children and teachers have their own laptops -- this is usually phrased as a question, but a few places are allowing us to begin to reformulate this into a declarative sentence. One such place is the state of Maine in the northeastern United States; another is the South American country of Uruguay, where under Plan Ceibal all primary school teachers and students in government schools now have their own free laptops (previous blog posts about the Uruguayan experience can be found here and here).

Alicia Casas de Barrán, the director of the National Archives of Uruguay, spoke yesterday at the World Bank about what is actually happening under Plan Ceibal. Through various examples, she highlighted the fact that many of the 'externalities' resulting from this ambitious initiative may in fact be central to its eventual value to Uruguayan society.

Here's one such example: Ms. Casas, whose institution is not officially associated with Plan Ceibal, quickly saw the potential to capitalize on her country's massive investments in connectivity and laptops for teachers and students to open up access to the national archives in ways not previously possible. Recognizing that laptops and wifi present an entirely new distribution channel for the services of the archives, and that the education system would need lots of new content in digital formats if it wanted to make full use of its large investments in technology infrastructure, the national archives approached the ministry of education to see how it might be able to help out. The result was an effort that the archives funded itself, digitizing key documents and images from the nation's heritage; one of the signature consequences of this effort has been the inclusion of digitized versions of primary documents from the nation's history into 5th and 6th grade curricula for use on the laptops.

This is not the first time that the archives have collaborated with the ministry of education on education content. (Indeed, this is part of its remit, as it is in many other countries.) But, in contrast to past efforts, today's effort isn't only about one-way dissemination of content. I asked Ms. Casas how much feedback she received from students five years ago about items in the national archives. Her laughing answer: "None". Under Plan Ceibal, she and her staff are now receiving lots of feedback directly from students about the suitability of various resources, and especially about how they could be presented in ways more suitable for children, few of whom have ever set foot in the archives building itself.

The One Laptop Per Child initiative, whose green and white laptops are now ubiquitous in Uruguayan schools as a result of Plan Ceibal, likes to bill itself as an 'education project'. (I'll leave it to others to debate the merits of that assertion, a popular pastime in some corners of the Internet.) Plan Ceibal, on
the other hand, does not see itself as an 'education project' per se, but rather as a project to help transform larger society, with the education system as just the initial vector through which the project hopes to infect all of Uruguay with a new level of 'connectedness'.

Investments in computers for all Uruguayan students merely to allow them to access documents in the national archives would (obviously) be much too expensive. However, as the ongoing work of the national archives demonstrates, once that infrastructure is place, small additional investments can yield some interesting (and in some cases, unexpected) results. Many examples in this regard are emerging in Uruguay -- add them up, and you see some very interesting, non-traditional 'results', many of which were not foreseen by Plan Ceibal proponents when the program was being initially planned.

Casas compared the effect of Plan Ceibal to that of 'a wind blowing into the classrooms of Uruguay'. She noted that, in many ways, the 'hidden curriculum in many Uruguayan schools has been discipline', and the widespread availability of laptops for all students in schools is challenging this. When I am asked to describe what I saw on my last visit to Uruguayan schools in December, I usually respond with one word: "chaos". I did not mean this (necessarily) in a negative sense, but rather to note that, when all children have laptops and when teachers are given the freedom to explore with those students how best to use them, some of the traditional ways of organizing and managing a classroom are greatly challenged.

How can you measure such changes? Looking to a traditional measure -- standardized test scores -- may not provide much insight. But this does not mean that such changes do not have value. If other places are any guide, the disruption that accompanies a large scale introduction of laptops has the potential to actually negatively impact test scores in Uruguay, at least in the short run. This is not to downplay the risks that Uruguay is incurring here: If this 'chaos' and disruption last for an extended period of time, there will no doubt be a serious reconsideration of the path the education system is on.

The challenge -- in Uruguay and elsewhere -- is in how to measure such changes. This challenge is complicated by the fact that many positive changes that result from such investments are not foreseen by policymakers in the planning stages, and so data are not collected against which such changes can be measured and assessed until it is, from an evaluation standpoint, perhaps 'too late'. This is not to say that attempts to evaluate such impacts are to be dissuaded, nor that (as some people would have you believe) this type of evaluation work is impossible. Nor is it to imply that we should abandon the use of traditional measurement practices and tools -- far from it! (Even most critics who complain about such things note that, at least in the short- to medium-term, this would be impractical.) That said, large-scale investments like Plan Ceibal in many ways challenge the way we have evaluated such investments in the education sector in the past; the audacious scale and vast use of public monies under Plan Ceibal in some ways compel us to be creative (and perhaps even audacious) in how we set up relevant and useful monitoring and evaluation schemes. As one policymaker in Uruguay put it to me: "We have jumped off a cliff with Ceibal. If we want to land safely, and end up in a new place that seemed impossible to reach before, we need to be serious about how we learn from our experience here and make any corrections that are necessary." Rigorous evaluation of Uruguay's flight into the unknown will therefore be central to the eventual outcomes and impacts of this bold program.
There is no telling to what extent the lessons from the emerging Uruguayan experience will be relevant to other parts of the world. The country's rather unique social contract, which results in one of the least inequitable income distributions in Latin America, its small size and largely urban nature -- these and other attributes should give us pause if we try to simply extrapolate the lessons from Uruguay to create models that are then simply dropped into other places.

But the lessons that are emerging are fascinating -- and other countries considering large-scale investments in computers and other ICT devices for their education systems would do well to monitor Plan Ceibal closely.

related blog posts:

- Uruguay's Plan Ceibal: The world's most ambitious roll-out of educational technologies?
- How do you evaluate a plan like Ceibal?
- What have we learned from OLPC pilots to date?
- ICT & Education: Eleven Countries to Watch -- and Learn From
- 1-to-1 educational computing initiatives around the world
- Ten comments on 1-to-1 computing in education

Please note: The image of the flower of the ceibo tree shown at the top of this blog post (from which Plan Ceibal gets its name) comes from Wikipedian Tano4595 via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution-Share Alike 3.0 Unported license.

---

The schedule of ICT/education talks and presentations at the World Bank open to the public this May continues:

- 20 May: Escuela + (educational television in rural areas in Latin America)
- 24 May: One Mouse Per Child (Miguel Nussbaum)

More information about these events, included RSVP information, can be found on their related web pages.
23. NRENs: Accessing the connectivity revolution for education
by MICHAEL FOLEY | published on 8 June 2010

[Note: This was originally posted in two parts on the World Bank’s End Poverty in South Asia blog. It is reproduced here by permission of the author.]

When Jim Wolfensohn, then President of the World Bank, sent me to Kabul in early 2002, just after the fall of the Taliban, in order to set up the first GDLN center in Afghanistan, the main challenge was to find decent Internet connectivity. In the end we had to set up our own satellite connection back to the World Bank in Washington, DC. The same happened in Sri Lanka. How things have changed in South Asia.

For a long time, universities in the region had to rely on high cost, low speed, satellite based services to bring Internet access to its faculty and students, but that situation is changing rapidly. Led by the Higher Education Commission (HEC) in Pakistan and more recently by the National Knowledge Commission in India, and by a host of other programs in other countries, educational institutions across the region are building or rebuilding their networks, connecting to each other and to global networks with high speed fiber optic links that are set to revolutionize how we share knowledge and collaborate in research.

The building blocks of this connectivity are the fiber based campus networks in individual institutions that connect to a centrally operated high capacity national fiber backbone, called an NREN (National Research and Education Network), which in turn connects to other countries’ NRENs and then to regional networks like GÉANT in Europe or Internet2 in the US.

The South Asian NRENs that are currently operating are; ERNET in India, NREN in Nepal, PERN2 in Pakistan, and LEARN in Sri Lanka. The other countries in South Asia are working to build their own networks, some with the help of the World Bank.

The Higher Education Quality Enhancement Project (HEQEP) in Bangladesh for instance, has a component funded by the World Bank to build BdREN, which aims to connect all of the higher education institutions of the country to each other at very high speeds. LEARN has been the first NREN to get support from the World Bank; to acquire long-term access to fiber and to establish a videoconferencing service for its members. Combined with the World Bank efforts at the country level, the European
Commission and the US National Science Foundation are part funding the linkages that connect the country NRENs to each other and to European, Asian and American networks. A global academic village is being built right now!

**How did this happen so suddenly?**

The key to the opportunity to build an NREN is the availability of fiber optic cable in telecommunications networks. These cables are being deployed globally, undersea by international telecom consortia and in country by public and private telecoms, and by other network owners like railway and electricity companies. After the telecom bust in the late nineties there was a lot of consolidation and buying up of assets including the undersea cables, which brought down the cost of submarine fiber but also brought a lull in the deployment of new fiber.

However, there is a new confidence in the market, most notably in the emerging economies of Asia and Africa. Africa will show a veritable explosion in the availability of submarine connections in the coming two years. The map shows some of the new connections coming to parts of South Asia too. Within South Asia the real revolution has been in the deployment of in-country networks, although new submarine cables are being laid too, adding to what was already there.

**Assessing the connectivity revolution for education**

One could say that by being connected to the rest of the academic world through an NREN your isolation from research projects, high cost lab equipment, and world-class leading edge knowledge will disappear. If you are a physicist you can contemplate joining research teams using the Large Hadron Collider in CERN in Switzerland, an astronomer can manipulate in real time a telescope in Chile or access the data from radio telescopes, a medic can join in high definition seminars on advanced techniques in surgery or remote diagnostics, climate specialists can access and provide data to disaster management databases, an economist can access and contribute to economic modeling resources, and everyone can gain access to the thousands of on-line specialist journals.

Even without large international bandwidth NRENs can host mirror sites that keep local traffic local, a typical example being Digital Libraries which can download international journals and databases that need only be downloaded once to a country and then accessed at high speed on the country’s own high speed backbone. Another example of high bandwidth local use is the Country-wide Classroom project which is bringing IIT (Indian Institute of Technology) classes to cities in India without an IIT, and which
runs on the currently being deployed National Knowledge Network, the $1.5 billion project of the Government of India.

**How can you access these networks?**

The first port of call for such an enquiry is to contact the Chief Technology Officer at your own institution and to enquire about the status of its connection to your NREN and of the speeds that you can expect on your office PC, your computer lab workstation, or your campus WiFi network. You can also look up the links to your own NREN, provided above, and see what services they provide and their plans for the future.

- For more information of the growth of TEIN3, please see the feature story on the World Bank South Asia web site.

*Guest blogger Michael Foley was the lead Distance Learning Specialist at the World Bank in Washington, DC until his retirement three years ago. Beginning in 1997, Michael work on all aspects of the Bank’s Global Distance Learning Network.*

*Michael welcomes comments, questions and suggestions on this exciting topic.*

*Image credits: The map “Linking Asia-Pacific to Europe and beyond” at the top of this blog post is (c) Dante.net and is used by permission.*
The recent news that Becta, the UK's ICT/education agency, is to be abolished later this year has been met with shock in many quarters outside the UK.

(I don't pretend to know how this has been understood within the UK itself, and I have no comment on internal political matters in the UK that led to this action. I don't confess to any special insight or expertise in this area ... but even if I did, it would not be my place to comment on them in a World Bank blog. Others are of course more free to do so.)

Many developing countries have looked to Becta as a general touchstone for leading thought and practice related to the use of ICTs in education. This is especially the case with regard to the research and huge number of influential publications that have been put out by Becta over the years, which are widely consumed and cited by academics, government officials and consultants active around the world in planning and implementing ICT-related initiatives in formal education systems.

Some of the examples of Becta publications (caution: some links to PDFs):

- The Harnessing Technology strategy paper, and the supporting papers that informed its development.
- Learning Literacies in a Digital Age
- Becta's investigations of key trends in emerging technologies
- The various short briefing notes in Becta's What the research says series.

There is much much more. The list is long!

If you haven't done so lately (and especially if you have never done so before!), you may wish to spend some time in the coming weeks perusing the cache of documents on the Becta site whenever you are taking a short break from all of the soccer/football action in South Africa.

For what it's worth, I am currently downloading Becta publications for local storage and access, mindful that transitions are often rather messy. I don't tend to believe, as some people say, that once
something is published on the Internet, it is available forever. And even if/where this is true (!), finding resources that have disappeared from one site, only to be reborn on another, can in my experience be rather problematic. (The publications from Dfid’s ICT/education program in Africa, Imfundo, for example, were off-line for awhile due to an internal reorganization -- you can now find them here).

While Becta as an organization itself may not last much longer, it is hard to imagine that many of the functions Becta currently performs will not be taken over by other groups and institutions. In addition to its vast knowledgebase, which hopefully will continue to be accessible on the web for many years to come (emphasis added for any UK visitors to this blog who might have a say in such decisions!), I would expect that many of the people who have played key roles in Becta will assume advisory and consulting positions in many other places, helping to share knowledge and lessons learned far beyond British shores, as interest and investments in ICT/education are (for better and for worse) exploding in other parts of the world. This is especially true for developing countries, where many national ICT/education agencies are just now being developed. Voices of experience from the U.K. -- about what to do, and perhaps just as importantly, what not to do -- will no doubt be well heard and considered in many such places. In a roundabout way, this upcoming exchange of knowledge and expertise may eventually, I imagine, swing back to help enrich the UK’s own approach to using ICTs in the education sector.

---

If you are looking for (positive) ICT/education-related news out of Europe:

- The European Schoolnet has just released the latest batch of 15 country reports as part of its INSIGHT project documenting technology use in education across Europe.

Please note: The imagine used at the top of this blog post ("an axe falls ... where will the chips land?") comes from b.gliwa via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution-Share Alike 2.5 Generic license.

Correction: The report Learning Literacies in a Digital Age was erroneously listed as a Becta publication in an earlier draft of this blog entry. This excellent report was in fact produced by JISC, a UK organization that explores ICT-related issues at the tertiary education level.
I recently found myself with a free morning in Delhi, and thought I would make use of the time by searching for a certain rather famous Hole In The Wall.

Some quick background: Back in 1999 professor Sugata Mitra decided to conduct a very simple, small-scale experiment: He put a computer behind some protective plexiglass, connected it to a joystick, and embedded the whole thing in a wall in a Delhi slum. They stood back and watched (both literally, and via a small video camera placed nearby). It turned out that, left to their own devices, children could 'learn computers' outside of the formal education system, unsupervised. Hearing about this experience was said to be the inspiration for the story that eventually became an Oscar-winning movie, Slumdog Millionaire. The Hole in the Wall had been in my thoughts for a number of reasons, including that fact that it had recently been awarded one of the Macarthur Foundation's DML prizes. (Disclaimer: A company, HiWEL, was formed by NIIT to take this work further, and it has received funding from the IFC, part of the World Bank Group. I have had no connection with this project or its principals.)

I must confess that I have been rather skeptical of many of the claims associated with the Hole in the Wall experience, especially (and mostly) those that have come from people and groups who have only a passing familiarity with how it actually works in practice, and with the research base that has grown up around it. The Hole in the Wall experience has been a staple example in untold numbers of PowerPoint presentations that I have seen over the past decade, and the philosophy / approach / movement that has grown out of this experiment, which is known today formally as 'Minimally Invasive Education', has been since linked to and/or appropriated by many other groups and initiatives --sometimes responsibly, sometimes less so. (If you want to read what the project principals themselves have to say and conclude about this experience, you should dip directly into Mitra's copious related research output, and well as that of some of his associates, here and here.)

Despite having read and heard about Hole in the Wall for almost ten years, I had never actually seen it 'live' with my own eyes. The original Hole in the Wall site, in Kalkaji, no longer exists, and the original
kiosk has since been relocated to a local school. So instead I visited two other sites, both in Delhi: one in a wall outside of a government school and one within a residential community (if you have seen a video of the project, this site in Madangir is often the one they feature).

My interest in the sites was predominantly ethnographic and mechanical, and my reactions reproduced here are largely impressionistic. One thing that seems to get lost (or, to be blunt, is often ignored) in policy-level discussions around educational technologies is a contemplation of actual usage scenarios, and how the physical settings of such use influences what is done with such technologies, and how. So my decidedly modest intention on my afternoon off was just to hang out for a few hours and see what was going on.

I must confess felt a little like a pale imitation of Jan Chipchase, fascinated by lots of the 'little things' that I found interesting about the HiWEL usage experience, snapping tons of pictures, some of which confused the people gathered around the kiosk. (Why are you just taking a picture of how they are using their fingers to move things onscreen? Why do you care so much about how far apart the children are standing, about which fingers hey use to point at and touch the screen, and which they use to prod their friend into some sort of action?) The fact that the plexiglas covering over the keyboard not only helped prevent theft, for example, but also make it very difficult for adults to use the computers (little hands had little trouble darting in and out under this protective guard), I found quite interesting. I filled up 20 notebook pages with notes and notations about such mundane things (possible fodder for future blog posts).

One thing that was stressed to me by the NIIT staff with whom I subsequently spoke about the lessons from the HiWEL 'experiment' was that, while the learning experience itself is meant to 'minimally invasive', this does not mean that you can just drop the computers into these communities and expect meaningful things to happen. 'Community mobilization' was cited as a key component in successful implementations over time. It has been found that having someone from the local community serve as a site coordinator, for example, and having someone dedicated to informing the community about what the computers are, and how they can be used, is a critical piece of the puzzle. "Why should we care about computers?" "Why should we allow our children -- especially our girls ! -- to go use them, especially in a public place?" Satisfactory answers to such questions can go a long way in ensuring that the colorful new devices dropped into low income communities actually get used.

In addition, it was clear that a good deal of effort had gone into developing compelling education content -- mostly in game or game-like formats. One boy I talked to said that he came to the kiosk "for the games", which he "thought were fun to play". My impression was that he didn't think at all about the fact that the content was actually drawn from the curriculum that his age group was meant to be using in schools. For him, the challenge of manipulating the computer to perform various tasks -- match
objects, answer questions based on scenarios presented on-screen, make simple mathematical
calculations, learn new vocabulary -- was what kept him engaged, and why he chose to return to the
kiosk so often.

At both sites, the computers were seeing a lot of use on the days I visited. In both cases, there was an
adult nearby monitoring what was happening, but their presence was quite unobtrusive. The HiWEL
literature talks about the learning activities at such sites being 'unsupervised', and this was certainly the
case during my (unnannounced) visits. Or: At least this was the case as far as adult supervision was
concerned -- the children themselves were pretty animatedly 'supervising' (or at least commenting on)
each other's activities!

As part of my observations at the first HiWEL site, I asked a senior teacher at a neighboring school about
his impressions of the kiosk embedded in the wall just outside his building. Yes, he said, he knew that
some of the pupils at his school used the nearby kiosk, and he "didn't object" to this occurring. (I found
this to be an interesting formulation.) I asked if his school had any computers. Yes, he said, his school
had had about a dozen computers for about 7-8 years. However, they had decided to close the lab two
years previously, he confided, because they "did not have teachers who were trained and competent
enough to use them". The good news (!) was that they had recently hired two new teachers who were
getting some computer training, though, and so it as expected that they would reopen the computer lab
soon, once these teachers had been properly certified.

**The contrast here was for me pretty stark:** One the one hand, you had two computers set up outside
which received minimal maintenance, and which anyone could use from 9-5 each day. There was no
direction on how to use this equipment, but that didn't stop kids from figuring it out via trial and error
(or, more often, from other kids). On the other hand, you had a dozen computers locked up in a school
just a short walk away, gathering dust for lack of 'qualified teachers' to use them, and direct their use.

I am hesitant to draw many broad conclusions and make sweeping generalizations on the basis of an
afternoon of observation of activities at two Hole in the Wall sites. Doing so does not appear to me to
be very responsible, as the sample size was simply too small.

The image of a locked school computer room door, and of an educator explaining why the door had to
remain locked, however, and the image of a bunch of children animatedly using computers on the street
less than a hundred meters away, is not one that I will soon forget.

**Note:** The images above were taken by me. It is unclear to me what sort of usage restrictions there are
on the further use of such images. Personally, I am happy for anyone to use them, with or without
attribution. According to World Bank guidelines, however, all work produced by World Bank staff
members as part of our official duties are owned (and copyrighted) by the Bank. That said, images
available through the World Bank Flickr account are made available through a Creative Commons
license that permits wider use. I did not visit the HiWEL sites as part of my official duties, and used my
own camera (and paid for my own taxi ride), but I would not have been in India on this trip were it not for the World Bank-sponsored event that I attended on the following days. So *caveat utilitor*!
Imagine, if you will, that you were an official at an international development organization who has been working with country x for a number of years in helping them think through options and issues related to the use of ICTs in their education sector. As part of this dialogue, you had regularly preached the virtues of a commitment to rigorous monitoring and impact evaluation.

Country x has, in various ways, been host to numerous initiatives to introduce computers into its schools and, to lesser extents, to train teachers and students on their use, and schools have piloted a variety of digital learning materials and education software applications. It is now ready, country leaders say, to invest in a rigorous, randomized trial of an educational technology initiative as a prelude to a very ambitious, large-scale roll-out of the use of educational technologies nationwide. It asks:

What programs or specific interventions should we consider?

We are not interested in evaluating a program that does not show tangible, measurable impact -- while there is scientific value in doing so, we feel this has been done already [they cite as one example this World Bank working paper]. We will take as a given that the introduction of computers etc. has a positive impact on student and teacher motivation toward learning, and that students and parents feel that the use of such technologies in schools will have a positive (if rather fuzzy) benefit over time. We are interested in moving beyond the simple promotion of basic 'ICT literacy' -- we have been doing that for many years already in many places, and feel that we have a good idea of how to do that efficiently. We would like to target the broadest group of students and teachers possible, and we want to do something where we can build credible control groups so that we can better tease out just what the impact of the technology has or has not been.

If no such program exists, how can we put one together, drawing on experiences from many existing programs from which there is much to learn but, by themselves, have not demonstrated the type of impact we are seeking?

Country x is (not surprisingly) most interested in being able to show a clear link between technology use and gains in standardized test scores, but is quite open to considering (and measuring) other types of impact, if given compelling reasons for doing so. Educational leaders have support from political leaders to be bold, provided they have a solid evidence base to support large funding requests going forward. And: They need to show results in a 'reasonable amount of time'. (Just how long is 'reasonable' is of
course open to interpretation -- experience leads me to assume that, as a practical matter, this usually means 'before the government changes').

One response to such a request would be to attempt to redefine the questions asked. This is of course an entirely legitimate course of action ... but is simply not possible here. The decisionmakers in the education sector in country x are firm believers in the potential for ICTs to be used in a variety of ways to help meet a variety of educational goals -- some of them, in fact, have advanced degrees in this topic and/or have led pilot programs of various sorts exploring educational technologies at small scales. There is a vibrant community of voices from the private sector and academia lobbying the country to adopt program A or technology B or approach C -- so much lobbying and marketing, in fact, that policymakers are having trouble finding a space to think away from all of the 'noise'. In some places in country x, computers (and the Internet) are still a novelty in schools, in other places they have been around and used for a decade or so. The country is not looking for guidance on an 'approach' to making decisions about ICT-related investments in the education sector (it is familiar with holistic, systematic approaches like those advocated in such tools the infoDev-UNESCO ICT in Education Toolkit) -- it is looking for specific guidance on what to do.

What would be a useful response to such inquiries? How would you design a program for measurable impact in a way that is immediately policy-relevant for decisionmakers contemplating large investments in the use of technology in the education sector, and what would this program look like?

Country x appears to be one of the few developing countries asking such pointed questions today -- let's hope many others will join them soon.

Please note: The image of an unpaved road in rural Georgia used at the top of this blog post ("where is this road leading us? the path ahead is murky") comes from Flickr user mortsan (Morten Oddvik) via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution 2.0 Generic license.
27. Does having a computer at home improve results at school?

by MICHAEL TRUCANO | published on 16 July 2010

Last week’s EduTech blog asked, *How would you design an ICT/education program for impact?*

A recent paper suggests that a good answer to that question is *not* to simply make computers more widely available in homes and leave it at that.

*Scaling the Digital Divide: Home Computer Technology and Student Achievement* [pdf], an NBER working paper by Jacob Vigdor and Helen Ladd released in June, used administrative data on North Carolina (U.S.A.) public school students in attempt to help answer the questions, *Does differential access to computer technology at home compound the educational disparities between and rich and poor?* and *Would a program of government provision of computers to early secondary school students reduce these disparities?* In this case, Vigdor and Ladd found that the introduction of home computer technology is associated with modest but statistically significant and persistent negative impacts on student math and reading test scores. Further evidence suggests that providing universal access to home computers and high-speed internet access would broaden, rather than narrow, math and reading achievement gaps.

This is not the first such study to look for a positive impact on access to computers outside schools on student learning. Earlier this year, another NBER working paper (*Home Computer Use and the Development of Human Capital* [pdf]) from Ofer Malamud and Cristian Pop-Eleches looked at a home computer access voucher program for low-income children in Romania found that

*Children who won a voucher had significantly lower school grades in Math, English and Romanian but significantly higher scores in a test of computer skills and in self-reported measures of computer fluency. There is also evidence that winning a voucher increased cognitive ability .... We do not find much evidence for an effect on non-cognitive outcomes.*

Both studies were preceded by a widely read and influential (at least in some circles) paper from 2004, *Computers and Student Learning: Bivariate and Multivariate Evidence on the Availability and Use of Computers at Home and at School* [pdf], in which Thomas Fuchs and Ludger Woessmann looked at the use of computers at home and at school and students’ educational achievement and found (when controlled for family background) that
the mere availability of computers at home is negatively related to student performance in math and reading.

While there has been little similar work done outside OECD countries, research in Brazil (Too much computer and Internet use is bad for your grades, especially if you are young and poor: Results from the 2001 Brazilian SAEB [pdf]) has shown roughly similar results.

Critics of technology use in education will (and have) latched on to results from these studies to reinforce their contentions that investments in computers to aid education are largely, for lack of a better word, folly. That said, findings from these studies are of course more nuanced than what I have excerpted here, and not all the findings are negative (as always, read the papers themselves for a full view of the findings -- and to understand the methodologies underlying them, which you may or may not agree with). Just to complicate matters: A 2010 report from the OECD (Are New Millennium Learners Making the Grade?[pdf]) considers a number of studies, combined with new analysis it has done based on internationally comparable student achievement data (PISA), and finds that indeed that gains in educational performance are correlated with the frequency of computer use at home.

If all of this leaves you a bit confused -- and/or ready to argue -- you are not alone.

(Of course some wide-eyed educational technology utopians simply refuse to consider these sorts of studies at all. Discussions with such folks typically focus on, well, things other than the existing evidence base -- and they are probably not reading this blog post anyway.)

One way to try to make sense of all of these studies together is to consider that ICTs may function as a sort of 'amplifier' of existing learning environments in homes. Where such environments are conducive to student learning (as a result, for example, of strong parental direction and support), ICT use can help; where home learning environments are not already strong (especially, for example, where children are left unsupervised to their own devices -- pun intended), we should not be surprised if the introduction of ICTs has a negative effect on learning.

Consistent with this line of thinking, the Romania study notes that "the presence of parental rules regarding computer use and homework appear to mitigate the effects of computer ownership, suggesting that parental monitoring and supervision may be important mediating factors."

This notion of ICTs as 'amplifiers' for learning environments in the home echoes in some ways conclusions of respected scholars like Mark Warschauer about ICT use at school, which suggests that laptops can make a good school better, for example, but they won't make a bad school good.

On a broader note, and in response to his reading of the Vigdor/Ladd paper, Warschauer states on his insightful blog that the "aim of our educational efforts should not be mere access, but rather development of a social environment where access to technology is coupled with the most effective curriculum, pedagogy, instruction, and assessment."
This seems a sensible approach to me -- if far more complicated and difficult to implement than 'if we provide it they will learn' approaches to student computer use that underlie some out-of-school ICT access initiatives.

*But:* What do you think? Does access to computers at home impact student performance in school? (And how? And why?) Posters on the EduTechDebate site site are currently discussing these questions - - and you are invited to join them.

*Please note:* The image of an empty Japanese high school classroom used at the top of this blog post ("do you think the students are at home learning with their computers?") comes from Flickr user frwl via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution-ShareAlike 2.0 Generic license.
28. Laptops for education: $10, $35, $100 and points in between (but not above!)
by MICHAEL TRUCANO | published on 3 August 2010

When I started working full time exploring issues related to the use of educational technologies in developing countries about a dozen years ago, many ministries of education would express their desires for introducing computers in schools by saying things like 'We want something that can enable students and teachers to do x and y and z'.

More recently, this conversation has switched in many places, as increasing numbers of ministries (and especially their most senior officials) have initiated their related planning processes by saying that 'we need a computer that costs $___'.

The implications of this shift on planning practices in many places have actually been pretty profound.

Now, it is true that, in the 'early days', the initial rationales behind putting computers in schools were expressed in rather vague terms (e.g. 'we want children to access the world of information on the Internet'). That said, such formulations often presented a useful starting point for discussions of what the educational goals of a particular ICT program for schools might be. For the past half-dozen years or so, however, it appears to me that there has been a much greater focus in many quarters on *only* the retail prices of various devices, with discussions of what specific learning goals these devices are meant to help meet -- and how -- shunted to the side.

I recently heard, for example, of at least one place that has been distributing laptops to teachers based on price point alone, sporting technical specs that are out of date and with little attention on how these computers are actually meant to be used. One practical consequence of this is that the laptops themselves are seen as junk by the teachers who receive them, and so they are not used. Penny wise, pound foolish, as my grandmother used to say.

The latest entrant in the '[fill in the dollar amount] laptop for education' sweepstakes comes from India, where a $35 (1500 rupee) tablet was recently announced to a great deal of media attention. This is just the latest in numerous similar news items over the years about various low cost computing devices designed in India, which include an earlier announcement of India's so-called $10 computer, the subject of one of the very first posts on the World Bank's EduTech blog, and reach back to what I consider to be
the first low-cost ICT device meant for developing countries environments to capture the imagination of many, the Simputer.

(Side note: For a few years while I was at infoDev, I actually maintained a list of 'low cost computing devices for education', with a companion archive of related news stories, to help track the steady procession of related announcements; the devices list was during most months the most visited individual page on the infoDev site.)

There has been much discussion on the Internet about whether the $35 price tag is achievable -- and if not, what a more reasonable price target might be in the near term. I can add nothing to such discussions, interesting though they may be ... although I do think it is encouraging to see ICT products for use in education in places like India actually being designed .. in places like India.

I don’t mean to suggest that the retail price of a given device is unimportant, nor to criticize this latest announcement out of India, which is quite intriguing in many regards. That said, the cost of the end-user device is typically only a fraction (and often a small fraction) of the actual 'costs' to a system associated with the introduction of a given technology -- at least if it is meant to integrated into the 'system'. And if research on ICT use in education *is* clear on one thing, it is that simply buying hardware -- and nothing else -- and expecting positive things to happen may not be the most prudent course of action!

How big of a fraction? It depends: Research studies have it ranging anywhere from 5-20% over a period of 5 years or so (depending on definitions of 'total cost of operation' and the variables considered). Absent complementary investments in technical support and maintenance, teacher training, content development and deployment -- and typically the re-engineering of various current processes as well -- the end 'value' or impact of investments in ICTs may be negligible.

One example:

- Let's say the cost of computer drops from $200 to $50 and so a government decides to buy *lots* of them.

- This is a pretty large reduction in per unit costs -- 75%.

- However, if this cost is (for example) only 10% of the total cost associated with the use of the device over its life, we would actually only be realizing a reduction in costs of 7.5% -- not inconsiderable, of course, but obviously (and by definition) only a fraction of total costs.

Now you may not buy my specific numbers here: Fair enough (I am not sure I buy them either), I have made them up to illustrate a larger point.

My point is that while one cost component is regularly (and dramatically) dropping, the other components -- much larger in aggregate -- are often not dropping as well (and may in fact actually increase, in some cases). Estimating costs related to ICT use is often rather tricky, and the cost savings
realized as a result of drops in hardware prices may not have as large an impact on the overall cost equation as one may expect.

A side comment: Most readers of this blog will quickly cite the emergence of the hype around the so-called "$100 laptop", which made its public debut at the World Summit on the Information Society meetings in Tunis in 2005, as the trigger that changed many discussions of the potential use of educational technologies in many places.

Just to be clear: My point in this blog post is not to criticize the organization that initially touted a '$100 laptop', the device itself, nor the movement that has grown up around it. Pro or con, the topic, and the project, still has the power to incite great passions from both supporters and detractors, and there are enough places you can go on the Internet to find such discussions.

Nor is it to criticize the term itself, which has proven to be irresistible to headline writers around the world and which I have always considered to be a masterful marketing formulation. In ways that perhaps no other slogan or tagline could have, it quickly drew attention to the project -- and, by extension, on the larger movement to provide educational technologies to students in developing countries -- even if the $100 price point has remained, for lack of a better word, elusive. For many people -- if perhaps not for the readers of this blog -- the first time they thought about the possibility and potential for using ICTs to aid education in developing countries at a large scale was triggered by hearing about the '100 laptop' and the One Laptop Per Child project. (The term '100 laptop' has since been pretty much abandoned by those working on the OLPC project itself, for a variety of reasons, but one could argue that it has largely served its purpose in catalyzing attention for the project.)

What I do mean to criticize is the often singleminded focus, even obsession, on the retail price of ICT devices alone, which is in many ways a distraction from more fundamental discussions of the uses of educational technologies to meet a wide variety of educational goals in ways that are relevant, appropriate and cost-effective.

---

Two additional related comments (I couldn't figure out how to weave them into the post above in a seamless way, and so am presenting them in a sort of quick annex):

- I don't mean to imply that ICTs necessarily increase costs (although they often do, of course). The one great potential/promise of ICTs is that you might be able to *significantly alter* other parts of the cost equation (possibly even removing some costs altogether) -- but this typically happens when a system or process is re-engineered to take advantage of the affordances that a given technology may offer. So: ICTs + business as usual --> perhaps no cost savings. But ICTs enabling/driving the reform of various processes, and thus changing the overall cost equations ... this is where things get interesting.
For what it's worth, I increasingly hear ministries of education talk about their 'one laptop per
child' pilot projects that are not related at all to the OLPC (One Laptop Per Child) initiative. In
many circles, this seems to be the default generic term of choice these days (although '1-to-1
computing' remains the phrase used in North America, Europe and Australia). It will be
interesting to see if the phrase 'one laptop per child' follows in the path of other 'proprietary
eponyms' -- i.e. brand names that morph into widely-used, popular common names used for an
entire type of class of product or service.

Please note: The image of the price listings outside a petrol station in Thailand used at the top of this
blog post ("what price is right for you?") comes from the Wikipedian Mattes via Wikimedia
Commons and is used according to the terms of its Creative Commons Attribution ShareAlike license.
29. Surveying ICT Use in Education in India and South Asia
by MICHAEL TRUCANO | published on 6 August 2010

The World Bank's infoDev program recently released the latest volume in its periodic surveys of the use of information and communication technology in the education sector around the world.

Following on earlier efforts that examined the Caribbean and Africa (and UNESCO-Bangkok's much earlier examination of the Asia-Pacific region), ICT for Education in India and South Asia catalogues what is happening related to the use of educational technologies in this important part of the world.

[Disclaimer: I helped initiate this series when I was at infoDev, and was a reviewer for this latest work, and so am not a neutral disinterested observer here!]

The series of reports include:

- An extended summary of the findings
- Individual country-level reports for Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka
- Four state-level profiles from India: Delhi, Karnataka, Rajasthan, and West Bengal
- Two profiles of distance education and teacher training in Pakistan
- Five thematic essays on gender equality, policy coherence, non-formal learning, capacity building, and primary and secondary schooling
- A discussion of the methodology and database of consulted experts and documents

Key findings highlighted in the reports include the:

"importance of fostering an ICT 'ecosystem' with numerous constituent parts working in collaboration to provide opportunities for innovative educational approaches. ICTs can be seen as a platform to overcome the worst parts of education and learning. Meeting this demand can take many forms - from distance learning on a radio or TV, to newer devices like the widespread mobile phone. Through it all though, the importance of local context and systematic capacity building is key. Furthermore, careful monitoring and evaluation, and coordination, is critical to success."
Such findings may not be a surprise to regular readers of this blog, but infoDev’s continued efforts to document what is actually happening ‘on-the-ground’ in countries around the world (many of which receive little international attention) is a welcome counter to the overheated and speculative rhetoric that many times characterizes examinations of the uses of educational technologies in such places.

All individual reports from the Survey, including the country reports, are available here.

On a related note: If you are interested in summaries of what’s happening with ICT use in education in Europe, you should check out the excellent Insight reports from the European Schoolnet.

---

The August version of the popular online EduTech debate coordinated by infoDev asks the question:

Does Google Make Us Stupid?
Attention, Thoughtfulness and Literacy in the Networked Age

Nicholas Carr, who wrote the widely discussed article of the same name (which he has since expanded into a book, The Shallows: What the Internet Is Doing to Our Brains), will kick off the discussion, which will also feature Steve Vosloo, Inés Dussel and Marion Walton.

As always, you are welcome to participate.
30. Failing in public -- one way to talk openly about (and learn from) 'failed' projects
by MICHAEL TRUCANO | published on 10 August 2010

I had the good fortune to participate in the recent FAILfaire event in DC organized by the MobileActive NGO and the innovations team at the World Bank Institute. What's a FAILfaire, you ask? In the words of the organizers:

"While we often focus on highlighting successes in our field, it's no secret that many projects just don't work -- some don't scale, some aren't sustainable, some can't get around bureaucratic hoops, and many fail due to completely unanticipated barriers. At FAILfaire we want to recognize the failures: the pilots that never got anywhere, the applications that are not delivering, the projects that are not having any measurable impact on the lives of people, and the cultural or technical problems that arise."

Here are the respective event wrap-ups from both WBI and MobileActive.

While investigations into 'failure' like this to promote learning are increasingly common in some parts of the private sector, the public sector has been, for the most part, quite reluctant to engage in this sort of thing (the bureaucratic incentives for doing so point in the wrong direction for most public officials and civil servants). Hopefully last week's event provides some additional 'courage' for organizations active in international development to permit their staff (as well as those NGOs whose activities they often fund) to participate in and benefit from such learning opportunities, both within the walls of their own institutions, and publicly as well.

Also:

- Those interested in the concept may also wish to follow the related Twitter account, @failfaire.
- My FAILfaire presentation was drawn from the EduTech blog post titled Worst Practice in ICT Use in Education.

Please note: The image used at the top of this blog post ["failure is not (only) child's play"] comes from Flickr user KimNavarre via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution-Share Alike 2.0 Generic license.
The recent announcement that Amazon.com will be dropping the price of its latest Kindle e-reader to US$139 is only the latest news item from the exploding field of ‘e-books’, which is receiving increasing attention from education policymakers around the world.

Now, while some may argue that too much attention is paid to the retail prices of ICT-related hardware for use in education, there is no denying that, as prices continue to fall, discussions around the potential use of such devices in a variety of educational settings will only increase.

Back in December the EduTech blog asked, rather speculatively, Can eBooks replace printed books in Africa? It turns out that this question is not only hypothetical. A number of organizations are investigating answers to questions as this -- including the World Bank, where, in response to requests from a few countries, researchers are investigating possible opportunities and potential impacts of the introduction of a variety of digital technologies (including e-readers) into learning environments in sub-Saharan Africa.

Preparations have begun for a potential pilot project later this year in Africa exploring the use of e-readers in specific local learning contexts.

As part of this preparation, a small number of e-readers were distributed to students as a first step in exploring potential use cases to consider and to begin assessing how the use of e-readers might fit in within larger needs assessment work related to potential activities to support a variety of educational needs in local communities.

While traditionally the World Bank only releases public information about its analytical studies after long deliberation and review, thought I’d share early 'findings' from this preliminary (and on-going) work, in case it might be relevant to others considering similar activities, and to shed some light on how the World Bank goes about its work, in case such things might be of interest.

Baseline information was gathered in June on reading habits and other possible conditions that might influence affect and impact the experiences of 30 students, who were given e-book readers for one month. In July, these 30 students were brought together to share their experiences as part of a ‘de-briefing workshop’ designed to help guide the development of a true pilot project. The workshop focused on two things: (1) results from a quick survey on student reading habits and familiarity with...
electronic gadgets; and (2) specific observations from the actual use (and non-use) of the e-reading devices by secondary school students.

Some quick highlights:

1. **Power**
   Access to reliable power was seen as a major obstacle to readers ability to use an e-reading device. Specific to the device used in the pre-pilot testing period, students noted that having a backlit screen would make it much easier to read when it was dark out (over the course of the month-long experiment, most reading on the devices took place during the day). The time lost by having to charge a device's battery was also cited; one use suggested that having removable batteries would facilitate quick swapping of used and charged batteries (this would obvious have other consequences).

2. **Text size**
   The ability to zoom in on text was of great importance to the African students.

3. **Aesthetics (and dirt)**
   Having e-readers in dark colors was something suggested by users, as there was a fear that white devices would quickly get dirty.

4. **Local content**
   There was a clear interest in having texts by local authors included on the e-reader, and not just the already digitized 'classics' already available.

5. **Functionality**
   Students requested that more 'cool functionality' be integrated into the e-reading device, including color screens, the ability to play music and games, etc. This was interesting for a number of reasons, including the fact that it showed that users compared the devices more to computers (or in some cases, phones) than they did to 'old-fashioned' books.

Overall, it was clear that the students had no problem understanding how to use the simple e-reader technology introduced in this beta pilot; they used it regularly and enjoyed the experience. The idea behind this quick exploratory user research was not to draw large conclusions about the utility or cost-effectiveness of e-readers for 'students in Africa'. Rather, it was meant to provide useful input into the development of the parameters of, and to flag possible implementation issues for, a subsequent pilot project where a a variety of hypotheses and implementation modalities will be tested. The full pilot project will, among other things, compare the impact of access to texts in traditional book and e-book formats on student reading and study habits, explore what impact (if any) any changes in such habits may bring about, and attempt to identify the related costs.

The World Bank has already received requests to explore similar or related work from other countries in Africa, Asia and South America. We hope to provide periodic updates on this initiative as it develops. We’d be happy to hear from other people or organizations doing similar work.
Please note: The image used at the top of this blog post of old books from the Basking Ridge Historical Society ("not destined for the rubbish bin yet -- but you'd better make room on the shelf!") comes from Flickr user William Hoiles via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution 2.0 Generic license.
On March 3, 2010, the World Bank Institute (WBI) and InfoDev launched EVOKE, an online alternate reality game with the goal of supporting social innovation among young people around the world.

I’ve written previously about the EVOKE initiative [here](#) and [here](#) -- and wanted to take this opportunity to share some data and reflections on the experience.

By the time the EVOKE adventure ended 19,324 people from over 150 countries registered to play, far exceeding expectations. Players submitted over 23,500 blog posts (about 335 each day), 4,700 photos and over 1,500 videos. The site received over 178,000 unique visitors and 2,345,000 page views with time per visit averaging over eight minutes. For the month of March EVOKE generated just under 10% of what the World Bank’s entire external website generated with regard to page views (1.1 million versus 12.1 million). Phenomenal numbers. Below is our original pyramid of participation and our actual numbers for EVOKE. Across the board EVOKE exceeded our expectations.

<table>
<thead>
<tr>
<th>Pyramid of Participation</th>
<th>Est.</th>
<th>%</th>
<th>Actual</th>
<th>%</th>
<th>Diff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visitors</td>
<td>87,500</td>
<td></td>
<td>177,673</td>
<td>103%</td>
<td></td>
</tr>
<tr>
<td>Registered</td>
<td>6,875</td>
<td>8%</td>
<td>19,324</td>
<td>11%</td>
<td>181%</td>
</tr>
<tr>
<td>Active</td>
<td>700</td>
<td>10%</td>
<td>4,693</td>
<td>24%</td>
<td>570%</td>
</tr>
<tr>
<td>Certified</td>
<td>70</td>
<td>10%</td>
<td>223</td>
<td>5%</td>
<td>219%</td>
</tr>
<tr>
<td>EVOKATION</td>
<td>7</td>
<td>10%</td>
<td>74</td>
<td>33%</td>
<td>957%</td>
</tr>
</tbody>
</table>

Over the course of the 10 weeks, players posted ideas, found friends, commented on projects, shared information, rated the quality of the information shared, discussed, argued, created and acted.

Librarians donated time to do research. Someone developed a [wiki for the game](#). Teachers created their own online community within the game. Some players developed an online conference for sharing the best ideas. One player wrote a [song about EVOKE](#). Others planted gardens.
Players went into their communities to learn about challenges on the ground and shared potential solutions to what they saw and heard. One player collected all of these ideas into a single blog post.

EVOKE I think has created space for dialogue around serious issues that may not be discussed in other social networking forums.

“I got to see things I would not have unless I went out actively searching for them. A lot of knowledge has been imprinted in my mind from some of the activities. Now I can delve deeper into certain topics, talk about them and do something about them, which I couldn’t have before.”

-- EVOKE player

At the end of the game, 74 project ideas (known as 'evokations') were submitted and the following rewards were made:

- 10 projects were given seed funding of US$1,000
- 22 projects were provided with a post-game mentor
- 15 projects were invited to the EVOKE summit in September
- 25 projects are competing in the EVOKE Global Giving Challenge.

The EVOKE challenge on Global Giving is happening now! The challenge provides players with an opportunity to put their ideas to the test – raising funds on-line and expanding their networks of supporters. Please visit the EVOKE challenge on Global Giving at www.globalgiving.org/evoke and support one of the EVOKE innovators in their quest to get their ideas off the ground!

To be continued.... More reflections in my next blog post.
33. EVOKE Reflections: Results from the World Bank's on-line educational game (part 2)

by ROBERT HAWKINS | published on 20 August 2010

On March 3, 2010, the World Bank Institute (WBI) and infoDev launched EVOKE, an online alternate reality game with the goal of supporting social innovation among young people around the world.

I've written previously about the EVOKE initiative here and here. Following on a blog post from earlier this week, I wanted to provide some more data and reflections on the experience.

At the end of July, the EVOKE team met (most for the first time face to face) to review the EVOKE experience and share lists of “what went right” and “what went wrong”. We live blogged the meeting and the complete game analysis can be found here.

We also met with the Natoma Group, which conducted the independent evaluation of EVOKE. The Natoma evaluation drew on a number of different data collection tools, including a survey, a series of interviews, a review of project ideas ('evokations'), Google Analytics, and evaluator insight. The survey yielded 500+ responses and the evaluators interviewed 15 individuals (five from South Africa, one each from Ethiopia player, the USA and Canada, as well as four 'game runners', one professor, one teacher, and one 'evokation' winner from South Africa).

The evaluation was conducted with the following overall objectives for EVOKE in mind:

- **Players recognize social challenges** in their communities and in the world & are inspired to act
- **Players think creatively** about ideas to address challenges
- **Players learn about social innovation**
- **Players develop action plans** for sustainable social enterprises
- **Players develop 21st century skills** including problem solving, team work, information reasoning etc
- **Players have fun** with: activities, interacting with each other and coming up with solutions to challenges
• Players develop a sense of self confidence, community and collaboration
• Extensive peer review of good ideas and activities outputs occurs
• Players interact with and learn from mentors
• Top social innovation plans are recognized and some are funded through an incubation process

While the final report is not yet complete, the following are some preliminary findings:

Finding: EVOKE objectives were met

Based on the survey, EVOKE had a strong effect on:

• Developing new ideas about global challenges
• Developing new ideas about local challenges
• Learning about potential solutions to....
• Learning about people in other countries
• Learning about sustainability

EVOKE had less effect on building a network of colleagues and friends and gaining self confidence.

“I live in small university town so by playing EVOKE I got to look beyond the bubble I live in. You hear about stories in the news and read about them in the paper but now I actually got a chance to give my
opinions, to see the bigger picture and to see things beyond the small town I live in. It opened my eyes to a lot of things let me put it that way.”

-- EVOKE player

Finding: South African players participated much more actively than other players around the world

An initial concern was that as a game open to anyone, players in the developed world would dominate the discussion. A positive finding is that African participation was around 8% of all players -- roughly equivalent to the global population percentage (around 12%). South African players were a large portion of this total at around 5% and the 1,010 South Africa players contributed content significantly above the mean of all players in EVOKE. In some cases contributing 78% more content than the mean (for "Act" missions) and posting blogs at 57% above the mean.

Finding: EVOKE made players in Africa think differently

Finding: EVOKE inspired players in Africa to “Think Big” and “Act”

<table>
<thead>
<tr>
<th>Think big thoughts about the future</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No effect</td>
<td>2</td>
<td>5.7%</td>
</tr>
<tr>
<td>Slight effect</td>
<td>5</td>
<td>14.3%</td>
</tr>
</tbody>
</table>
Picture myself starting something new

<table>
<thead>
<tr>
<th>Effect</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No effect</td>
<td>2</td>
<td>5.7%</td>
</tr>
<tr>
<td>Slight effect</td>
<td>4</td>
<td>11.4%</td>
</tr>
<tr>
<td>Moderate effect</td>
<td>7</td>
<td>20.0%</td>
</tr>
<tr>
<td>Strong effect</td>
<td>21</td>
<td>60.0%</td>
</tr>
<tr>
<td>No opinion</td>
<td>1</td>
<td>2.9%</td>
</tr>
</tbody>
</table>

**Finding: EVOKE connected young innovators to each other**

The evaluation team concluded that perhaps the most valuable contribution of EVOKE is as a platform to connect young innovators to other minds, ideas and inspiration – to connect them to social capital to help them develop new and innovative solutions to development challenges. They summarize this goal as follows:

"...to serve as a cornerstone supporting the development of a cadre of civic-minded, socially engaged African innovators, who are able to find and organize knowledge resources and human resources to address local, national, regional and international problems in new ways."

The EVOKE summit will be taking place at the end of September in Washington, DC. At this summit we will bring together a number of the players, mentors and development team to celebrate the incredible work of the EVOKE community and reflect on how to build on the lessons learned for future iterations. Please share any ideas you have!

"Evoke gave a safe place to put the idea out there and when no-one laughed but actually had good things to say it gave me the confidence to approach others...so I can only imagine that there are many students out there with similar ideas, but without the confidence to pursue them."

-- EVOKE Player
Wikipedia defines “crowdsourcing” as the act of outsourcing tasks, traditionally performed by an employee or contractor to a large group of people or community (a crowd).

Why do it yourself, alone, if other people are interested in helping and have the necessary talent and skills to do so?

Crowdsourcing has become an increasing wide-spread and powerful tool to help solve problems in 'distributed' ways. My World Bank Institute colleagues, for example, are crowdsourcing some of the work on geo-referencing World Bank lending projects. Students, professors and researchers from some leading universities and communities of developers (including William and Mary, George Washington University (GWU), Georgetown University, Fletcher School, University of California, Los Angeles, BYU Geo-referencing, Oxford Aid Data and Students for Development) are working together to assign geospatial metadata to help 'map' World Bank projects. More than 12,000 Bank projects in 70 countries have been mapped so far and the list continues to grow. Here is a short video, shot by some of the participating students, that shows the level of enthusiasm and highlights their work.

Crowdsourcing in the World Bank started last year, when our Disaster Management colleagues in Latin America and Caribbean region teamed up with Yahoo, Google, Microsoft, NASA and FEMA to assemble developer communities in Silicon Valley to help tackle issues of communication (particularly early response) following natural disasters. Use cases were defined and put in front of software developers who came up with 11 possible tools to deploy in a disaster situation. One of these tools used to gather information from affected communities quickly and get information back out to them has been developed further. It was used in Haiti earthquake, which, by vicious coincidence, struck shortly afterwards. The community of developers 'crowded around' the crisis, applying their talent and skills to help with disaster relief efforts from afar.

A World Bank event on “Developers of for Development” highlighted this tremendous potential of developers' communities to help solve myriad challenges that developing countries are facing. It showed how innovative grassroots technology movements such as Crisis Commons, Random Hacks of Kindness, Ushahidi, Crisis Mapping, and the Global Earth Observation are changing the landscape of disaster response and governance. The software tested in Haiti was used in Chile earthquake, on the request from Chile government.
Can crowdsourcing be applied to solve other development challenges? At least in the opinions of many developers: It can. It can work anywhere there is technology and wherever there are communities. Crowdsourcing allows communities or groups of people to:

- submit a challenge or a defined need;
- find out information concerning the need or challenge;
- offer ideas and suggestions about solving a challenge;
- share experiences and collaborate in on-line discussions;
- rate and select a suitable solution.

How can governments take advantage crowdsourcing? During a World Bank Institute event earlier this year that looked at the Challenges of Government 2.0: Lessons for Developing Countries, speakers like Andrew McLaughlin, the Deputy Chief Technology Officer in Obama administration, discussed how crowdsourcing can help policy makers make better decisions, enhance the quality of service delivery and the responsiveness of government to citizens needs by offering a fundamentally new way of interacting with citizens.

How, you might ask, is all of this relevant to the education sector? In education, crowdsourcing can inspire new practices and creative solutions to systemic problems at both the local and regional levels. It could, for example, help reduce the school dropout by soliciting solutions to poor attendance, or help raise low reading, math and science scores by sending out requests for instructional success stories. It could also help connect education workers together and it can help find funders for innovations. As an example, the U.S. Education Department launched an Open Innovation Portal, employing crowdsourcing to tap collective wisdom through the Internet to help address educational challenges ranging from high school dropout rates to low reading, math and science scores. The initiative is a follow up on an effort of the White House effort to encourage innovative collaboration across all industry sectors.

Cynics may argue that this is a public relations exercise, but the preliminary results are encouraging. In four months, more than 4,000 people signed up and more than 80 useful and practical innovative ideas were submitted, as well as many new challenges. The solutions will be rated, selected, passed on to potential sources of donor funds and implemented by other participants.

This example is considered a notable success. Crowdsourcing encourages collaboration and removes the walls separating distant sectors and disparate groups. And the practical end goal is to find solutions in an efficient, non-redundant and expeditious exchange of knowledge through the tapping of collective wisdom. Citizens and communities are ready to deploy their time and expertise around any kind of real world problems. And ICTs are here to help them.

Guest blogger Galina Voytsehovska works in the World Bank's education sector anchor unit on ICT and education issues. Previously, she was part of the World Bank Institute's Innovations team.
Please note: The image used at the top of this blog post ("we're here to help -- if you let us!") of a crowd of people at a Hong Kong shopping centre is from Wikipedian KTo288 via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution-Share Alike 3.0 Unported license.
Much popular attention has been paid to the so-called "$100 laptop" initiative and other programs to provide "1-to-1 educational computing" to students in developing countries. Even at $100 dollars per device, however, such solutions are still much too expensive for most communities around the world. Indeed, the typical scenario for computer use in schools in developing countries, and especially in rural areas, is for multiple children to crowd around one computer while one child controls the mouse, leaving the other children as onlookers.

Some people say that the approach of providing children with a computer (or laptop) is simply not scalable in most developing countries, and that, where the use of ICTs is being considered, we should be looking instead at different 'gadget', the mobile phone, which is becoming increasingly ubiquitous around the world, even in some of the poorest communities.

Phones vs. laptops -- it is a fun debate, but certainly this will not be an either/or choice. At least in the short term, computers will be seen as too expensive for use in many contexts, and while the time of the mobile phone as an educational device may well come, we are certainly not there yet. By the time that prices drop far enough for the 'high end' devices to be much more widely affordable, and that functionality and content increase on the 'low-end' devices to make them more functionally viable, whole new classes of devices may well be available and relevant for use in education settings in developing countries as well (e-readers, tablets, as-yet unnamed devices that will fall somewhere in between all of these categories*). Does this mean we should just wait?

Some people emphatically argue 'no', and are busy trying to adapt/adjust/leverage existing technologies already in widespread use in schools for the contexts and settings (and price points) more relevant to many schools in developing countries. In this context, some creative people asked the following question:

*What would happen if you only bought one computer, hooked it up to a projector, and then connected up 50 children using 50 computer mice?*

This idea -- half-jokingly dubbed 'One Mouse Per Child' in some quarters, in an obvious nod toward the well-known One Laptop Per Child project -- has been successfully tested in pilot experiments in Chile and
India, aided by special educational software developed and tested to take advantage of such multi-user scenarios, with additional, larger-scale pilots expected to follow. It is just one innovative approach among many in a movement to re-imagine how ICTs can be more effectively and equitably be put to use at scale in schools, especially those in poor communities in developing countries.

Miguel Nussbaum, one of the world's leading researchers exploring the use of a variety of highly collaborative "1-to-1" computing solutions in education (from laptops to PDAs to "massive multiple mice"), stopped by the World Bank in May to share results from his varied and fascinating research in these areas and to propose that we should perhaps broaden the way we think about relevant, cost-effective educational technologies for use in Sub-Saharan Africa, Asia, Latin America and beyond. Nussbaum subsequently offered a short synopsis of some of his work in this area as part of the online EduTech Debate in June on low-cost ICT devices. (For those of you interested in more information about this particular project, this synopsis is a good place to start.) This is certainly fascinating and very practical work.

Some people argue that, because multiple mouse learning scenarios and tools provide affordable access to (some) educational technologies now, related solutions can rightly be viewed as promoting more equitable access to ICTs. At the same time, however, some critics feel that approaches like the use of multiple mice actually raise strong equity concerns. One commenter during the related online EduTech Debate, for example, felt that this is "about how kids in the developing world should be short changed, sold short, under-resourced, under-estimated, and should be trained to have limited expectations. They need one laptop not one mouse. This is like handing out an extra set of keys then changing the locks. This is a recipe on how to start small and stay there."

The point here isn't to advocate for the primacy of *any* specific technology choice, nor to take sides on such important debates about equity (you are of course free to do so in the comments section below).

Rather, it is merely to highlight the fact that different approaches and tools exist beyond the narrow model of how computers have typically been used in schools in places like North America, Europe and Australia. These different approaches and tools -- like, for example, 'multiple mice' -- potentially offer new opportunities for ICY-enabled learning, in a variety of educational contexts, beyond what are offered by traditional conceptions of what educational technologies can and can not do.

Indeed: If you believe that education isn't (or shouldn't be) a 'one size fits all' endeavor, why should you think that we should only consider 'one size fits all tools' technology tools (whether PC, laptop, phone, tablet or some other device) to help meet the greatly varied education objectives and challenges faced by learners and teachers in highly varied learning environments around the world?

Additional information:

- 'Multiple Mice' is most closely associated with the Microsoft Research group in Bangalore (which pioneered the concept and supported some of the related research work done by Nussbaum and others). The paper that first aroused widespread interest in this approach was probably Multiple Mice for Computers in Education in Developing Countries [link is to PDF].
A quick Google search will yield a number of additional related scholarly papers. Some of this technology has since been made more widely (and freely) available as Mouse Mischief.

- 'Multiple Mice' has antecedents in other projects. Back when infoDev was a grant-making program, for example, it funded a pilot project in northern India that allowed for one computer to be used simultaneously and independently by two children; one using a mouse, the other a keyboard.

- Investigations into the use of 'multiple mice' in low-income rural learning contexts are just one of a variety of research areas that are currently receiving serious attention at the World Bank, where there appears to be an increasing interest in some quarters in exploring the use of a number of different low-cost ICT-enabled approaches to help address a variety of challenges in the education sector. This is not limited to approaches like the potential use of 'multiple mice'. (For what it's worth, this blog has previously looked at other low-cost tools like the Talking Book, e-books, mobile phones, radio, and a variety of low-cost laptop initiatives, most notably the OLPC project.) We hope to be able to report on some related World Bank-funded pilot initiatives in this area in 2011.

Please note: The image used at the top of this blog post comes courtesy of Miguel Nussbaum and is used with his permission.

Also of potential interest:

- UNESCO has announced a call for nominations for its annual global ICT in education prize. Deadline is 30 September.
Much lip service is paid in various quarters to the potential use of mobile phones in education in developing countries. That said, concrete examples of such use -- especially projects that have gone beyond small initial pilot stages -- remain few and far between. This is beginning to change. One interesting project can be found in Bangladesh, where the BBC World Service Trust and BBC Learning English are implementing the Janala project, an initiative that is providing English language lessons to citizens via their mobile phones as part of the wider English in Action program in Bangladesh, funded by the UK's Department for International Development (UKaid).

Some of people involved with the Janala project recently shared some information about what they have been doing -- and learning -- as part of a discussion series at USAID around 'mobile education' topics (the other project presented in the latest session was the MILLEE project, which has been profiled on this blog before). I was fortunate enough to be able to sit in on the presentation, at the kind invitation of USAID educational technology team, and thought I'd share some brief highlights:

**What it is.** BBC Janala allows Bangladeshis to access short (2-3 minute) audio lessons through a simple voice call by calling a four digit shortcode. (Over 140 bilingual audio lessons are currently available.) While it is still in its early stages, the service appears to have found an audience: To date over two million audio lessons have been accessed (listened to), 177,000 short audio have been taken and stories and feedback recorded. In addition, over 100,000 audio lessons have been downloaded from BBC Janala mobile internet site (some observers consider this rather remarkable, given the difficulties for many to access the mobile internet and the fact that it has not been advertised). 46% of first-time users have returned to the service -- this is also noteworthy, given that mobile value-added services in Bangladesh typically have only a 5% repeat rate.

**Costs to users.** Through a special agreement, facilitated in part by coordination with the telecom regulator BTRC, all six operators have agreed to charge the same (reduced) tariffs for voice and SMS traffic to BBC Janala. The result has been a 50% reduction in the standard value-added service voice and SMS rates, which means that individual calls cost users a little less than a cup of tea.

**Research.** The rollout of BBC Janala was preceded by a great deal of market and user research, and this research interest continues. One example of the type of research that is being conducted: 40 'incentivized' users are being closely tracked and studied, to get a qualitative sense of the user experience.
experience and relevance of the BBC Janala offering over time. The 'incentive' here does not involve paying any participants; rather, air time costs associated with the use of BBC Janala are reimbursed. The idea here is to 'take cost out of the equation' in order to better understand the value for mobile education products and services themselves. One (very preliminary) early finding from related survey work is a suggestion that women are particularly interested in learning by mobile (especially given its "any time, any place" nature).

There are many potential ways that mobile phones can be used as learning tools; BBC Janala represents just one of them. (For example, some readers of this blog may be familiar with the MobilEdu and Nokia Life Tools English language mobile learning offerings in China and India, respectively.) It will interesting to see how such efforts evolve over time, as part of a larger investigation into how one increasingly ubiquitous ICT device -- the mobile phone -- may become increasingly relevant to learners around the world, in various ways and contexts.

Note: The image used at the top of this blog post ("the infrastructure is increasingly there ... how can we take advantage of it?") of a construction site in Dhaka, Bangladesh comes from Wikipedian Jeff Ratliff via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution-Share Alike 3.0 Unported license.
When discussing plans for various uses of ICTs in education, one of the questions that we are regularly asked at the World Bank by Ministries of Education is (for better or for worse),

“What are the new low-cost educational technologies?”

Some observers argue that this emphasis on the retail prices of individual educational technology products diverts our attention from more important and fundamental issues. Let's acknowledge such concerns ... but put them aside for the moment in an attempt to help respond to such a popular question.

For a few years while I was at infoDev, we actually maintained a (rather idiosyncratic) list of ‘low cost computing devices for education’, with a companion archive of related news stories, to help track the steady procession of related announcements. (We gave up trying to track press items when the number of related news stories increased to such an extent that we concluded this stuff had reached the 'mainstream'.) This list served a few purposes: It allowed us to help answer such questions and served to help illustrate that there was a lot happening in this area (it also turned out to be a great way to draw traffic to the infoDev web site -- during most months it was the most visited individual page on the site!).

Back in July infoDev published an updated version of this list as an Updated Quick Guide to Low-Cost ICT Devices for Educational Systems in the Developing World.

One challenge that such lists face is that they are, in a sense, out-of-date as soon as they are published (for example, the latest list doesn’t include the EduFrame netbook recently announced by the Commonwealth of Learning). Reading through both documents, however, what strikes me isn't how up-to-date they are (or not). Rather, I am struck by the fact that perhaps what is often most interesting these days is not what is *on* such lists, but rather what is left *off*.

When the first low-cost devices list was published back in 2005, we noted that

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).

It may seem like semantic quibbling to some, but how categories like this are defined can have very real consequences in some places, especially where dedicated "ICT budgets" have narrow definitions about what are allowable purchases. To cite just one quick example: In one country, it proved much easier to buy computers for a pilot initiative targeting calculus classes than buying graphing calculators -- even though the calculators met the immediate usage requirements and context much better than computers did, and were of course much cheaper! Academics to whom I mention such things often scoff, but these sorts of implementation challenges on the procurement side are practical realities in many places -- and can greatly impact what is possible, and what is not, in a given school or school system.

A previous post on the EduTech blog, which looked at uses of USB sticks in education, noted that

"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."

For what it's worth, here are some other 'low-cost ICT devices' that we at the World Bank see used in schools in useful ways: MP3 devices of various shapes and sizes (some ratheringenious); radios; DVD players; small handheld purpose-built educational devices (things like the TeacherMate, which I have sitting on my desk right now); handheld interactive response or voting devices; videogaming players and equipment; digital pens; so-called edutainment learning toys; digital cameras; and video cameras. Low-cost tablets in education aren't here yet, but seem inevitable. And in the future, we expect increasingly to see things that don't fit into any neat categories ... but which are undeniably neat. (One example might be things like Siftables, which many people know from a popular video from the TED conference.)

To the extent that such devices are hackable, some interesting, lower-cost ICT options can open up. Witness, for example, some of the cool things done with remotes from the Nintendo Wii gaming system to create very low-cost interactive whiteboards solutions in South America among school populations for whom traditional interactive whiteboards are simply too expensive (the first time I saw this was a demonstration at a school in Senegal). As ICTs become more diffused in more schools around
the world, we shouldn't be surprised to see low-cost 'adaptations' like this showcased not only at places we traditionally associate with ICT innovation, like the MIT Media Lab (where Siftables was born), but also at events like Maker Faire Africa, which celebrates "ingenuity, innovation and invention" in places that traditionally have not been thought by many to be hubs for such 'applied inspiration' in the ICT sector.

A full list of 'low cost ICT devices used in education in developing countries' is increasingly long and varied, and challenges the traditional conceptions in many places of the 'school computer lab', with its rows of computers, as the place where educational technology finds its most useful home inside schools.

*Note: The image used at the top of this blog post ("increasingly countries are looking to buy on cheap street") of Cheap Street in Bath (UK) comes via the Geograph Britain and Ireland project; it is copyrighted by Derek Harper and is used according to the terms of its Creative Commons Attribution-ShareAlike 2.0 Generic license.*
Last week I attended a brainstorming meeting as part of the World Bank's 'Apps for Development' initiative, in preparation for a competition that will be announced in October to bring software developers and development practitioners together to develop useful software tools and data visualizations that use World Bank data. This is (hopefully!) just the first stage in a broader initiative over time exploring how approaches to 'open data' (and not just those generated or warehoused by the World Bank) can help contribute to creation of useful software tools to help with a variety of development challenges.

In addition to an engaging Q&A with various luminaries (including Tim O'Reilly), most of the time was spent in small groups where software developers, data folks and subject experts in various fields came together to brainstorm about how various development challenges might be approached in new ways, and how to harness developer communities of various sorts around the world to help out.

The first directive from the organizers was to consider how existing 'apps' (small pieces of software designed to help users perform specific tasks) that exist in one context might be able to be re-tooled for application in another (especially where newly-opened data sources might be utilized). Going further, the organizers urged participants to not be constrained by what is currently available, on either the data or app side, but rather to start first with a variety of challenges, big and small.

Within the brainstorming sessions related to 'education', much of the discussion centered around opportunities for the 'crowdsourcing' (the topic of a recent EduTech blog post) of various data collection and analytical tasks.

Perhaps the most-discussed small education 'app' was one that could help with the endemic problem of teacher absenteeism in some countries. Specifically, how might an 'app' utilize a camera phone to help document whether teachers are showing up for work? (This idea of taking digital pictures of teachers has perhaps been most famously explored in a study done in India by the J-PAL group at MIT; other places are exploring the use of things like fingerprinting).

This proposed 'app' was in many ways representative of most of the apps suggested, in that it addressed some common questions from World Bank education sector staff: How can we enable subnational
(especially hyper-local) data collection, and how can we provide access to such data in a variety of visually appealing ways 'in the field', especially by using mobile phones?

In the context of speaking about the use of ICTs in schools, I raised the idea of an app that would allow students or teachers to record how many computers in their school are working (or not). This is certainly not the most pressing issue confronting education in developing countries today, but it is the sort of discrete, easy-to-understand thing that would lend itself well to the development of an 'app'.

(While perhaps not the first on any list of most important developmental challenges, this is, as countries buy more and more technology for use in schools, nonetheless a very real, immediate and practical problem, as anyone who has ever visited a school where half the computers are not working -- and half of the remaining stock remain in boxes or behind locked doors, lest they break as well! -- knows).

Would such an app be useful? Practical? Who knows? But harnessing local and international networks of software developers to help attack such discrete challenges is one way to find out, and possibly to build momentum to tackle more fundamental issues.

Event organizers challenged participants to look where it might be possible to adapt tools and applications that are already available. Thinking about an 'our school computers are broken' app, adapting a tool like Ushahidi is one possible way to go. But there are other projects that offer examples of how to potentially present and collect school-level data in ways that are easily accessable to the public. For example:

![Image](https://example.com/ushahidi.png)

*Promoting transparency and social accountability, one school at a time!*

While school computer-related data is not yet available, an interesting initiative in the Philippines does try to map other types of school-related data, and encourages citizens to submit feedback via SMS from citizens about the quality of the data currently presented about their schools.
Drawing on data supplied by the country’s Department for Education (DepEd), checkmyschool.org maps information on public education services in the Philippines. The idea is to provide a tool for independent third-party monitoring of government performance in providing education services related to things like school budgets, enrolment, teaching personnel, furniture, textbooks, classrooms, toilets, and test performance.

Currently information about around 8,000 of the country’s 44,000 + public elementary and high schools is included in the database (these are the schools whose GPS coordinates are known). Built using Google Maps, the application currently is available through a web browser, and local feedback on schools is solicited via SMS.

As open data initiatives help to unlock facts and figures previously held tightly within governmental bureaucracies, and as (increasingly powerful and affordable) mobile phones and other ICTs are increasingly to be found among wider segments of populations, exploring how to tap the skills and enthusiasm of software developer communities seems a useful way to help spark innovative thinking and the creation of innovative tools to help us collectively identify and implement new approaches to solving various developmental challenges.

\textit{note}: The image used at the top of the blog post ("open things up, and you never know what unexpected paths may lie ahead") comes from Flickr user J. Samuel Burner via Wikimedia Commons and is used according to its Creative Commons Attribution 2.0 Generic license.

FYI Checkmyschool.org will be demo'ed internally at the World Bank Institute in Washington, DC on 21 September. World Bank staff may wish to check to contact the WBI governance or innovation teams for more information.
Over the past decade or so, increasing numbers of groups have been working on answers to variations of the following question:

*How can the wealth of educational resources on the Internet be brought to the majority of African schools that are today 'un-connected'?*

While the Internet has not wrought the similar types of profound, broad societal changes in Africa that it has in other parts of the world, the connectivity landscape in Africa is in fact changing very quickly in many places (for the better!), with (for example) macro-level announcements about progress with new fibre optic cables coming on what seems like a weekly basis.

*For those who like such things, here's a [great map](http://example.com) to track technical progress in this area. For acronym fans, here are links to announcements about some of the major backbone connectivity initiatives in Africa: [Glo](http://example.com), [RCIP](http://example.com), [EASSy](http://example.com), [TEAMS](http://example.com), [Seacom](http://example.com) and [LION2](http://example.com).*

Earlier this year the total number of mobile phone subscribers in Africa ([over 300 million](http://example.com)) passed the total in North America and, while access to the Internet via mobile phones is still low across the continent, it is growing quickly. In Nigeria, for example, [published reports](http://example.com) now have *mobile phones as the primary access device to the Internet* in Africa's most populous country. There is even increasing talk ([and some action](http://example.com)) of connecting African educational institutions to the 'cloud' in various ways.

**That said, it also undeniable that improvements in connectivity are not coming fast enough, or at a high enough speed or quality, or cheaply enough, for all citizens and schools, especially outside major population centers -- and won't any time in the near future.**

For years, groups have been attempting a variety of grassroots solutions and approaches across the continent to provide *better options for schools than simply waiting*. Tools such as [loband](http://example.com), for example, were designed to strip out the 'extra' stuff in web pages so that they download quicker over slow connections. Some groups have supported training activities related to bandwidth management and optimization, recognizing that many universities (for example) could do a *much better job of managing the current bandwidth* that they already have. Other have advocated for more attention to *designing web pages for faster access* in low-bandwidth contexts.

While the connectivity environment for many may not be changing fast enough, one thing that is changing very quickly for *everyone* is the cost of data storage. 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."

Recognizing this trend, some groups have championed approaches to 'cache' content locally and/or to provide content on physical media like USB sticks or DVDs (one well-known example in ICT4D circles is the Wizzy Digital Courier), physically delivered to remote communities (this is affectionately known as the 'sneakernet', as a nod to the early sneaker-clad 'geeks' who would walk floppy disks between unconnected computers and computer networks).

The eGranary Digital Library has been involved in different aspects of these sorts of activities in Africa for almost a decade. Cliff Missen of the University of Iowa (USA), the driving force behind the eGranary project, recently stopped by the World Bank to share lessons from experiences across Africa and the results of a recent evaluation report. For those unfamiliar with the eGranary initiative, here's a short description from the project web site:

The eGranary Digital Library - also known as "The Internet in a Box" - provides millions of digital educational resources to institutions lacking adequate Internet access. Through a process of garnering permissions, copying Web sites, and delivering them to intranet Web servers INSIDE our partner institutions in developing countries and other places around the globe, we deliver millions of multimedia documents that can be instantly accessed by patrons over their local area networks at no cost.

The eGranary currently includes about 14 million documents across multiple sectors (this equates to about 2 terabytes of data), with a heavy representation of resources from the health sector. Included in this document cache are full text papers from over 250 academic and scientific journals (interestingly, it turns out that most places don't use them all that much; by far the most popular resource is ... the off-line version of Wikipedia). It has been recently re-architected, so that it can work more seamlessly with multiple hard drives, and new security tools have been introduced. Researchers at the University of British Columbia (Canada) are studying the impact of programs like the eGranary helping to promote information and digital literacy (in Uganda and elsewhere). Currently the eGranary is installed at over 300 educational institutions in Africa and elsewhere, with ambitious plans for expansion.

One criticism that I hear of projects of this sort goes something like this: 'Stuffing the Internet in a box and shipping it to Africa -- do you think that all we are need is your 'knowledge', and that we have nothing to contribute and share ourselves?'

This is a sentiment that the eGranary project has apparently heard, and content creation and management tools like Wordpress and Moodle are now bundled as part of the eGranary as a way to help enable local content creation and curation. However, as the folks at eGranary will be the first to tell you, providing the tool alone isn't usually enough to catalyze local content creation -- a variety of other things need to be done as well. There is no reason, of course, that initiatives like this can't be
used as triggers to help with the creation/digitization and dissemination of digital content in local communities. One thing that the eGranary folks highlight, and which they are clearly passionate about, is the need for additional capacity building for librarians throughout much of Africa around issues related to digitized resources. They note that it is not enough to help support better access to, and the development, of digital resources if sufficient energies are not also expended around creating related competence and expertise around the curation of such resources, so that users can find them in ways that are useful and relevant.

Reflecting on some of the lessons emerging from the eGranary and other projects of this sort, a few questions come to mind:

- Given that storage costs are falling more rapidly than bandwidth costs, how might off-line storage tools of this sort be considered as a matter of course within larger, more holistic considerations of access to information that are an important driver for action to bring better connectivity to schools in poor connectivity environments?

- There is a trend toward increasingly open data around the world. How can projects like the eGranary take advantage of these, incorporating newly released data sets into the document warehouse in ways that are useful? How, for example, might World Bank open data be marketed and made more attractive to be included in off-line document and data repositories like the eGranary?

- One of the clear messages from previous versions of the Africa Tertiary Internet Connectivity Survey (ATICS) was that there was a great need for African universities to better manage the existing (expensive, often poor quality) Internet connections. Wouldn't it be great if bandwidth management and optimization tools could be integrated into resources like the eGranary, as a way to help expose network administrators to them in advance of the arrival of more copious broadband connectivity?

- As storage costs continue to fall, what are the opportunities for things like an 'eGranary on a USB stick' -- or even better, given their increasing ubiquity even in some of the most remote or poor communities around the world, on a mobile phone?

For what it's worth, another criticism I hear in some quarters is that creating these sorts of solutions for places that do not have reliable Internet lessens the urgency to bring connectivity to them, relegating certain segments of society to 'sub-optimal' solutions compared with other, more privileged groups. (In a similar vein, some people have criticized an earlier post on the EduTech blog about the so-called One Mouse Per Child project -- which enables up to 50 children to use the same computer at the same time, each with her own mouse -- complaining that giving prominence to such 'gimmicks' distracts us from more important goals, like providing equal access to all children to educational computing devices.)

While sympathetic to such sentiments, I don't see these as binary, 'either/or scenarios'. In the words of Voltaire, there is a danger that 'the perfect can be the enemy of the good'. Given the opportunity to
have an affordable, always-on broadband connection, I doubt few places would opt for tools like the eGranary as a 'replacement' -- nor would the use of tools of this sort lessen the degree to which institutions advocate for better, cheaper, and more reliable bandwidth. Tools like the eGranary, and others covered in an earlier EduTech blog post (*A (digital) library ... in your pocket?*) perhaps should not be seen as detours from such larger aspirations and needs, but rather as useful (and inexpensive!) way stations along the various developmental paths that connectivity-poor education institutions of various sorts in Africa (and beyond) are following.

*Note:* The public domain image used at top of this blog post ("there are multiple options for moving forward") is of the **AutoNov1**, a 1970s concept car creation of the late Nigerian professor, engineer and inventor Ayodele Awojobi that could be driven forwards or backwards with all four pre-existing gears.
When is the rigorous impact evaluation of development projects a luxury, and when is it a necessity?

This is a question asked in a new paper examining the Millennium Villages Project (MVP), a high profile initiative that, according to its web site, offers a "bold, innovative model for helping rural African communities lift themselves out of extreme poverty".

In the words of one of the authors of When Does Rigorous Impact Evaluation Make a Difference? The Case of the Millennium Villages, "We show how easy it can be to get the wrong idea about the project’s impacts when careful, scientific impact evaluation methods are not used. And we detail how the impact evaluation could be done better, at low cost." The paper underscores the importance of comparing trends identified within a project activity with those in comparator sites if one is to determine the actual impact of a specific project. This sentiment should come as no surprise to those familiar with an area of exploding interest in the international donor and development community -- that of the usefulness of randomized evaluations.

While project proponents, critics and neutral observers alike would all agree that MVP is an ambitious work in progress (with many supporters likely ascribing a dual meaning to this characterization), lessons from this experience are already being formulated by policymakers and advisors in many places. The impact of the MVP project is not only important for the participating communities in Kenya (and the other project sites), but in many other places as well, as this is seen by many as one possible model for a sustained, long-term engagement to support economic development of potential broader relevance. It also provides opportunities for very concrete and contemporary explorations of how to evaluate the impact of an intervention of this sort at scale. (International donor agencies like the World Bank are of course particularly interested in "scaling up").

For those with a particular interest in "ICT for development" (ICT4D) or "ICT in education", the Millennium Villages Project (and the related Millennium Promise initiative) has been of particular interest, given its high profile in exploring how mobile phones, village connectivity and other ICT-related tools and solutions can relevant to the interlinked challenges of health, infrastructure, education and economic development in poor village communities.
As interesting as the report itself is, those time-pressed people who profess to not to read full papers (I know there are more than a few people who characterize themselves this way -- read into that what you wish) may prefer to scan a set of related blog posts that have come out since this paper was released. To me, these provide a very quick, real-life primer on evaluation issues -- not only on methodologies and approaches, but also, perhaps (if you read between the lines) on some of the related attendant politics (and posturing).


- blog post by Michael Clemens (co-author, CGD)
- blog post by Gabriel Demombynes (co-author, World Bank)
- blog post response from the MVP team (including Jeffrey Sachs): related articles in Kenya's *Daily Nation* newspaper, the *Financial Times* (by ex-IFC staffer Tim Harford) and over at *Aid Watch*.

Note: There will be a related debate at the World Bank in DC on Wednesday, 27 October, at 2pm DC time, which will be livestreamed over the Internet.

Some time in 2011 we expect to see first results from a rigorous, IDB-funded randomized evaluation of the OLPC program in Peru, one of the very few attempts to date to apply RCT methodologies to an educational technology initiative in a developing country. It will be interesting to see how many of the themes from recent exchanges around the Clemens/Demombynes paper will re-surface in what I expect will be lively commentary around the evaluation of another quite high profile development project. (Those interested in this upcoming evaluation report may wish to monitor the IDB's ICT in education blog for updates.)

Please note: The photo at the top of this blog post of London's Millennium Dome, as seen from the Isle of Dogs ("not all millennium projects are this neatly contained within clearly defined borders"), was taken by Jan van der Crabben; it comes via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution-Share Alike 2.0 Generic license.
One question I am regularly asked (by colleagues at funding agencies, in governments, and from private groups looking to network with like-minded groups) is,

**Can you point us to some innovative or exemplary ICT & education projects in developing countries?**

As follow-up, they often note that "We already know about prominent projects like Microsoft Partners in Learning, Intel Teach and One Laptop Per Child, but what else is out there that we should know about?"

In an attempt to help provide partial answers to such queries, this post is a continuation of sorts of a blog entry we published in 2009 which continues to generate a good amount of regular traffic despite being over a year old, *Finding (useful) research on ICT use in education in developing countries*. Those who haven't read that post, but who have made it this far through this one, are encouraged to go back and read it, as the information in it is still quite relevant (and so I won't repeat much of it here), as well as a post from early 2010 on *ICT & Education: Eleven Countries to Watch -- and Learn From*.

---

At the World Bank, we are privileged to have regular and often rather unique exposure to lots of very interesting people and initiatives active in this area. One of my first responses when asked the question above is, "you may wish to scroll through the ~ 100 [posts in the archive](http://www.worldbank.org/edutech) of the World Bank EduTech blog", as one of the reasons this blog came into existence was to have an informal outlet to provide pointers to some of the interesting developments and organizations active in this area. We make no claim to be comprehensive or all-inclusive, of course, and (as the frequency of posts probably suggests), we are certainly not full-time bloggers. (In fact, the EduTech blog has for the most part been an 'extra' activity, with posts assembled in short bursts in-between 'normal work' and on personal time.)

While we do look at them from time to time, we try on the EduTech blog not to focus too much of our attention on [initiatives that already receive heavy scrutiny and exposure](http://www.worldbank.org/edutech) via other outlets (although we do appreciate the passion of the supporters of some of these individual initiatives who contact us weekly, and sometimes daily, advocating for more attention to their particular project). We also try to highlight activities inside [projects](http://www.worldbank.org/edutech) that the World Bank is involved with in some way, both as an aid to transparency and because we find that lessons from such activities are often not, for whatever reason, well shared via other means. To provoke discussion about both individual projects, topics and trends, we also sponsor a separate monthly online [EduTech Debate](http://www.worldbank.org/edutech).
As we don't want to appear to be endorsing specific projects or organizations, I will not make a simple list here in response to the question that triggered this blog post. Instead, I'll point to some of the primary online tools I use to identify and track such projects and organizations, in case they might be of any interest to others, as an update to last year's post (which btw contains lists of academic journals that has not changed, so these publications are not mentioned below).

**Blogs**

One year on, there still aren't many new sources that cover this general topic itself (as opposed to single, individual initiatives) regularly and exclusively. There is this blog, of course, that of the Inter-American Development Bank (IDB), the UNESCO Bangkok ICT in Education newsletter and accompanying database, and the multiple-author blogs of the Commonwealth of Learning and GeSCI. Digital Learning out of India is one of the longest, continuously active online publications devoted to this topic (with, not surprisingly, a strong representation of stories from India itself). ICT4D organizations active in this area with regular news feeds that cover education topics include IICD, Inveneo's ICTworks, and MobileActive (which also maintains a very useful m-learning database).

**BBLs**

As a default we try our best to open up the informal 'brown bag lunch' (BBL) presentations on interesting projects to the public (most happen at the World Bank in DC, but occasionally in other places as well), to stream them over the web as best we can, and to archive results on our web site.

**Competitions**

There are a few high profile international 'competitions' that recognize ICT/education initiatives, including those in developing countries. Most prominently, these include the UNESCO Prize on ICT use in education, the World Innovation Summit for Education (WISE) awards, the Stockholm Challenge, and the Digital Media and Learning (DML) Competition supported by Hastac and the Macarthur Foundation.

Projects that 'win' such awards are usually quite established and have a track record of activity and accomplishment. To identify smaller projects, it can often be useful to turn to ...

**Conferences**

There are a huge number of educational technology conferences around the world every year that showcase interesting and valuable initiatives. (The most comprehensive list of such events is maintained by Clayton R. Wright). These include large established events like eLearning Africa, and other regional events focused largely on projects in 'developed' country markets like Online Educa Berlin, e-Learning Asia and BETT, which increasingly include small numbers of initiatives from developing countries. Often times more projects participate in so-called ICT4D conference, the highest profile of which is probably ICTD. Other places where interesting educational technology projects and applications are sometimes featured include high profile "influencer" conferences like TED and PopTech.
Country surveys

infoDev and UNESCO have published regional surveys on ICT use in education in developing countries around the world on Africa, Asia-Pacific, the Caribbean and South Asia (the Insight reports from European Schoolnet do something similar for Europe.) These surveys, even if some of them are a little dated, can be useful ways to find pointers to specific projects that might be of interest.

Learning about new projects via Email  Twitter

Most of the email newsletters and listservs to which I regularly subscribe have made the transition to blog formats, or at least have related RSS feeds, and I find that I rely less and less on email to learn about new initiatives in this area. (Given the fact that I receive up to 400 emails a day, a figure that I often find physically unmanageable, I concede that I regrettably may miss some things in my in-box.) As a result of information overload, I have unsubscribed to almost all email newsletters and listservs (one notable exception is the CIVIC list in the Caribbean).

On a practical level, Twitter has replaced email as my main source of news about new developments and initiatives. If you are interested in using Twitter for this purpose, good places to start might be the people and organizations who follow our Twitter feed, @WBedutech, and the related curated topical lists. (Note that you need to be logged into Twitter to view these.)

What's Missing?

What's missing from this list of resources? A lot of things, without a doubt. Facebook is certainly a great way to identify and connect with interesting projects. And, geographically, there is one country where there is a tremendous amount of interesting initiatives underway, but which is grossly under-represented in the resources mentioned above: China.

Please feel free to submit any suggestions in the comments section below of useful resources that can be helpful when 'on the lookout' for interesting projects (or of worthy projects themselves) outside of 'developed' markets in Europe, North America, Australia and East Asia that I've missed -- or, more likely, simply don't know about!

Note: The public domain image used at the top of this blog post ("wow, a lot is happening, but it's hard to make out the specifics") comes via Wikimedia Commons.
Over 100 education policymakers from 32 countries gathered last week in Seoul to share lessons, experiences and opinions in response to the following question:

**How should an education system structure itself to meet new challenges and take advantage of new opportunities related to the use of information and communication technologies, and what roles and responsibilities could/should a dedicated ICT/education agency or unit play?**

This was the theme of the fourth global symposium on ICT and education, an annual event that the World Bank has co-sponsored with the Korean Education & Research and Information Service (KERIS) and the Korean Ministry of Education, Science and Technology (MEST) and other partners, including UNESCO Bangkok, Intel and the IDB. (Proceedings from previous symposia are available [here](#), [here](#), [here](#) and [here](#).)

This global symposium was believed to be the first ever global gathering of leaders of national ICT/education agencies (and their equivalents) from OECD, middle income and low income countries to share information about what is working, and what isn’t, and possible roads ahead, especially as it relates to the development of institutions dedicated to directing the implementation of initiatives in this area.

While the event was targeted for participants from medium and low income countries, the first day featured presentations from OECD countries whose national ICT/education agencies have been (or are being) dissolved, radically downsized or re-structured (UK, Australia, Japan), and one from a country (Korea) whose national agency which has escaped such a fate, as a way to highlight potential future challenges for similar institutions emerging in less developed countries, and potential responses to such challenges.

One key difference between the experience of the national agency in Korea and those in Australia, Japan and the UK was that funding for KERIS was written into the national law related to education to embed it firmly within the structures of the existing education system, help to ensure that it would be less susceptible swings in opinion by political leaders over time. (For more comments on this topic, please see a related [blog post from Keith Krueger of CoSN](#).)
Prior to this year's event, many countries -- especially in Asia -- had expressed an interest in "setting up an national institution like KERIS", and so specific attention was paid to lessons learned from the KERIS experience. Multiple sessions examined the development of national institutions in Korea to implement ICT/education initiatives in order to provide participants with a more granular exposure to various aspects of the Korean experience.

Separate sessions focused on KERIS included: (a) how KERIS, the national ICT/education agency, was conceived and started; (b) on what KERIS does today and how; (c) a roundtable discussion with the president of KERIS and his key lieutenants in areas such as education management information systems (EMIS); educational resources and portals; open courseware; and forward-looking research; and (d) a site visit to KERIS headquarters.

In recent years KERIS has engaged with numerous developing countries to share its experiences more widely, and has established many partnerships with emerging national initiatives in other parts of the world.

One of the goals of this year's global symposium was not only to further enable existing channels for knowledge sharing between leaders of national ICT/education efforts within Asia that go back many years (UNESCO-Bangkok has played a key role in animating such discussions over the past decade, and has published a series of related toolkits), but also to expose institution leaders in Asian countries to the rich experiences in Latin America related to ICT use in education. To this end, the Inter-American Development Bank was brought on as a partner in the event, and a number of cases from South America were highlighted. The cases of Chile and Uruguay were specifically cited by Asian participants as of keen interest, and a number of connections were established between these South American countries and Asian counterparts for knowledge exchange going forward.

It will be especially interesting to see what sort of linkages may be formed going forward between Korea and Uruguay, two emerging regional hubs for knowledge sharing on implementation issues related to
the large-scale use of educational technologies, and how lessons from these two countries may impact and inform strategic decisions in other countries around the world.

As a result of this global symposium, case studies of countries identified by participants from Asia as of keen interest and relevance will be collected together into a publication that will serve as a companion document to this event. This publication will come out some time in mid-2011; profiles of these cases will be featured on the EduTech blog as they are completed. Going forward, it expected that the annual global symposium in Seoul may be linked thematically each year to an annual minister-level event in Asia on ICT/education issues convened by UNESCO-Bangkok

---

Of potential related interest:

KERIS regularly publishes numerous white papers and other reports in English as a way to share lessons learned with a broader, international audience.

- White papers
- Annual reports
- Overview of KERIS's activities
- Contacting KERIS about possibilities for international cooperation

A number of the items and issues discussed during the symposium were previously featured on the World Bank's EduTech blog. For the convenience of participants in Seoul, some of these have been collected together here for quick access:

- The blog post that inspired this year's event: Building national ICT/education agencies
- ICT & Education: Eleven Countries to Watch -- and Learn From
- Learning from Becta
- Uruguay's Plan Ceibal: The world's most ambitious roll-out of educational technologies? and two other posts about Uruguay: What happens when *all* children and teachers have their own laptops and How do you evaluate a plan like Ceibal?
- Linking up with Enlaces (Chile)
- One Mouse Per Child
- Worst practice in ICT use in education and Failing in public -- one way to talk openly about (and learn from) 'failed' projects
- Ten comments on 1-to-1 computing in education
• **Comparing ICT use in education across countries**

• There have also been many posts about **impact and evaluation**

Also:

• European Schoolnet published a [Compendium of ICT in Education Networks](#) [link to PDF] over the summer.

• The most complete discussion of the Australian experience can be found in the doctoral dissertation of Gerry White (one of the speakers at this year's event), *Diffusion of ICT in education and the role of collaboration: a study of EdNA*.

*Note:* The image at the top of this blog post ("KERIS -- at the cutting edge") of the traditional dagger in Southeast Asia known as the kris or keris (also, by sheer coincidence, the acronym for the Korean national ICT/education agency) comes from Gunkarta Gunawan Kartapranata via [Wikimedia Commons](#) and is used according to the terms of its Creative Commons Attribution-Share Alike 3.0 Unported license. The public domain image in the middle of this blog post of the rainbow fountain at Banpo Bridge across the Han River in downtown Seoul ("building bridges in Korea") from photographer Gu Gyobok (photographer) and the Seoul Metropolitan government comes [via Wikimedia Commons](#).
43. Is there a role for ICTs in international donor aid strategies for the education sector?
by MICHAEL TRUCANO | published on 24 November 2010

The World Bank recently released a draft version of its new Education Sector Strategy 2020 for public comment, the culmination of a global consultation effort over the past year that has included dedicated multi-stakeholder meetings in and with over 70 countries around the world.

In a blog post announcing the release of the draft strategy requesting public comment, World Bank education sector director Elizabeth King poses the question, "What will the world look like in 2020?"

Now, some folks will question the utility of trying to look and plan ten years ahead. Fair enough, such criticisms are duly noted. (As someone who works in the area of technology, where the winds of innovation can quickly and radically change the operating landscape, challenging deeply held assumptions about what's possible, I do profess a healthy amount a skepticism in this regard.) That said, World Bank education projects often take two to three years to plan and negotiate and then often last for five to seven years, and so a ten-year time frame is actual relevant in practice. As returns on investments in education generally are often thought to be best considered over a long time horizon, it is thought that the development and articulation of a long term vision and strategy for engagement in and support for the education sector beyond individual budget cycles has some value. In addition, the articulation of a strategy such as this can have an important signalling effect to partners about the direction the institution is moving in.

During the strategy consultation process, and especially since its publication in draft form, I have been asked by many groups what the World Bank's new strategy may mean for issues related to the use of ICTs in the education sector. (f.y.i The World Bank's ICT group is also currently in the process of revising its ICT policy, which will contain a section looking at education.) I am not sure it is my place to do so, but I thought I'd offer here some quick comments on the draft education sector strategy in response to such queries, as an input into the final round of feedback that has been requested by 30 November, and especially in the hope that doing so will provoke additional comments and responses. There is an official comments form available on the education sector strategy site. For those whose comments don't fit neatly into the format requested there, feel free to post comments below and I will make sure they are seen by the education strategy team.
On to the comments ...

The publication of the draft strategy is a tangible milestone near the end of what I know has been a herculean effort on behalf of the education strategy team, and has involved an unprecedented amount of related consultation by the World Bank with related partners that I think signals to other groups how inclusive the process is meant to be, offering (I hope) a potential model for other parts of the Bank to follow.

I thought I'd try here to give voice to sentiments that I detect in feedback I have received informally from the educational technology communities with which I regularly interact, in case doing so is of any value to the finalization of the Bank's education sector strategy process. (And by doing so publicly, I will know more quickly where I have gotten things wrong!) Since the draft strategy has been published, I have heard from a number of people whose comments can be summarized thusly:

"Great strategy, very well written. That said, it's rather shocking, given that it is meant to be looking forward over the next decade, that it seems to ignore discussions of the potential impact and relevance of technology on learning and teaching almost entirely."

Some history: Past World Bank education sector strategies have tended to treat issues related to the use of ICTs in very general ways. In the past, some critics have considered this (rightly or wrongly) a bit of a 'lip service' topic within World Bank sector strategies. Such criticism can be summarized rather crudely in the following manner: "Add a paragraph or two on 'ICTs' to the mix, check the box next to 'ICTs' on the to-do list noting that this topic has been considered, and then move on to more important things."

Frankly, I don't necessarily think there is anything wrong with such an approach -- if it is strategic. We have to make hard decisions about what is relevant, and what isn't, given that there are so many competing demands for our institutional attention. Where strategies try to be all things to all people they inevitably fail. As someone who focuses on the nexus of ICT and education here at the World Bank, I just thought it might be useful to raise an issue related to how groups outside the Bank active in my areas of activity may look at the Bank's new draft strategy -- and, I fear, conclude that the Bank simply 'doesn't get it' -- in the hope of provoking additional comment.

Now: I readily concede that the type of people and institutions with whom I have regular contact have a particular perspective or bias in this area. And: I would argue that the history of the field of 'education technology' is replete with giddy optimism and techno-idealistic prognostications about the potential of technological advances to 'transform teaching and learning', and that this potential never quite seems to be realized. I also acknowledge that putting together a strategy such as this is complicated by many things: institutional history and legacy; the 'lobbying' of various interests groups for more attention to their pet area of activity; need for alignment with larger strategic directions at the Bank; client demands; emerging scholarship; partnership arrangements; the list is quite long. The strategy team has done an admirable job in navigating these forces to produce a draft document that reads well and offers much food for thought.
That said, despite the profound changes that ICTs have wrought on societies over the past 20 years, it could well appear to some -- after quickly skimming past education sector strategies (and strategy updates) and comparing them to the current draft strategy -- that ICTs are even less relevant to the Bank's worldview in 2010 than they have been before. And where they are relevant, their consideration is (at least in the minds of the communities with which I regularly interact) constrained by conventional thinking and approaches.

To provide one illustration of what I'm talking about, here's the paragraph in the latest version of the strategy that deals with ICTs (emphasis added by me):

14. New information technologies have transformed – and continue to transform – how people live and communicate, how enterprises do business, what jobs are available, and what skills are in greater or lower demand. The growth in number of mobile phone subscribers has outpaced global population growth (figure 5). Mobile telephony has been adopted even in rural areas of poor countries. The number of Internet users grew by an estimated quarter of a billion people between 2000 and 2005, most of them young people (OECD, 2010). How can education systems best use these technologies to equip students with knowledge and skills relevant to a rapidly modernizing context? More systematic information is needed about whether and how school-based ICT can enhance learning and raise school completion rates.

One of the animating beliefs that seems to drive many education reformers who have latched on to 'educational technologies' as an important vehicle for 'reform' is that current education systems are only really capable of incremental reform and improvement, and that, for much of the world, 'incremental reform and improvement' is simply not what is needed. As the draft education sector strategy 2020 clearly shows, the World Bank's work in education is clearly focused on a 'systems' approach. If this is to be the Bank's primary strategic focus, it perhaps follows that ICTs really aren't all that important (except, perhaps, on the back-end information systems side, supporting the system to be 'more efficient', 'better coordinated', 'more transparent', etc., largely supporting business as usual). And: Given that the Bank appears to be adopting an approach in the new strategy that could be characterized as 'systems-centered', and that most strategies which feature consideration of the relevance of ICTs typically place the needs of the learner at the center of things, contemplation of the role of ICTs really doesn't fit the fundamental analytical model underpinning the draft sector strategy.

An aphorism spouted regularly by many who work in the area of ICT/education is that 'technology is transforming education everywhere but in the classroom'. The Bank's new draft strategy provides rather frightening data suggesting that what is happening in the classrooms in many places is not yielding much impact. There is no doubt that, given its institutional legacy, staff composition, and existing activities, the Bank is best positioned to focus its efforts at improving things from within, working through established channels, and seeking to improve on processes and systems already in place.

Paragraph 14 of the strategy highlights how technologies are transforming the world outside the formal schooling sector. It then goes on to suggest (I think) that we need to bring this world into education systems and schools. But: Perhaps the really transformative power of ICTs would be if they could help
bring what is meant to occur within existing systems and schools into this wider world, and not vice versa? On p.10 of the strategy, it is stated that "Since learning opportunities do not have to be limited to schools or higher education institutions, they do not have to be provided by government." Fair enough. The private sector and civil society certainly have important roles to play. For what it's worth, I find that such groups often tend to be much more innovative in their approaches to exploring relevant uses of ICTs. And I wonder why government itself can't help provide learning opportunities outside of schools or higher institutions ... perhaps with the aid of ICTs?

Or -- maybe -- the Bank feels that ICTs really don't have much of a place in our thinking when discussing education issues, especially given the rather checkered history of many large scale investments around the world. (This is a sentiment that one does hear internally from time to time.) If so, might it be useful to consider and then reject this in such a draft strategy document, rather than to largely ignore the topic?

I sometimes find that the World Bank has a very real 'optics' challenge with certain groups around the world -- or at least those in the ICT-related communities with whom I regularly interact. "Slow." "Plodding." "Stuck in the past." These are criticisms I hear not infrequently (whether they are accurate or not is another issue entirely, of course, perhaps fodder for a separate debate). Now, on the order of importance and priority, such groups may rank far down the list for the Bank. Fair enough. But it is from such communities that much of the innovation in the global economy is thought to spring, and I fear that many groups in such communities will look at this new strategy and be puzzled. To such groups, it may well appear that the Bank doesn't see much strategic value in attempting to channel the winds of technological changes buffeting much of the world to help address many of the challenges that, almost sixty years since the institution was established, still vex us. Nor even, I fear, that such phenomena are that relevant.

Just my $.02. You are welcome to add yours below as well.

- You may also be interested in 'ICTs & Education: Issues and Opportunities', a draft background note prepared as an input into the development of the new World Bank sector strategies for the education sector and ICT sector [link to PDF]

- At the start of the strategy development process, an EduTech blog post asked A new education sector strategy -- what role for ICT?

*Please note: The comments expressed above here are the opinions of the author and do not represent the opinions of the World Bank, its member countries, or the World Bank education or ICT sectors.*

---

*Note: The public domain image of a rocket blasting off ("charting a new course for tomorrow") comes from NASA via Wikimedia Commons.*
The Inter-American Development Bank (IDB) recently released the first set of results from its on-going, multi-year randomized evaluation of the impact of the OLPC project in Peru. *Experimental Assessment of the Program "One Laptop Per Child" in Peru* (Spanish version [here](#)) is the first rigorous attempt to examine the impact of the largest '1-to-1 computing' initiative in a developing country. This evaluation, done in concert with the Ministry of Education, looks at the ambitious program to provide computing resources to multi-grade rural elementary schools in some of the poorer communities of Peru.

The contrasts between the OLPC roll-out in Peru and that of the other country in South America to have adopted the program at scale -- **Uruguay** -- are striking. A geographically compact, middle-income country with good infrastructure known historically for its high literacy rates and much narrower gaps between the rich and poor than are found in most other South American countries, Uruguay provides in many ways an ideal setting in which attempt a quick roll-out of low cost computers to primary school students. (This is not to say that they aren't still substantial challenges with the project in Uruguay -- of course there are -- just that, comparatively, the challenges in Peru are in many ways of a different sort and magnitude.) Results from a number of evaluations of various sorts of the Uruguayan experience were shared at a recent event in Montevideo, *Ciudadania Digital*. You can read an executive summary of results (in Spanish) [here](#).

While each circumstance and context is of course unique, the types of challenges presented in the Peruvian case (geographical isolated communities, mountainous terrain, poor communities, indigenous languages) present a good test of the how well-intentioned, large-scale educational technology programs targeting populations that face some of the most difficult schooling and learning challenges might (and might not) work in reality. If you want to know where theory meets the reality (or at least where one theory meets onereality), you could do worse than to look to Peru.

Here are the highlights from the IDB paper:
Even though this program has only recently been implemented, this document presents a few preliminary findings that could be relevant for its future development. On the one hand, we find evidence of better attitudes and expectations among teachers and parents; students that are more critical of school work and of their own performance; and a greater development of technological skills among girls and boys. On the other hand, there seems to be a decrease in the intensity of computer use in the classroom, as time passes and difficulties arise in the implementation of the project. Due to the short interval of time since implementation, no impact was observed in learning. This should be verified in future surveys.

The authors of the IDB report concede that it is too early to draw many sweeping conclusions from the progress of the OLPC program in Peru so far. That said, comments on the report are beginning to appear in many places. The independent OLPCnews.com web site, which tracks and comments the various OLPC initiatives in great detail (and which features a number of divergent voices, a number of them highly critical, and which has no official connection to the OLPC organizations that coordinate the various OLPC initiatives), weighed in its quick take on the preliminary results. This followed a fascinating exchange in the comments section of infoDev's EduTech Debate web site between Christoph Derndorfer (who spoke at the World Bank last August) and Oscar Becerra, who directs the OLPC program at the Ministry of Education in Peru. (You may also be interested in Walter Bender's take on this exchange.)

In addition to its (obvious) potential relevance to the students, teachers, and communities impacted by the OLPC program in Peru, the IDB evaluation is important for another reason as well. Most evaluations of ICT use in education in developing countries are, at least in my opinion, of regrettably low quality. To my knowledge, there have been precious few rigorous, large-scale randomized evaluations of an educational technology initiative in a developing country ever attempted at this scale. (If you are looking for one of the few good examples of a rigorous evaluation of this sort, albeit at a more modest scale, you may wish to check out the work done in Colombia by my World Bank colleague Felipe Barrera, together with Leigh Linden.)

Working together with the Ministry of Education in Peru, the IDB has been investigating the OLPC project from the very start of its implementation there, and this perspective has the potential to provide fascinating insights into some of the critical factors that may lead to 'successes' or 'failures' of various types. Reasonable people may well disagree about what constitutes 'success' or 'failure' in ICT/education initiatives of this sort, but by engaging with a project and evaluating its roll-out and impact over multiple years, and by publishing its related research methodologies and the data it collects, together with whatever conclusions it draws, the IDB and its partners will potentially offer a valuable tool to enrich our collective understanding of what types of impacts we might reasonably expect from large scale roll-outs of educational technologies in very challenging environments, and how such impacts might be measured.

---
For those interested in tracking developments with the OLPC project, you may wish to have a look at earlier related posts on the EduTech blog, as well as the following web sites and papers (in addition to those mentioned above):

- The IDB also looked at the early stages of the roll-out of the OLPC project in Haiti. You may wish to monitor the IDB ICT/education blog for possible sneak peeks at results from the next round of evaluations in Peru (a second round of data collection was meant to be completed in November).

- The official OLPC wiki provides a wealth of information on the project around the world, including an 'Assessment Overview of One Laptop per Child Projects' (link is to a large PDF file).

- The World Bank is also conducting an evaluation of a small OLPC pilot in Sri Lanka. We expect some results from this work in 2011; we'll share them here once they are available.

Please note: The image used at the top of this blog post of Machu Picchu ("sometimes the goals are clear to see -- it's just challenging to get there") comes courtesy of Martin St-Manat via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution-ShareAlike 3.0 Unported license. It was a finalist in the Fourth Annual Wikimedia Commons Picture of the Year (2009).

[Martin St-Amant - Wikipedia - CC-BY-SA-3.0]

Due to a technical glitch, this post disappeared from the EduTech blog for undetermined amount of time. It was re-posted on 5 January 2011. We apologize for any confusion or inconvenience this may have caused.
45. Sharing experiences on building national ICT/education agencies
by GALINA VOYTSEHOVSKA | published on 15 December 2010

There was a good reason for the recent Global Symposium on Building national ICT/education agencies to have taken place in Seoul. South Korea has demonstrated that making a single specialized agency responsible for integrating ICTs in the education sector to implement the ambitious goals of government can bring high rate of return. Since its inception in 1999, KERIS (the Korean Education Research & Information Service) has made a significant contribution into helping build a knowledge and information-based society in Korea, helping to enhance the nation’s education system and research competitiveness through its work at the secondary and primary education levels.

Increasingly looking to share lessons from its experience with other, KERIS has established many partnerships in other East Asia and Pacific countries, and is developing partnerships with countries in other regions as well. Numerous countries invited to the Seoul Global Symposium were explicitly interested in how they ‘might set up their own KERIS’, and saw the forum as an opportunity to learn firsthand from the Korean experience. For four days, over 120 representatives from 32 countries discussed a variety of issues related to organizational structures, staffing, funding schemes, institutional evolution, and other challenges along the way when building and developing ICT in education agencies.

As noted in an earlier post on the EduTech blog by my colleague Mike Trucano, countries have different institutional approaches to the implementation of large scale ICT/education programs. East Asia is no exception to this; countries in the region are different in their level of development and different level of ICT integration, but most governments have set ambitious goals for the future. Comparing the goals and objectives the countries are pursuing provides a valuable insight into the trends within education systems and a picture of how they adapt to challenges and opportunities that the development of ICT presents. A key success factor seems to be government’s commitment to its stated goals. For example, Cambodia is at a very early stage of integrating ICT in education. As Koem Oeurn, the Director General of the Higher Education in the Ministry of Education, Youth and Sport of Cambodia, notes: “We have developed policy on ICT and we also have strategy... Cambodia does not have all resources to implement it yet, but still, but there is a commitment from the top to the bottom”. In other countries in the region (Indonesia, Malaysia, Philippines and Vietnam are good examples) more progress has been made, with either a dedicated unit within the ministry of education or a separate (new) agency made responsible for all ICT-related issues. In other countries in the region (e.g. Mongolia), there is no specialized unit yet, but a proposal has been drafted to help set one up.
In countries like Lao PDR and Thailand, where several ministries and agencies are responsible for the development of ICT policies and ICT-related programs, coordinating between these agencies becomes quite challenging. In addition, a number of other challenges slow down development and implementation of ICT policies and initiatives in East Asia countries. These include: low incomes; low literacy rates (especially outside urban areas); and a shortage of local content (Laos is a good example of this). That said, the government of Laos has made significant progress in setting up an Educational Technology Division, one of the functions of which is coordination between ministries and agencies on ICT issues.

In addition to learning from each other’s experiences, could East Asia countries learn from other regions of the world? According to the survey conducted at the Global Symposium, participants from the region especially want to learn from Australia, Chile, Japan, Korea, Uruguay, UK and other countries (with Korea, Chile and Uruguay topping the list). Chile, with its Enlaces program, presented its unique experience at the Global Symposium on how “to start small”. Intended as a pilot to test before replicating in other public school in 1992, it became the official nationwide initiative and was eventually included as a unit in the Ministry of Education. According to Sebastian Barrientos, the Executive Director of the Enlaces program: “One of the most interesting things done by Enlaces is that within several years it allowed to set up an interesting program that has allowed to enhance not only infrastructure but also training for the teachers in the use of ICTs. As a result, today we have roughly 100 per cent of the kids use technology in a very common way”.

One interesting case discussed at the Symposium was that of Becta, the British Educational Communications and Technology Agency that was established in 1998 and closed twelve years later as part of the package of measures taken by the U.K. Government to reduce expenditure in the public sector. Even its critics concede that Becta accomplished quite a lot: It saved £223m for the education system through procurement agreements, provided digital resources for teachers, issued more than 12,000 grants to 90% of low income families to purchase computers, and commissioned and published scores of publications widely read by professionals at similar institutions around the world. The decision was made earlier this year to close Becta completely, but now there's recognition that there's a need to keep certain aspects of it (including, it appears, to absorb several functions of Becta into the Department for Education). Says Gavin Dykes, an independent education technology specialist who worked for Becta:

“If you are going to achieve transformation of the way the education system works with technology, it has to be set up so that it does not depend on and is unlikely to be changed by political change. It is not about sustaining an organization forever, but making it last long enough to have an impact that it should. It would be interesting to reflect upon in the future is whether the level of change has brought enough to make change sustainable”.

As Keith Krueger has noted, many prominent ICT in education agencies around the world have been in a state of flux, with some restructuring (EdNA in Australia), or (like Becta) closing, or changing their functions (like Enlaces), and it is imperative that the countries planning to set up and develop ICT in education agencies have the possibility to learn from these experiences. The participants of the Seoul
Symposium unanimously voted for staying in touch, stating that this will help them to avoid mistakes that others have made and better solve new problems as they emerge. It would be useful if development agencies to join their efforts, many participants said, to share their resources and commission new analytical work on the issue. (As part of its System Assessment and Benchmarking for Education Results initiative, or SABER, the World Bank will be looking to document and benchmark the experiences of a set of national ICT/education agencies beginning in 2011.) Participants from developing countries also discussed the value having countries like Korea and Uruguay emerge as de facto regional knowledge hubs, becoming centers for information and experience-sharing on issues related not only to agency development but, also on ICT in education issues more broadly.

Says Paul Soriano, the Head of Technical Services at Department of Education of the Philippines:

“We are all education agencies and want to provide quality education to our students. It is imperative that these education agencies share their experiences and knowledge of initiatives and projects initiated by different ministries be shared so that start up countries would learn from them”.

Looking at each other’s experiences, countries also want to see what is ahead. According to Koem Oeurn, the Director General of the Higher Education in the Ministry of Education, Youth and Sport of Cambodia,

“Some things I learned here from Chile, Australia and other countries probably cannot be applied in the near future, but it can give a vision of what is the future path of ICT and this trend is very important for the planning process in Cambodia”.

Note: The image used at the top of this post ("entering Korea's u-class, the classroom of the future") comes courtesy of KERIS and is taken from a short video describing the u-class initiative.
Despite the very cold weather in Berlin, on 1-3 December 2010 over 2000 learning and training professionals from 108 countries convened to discuss the latest trends and developments in ICT-supported learning. This group discussed projects in the corporate, academic and public service sectors at the now famous ONLINE EDUCA BERLIN, which has met annually in Berlin during November/December for the last 16 years.

**Plenary Session - Education + Technology = Hope**

Under the theme of ‘Learning for All in a Digital Age’, plenary speakers delivered thought-provoking talks on a range of topics from high-impact corporate learning to innovative strategies and new technologies for a sustainable knowledge society. Keynote speakers included Talal Abu-Ghazaleh (Chairman of the UN Global Alliance for ICT and Development), who introduced the notion of a MDG eNabler -- a web-based equivalent of GPS to be launched in 2011 -- to provide guidance on ICT as an enabler for achieving the MDGs. In his stirring speech Talal Abu-Ghazaleh urged people to use “new eyes to see new scenes, instead of using our existing eyes to look for different scenes”. Another interesting keynote speaker was Charles Leadbeater, a British innovation strategist whose Cisco-funded learning journey and recent work “Learning from the Extremes [link to PDF],” highlights that new approaches to learning in slums, favelas and other deprived conditions, provides insights into how the developing world should reform its educational systems. He drove home the point about “disruptive innovation” and “radical transformation” as necessary tools to bring learning at mass scale. Examples include the kind of work being pioneered by social entrepreneurs such as Sugata Mitra’s Hole in the Wall [profiled earlier on the EduTech blog], Barefoot College in India, the Sistema in Venezuela, and the Center for Digital Inclusion in Brazil. Josh Bersin, the head of Bersin & Associates, reinforced the notion that high impact learning today is no longer determined by the availability of content. Rather it is defined by the “learning culture” of the organization and facilitated by the way senior management support continuous learning. Their research based on a survey of successful companies (such as IBM, Accenture, Intel, CISCO) focus on six management practices. These include empowerment, trust, reflection, formal learning paths, knowledge sharing and demonstrating the value of learning. In today’s business climate he stressed, such a learning culture is critical for survival. Finally, Larry Johnson, head of The New Media Consortium, a firm that tracks the evolution of emerging technologies -- highlighted seven underlying patterns or “megatrends” that will affect learning, work and place. These include intuitive interfaces,
computing in three dimensions, collective intelligence, games as a pedagogical tools, users as producers of content, the ever present Network, and the convergence of cellular networks and the Internet.

Noteworthy parallel sessions included:

**Speed Learning for Financial Market Professionals.** Today’s learners do not wait for the learning to come to them. They proactively seek out knowledge for themselves. So training needs to adjust. Joe Pokropski, Managing Director at Thomson Reuters, -- a leading source of intelligent information for businesses and professionals -- discussed a major change program that they have initiated for their training department. It is called the Knowledge Network which uses three components to deliver speed learning: Knowledge Live, Knowledge On-Demand and the Knowledge Academy.

**Transforming skill-sets for L&D professionals.** As learning becomes more embedded, and as technology makes learning happen more socially and informally, learning specialists need to re-skill. Otherwise they will become irrelevant! In a world where we need to learn, unlearn, and relearn as fast as ever, three critical skills emerged: curiosity and innovation, a blend of training and business skills and flexibility and risk taking. The biggest contribution that learning specialists can bring to the table will be to understand a problem and put together a solution that will have an impact on business results.

**Battle of the Bloggers.** This proved to a popular and vibrant session where e-learning leaders and participants engaged in heated discussions on current trends and controversies. The theme this year was called “The Graveyard of Learning” and panelists Tom Wambke, John Traxler and Hans de Zwart debated and shared their reflections, opinions and arguments on current e-learning trends, tools and systems, declaring them dead, alive or zombie. For example, over-used methodologies such as ADDIE and Learning Styles were both declared dead by popular vote. The audience participated in the discussion, both live and commenting through a backchannel using a new tool called Shakespeak launched by a young Dutch start-up.

Other interesting sessions included “future of learning is increasingly free”, “augmented realities and game based learning”. Of course, in conferences like this, much more is learned in “unconference” mode along the hallway and in cafes as you meet distance learning colleagues you have only been in touch via Skype, Twitter or Facebook.

The event web site provides an overview of all sessions and will be updated with presentations, videos and podcasts. Also, check out #OEB10 on Twitter for backchannel conversation from the event.

*Note: The image used at the top of this blog post ("listening in on what happened in Berlin"), a photographic reproduction of a 1911 work by German Impressionist painter Lesser Ury, Mädchen im Romanischen Café, is in the public domain and comes via Wikimedia Commons.

*This is the first post on the EduTech blog from Sheila Jagannathan, a Senior Learning Specialist at the World Bank Institute.*
**About the authors**

**Michael Trucano** is the World Bank's Senior ICT and Education Policy Specialist, serving as the World Bank's focal point on the topic within the education sector and leads the World Bank's related analytical work on under its flagship System Assessment for Better Education Results initiative as it relates to information and communication technologies (SABER-ICT). In addition, Mike provides advice and support to World Bank country-level education projects seeking to utilize ICTs in various ways in multiple countries around the world; current areas of activity include ICT/education policy development, the use of mobile phones in education, ICT and education indicators, 'new economy skills for Africa', development of national ICT/education agencies, child Internet safety, and low-cost 'ICT devices'. As part of his duties, he co-chairs the World Bank's internal cross-sectoral thematic group on ICT and education, which helps to maintain the organization's internal knowledgebase on related topics and sponsors numerous speakers and knowledge-sharing events each year. Mike is also the principal contributor to the World Bank's widely read EduTech blog (http://blogs.worldbank.org/edutech).

**Robert Hawkins** is a Sr. Education Specialist in the World Bank with a focus on science and technology as well as the role of technology in education. Bob has managed a number of projects in the World Bank including the online educational game EVOKE, the ICT for Education program in the World Bank Institute, the Africa Virtual University and the World Links for Development project. Prior to joining the World Bank Institute, Robert spent four years working for the World Bank Africa region, promoting ICT connectivity, policy, and capacity building.

**Galina Voytsehovska** works in the World Bank's education sector anchor unit on ICT and education issues. Previously, she was part of the World Bank Institute’s Innovations team.

**Michael Foley** was the lead Distance Learning Specialist at the World Bank in Washington, DC up to his retirement in 2007, where he worked for a decade on all aspects of the development of the Global Development Learning Network.

Dr. **Harsha Aturupane**, a Senior Economist at the World Bank, is the Lead Education Specialist in the World Bank's office in Colombo, Sri Lanka.

**Sheila Jagannathan** is a Senior Learning Specialist at the World Bank Institute.
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

blogs.worldbank.org/edutech