Mobile learning and textbooks of the future, e-reading and edtech policies:

Trends in technology use in education in developing countries

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

Michael Trucano
The World Bank
2013
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About the author
**Introduction, notes and disclaimers**

This electronic publication collects together posts from the fourth year of the World Bank's EduTech blog. 'EduTech' [blogs.worldbank.org/edutech] regularly explores issues related to the use of information and communication technologies to benefit education in developing countries. While the blog has over time developed a devoted general following, it is meant to target a relatively narrow niche: professionals (in ministries of education, with NGOS, in international funding agencies, with research institutions or universities, and in the private sector) planning for, researching, evaluating, overseeing, or implementing programs and projects utilizing ICTs to aid a variety of developmental objectives in the education sectors of so-called 'developing countries' (a formulation used intentionally, if reluctantly, to subtly reinforce the context of the observations and questions that the blog seeks to highlight). Where research or experiences from 'developed economies' are highlighted, it is for the purpose of attempting to contextualize and interpret them in ways that might be relevant to audiences in other parts of the world. As such, the blog hopes to contribute to discussions occurring on the Internet between members of a geographically disbursed global 'community of practice'.

Posts on the EduTech blog collected here are not 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. In many cases, posts are meant to help catalyze discussion or activities around certain topics and developmental challenges. Whereas many World Bank publications attempt to summarize 'official' conclusions and recommendations developed as a result of engagement by the World Bank in a given place on a given topic over a period many years, and mark as a result the 'end point of a journey', the EduTech blog is in many instances meant to help with the first tentative steps of such journeys by 'thinking out loud in public' and then seeing what happens as a result. The views expressed on the EduTech blog, and in this publication, are those of the author(s) alone, and not those of the World Bank.

*Mobile learning and textbooks of the future, e-reading and edtech policies: Trends in technology use in education in developing countries* is the fourth annual collection of EduTech posts, assembled and re-purposed to enable off-line reading in one consolidated PDF document. While it is possible to read the collection straight through while not connected to the internet, this publication is best read
when connectivity is available, given that most posts contain numerous links to other resources on the Internet.

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 (usually on a Friday), please follow @WBEdutech on Twitter or subscribe directly to the EduTech RSS feed, http://blogs.worldbank.org/edutech/rss.xml. Re-posting and re-distributing content from the EduTech blog is encouraged; to this end, all content is made available under a Creative Commons Attribution 3.0 Unported (CC BY 3.0) license.

Posts on the EduTech blog have been collectively read over a million times since the blog’s inception in 2009.

Previous collections:

2009: Perspectives on the use of information and communication technologies (ICTs) to benefit education in developing countries. Excerpts from the World Bank’s EduTech blog


2011: Separating the Hope from the Hype: More perspectives on the use of information and communication technologies (ICTs) to benefit education in developing countries. Excerpts from the World Bank’s EduTech blog (Volume III)

by Michael Trucano
originally published on Tuesday, 8 January 2013

From Africa to China, from the use of mobile phones to a big evaluation report on the OLPC project -- with a short detour down Sesame Street and a bunch of stuff about digital textbooks thrown into the mix -- the World Bank EduTech blog covered a lot of ground in 2012. Begun in 2009 as one of the World Bank's first regular blogs, EduTech has tried to explore issues related to the use of information and communication technologies to benefit education in developing countries via a series of informal posts on a variety of topics, informed by lots and lots (and lots) of discussions with groups in countries around the world doing interesting things. Along the way, we have realized that, for better or worse, and at least with regards to ICT use in education, we are able to connect via the blog with many people in ways that our more traditional (often long, although hopefully not long-winded) formal World Bank publications and dialogues struggle to achieve. By 'thinking aloud in public', we have also tried (in an admittedly very modest way) to use the blog to open up conversations about various themes to wider audiences, and to share emerging thinking and discussions on topics that in the past were often (regrettably) shared only 'behind closed doors' within small circles of people and institutions.

2012 saw the fewest number of discrete posts on the World Bank EduTech blog, and yet the blog as a whole experienced its highest overall readership. While it is flattering that our stuff occasionally (and increasingly) finds good-sized audiences online, we don't put too much stock in individual readership metrics -- nor are we terribly interested in them, to be honest. While we are of course happy with the broad readership that the blog attracts some weeks inside our little niche topic area (while at the start we used to be happy if we could attract 1000 or so readers to a post, in 2012 we would sometimes get that within a few hours of the appearance of a new blog entry), most weeks our target audience is actually just a handful of key...
decision makers in one place whom we hope to make aware of something that is happening in another part of the world that might be of relevance to their work. So, while it is gratifying to find out that a post was read by 500 or 5000 (or 50,000!) people, in all honesty we are most pleased if it was seen by a target group of people who may actually number only five -- especially if and where it may influence their thinking in a positive and useful way.

We deliberately try not to focus our attention on any one topic for too long (a short attention span no doubt helps in this regard), but rather to highlight research, initiatives, questions and conversations with which we are engaged at a particular point in time, in the hope that doing so in public is useful to other people dealing with similar challenges in their work. As we have done in the past, we thought we'd begin the new year by counting down the list of top EduTech blog posts over the prior 12 months as a sort of quick review for a general audience. Criteria for inclusion are rather idiosyncratic, and include a combination of page views and RSS hits, re-postings in other fora, and related exchanges via email and in person have informed our entirely unscientific attempt to rank-order offerings from 2012.

If you are new to the EduTech blog: We hope you find something of interest and relevance to your work. If you do, you may also wish to check out our lists of top posts from 2009, 2010, or 2011, check out some general background information on what we are trying to achieve with the blog, and/or download one of the annual compendia of all of the posts from a given year:

2009: *Perspectives on the use of information and communication technologies (ICTs) to benefit education in developing countries.* Excerpts from the World Bank’s EduTech blog [pdf]


2011: *Separating the Hope from the Hype: More perspectives on the use of information and communication technologies (ICTs) to benefit education in developing countries.* Excerpts from the World Bank’s EduTech blog (Volume III) [pdf]
With all of that preliminary stuff out of the way, and without any further ado, here are the ...

**Top World Bank EduTech Blog Posts of 2012**

10. **What Sesame Street Can Teach the World Bank**
Long a touchstone for many of us who work in the educational technology field, Sesame Street (in its various incarnations) is probably the most studied educational technology initiative in history. This post attempts to draw five lessons from the Sesame Street experience of particular relevance to international development institutions like the World Bank.

9. **Evaluating One Laptop Per Child (OLPC) in Peru**
While these days one perhaps hears more about the Khan Academy and MOOCs (and increasingly of initiatives like Raspberry Pi as well), the One Laptop Per Child project has for many people around the world been the most prominent example of the use of, and potential for, various low cost education technologies in developing countries. Much discussed and debated for the past decade, we are starting to see the emergence of some various interesting data and studies examining the impact and approach of OLPC in different places around the world. Most notable of these studies has probably been work by the Inter-american Development Bank, which this blog post discusses. Other posts in 2012 that looked at lessons from the 'low cost laptop' experience included *Around the World with Portugal’s eEscola Project and Magellan Initiative and Let them eat laptops?*

extra: Relatively speaking, the EduTech blog focused less often in 2012 on specific individual country experiences than in past years. *ICT and rural education in China and Assessing education with computers in Georgia* were two notable exceptions to this.

8. **An update on the use of e-readers in Africa**
While the EduTech blog had less of a focus on Africa in 2012 than in years past, a post on the work of the Worldreader NGO in Ghana and elsewhere attracted many readers, emblematic perhaps of the interest we have seen from many educational policymakers to explore how the use of the purpose built small tablet devices that we refer today as e-readers' may be relevant to their countries' particular interests and needs. Another Africa-related post in 2012 was *Developing ICT Skills in African Teachers.*
7. Reporting back from WISE, the World Innovation Summit for Education
While not explicitly interested in ICT use in education, the Doha-based World Innovation Summit on Education provides a way for lots of folks exploring the innovative uses of technologies to help address a wide variety of developmental and educational challenges to share thought and perspectives on what they are doing, what is working -- and what isn't.

6. Textbooks of the future: Will you be buying a product ... or a service?
We receive *lots* of unsolicited sales calls and emails from education publishers looking to find ways to sell their digital products and services to countries that are receiving support in various ways from the World Bank. (Our apologies to vendors that we don't return many of them -- there just aren't enough hours in the day to do so.) One can only imagine how many such calls and visits ministries of education around the world get, but we are often called in to help countries make sense of pitches they are receiving. Based on one's perspective, the topic of 'digital educational material' is an area where there are either too few satisfying answers about the way things might proceed going forward, or too many. Whatever the case, the end result is the same: lots of confusion about which way markets are heading, and how educational systems should be planning in the face of such uncertainty. *Textbook policies in an increasingly digital age*, while specifically meant to highlight some related issues that we face here at the World Bank, was written with a larger potential audience in mind, and *Mapping Open Educational Resources Around The World* highlights some additional work of relevance to the topic.

5. Re-thinking School Architecture in the Age of ICT
What will the school of the future look like, and to what extent will, or should, considerations around technology use influence the design of learning spaces going forward? This post attempts to explore related issues.

extra: As work completed under the World Bank's SABER-ICT project emerges over the course of 2013, readers can expect a lot of related information to appear first on the EduTech blog. Two posts from 2012 -- *Developing a national educational technology policy* and *Analyzing ICT and education policies in developing countries* -- anticipate some of these upcoming entries.
4. Surveying Mobile Learning Around the World (part one) & Surveying Mobile Learning Around the World (part two)

3. Mobile learning in developing countries in 2012: What’s Happening?

These two thematically linked posts (the first presented in two parts, due to its length, and whose popularity occasioned a full translation in Spanish) represent the one topic guaranteed to generate lots of readership: the use of mobile phones in education. Long-hyped, we are now starting to see examples beyond the handful of often-cited projects that are used as representatives examples of what is actually happening 'on-the-ground' on this emerging and fast-growing area of activity.

extra: Some of the EduTech blog posts from 2012 that generated the smallest readership received the strongest sustained feedback and comment, especially from the private sector. Educational technology and innovation at the edges, How (not) to develop ICT literacy in students? and Planning for an edtech RFP: Technical vs. functional specs are three examples of this phenomenon.

2. Ten things about computer use in schools that you don't want to hear (but I'll say them anyway)

Bloggers have long known that lists of various sorts have the virtue of being both relatively easy to write and easy to digest for readers. Lists of ten irregularly feature on the EduTech blog, and this one from April with a very Twitter-friendly title was the second-most popular post of 2012.

And, in a somewhat similar vein ...

1. Ten trends in technology use in education in developing countries that you may not have heard about

This post from June came in response to a question that we are asked so often as a sort of aside at the end of discussions about other topics that we decided to attempt to answer it 'in public', in case it might be of interest to other groups as well. "What trends are you are noticing that are a bit 'under the radar'?") Here is a short collection of a few of our responses to this query, deliberately omitting those that made an earlier appearance on the EduTech blog in a post on 10 Global Trends in ICT and Education. That post, which was published on the blog in 2010, was actually the most read post of 2012, demonstrating that, even though most blog
posts are meant to be 'of the moment', certain individual entries seem to continue
to find and connect with readers long after they first appeared (the one on ‘worst
practice in ICT use in education’, also from 2010, is another good example of this).

OK, that's the list for 2012, the fourth year of publication for the World Bank's
EduTech blog, a year in which we achieved an important geek milestone: our 128th
post! (That's $2^5$, or two to the fifth power, for those who don't automatically think in
binary.) Will we make it to our fifth birthday? Please do check back in with us
at http://blogs.worldbank.org/edutech, subscribe to our RSS feed or follow us on
Twitter @WBedutech to find out. Thanks again for taking time out of your busy day
to spend a few minutes with us, and ... Happy New Year!

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Note: The image use at the top of this blog post of a Sri Lanka dance trooop spinning plates during a
performance in the ancient hill city of Kandy ("the World Bank EduTech blog: providing our own spin
on things since 2009") is adapted from an image from WikipedianJerzy Strzelecki via Wikimedia
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license. Most weeks, the EduTech blog consciously uses images from Wikimedia Commons and similar
resources as a way to highlight the use of various Creative Commons licenses.
In recent chats with officials from [an unnamed country], I learned of the desire of educational policymakers there to *leapfrog e-learning through m-learning*. This made an impression on me -- and not only because it succinctly was able to encapsulate four educational technology buzzwords within a five-word "vision statement". In many ways, this encounter helped confirm my belief that a long-anticipated new era of hype is now upon us, taking firm root in the place where the educational technology and international donor communities meet, with "m-" replacing "e-" at the start of discussions of the use of educational technologies.

My 'evidence' in support of this observation is admittedly anecdotal (and personal), and, contrary to standard operating procedure here at the World Bank, not gathered in any sort of rigorous way. *Here it is, in brief: More often than not, the unsolicited project proposals that clutter my in-box here at the World Bank now seek in some way, or at some level, to explore how 'the use of new mobile computing devices like tablets and phones can be used to transform education'. Requests for me (as part of my duties at the World Bank) to provide comments on or input into 'm-learning strategies' sponsored by various groups have risen considerably, and I am now seeing plans for wide scale (i.e. country-wide) m-learning initiatives, where I used to see only pilots. If speaking requests and event announcements that we receive here are any indication (some would argue that this is at best a proxy for hot air), the theme of 'm-learning' appears to have 'gone mainstream' on the international conference and workshop circuit, an increasingly default topic on the agenda of high level meetings meant to inform the thinking of
key decision makers in the educational, technology and international development sectors.

Cynics (including those with long memories of the cycle of hope and hype that accompanies the announcement of each new 'paradigm shift' in the educational technology space) may contend that rhetoric around this topic is (take your pick) rather hollow; or brazenly opportunistic; or just naively optimistic. No doubt all of these things are true in some cases.

Yet few of those who question the appropriateness of many large scale 'm-learning' initiatives currently under preparation in developing countries (and there appear to be a lot of them!) or who are skeptical of the intentions of the groups behind some of these initiatives (whether vendors pitching their own products or politicians pitching their own 'visions') would deny the potential relevance of new types of mobile devices -- from phones to laptops to tablets -- to many of the challenges faced by education systems around the world. Just because there is a lot of hype doesn't mean that some of the things that are happening aren't worth serious attention and study.

So the topic is generating increasing heat in many quarters ... is there any accompanying illumination to help guide us in our related decisions? A few high profile initiatives in the international donor community intend to help us find out.

Last month UNESCO convened its first Mobile Learning Week (more are planned), which invited "officials from Ministries of Education, international experts and practitioners in mobile learning, as well as representatives from major partners in the field ... to share innovative ways of learning with, and through, mobile technologies, and of using them to achieve the Education for All goals and improve the quality of education." The results from the public portion of this exercise have now been posted online. The 'closed' expert meetings included an internal review of drafts from regional surveys of mobile learning activities underway in various regions of the world -- it is expected that the final reports will be released online by April, together with a global overview of trends, and an attempt to make sense of the potential implications of all of this for policymakers.

The event featured a 'walking gallery' of mobile learning projects, including a number sponsored by Nokia (Nokia Mobile Mathematics, Nokia Education Delivery, Nokia Data Gathering and FlashCard application for literacy); LIVES from the
Commonwealth of Learning; Intuition Mobile learning; M4Read from iLearn4free; openEyA from ICTP; T Smart Learning from SK Telekom; and a number of other initiatives and applications. (I have listed these here to enable interested parties to get a sense of what is out there, so that they can search for more information on the web about them; inclusion here does not imply anything about the worthiness of individual projects or programs.) Presentations from the event are now available on the event web site, as is a report of the proceedings [pdf]. People organizing similar events may be interested in mining the list of speakers and experts posted on the site, which includes some very knowledgeable people working on and researching m-learning initiatives. UNESCO intends to use what it learned during the week to inform upcoming m-learning pilot projects it will sponsor in Mexico, Pakistan, Nigeria and Senegal.

UNESCO participates (as does the World Bank, The British Council, ISTE, the IDB, UNICEF, World Vision and many other groups) as part of the mEducation Alliance, which was soft-launched in August by USAID under the provisional name of m4ed4dev, bringing together groups of various sorts interested in exploring the use of mobile technologies. It doesn't appear that presentations from the August event are available yet online (presentations from a related earlier roundtable at Stanford are), but a number of the initiatives featured at the August event have been profiled on the EdTech blog in the past. A few that haven't include Project ABC (Alphabetisation de Base par Cellulaire) in Niger (here's a related CGD working paper about the impact of the project) and two projects from South Africa that I often reference when people ask me for interesting ongoing mlearning initiatives, Yoza (formerly m4Lit) and Dr. Math.

Many of the groups that participate in the mEducation Alliance are also part of the USAID-led Mobiles for Reading Working Group (including the World Bank), which is linked to the recently announced Grand Challenge for Development: All Children Reading initiative that USAID is sponsoring with other partners. As part of All Children Reading, USAID solicited proposals to fund innovative projects tackling childhood literacy challenges, and it is expected that a number of these proposals may involve the use of mobile technologies. Organizations with winning submissions will be eligible for as much as $300,000 in funding; we will profile some of the winning entries in upcoming months here on this blog.

In addition to the upcoming regional surveys from UNESCO, m-learning projects funded under All Children Reading, and analytical work and events from groups
participating in the mEducation Alliance (and no doubt lots of industry-sponsored and academic conferences like this and this), people interested in the topic should look for an upcoming edition of the International Journal of Mobile & Blended Learning that will focus on Africa, guest edited by Dick Ng’ambi and John Traxler. (Hopefully portions of this will emerge from behind the paywall that typically sequesters many international journals from interested audiences in developing countries.)

Some final comments:

At many of the sorts of events mentioned above, I often sit through animated discussions about where to draw the line between 'e-learning' and 'm-learning'. Do we include laptops? Or are we only talking about handheld devices? And what about tablets? As fascinating as such distinctions might be to insiders and academics, I find that most practitioners and policymakers don't care too much about the nuances at the heart of such hair-splitting, especially as the borders between many of these devices continue to blur.

I often hear and read pronouncements about individual m-learning projects that could have been cut-and-pasted from reports on computer-based e-learning initiatives (e.g. "student motivation increases", "teachers report expecting improved outcomes"), with little attention or insight into what the particular affordances and trade-offs and costs and impact of a devices mobility might be. I have also had numerous discussions with educational publishers who are porting over their 'e-content' for use on mobile devices (in some cases, one suspects that this material may have been previously ported over from a printed textbook). Should we expect this to work? Well, maybe, perhaps ....

I do often feel that many of the discussions around 'm-learning' end up sounding a lot like general discussions of ICT use in education. At one level there is nothing wrong with this, of course, as in the end we are still talking about sets of tools and their relevance to help meet specific needs of educators or learners. In addition, many of the groups new to discussions around 'm-learning' are also new to educational technology discussions in general (and often 'newcomers to the education world from the technology world' -- this is often especially true for the 'mobile phone people'), and so recitations of commonly-held good practices around technology use in education can be useful reminders to help keep these sorts of initiatives pointed in the right direction. That said, I do think there is
something fundamentally different about the potential for mobile devices. My hope is that, given all of the groups now considering this an increasingly important priority area for action of some sort, in 2012 practical insights into what this mobility might mean for both educators and learners based on real life experiences will emerge in greater volume and depth, so that policymakers and planners can make more informed decisions about how to direct increasingly scarce resources in ways that are cost-effective and impactful.

OK, that’s all for now. For those of you have found this quick round-up interesting in some way, here is our blog post from last January 2011 on this same topic, and here are links to numerous related posts we have made over the past few years here on the blog.

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Note: The image used at the top of this blog post ('might mobility enable new approaches?') comes from Flickr user Ana Cotto via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution 2.0 Generic license.
One of the fascinating benefits of working at a place like the World Bank is the exposure it offers to interesting people doing interesting things in interesting places that many other folks know little about. Small countries like Uruguay and Portugal, for example, are beginning to attract the attention of educational reform communities from around the world due to their ambitious plans for the use of educational technologies. Much is happening in other parts of the world as well, of course, especially in many countries of Eastern Europe and Central Asia. The largest stand-alone World Bank education project to date that focused on educational technologies, for example, was the Russia E-Learning Support Project. Macedonia gained renown in many corners as the first 'wireless country', with all of that Balkan country's primary and secondary schools online since the middle of the last decade -- although other countries, like Estonia and the tiny Pacific island nation of Niue, also lay claim to versions of this title. (If you are looking for more information on the Macedonian experience, you can find it here and here [pdf]). Much less well known, however, is the related experience of the small country of Georgia, located at the crossroads of Eastern Europe and Western Asia, where small laptops are being distributed to primary school students and where school leaving exams are now conducted via online computer-adaptive testing.

Beginning with a pilot program that distributed 2500 netbooks to first graders and their teachers in fall 2010, the government has now distributed over 60,000 'bukis', a localized version of the Intel Classmate laptop which is produced by a Georgian computer firm. A national education portal with Georgian language content is also available, and digital textbooks and other educational content is also pre-loaded on the devices themselves. These materials (and other, like 'Art' and fifty other education games developed by the Ministry of Education) are meant to supplement traditional paper-based texts. (When people think of cooperation between Europe
and South America around educational laptops, they often cite links between Portugal and Venezuela, smaller connections between Georgia and Suriname are less well known).

While the buki is aimed at students at the lower primary school level, the so-called buki generation, an even more ambitious program has been underway targeting students finishing their secondary education.

Last year Georgia had nationwide school leaving exams for the first time. While this is notable in and of itself in the Georgian context (corruption in university placement is a challenge for many countries in this part of the world, and school leaving exams of this sort are one attempt to help address this issue), what is more interesting for international audiences may be the fact that this was done entirely using computer adaptive testing.

The costs for a national paper-based examination system were seen to be prohibitive in Georgia, and so the decision was made to take advantage of the investments in school ICT infrastructure to do everything online.

Over 1500 schools and 44,000 students participated in this ambitious exercise, sitting for proctored, school-based examinations over eight days (one subject per day). Results were available immediately at the end of each exam, both for individuals and consolidated across the system (centrally, the team responsible for this process say they were able to monitor progress in real time). Sitting in school classrooms, student logged in en masse using their national identification number, and, for security purposes, the exam proctor in the room entered a related code to enable access to the online test itself.

An official from the Ministry of Education in Slovenia explained to me that this sort of centralized, 'Big Bang' approach (which he referred to as the 'Lithuanian model') can be attractive and cost-effective to countries like his and Georgia, given their small size. (The Uruguayans are also exploring how the ICT infrastructure in schools there can be utilized across the country to help teachers with formative assessments in informal, low stakes ways.) As with the buki, the technology at the heart of this had a decidedly Georgian flavor, and it was told to me that "everything used here was developed in Georgia, the software, the assessment engine, individual test items and the test item data bank: everything".)
While I am always skeptical of 100% reported success rates, officials say that the process went off without a hitch. Students -- almost all of whom had never taken an official computer-adaptive test before and who have been taking paper-based assessments their entire academic lives -- were able to practice on the system in prior weeks before logging in to take the actual test, which also helped officials test load across the system. (I would like to learn about how they were able to ensure adequate bandwidth across the system and that the testing servers were robust enough not to buckle under what must have been considerable strain.) Those who would like to learn more about this Georgian experience may be interested in an upcoming international event organized by the country’s national examinations center. The *Third Black Sea Conference on Assessment in Education: New Technologies in Educational Assessment* will take place in the Georgian resort town of Batumi this spring, just a few weeks after the national exams take place in May. Come this June, officials in countries considering similar things might do well to have Georgia on their minds.

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*Note: The image used at the top of this blog post (‘the buki generation’) comes from the buki portal and is used with the permission of the Ministry of Education in Georgia, which holds its rights.*
4. Educational technology and innovation at the edges

by Michael Trucano
originally published on Tuesday, 28 February 2012

As part of my duties at the World Bank, I talk with lots (and lots!) of people and groups. Mostly, I talk to people within the World Bank and in other development institutions (this is part of my official responsibilities, to support the work of such people as a 'subject expert'); to our counterparts in governments around the world (we say 'clients' but I am not a big fan of this formulation); and with lots of consultants and practitioners*.

(*Some of you may quickly identify a pretty important group that is missing here: 'users', or beneficiaries. This is a pretty big, if not fundamental, omission, in my view. Talking with practitioners is a sort of proxy for talking with end users and beneficiaries ... I guess ... but certainly an insufficient and inadequate one. Mistaking those who pay for, and those who implement, development programs with those who actual 'use' or benefit from them is a recipe for potential disaster ... perhaps a topic for a future blog post.)

I also speak with lots of companies. Sometimes I am obliged to do this, because (to be blunt, and honest) the company is 'important' and politically well connected. Sometimes I really want to do this, because the company is doing something quite new and/or cool, or is doing something quite well. (I should note that these things aren't necessarily mutually exclusive, of course.) I frequently talk with companies at the request of colleagues or counterparts in government ("these guys are telling us x and y ... should we believe them?"). I also do it to better understand what is happening in various markets; I often find that firms (as with NGOs) have a better sense of what is happening in government schools related to the use of technology than do ministries of education.
Occasionally I speak not to individual companies, but to large industry groups. Because presentations to these types of groups often occur behind 'closed doors' of various sorts, I thought I'd share here some of what I tell them, in case it might be of any interest. (One of the reasons that this blog exists is to try to open up certain conversations that typically occur behind closed doors to wider audiences.)

In December, for example, I spoke with members of an industry association whose smaller-sized companies (almost exclusively from OECD countries, I assumed) were interested in the 'potential market for their educational technology products and services in Africa'. Here's what I said:

**Opportunities for growth**

As a sort of general introductory remark, I noted that the periods of truly heady growth for certain types of ICT-related goods and services in the education sector in many OECD countries is probably behind us -- at least compared with the potential for growth in newly industrializing and emerging economies of the so-called 'developing world'. The big companies have already recognized this, I tell smaller firms, and you might do well to do so as well.

**Investing, not just selling**

I often say to companies entering new markets in developing countries for the first time is that *your first sale might be the easiest*. If the initiative for which you win a contract doesn't succeed, however, or your product turns out to be the wrong one for the specific needs of local users, you may find that things can get very difficult for you going forward very quickly. In such cases, where your first sale was (relatively) easy, your second sale may never come. Technology use in education is a growth area of investment for pretty much every country around the world, and looking for quick sales in the short run by cutting corners and misrepresenting your product may limit your potential to grow along with these markets over the medium- to long-term.

*If you want to grow in such markets, you may need to growth with the markets.* This will probably mean partnering with local firms (and there are a lot of local firms in working in this space across Africa, albeit often small ones) and in looking to support local 'business and user ecosystems' related to your product or
service in various ways. This may mean not only selling into, but also investing in, the development of local markets, and especially investing in local people.

*(Side note: When speaking with counterparts in governments, my colleagues and I often discuss with them strategies for how they can best take best advantage of the arrival of and investments by foreign firms, as well as the activities of their own domestic companies, to help meet their country's developmental objectives. I mention this to note that this stuff does not need to be a one way street ... even if that is regrettably too often the case.)*

I closed the first session of my talk by relating the comment of the Executive VP of a Fortune 100 company who stopped by the World Bank and told us that, "We would invest a lot more in Africa -- if we could find the right people to employ and run our business there for us. So we think it's time to invest more in people across Africa."

**Information asymmetry**

*An observation:* In many of the countries with which we work at the World Bank, there is a profound information asymmetry related to ICT use in education. The people selling the stuff know a great deal about the topic, and often have lots of 'white papers' that they share with government touting the cost effectiveness and positive impact of their goods and services. They are tech savvy, and can relate seductive stories of 'success' in other countries. On the other (buyer's) side, there is quite often limited or insufficient capacity within government to make well informed decisions about this stuff and evaluate the claims of firms marketing their wares. (For what it's worth, there is often insufficient capacity within many of the international donors who are advising governments in this regard, and who are lending or giving money to governments to purchase such goods and services.) *This information asymmetry can lead to a very dangerous situation* where companies, or consultants with whom they regularly work, basically serve as lead advisors to governments related to the use (and purchase) of ICT-related goods and services in the education sector. Unethical firms seek to exploit this asymmetry of information and technical know-how; other firms, especially those in it for the 'long run', seek to help build capacity in government to make better informed decisions (although of course this is not always entirely an altruistic course of action either!)
Innovation at the edges

While not neglecting many of the very urgent challenges and pressing needs of people and communities across the continent, I spent most of my time talking about some things that seemed to be new to many of the association members: about the under-reported growth of middle classes across the continent, for example, and about the (even more under-reported) growth of innovative businesses and civil society organizations utilizing ICTs in new and inventive ways (here I cited examples of organizations and people affiliated with iHub in Nairobi). I talked about the severe stresses being out on many public education systems, and the resulting potential for growth of informal learning and private education providers.

At this stage, I said, it seems most everyone knows about the rapid penetration of mobile phones across the African continent, reaching out and down into communities that few predicted would take to these devices with such speed. I mentioned this not to highlight opportunities for 'mlearning' (a regular topic on this blog). Instead, I did it as a way to highlight certain types of ICT-enabled dynamism that are occurring in emerging economies in the 'developing world' in ways that are different from what people may find in Europe and North America. Here's one example I gave from the financial services sector:

By the early part of the last decade, most programs to expand "mobile banking" (i.e. engaging in financial transactions using a mobile phone) had fizzled out in Europe and North America. There were many reasons for this, including the fact that people had all sorts of well-established mechanisms that provided easy access to banking and financial transaction services: They had computers and the Internet at home, they had ATMs in their cities and towns, and they had physical branches of banks not too far away, etc. In some places -- like the Philippines, the subject of one of the first studies of this stuff, which we did when I was with the Bank's infoDev program -- this infrastructure largely didn't exist, especially outside urban centers. As a result, cash was king, credit was dear, and demand for access to various types of financial transactions and services was thus largely unmet. Some bright people noticed that mobile phones, which were increasingly to be found in the pockets and pocketbooks of Filipinos all across the archipelago, could utilized to provide some of this access in new and innovative ways. People in other parts of the world saw what was happening and, within a few years, mobile banking started to catch fire in other developing countries -- Kenya is one quite
well-known example. Now, companies in so-called 'developed' economies are looking to places like Kenya to learn about how they can introduce (or re-introduce) such mobile banking services into European and North American markets.

That's all well and good, you might say, but what does this have to do with education? Here's my point (and I am sorry it is so long in coming):

- Despite the successes of the Education For All movement in many countries, for hundreds of millions of people in developing economies, access to quality education is a need that is not being met sufficiently through traditional means.

- I speak and correspond with lots of (young) entrepreneurs and companies in developing countries who are investigating the potential use of mobile devices (like cell phones) to help provide access to educational services and products in new ways in such places. These folks are trying out new approaches to using the ICT devices they have at hand to help overcome many of the longstanding challenges that have inhibited access to traditional educational products (e.g. books) and services (e.g. schooling).

- A consistent refrain heard across pretty much all 'developed' countries is that much needs to be 'fixed' with their traditional education systems, but there is little consensus about what exactly do to, and people are hungry for examples of new approaches that 'work' and 'scale'.

- The education minister of an East African country told me last spring that his country had a deficit of 35,000 teachers right now. *Even if we can recruit and train this number of teachers quickly (and we can't, using our current practices),* he asked, *how are we going to be able to support these teachers once they go into classrooms across our country, especially in the places where we need them most -- in the villages? While continuing to expand and improve what we are already doing, he continued, we need to explore new, non-traditional approaches, and we see technology use as fundamental to such new approaches.*

If there are to be truly new and innovative approaches to (for example) supporting teachers using new technologies like (for example) mobile phones, where might we expect them to occur? It might be that they will be found in your current markets,
in places like the affluent suburbs of Brisbane or Berlin. Or, just possibly, they might be found outside places like Manila or Nairobi -- somewhat like what occurred with mobile banking.

As the EduTech blog attempts to help document and explore, we are seeing lots of innovative uses of ICTs at the 'edges', and it is just possible that some of the most innovative future business models related to technology use in education in industrialized countries may be developed in response to consumer needs for lower cost, more equitable access to quality educational products and services in emerging economies around the world.

Discussions of the potential for 'innovation at the edges' are now a staple of certain parts of academia and the business press (and given at least lip service by some policymakers). From the perspectives of most of you [by which I meant the educational technology companies to which I was speaking], most of the people in the world live at these 'edges'. These are where the needs are the greatest. These are your markets. And these are the places where you should go to learn.

The science fiction writer William Gibson has famously remarked that "The future is already here — it's just not very evenly distributed." One conclusion to draw from the short history of mobile banking over the past seven years or so is that this distribution doesn't just happen from the 'core' of developed economies out to the 'edges' of the developing world (the traditional pathways, it is perhaps worth noting, along which international aid and foreign direct investment flow), but that the reverse path is possible as well. Might this also happen in the educational technology space? Maybe. But you have to participate to find out.

(In closing, I noted that their business competitors and partners from China already know a lot of this stuff, so they better get moving unless they want to continually play catch up!)

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Note: The image used at the top of this blog post ("the business of tomorrow, today?") comes from FutureAtlas.com via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution 2.0 Generic license.
5. What Sesame Street Can Teach the World Bank

by Michael Trucano
originally published on Friday, 09 March 2012

Plaza Sésamo. Zhima Jie. Takalani Sesame. Galli Galli Sim Sim. Behind the various incarnations of 'Sesame Street' around the world stands the Sesame Workshop, the non-profit group committed to help children (and especially young children) develop literacy and numeracy skills, build the resilience they need to cope with tough times, establish an early foundation for healthy habits, and help fostering respect and understanding.

Sesame claims that it produces the "most studied TV program in history". While I don't have hard data to support this assertion, I can't even imagine a potential competitor to this claim. Long a touchstone for many of us who work in the educational technology field, I would add that it is probably the most studied educational technology initiative in history as well.

Recently a group from Sesame spoke to a packed conference room at the World Bank about what it does around the world, and how it does it. It was an entertaining presentation-- videos of small children cavorting with the likes of Elmo and Kami do tend to engage people in ways that, say, arguments about multivariate regression analysis do not. The event was organized by the World Bank's early childhood development (ECD) group, but attracted many people from our more diffuse 'EduTech' thematic community as well. This led me to wonder: What can those of us of work on educational technology initiatives within large institutions like the World Bank learn from how Sesame Workshop operates?

While attempting to answer this question for myself, I came away from the entertaining and thought-provoking presentation with quick notes on five core 'lessons' to consider:
1. Go to where your users are -- and be interesting once you get there

Why should we be promoting the use of ICTs among children? Don’t kids around the world already watch too much television and waste too much time using computers (playing games, etc.)? These are questions I hear regularly from certain quarters in 2012; one person asked a version of this at the Sesame presentation. In the paper she wrote for the Carnegie Corporation in 1967 that led to the creation of Sesame Street, Joan Ganz Cooney noted that lots of pre-school children were already watching TV -- and were especially fascinated by the commercials they saw. Why not then adopt and adapt some of the successful tools and approaches of the advertising companies -- approaches which in many ways mirrored effective teaching techniques, she noted -- and put them to use to help educate children, especially if they were going to be watching TV anyway? As a result, Sesame used a widely available common technology (in the late 1960s, this was broadcast TV) to go to where kids were, subverting some of the impactful approaches for using that technology for its own ends. In 2012, Sesame not only seeks to engage children via broadcast television (although of course it does do this, a lot), but also is actively exploring and experimenting with a variety of the technologies already at hand in the lives of children (from oversized picture books to the mobile phones that parents increasing hand to their children to keep them occupied. (The first time I ever heard a name given to the 'pass-back effect' -- where parents hand their phones back to their children to keep them occupied -- was as a results of discussions kicked off by reading from the Pockets of Potential paper produced by the Joan Ganz Cooney Center, Sesame's affiliated research arm). Go to where the children already are, the Sesame experience teaches us, and be interesting and engaging when you arrive there. Whether you do this via a printed picture book, a TV, or a mobile phone, the point isn't that you are using a particular technology, it's that you are effectively using a technology already in use.

2. Embrace non-traditional approaches

Some may question whether you can really laud Sesame for 'non-traditional' approaches to educating young children, given that it has been around since the 1960s. While continuing to be known largely for its television programs, the organization self-consciously proclaims that it is in its '42nd experimental season' as a way to remind its staff that they need to be forward looking. Today in Bangladesh, Sesame sets TVs on rickshaws and pedals them into slum communities, bringing messages to students where they live and gather (one lesson for other groups doing this in similar settings -- make sure you use rickshaws small enough to navigate narrow alleys!). Some of the available
technologies that Sesame is trying to take advantage of may not be that obvious. Recognizing that printers are really just (increasingly powerful) single function computing devices (with the display not an LCD monitor, but rather a piece of paper), Sesame is looking at how they can utilize these devices in innovative ways to help disseminate its materials without the need of standalone computers. Instead of inventing something new, Sesame prefers to adopt and adapt traditional or established technologies and put them to new uses.

3. Put research at the heart of the process
"Research informing practice" -- this is a mantra that Sesame holds dear. Many other groups espouse similar things as well, of course. That said, in the cases of some such groups, this is perhaps more accurately stated as 'we need to do research before we start a new practice' (while at the same time 'old' practices remain unquestioned because they have been followed for a long time, with tradition and inertia conspiring to support 'business as usual', even if there is no compelling no research base supporting them -- and in fact, even where there is evidence to the contrary!). The 1967 report to the Carnegie Corporation noted that "There is no substitute for trying [something] and evaluating its effects", and this assertion still guides Sesame's work today. *Remain in continual experimental mode. The best way to figure something out is to do it. Learn from what you are doing. Change course along the way based on what you learn.* These were messages that the Sesame folks conveyed quite strongly. This means that mistakes will be made, they said, but this is an important part of the learning process -- for organizations just as it is for young children.

4. International models, contextualized locally
In some ways, Sesame Street looks decidedly different in different countries ... and yet there is no denying that the end product is still Sesame Street. Essentially Sesame prescribes a process for local partners to follow, but not the actual program or product that is meant to result from the process. Of course, it does offer many examples of successful programs or products from around the world for its local partners to emulate, and it does care (a lot) about quality control. One of the benefits of developing things locally is that this helps ensure local buy-in. Another benefit to this approach is that it can result in lots of context-specific programs and products (like Math Bingo in Nigeria) that those in 'headquarters' would never have anticipated. While productions are local, and despite the diversity of approaches and products that results from local production, the Sesame branding remains -- and remains strong.
5. To reach your target audience, you need to consciously reach out to other groups as well

If one were forced to reduce the World Bank’s new Education Strategy 2020 to just three words, they would be: Learning For All. For the World Bank, "Learning for All means ensuring that all children and youth – not just the most privileged or the smartest - not only can go to school but also acquire the knowledge and skills they need to lead healthy, productive lives and secure meaningful employment." Sesame Workshop’s mission is "to use the educational power of media to help children everywhere reach their highest potential." In pursuit of this goal, Sesame understands that its audience is not just children, but also their parents and caregivers. If you want to reach children, you need to reach out to, and support, those who are closest to them as well. Do this in ways that are inventive and engaging, using the tools (including the ICT tools) at hand, and you are more likely to be successful in your overall mission.

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These are some of the quick impressions I took away from the Sesame Workshop presentation. No doubt there are examples from Sesame's history, or current practice, in each of these five cases where things aren't exactly as I have painted them here, where Sesame itself doesn't follow these lessons 100% of the time. Such is the nature of organizations -- especially long established organizations. But even if these aren't being followed all of the time, or if the quick lessons I have drawn are a bit fuzzier and nuanced in reality than how I have quickly presented them here, the general intentions and directions that help guide the staff of the Sesame Workshop are pretty clear. What is also clear to me after spending two hours learning lessons from the Sesame Workshop experience is that, if they are to remain relevant (let alone helpful), initiatives within institutions like the World Bank (especially those in fast moving fields, like the use of technology in education) will need to continue to challenge themselves to learn from, learn with, and work with a wider variety of organizations than may have been the case in the past. "There are many paths to the top of the mountain", or so goes an old Chinese proverb. Even if they all eventually lead to the same place, it doesn't mean that others won't get there first.

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You may also be interested in research from the Cooney Center, the independent research and innovation lab at Sesame Workshop that catalyzes and supports research, development, and investment in digital media technologies to advance children's learning. And: Wikipedia contains a useful short summary of the 'influence of Sesame Street', primarily in its U.S. incarnation, including discussions of criticisms of the show and related controversies.

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Note: The image used at the top of this blog post of an entrance to the Plaza Sésamo theme park in Monterrey, Mexico comes via Wikimedia Commons and was made available through a Creative Commons CC0 1.0 Universal Public Domain Dedication license.
6. An update on the use of e-readers in Africa

by Michael Trucano
originally published on Friday, 16 March 2012

What does it take to introduce e-books and e-readers into communities in low income countries -- and is this a good idea?

Judging by the increasing number of inquiries we receive here at the World Bank on this topic, we are not alone in asking such questions. If you want help in trying to answer these and related queries based on evidence from pioneers in this area, you will most likely find yourself at some point in contact with the folks at the Worldreader NGO. Co-founded by one of the former senior executives at Amazon, Worldreader is working with its partners to "bring millions of books to underserved children and families in the developing world". Jonathan Wareham, a professor at ESADE in Barcelona who serves on the Worldreader - Spanish Foundation Board and collaborates with the organization on various research activities into the use of e-readers and e-books, recently stopped by the World Bank to talk about what Worldreader is learning from its work in Africa.

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Those of us who work in the educational technology field are all-too-familiar with the phenomenon of locked computer rooms. Locking up the valuables didn't start with computers, of course. This phenomenon has its direct antecedents in the locked bookcase -- something one still encounters in too many schools around the world, especially those in very poor communities where books are seen as too valuable to use (except perhaps on special occasions), lest they get 'damaged'.

Worldreader is trying to fight against, and reverse, this phenomenon by increasing access to reading materials. Many groups donate books to Africa; some have done
so for decades. In some ways what Worldreader is trying to do is a 21st century, digital twist on something that has been going on for quite a while.

The Worldreader presentation began by focusing on literacy. During the course of the presentation and subsequent discussion, it became clear that it is interested in a good deal more than this, but in today's funding environment, simplicity of message is often key for NGOs, and so it was perhaps not surprising that the presentation kicked with some general comments about the fundamental importance of literacy. That said, very few people need to be convinced of the social benefits of reading.

Worldreader is informed by a basic belief that, the fewer interesting things someone has to read, the less she reads. It operates according to a few core, simple assumptions, including: Kids will think it's cool to use e-readers and so will spend time doing so (this was labeled the "shiny gadget hypothesis"). And: Having access to lots of books on an e-reader will increase the probability that kids will find something interesting, and so makes reading more likely.

**Implementation**

Worldreader began its activities by wondering: What if we *only* influence the supply of e-readers, what will happen? To some people, this may sound a lot like the approach commonly associated (rightly or wrongly) with the One Laptop Per Child (OLPC) approach. Worldreader actually studied the OLPC experience quite closely before launching, hoping to learn from the lessons of that high-profile initiative so that they would not face some of the same challenges. One result is that they deliberately decided to complement the delivery of the devices with extensive engagement with local stakeholder groups, did a lot of capacity building with teachers and trainers, and tried to help align what they were doing with what was happening in the formal education system.

Of particular interest to many readers of this blog (some of whom I know are planning for large e-reader pilots in various places, including at least two African countries) may be lessons being learned by Worldreader about some practical operational challenges that might be common to initiatives of this sort:
1. Theft
This has not (yet) been a problem. WR feels that extensive consultation with local community leaders has helped with this.

2. Power
Power has not yet been a serious issue. Just like you can find Coca Cola in pretty every market in the world, even some of the remotest places, people seem to be able to find enough access to sources of electricity to keep their mobile phones charged as well. Given the long battery life of e-reader devices (where charges last weeks, and not hours, as is the case with tablets), and despite the fact that, across much of Africa, the 'digital divide is as much about access to electricity as it is about access to computing resources and connectivity, power has not been a real problem so far.

3. Dust
Dust, and other environment hazards, like water, on the other hand, are very real issues. Most e-reader devices were not designed with usage scenarios in rural communities in developing countries in mind. This can lead to ...

4. Breakage
Breakage is a very real issue. User education is one solution to this challenge, but Worldreader is finding that this will only go so far -- you also need sturdier devices. As it becomes more clear to device makers that there are (potentially large) markets for their e-readers in places where they don't currently exist, one would expect that this would begin to change -- but it hasn't yet.

One way around the dust and breakage issues is to utilize a device already in widespread use in the target communities. Until now, Worldreader has basically been a Kindle-centric project, but going forward one expects that it will be increasingly device-agnostic. One device with obvious potential to serve as an e-reader is the mobile phone, and last month a mobile phone app was announced to allow e-books distributed by Worldreader to be delivered to and read on mobile phones.

If you have a look at the Worldreader web site or at the great pictures included in their standard presentations, you will probably quickly note that all of the e-reader devices are Kindles. While known as the 'Kindle NGO in some quarters, perhaps the most notable but under-recognized contribution from Amazon, Worldreader
explained, was its help in finding a way to manage hundreds of devices at once (normally management is one user, one device, which complicates efforts to push lots of content to multiple devices at once). Back-end issues such as this become increasingly important as initiatives grow beyond small pilot projects, and it may be in regard to things device management and content distribution that some of the most impactful lessons from the Worldreader experience of immediate relevance to other initiatives of this sort may be found going forward.

**Content**

All that is well and good, some might say, but what is actually being read on these devices -- especially if local curricular resources have not (yet) been digitized? There is of course no shortage of classic texts available (through things like [Project Gutenberg](https://www.gutenberg.org)) for download and dissemination on these sorts of e-reading devices. In addition, Worldreader has signed deals with a number of publishers to make lots of additional well known content (e.g. from Penguin, for the Roald Dahl estate) available. That said, there are very real concerns in some quarters that e-book initiatives from the 'West', however well-intentioned, are potentially an important tool contributing to a subtle form of, for lack of a better term, cultural imperialism. Worldreader is apparently working on a platform for African authors and publishers to be able to distribute their works electronically, so that it will be easier for students to read books from local authors, consistent with the learning goals of local school systems. While not downplaying the difficulties of getting large educational publishers to make their content available digitally for use by students in Africa, this desire to help promote digital marketplaces for African reading materials is perhaps the most ambitious aspect to the Worldreader initiative. When they initially approached African publishers and authors about making their content available for free, they (not surprisingly) didn’t always get the warmest reception. When they went back and asked, "what if content was digitized and made available at $1/book?", many people suddenly got very interested. (For what it's worth, Worldreader features about 240 or so digitized African titles right now, which they have co-published using the Amazon platform.) Who knows what (if anything) will eventually come of such efforts, but it is clear that many of the long-standing business models of large Western publishers are about to (if they have not already) face some large (and perhaps existential) shocks as a result of the move towards e-books. As in other areas where business as usual may not be viable going forward, perhaps some of the most compelling business models may emerge from so-called frontier or 'edge' markets (exactly the types of places where groups like Worldreader and scores of other tech-savvy firms and NGOs are active).
Impact

OK, you might say, we accept the importance of reading, we concede that reading will increasingly take place on portable digital devices, and we acknowledge that there are a great number of interesting implementation challenges that need to be solved along the way before this sort of thing can happen at any real scale in many communities in Africa. What do we know about the actual learning impact of doing this sort of thing?

A number of research efforts of various sorts are underway trying to help provide some tentative answers to this important question, based on Worldreader pilots. Most notable has been the iRead pilot in Ghana (here's an executive summary of the first independent evaluation commissioned by USAID [pdf]), which used a set of pre- and post- literacy tests to three groups: a control group; a group which received just the devices; and a group that received the devices coupled with a number of 'pedagogical interventions'. Worldreader is encouraged by the results it is seeing so far -- the biggest effects are being seen around grades 4-5, a result that many of the literacy experts attending the Worldreader presentation did not find surprising, for a variety of reasons -- but they are not yet seeing the types of 'blockbuster results' it is hoping. Part of this may be due to the fact that the effects are best observed over the long term (I must confess, I am as a rule immediately skeptical of the claims of most of the NGOs and firms who regularly send me reports of 'astounding, unequivocal, and immediate impact' of their education programs); part due to the need to experiment more with their implementation models; and part due to the need to look for different types of impacts, using different measures, tools, and methodologies. Worldreader does appear serious and diligent in its approach, however, and so I look forward to receiving updates on the research output that I expect will emerge over time, which it plans to make available on part of its web site dedicated to "learnings". (Parenthetical note: Preliminary results from the World Bank's e-book pilot in Nigeria are expected later this year; background here, here, and here.)

What's next?

Based on preliminary successes and lessons from its first set of pilots, Worldreader is wondering, how do you scale initiatives like this exponentially so that they can have the broadest impact?
The first challenge in this regard is (as always) money. Here Worldreader is now starting to confront a phenomenon known to many who have worked in the ICT4D area for a while. Finding funding support for small pilot projects, while not always easy, can be done. Large national educational technology projects are being funded in various countries around the world. But what about the in-between level, where you do things at a much larger scale so that you can learn about how best to scale when you do things at a really big, national level? Few funders seem able to provide support at this level. As a result, one approach being explored is a franchising model, combining both donor and local partner funding, and a prototype 'Worldreader-in-a-Box' solution for local implementing groups is being rolled out and tested.

Whatever path it chooses, Worldreader says that, at the grassroots level, there are a few things that need to happen if its work is to have any sort of real impact. They include:

1. **Support from local education officials** -- or there won't be the space to introduce new approaches and innovations
2. **Support from teachers** -- or the tools simply won't be used (effectively)
3. **A need to give reading a higher social currency in many local cultures**, especially those that have very strong oral traditions -- often, where there are few books, this leads to not a lot of reading, which leads to reading not being highly valued (a vicious cycle)
4. **Dedicated 'face time' in schools** -- important to keep momentum going
5. **Buy in from local support structures at the community level** -- without which, an initiative from outside the community may remain 'foreign', and thus less likely to be embraced

The first stage of Worldreader activities in introducing e-books and e-readers into a few small communities in Africa has convinced the organization and its backers that what it is doing is worth doing. *We no longer need to convince ourselves "if" we should be doing this*, they say. *Now the question is, "how?"*

Whatever conclusions you yourself draw in response to these questions, it will be interesting to learn from the attempts of Worldreader, and other groups doing similar things, in the coming years.

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Note: The picture used at the top of this blog post ("you can't help but notice all of the e-readers in this classroom ... did you also notice the absence of books?") comes from Worldreader and is used with its permission.
7. Evaluating One Laptop Per Child (OLPC) in Peru

by Michael Trucano
originally published on Friday, 23 March 2012

Few would argue against the notion that the One Laptop Per Child project (OLPC, originally referred to by many as the '$100 laptop project') has been the most high profile educational technology initiative for developing countries over the past half-decade or so. It has garnered more media attention, and incited more passions (pro and con), than any other program of its kind. What was 'new' when OLPC was announced back in 2005 has become part of mainstream discussions in many places today (although it is perhaps interesting to note that, to some extent, the media attention around the Khan Academy is crowding into the space in the popular consciousness that OLPC used to occupy), and debates around its model have animated policymakers, educators, academics, and the general public in way that perhaps no other educational technology initiative has ever done. Given that there is no shortage of places to find information and debate about OLPC, this blog has discussed it only a few times, usually in the context of talking about Plan Ceibal in Uruguay, where the small green and white OLPC XO laptops are potent symbols of the ambitious program that has made that small South American country a destination for many around the world seeking insight into how to roll out so-called 1-to-1 computing initiatives in schools very quickly, and to see what the results of such ambition might be.

The largest OLPC program to date, however, has not been in Uruguay, but rather in Peru, and many OLPC supporters have argued that the true test of the OLPC approach is perhaps best studied there, given its greater fealty to the underlying pedagogical philosophies at the heart of OLPC and its focus on rural, less advantaged communities. Close to a million laptops are meant to have been distributed there to students to date (902,000 is the commonly reported figure, although I am not sure if this includes the tens of thousands of laptops that were
Last month the Inter-American Development Bank (IDB) released a long-awaited working paper detailing findings from its evaluation of the OLPC program in Peru. While OLPC has been the subject of much research interest (some of decent quality, some decidedly less so; the OLPC wiki maintains a very useful list of this research), *Technology and Child Development: Evidence from One Laptop per Child Program in Peru* is meant to be the first large scale evaluation of the program’s impact using randomized control trials (considered by many in the evaluation community as the 'gold standard' for this sort of thing).

In a blog post announcing the release of the paper (*And the jury is back: One Laptop per Child is not enough*), the IDB's Pablo Ibarrarán quickly summarizes this results of this research:

- the program dramatically increased access to computers
- no evidence that the program increased learning in Math or Language
- some benefits on cognitive skills

This working paper is a follow-up to "Experimental Assessment of the Program "One Laptop Per Child" in Peru, the initial set of findings from IDB research into this area released in late 2010, and a continuation of its interest in 1-to-1 computing initiatives in latin America. (see from late 2010).

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**Technology and Child Development: Evidence from One Laptop per Child Program in Peru**

Cristia, Cueto, Ibarraran, Santiago, Severin. 2012. [IDB-WP-304]

*Abstract:* "Although many countries are aggressively implementing the One Laptop per Child (OLPC) program, there is a lack of empirical evidence on its effects. This paper presents the impact of the first large-scale randomized evaluation of the OLPC program, using data collected after 15 months of implementation in 319 primary schools in rural Peru. The results indicate that the program increased the ratio of computers per student from 0.12 to 1.18 in treatment schools. This expansion in access translated into substantial increases in use both at..."
As with most things related to the OLPC project, this working paper has kicked off a great deal of discussion. Some of this is happening over on our (sort-of) sister site, the EduTech Debate, which has devoted itself this month to exploring issues being raised as a result of the publication of the IDB report. In addition to reproducing findings from the IDB report itself, ETD notably features commentary from (among others) Oscar Becerra, who was responsible for overseeing the design and implementation of "Una Laptop por Niño" at the Ministry of Education in Peru (and who was involved in a fascinating and very open discussion with Christoph Derndorfer in the comments section of a post on the ETD site back in October 2010).

Given the vibrancy of the debate on the ETD site, and on other blogs where this is being discussed, my aim here isn’t to try to try to attempt to analyze and dissect the IDB working paper. (For that, I would refer you to the ETD site -- after you've read the paper itself, of course!) That said, one thing that has struck me about many of the conversations happening as a result of the IDB paper, both online and in other forums, is how quickly the conversation can also become about other things. For the hard core evaluation people, the (often quite detailed and exact) conversation is about methods and methodologies. Some critics of the OLPC approach see the IDB report as a validation of sorts of some of criticisms they have long voiced about the program. More generally (and interestingly), however, I hear two common responses to the findings detailed in the IDB report about the lack of compelling impact evidence directed at the authors: What are you testing for -- is it really what's important? And: Are you testing for this in the right way?

These are certainly important questions to ask, and they touch on a common challenge made by folks seeking to do rigorous impact evaluations of educational technology projects, especially evaluations designed to provide insight to policymakers who are interested in the 'impact on test scores'. Whether or not you agree with this interest (and you are certainly free not to do so), there is no denying that this is a question asked regularly by many policymakers. The question
then becomes: Which test scores? Broadly speaking, we can divide 'tests' into two types:

1. Standardized tests in common use within a formal education system (such as the sorts of high stakes school leaving exams that characterize many education systems)

2. Tests developed by experts to assess the impact of a particular intervention

(Let me be clear: I am not saying that these are the only criteria against which you can, or should, evaluate an educational technology project – a topic discussed regularly on the EduTech blog -- nor that they are necessarily good ones. Rather, I am saying that, for better or for worse, policymakers often seek to evaluate impact using such measures.)

The 'results' from these different types of tests of the impact of the same initiative might well be different -- and this difference might be very important at a practical level. You might see a marked positive impact on standardized test scores (#1), for example ... but what if these are bad tests to begin with? Where standardized tests measure recall of specific facts, for example, computers can be used quite effectively as sort of turbo-charged flashcards, helping to cram lots of specific facts or simple procedures into the heads of students (the decades-old, and not very affectionate, term in many education communities for this sort of use of educational technologies is 'drill and kill'). Let's postulate that, from a learning perspective, #2 measures what is actually important. That is all well and good, but, like it or not, #1 is usually what drives actual behavior at the school or classroom level. This tension -- should we measure the impact on what the system is current attempting to measure, or on what emerging consensus holds is actually most important for learning? -- is one not exclusive to discussions of the use of educational technologies, of course, but it can often be particularly acute in this area.

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However you feel about the OLPC project (in its Peruvian incarnation, or more generally), or about the IDB's attempt to assess the impact of the OLPC project in Peru, there are, generally speaking, five potential explanations for the fact that no
(or little) impact is found when evaluating an education technology initiative (please note that this list is adapted from a talk by the IDB’s Eugenio Severin):

1. The use of technology in education in general makes no difference 
or
2. It's too early to tell (our time horizon is too short) 
or
3. The evaluators tested the wrong things and/or used the wrong methods 
or
4. The idea was good, but the particular implementation was bad 
or
5. Change doesn't come unless you make real changes (and often, no real, fundamental changes are made except for the addition of technology)

It is this last potential explanation that has frustrated many people in the educational technology community for a long time. Long term, sustained positive change (in the education sector, if not more broadly), whether as a result of an explicit reform process or slower, evolutionary changes in behavior, typically does not happen as the result of a single discrete intervention. Dump hardware in schools, hope for magic to happen -- this is for me the "classic worst practice in ICT use in education". I am not saying that this is an accurate characterization of what has happened in Peru (I have no firsthand knowledge of the project there), but this is something that one sees seen repeated time and time again, in countries rich and poor, 'advanced' and 'developing'. Around the world, expecting the introduction of ICTs alone -- no matter whether the shiny devices are lined up in rooms in computer rooms added on to schools or (to borrow a particularly colorful metaphor) dropped from helicopters into remote communities -- to help bring about transformative, cost effective improvements in student learning while at the same time continuing with a business as usual approach to other aspects of the educational experience usually proves to be, well, a less than optimal way of going about things. In the specific case of OLPC in Peru, the IDB's suggestion "to combine the provision of laptops with a pedagogical model targeted toward increased achievement by students" sounds like an eminently reasonable recommendation, and one which presumably is relevant to educational technology initiatives of various sorts in other places as well. That said, given the history of educational technology programs showing little substantive impact in place after place, one can perhaps question whether it goes far enough. Given the outsized ambition that characterizes massive investments in ICTs in education in country
after country around the world, it may seem foolish to question whether many of these sorts of programs are indeed being ambitious enough. But are they? In speaking about ICT use in education, a number of well-respected commenters have noted that, "if you are already going down the wrong road, technology will only help get you there faster" [pdf]. For many, the promise of technology use in education has been that it will help to blaze new trails, while in practice, its use has often looked more like "tinkering toward utopia" (to borrow an evocative phrase from David Tyack and Larry Cuban, who used it in a slightly different context). Whether you agree with the IDB’s findings on the OLPC project in Peru or not, the way its conclusions were arrived at, or indeed the nature of the inquiry altogether, reading the study and talking with its authors leaves me to ask if indeed we are being bold enough in the way we are thinking about the potential relevance of technology use in education. Perhaps it is unrealistic to think that truly new approaches to education are possible, at least within many existing education systems in many places, given well entrenched interests, pressing immediate needs, insufficient policy-relevant research to help make tough choices, bureaucratic inertia and the temptation to flit from reform to reform as a result of the latest academic fads or political expediency. Yet this is what excites so many people about the potential of new technologies. Given the massive price tags associated with large scale educational technology initiatives, it is hard to believe we aren’t being ambitious enough. But given the checkered history of so many investments of this sort around the world, if we aren’t being truly bold, it might be worth asking: Should we be doing this sort of thing at all?

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Note: The image used at the top of this blog post of students in Ferreñafe, Peru ("learning learning") comes courtesy of One Laptop per Child via Flickr and is used according to the terms of its Creative Commons Attribution 2.0 Generic (CC BY 2.0) license. (The OLPC Flickr pages are a great source of quality photos of children using technology around the world.)
8. Developing a national educational technology policy

by Michael Trucano & Carla Jimenez Iglesias
originally published on Friday, 30 March 2012

“We think we need to develop a national policy to help guide our efforts to use information and communication technologies [ICTs] in education. What should such a policy contain?”

This is a question we get not infrequently here at the World Bank. Sometimes this is in response to recognition that a country is about to spend a lot of money buying computers for schools, and there is a realization that there is no policy in place to help guide this effort. Other times it is a result of recognition that there has been no or little policy guidance in this area despite the fact that lots of money has been spent (for example) buying lots of computers for schools -- and this hasn't worked out quite as well as hoped. Some countries have had policies in place -- sometimes quite good policies -- and they are now looking to 'move to the next level', but aren't exactly sure what that means, and so are seeking outside input, especially because of the challenges and opportunities offered by new technological developments. (We see other scenarios as well, but will stop listing them now.)

There are a few ways to help answer such a question.

One approach is to help guide policymakers through a systematic, consultative process to formulate and policies related to, and plan for, the deployment and use of educational technologies, as part of a wider policy formulation and planning process that looks at broader developmental and education goals, and then seeks to investigate and articulate how and where the use of ICTs can help meet these objectives. This is a process that was (for example) followed as part of the World Bank's World Links program a decade ago, and which was extended and formalized through the development and use of the ICT in Education Toolkit for Policymakers,
Planners and Practitioners, which was supported by a number of organizations (and used extensively throughout Asia by UNESCO as part of its advisory work in this area). Of course, not all policy planning processes are as systematic and well laid out as that identified by the Toolkit -- many of them are, in practice, rather ad hoc.

**Another way to answer the question** (and these approaches aren't mutually exclusive) is to show people what other policies say, to the extent that you can find them. Whether systematic or ad hoc (or somewhere in between), there was input that seemed to us to be missing from pretty much every ICT/education policy development process in which we have been engaged. *Wouldn't it be useful if there was a comprehensive global database of ICT/education policies from which countries could find inspiration and establish useful benchmarks for their own related policies?*

This is not to say that there has to date been no documentation available, of course:

If you sit in Brussels or Berlin, Calgary or Canberra, you are probably well aware of the policy environments of other OECD countries and neighboring provinces. You might, for example, know of the good work of the European Schoolnet in documenting this area across the continent, have sat next to your counterpart from another country at a conference, or have stumbled across a copy of *Cross-National Information and Communication Technology Policies and Practices in Education*, which is the best and most complete compendium of its sort that we know of. (Despite this being about ICT policies, it is unfortunate to note that this is only available in hard copy -- not very useful if you live in a place where it is impractical to have it shipped to you.) You might also have easy access to academic journals where this sort of thing is discussed and analyzed -- as well as easy access to the people who are doing such discussing and analyzing. (Those working in the field of 'international development' may also be familiar with some of the good work in this area by groups like UNESCO and GeSCI.)

Even in some of the poorest countries of the world, we have found that people typically know about some of the leading 'best practice' examples from around the world, national policies that are lauded for their comprehensiveness, vision and directive value. Things like the National Education Technology Plan of the United States, or the various ICT/Education "masterplans" from Singapore, are often consulted and referenced around the world -- in part, we suspect, not only because
they are excellent policy documents (although they certainly are), but because they are so easy to find via major search engines, and, at a more abstract level, simply because these places are well known globally as leaders in educational technology issues. In addition, there are summaries available about the policy environments in a larger number of (mostly OECD) countries, even where access to the actual text of such documents is impeded because the actual documents themselves are not posted online, or are only available in a local language.

Just because something is considered a 'best practice' example, is easy to find online, or comes from an 'advanced' country, doesn't mean it is the most relevant (in whole or in part) to another country's particular circumstance or context, however. This is especially true for many middle and low-income countries seeking to benchmark their policies not only against what 'leading' or 'advanced' countries are doing in this area, but also what their neighbors, and countries 'more like them', are seeking to do. *What to do in such a circumstance?* Some countries have found that, if particular policies they find are not that relevant to their context, it might be useful to turn to seek the guidance of international experts on emerging consensus in this area. That said, this still tends to yield advice based on leading edge country examples. While the policy direction of countries like the U.S. or Singapore or South Korea or the UK may indeed typify or embody leading edge 'expert' thinking, this may not always be what is most needed, or indeed relevant, for less developed countries.

*What then, to do?* One way to proceed is simply to ignore international experience and forget about international benchmarks and just concentrate on local knowledge and local experience to guide efforts. Other options we have seen:

- Call an academic or identify a consultant based on her/his cross-country knowledge, especially one who has worked in this area before, and hire that person
- Open your favorite search engine and search for things like *ICT education policy* and see what comes up (and then use the resulting documents as sort of global benchmarks)
- Seek the assistance of an international organization (like the World Bank, UNESCO, the IDB, etc.) or, something we see happen more often in practice, a large vendor who supplies goods and services related to ICT use in education (while critics may ascribe ulterior motives to such actions, a
number of large multinationals actually do quite good work at the policy level in this area -- the two things aren't necessarily mutually exclusive).

All of these options may be useful, but we think they could all benefit from having some more source material.

*Side note:*

*With both World Links and the Toolkit, we found that the *process* of ICT/education policy formulation itself is at least as important as the result.* On numerous occasions, we found that consultations around the development of new policies were the first time that important decision makers from across key ministries involved in educational technology activities had actually met with each other (education, ICT, telecomm), and/or with some key civil society groups or firms active in the area. The networks of people and institutions that developed as a result of this consultation not only allowed for wider perspective, greater understanding of needs and capabilities across the system, and early buy-in from key actors, but also help smooth the way for things once they moved into the (inevitably messy) implementation process. It should perhaps go without saying -- but we'll say it anyway -- that the process itself also can prove to be an important mechanism for actually building capacity in this area among key decision makers, actors and stakeholders.

**So here's what we're doing:** We're building a database of all policies of this sort. (And plans too: Sometimes what is labeled a plan looks suspiciously like a policy to us, and vice versa, and in some cases the documents are one in the same. While respecting the difference between policies and plans, we find in practice that many times these sorts of things bleed together, and rather than try to make judgments about the difference, we figure it’s prudent just to collect things that carry both titles and then let the actual substance of the documents guide us.) **We have just released our latest attempt at a comprehensive list of ICT/education policies.** If you have a look at it, you'll note a few things.

**First, you'll probably note that we've missed something.** If so, please do let us know (either via the comments section below, the contact form on the EduTech blog, or via email or Twitter, if you are already in contact with us via those means). We make no claim to comprehensiveness -- although we do think this is the most comprehensive list available.
Second, you’ll notice that we’ve only listed the titles of documents, and that the documents themselves aren’t there. We actually do have full copies of everything on our list, but given that we are a large international public institution, simply uploading these to our web site has proven to be problematic. Some countries have said ‘that is only our draft policy, we haven’t published it ourselves, so you shouldn’t either’. (At the same time, we note to ourselves that it is actually the de facto policy guiding action, even if it only articulated in an unofficial way -- like a PowerPoint presentation or a page buried on a government web site -- or that it is already available on the Internet if you know where to look.) In some cases, we have been told only to show the most recent policy (we note that the policy environment of one country in 2004 may still be relevant to another country in 2012 -- in fact, it may be more relevant than the most recent version, depending on the context). Where there is no translation available in a major international language, we have had policies informally translated internally, but posting such documents can be problematic if they are not ‘formally’ endorsed by countries (a process which can take some time).

This may lead you to wonder why we don’t just then link to individual documents. We have found that these documents tend to disappear with regularity from the web, and that trying to maintain and up-to-date list of links was a huge task. If you know the document title, however, we expect that you can search for it and find it -- if it is still available (we do note that websites of ministries of education regrettably are not always terribly reliable in this regard).

Doing this alone isn’t enough to help a country posing the simple question at the top of this blog post, of course, but it is, we think, helpful. (Our #1 worst practice in ICT use in education, is, after all, 'simply provide access and then sit back and let the magic happen.' If only that worked!) The idea is, at a basic level, to surface source documents from a wider variety of countries. In other words, make available not just summaries of these documents, but the actual language of the documents themselves. (A quick note to those tech-savvy consultants who like to cut-and-paste from their previous policy advice and insert similar language into key documents as part of your engagement with another country -- this may make your actions a little easier to detect!)

This is only the start of a series of related types of work. We’re doing summaries as well, in addition to proposing a framework for analyzing such policy
documents, based on what the documents themselves actually appear to say (and
not just what we think is important). We'll also do some analysis. The idea,
however, is to break everything into pieces, so that what we're doing is
transparent. In other words, instead of just publishing 'recommendations', we want
to surface everything that we used to reach these recommendations (the data, our
analytical framework for understanding these data, the tools and methodologies we
use to analyze the data, and supporting analysis). The hope is that this will enable
others to do similar work as well, and perhaps reach different recommendations, if
they so wish -- or even do something quite different, drawing on the same
knowledgebase.

We are certainly cognizant of the fact that policy intent doesn't necessarily
translate into action, and that what's written on a page or communicated
in a policy speech can be unrealistic, or interpreted in different ways, or
even (gasp) ignored. Fair enough, but we do think trying to document intent
does have a value. Across the world, it has proven devilishly difficult in many
instances to assess the impact of educational technology projects. There are a
number of reasons for this. Complicating actions to gauge impact in many places is
the fact that we don't have rigorously obtained, globally comparable data on what
is actually happening, and about what people intended to happen in the first place
(something which policies can help identify, even if they are at times imperfect
proxies).

All of this is part of the World Bank's larger System Assessment and Benchmarking
for Education Results (SABER) initiative. The ICT/education policy work is one part
of what is known within the World Bank as SABER-ICT; we'll share information
about additional parts of this on-going work in upcoming blog posts.

Also of potential interest:
- GeSCI's list of ICTs in Education (ICT4E) Policies and Plans
  worldwide (August 2011) [pdf]

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Note: The image used at the top of this blog post ("lots of paper files on digital policies") comes via
Wikimedia Commons and is in the public domain.
9. How (not) to develop ICT literacy in students?

by Michael Trucano
originally published on Friday, 6 April 2012

In most cases, in most places -- at least in most so-called 'developing countries' -- the use of computers and other ICTs in schools is in practice focused largely on the development of what is commonly referred to or understood as 'ICT or computer literacy'. In fact, in many low and even middle income countries, professed needs to develop 'market-relevant' things like keyboarding skills, a basic understanding of how to navigate computer GUIs and operating systems and a general facility with standard office applications inform some of the primary justifications for the roll-out of computers in schools.

In some such places (case #1), once you have become 'proficient' in using (e.g.) a word processor, the promotion of the development of 'ICT-related skills' stops. (You are now 'computer literate': Time to move along!)

In other places (case #2), there is no shortage of lofty rhetoric around the need to develop '21st century skills' through the use (in part) of ICTs, but if you look at how the equipment is actually being utilized, the reality of ICT use in case #2 is not terribly different in practice than what one sees in the first case.

That said, some people think that way basic ICT literacy is being promoted within many 'digital divide' initiatives in the education sector may over time actually impede progress toward the development of higher order ICT-related skills. This points to a phenomenon associated with the so-called 'Second Digital Divide' (related EduTech blog post), which (in the words of the OECD) "separates those with the competencies and skills to benefit from computer use from those without". For such people, a focus on developing only basic ICT literacy,
1. treats the use of computers as a technical or vocational skill, not linked to core educational practices;

2. requires that lots of 'computer teachers' be hired, and these folks dictate the culture surrounding computer use in schools -- and often control the keys to the computer labs, crowding out or limiting use by students and teachers for core academic subjects or learning activities;

3. diverts attention and funding that could more profitably be used to explore utilizing computing facilities to develop higher-order learning skills and competencies; and

4. is considered increasingly passé in most OECD countries, which find that basic ICT skills, where they are not developed outside of school, can often be most efficiently acquired in the course of using computers to support specific learning objectives in core academic subjects.

There is a great deal of merit to such arguments, but context is king: What works in one place (or time) in this regard may not work so well in another. This is not to say that vocational computer-related training is always a waste of time (certainly not!) nor to assume that children do not need to learn how to perform basic tasks with a computer.

While the term itself has fallen out of favor in certain circles, the 'digital divide' is quite real in many places around the world, and in some ways, is perhaps even larger than before, given how quickly some groups have moved ahead, while others haven't moved at all. In circumstances where kids and their teachers have never used computers before, an initial focus on developing basic ICT literacy skills may well be the best course of action. But is this really enough?

In some places the answer may well be "yes" -- but only for the time being. Successfully rolling out a computer literacy initiative in places where teachers and students have never seen or touched a computer before is often an important accomplishment in itself.
(Side note: I do recognize that 'ICT literacy' and 'computer literacy' can and perhaps should mean different things, but in my experience at a working level, these terms are used interchangeably in many developing countries, for better or for worse, and so I will not draw any lines between them here. The term digital literacy is used in some quarters, especially in OECD countries, to go beyond the basic skills that often are at the heart of 'ICT literacy' programs in schools in many developing countries.)

Where simple exposure to computers is an important and worthwhile goal of such a program, it of course helps if there are actually computers at hand! I have been in schools in numerous countries where I have observed students in a 'computer' or 'informatics' class where there were actually no computers in the room. In one memorable case, children were learning 'how to navigate an operating system environment' by reading about it in a book; in another, students were taking a multi-choice test about what types of actions required a single click, and in what instances you should double click with your mouse.

Even where computers are (arriving) in schools, and basic exposure to ICTs for students and teachers unfamiliar with them is considered a relevant policy objective, are PC-centric basic 'computer courses' really appropriate in places where likely usage scenarios for ICTs going forward do not involve someone sitting at a desk, but rather using a mobile phone or -- soon -- a tablet device? An interesting question.

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Even where they concede the need to rapidly develop basic ICT skills, some folks feel that devoting the use of computers in schools primarily to promote 'ICT literacy' inevitably tends to crowd out other uses of ICTs, and that desires to develop skills that conform to narrow definitions of 'ICT literacy' (i.e. basically the mechanical stuff -- opening a document, word processing, etc.) can often be met by utilizing ICTs in other ways. Might it be better, they ask, to help students develop their 'computer skills' as a natural by-product of ICT use as part of other learning activities?

This is not to say that ICT literacy programs are not worthwhile. Far from it: The ICDL, the IC3 -- these sorts of programs can have very real value in many circumstances and are useful benchmarks against which indigenous ICT literacy
programs would do well to measure themselves.

That said, even in places where instruction in the most basic computer literacy skills is considered appropriate, the need to develop such skills may wane over time. *What do you do with the computer labs meant to teach older kids 'ICT skills' when it turns out they already have them?* One response is that, as ICT use becomes more prevalent across societies, 'computer literacy' initiatives are often pushed to lower and lower grade levels. In other places, there is essentially no recognition that children are picking up basic skills outside of school environments (or are picking them up much more quickly within schools than the curriculum foresees). I have visited many 'informatics' classrooms around the world where kids are 'instructed' on how to operate (e.g.) word processing software, how to operate in Windows environments, etc. (often times with artificial exercises not linked to assignments in their other subjects) and then when I speak with them later, I find that they are doing much more 'advanced stuff' with technology outside of school.

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One commonly reported result of studies attempting to gauge the impact of technology use in education is that ICT use 'increases student motivation'. *But what do you do when kids are bored in their 'computer class'?* This is a question that many places are asking themselves.

Back in January, while attending the BETT Show in London, I sat in on a very interesting speech where it as announced that the country's existing ICT curriculum was to be scrapped, due in part to criticisms from industry. Afterwards I had a chance to speak with a number of education ministers from developing countries who were in the room and who were very surprised by this announcement. *The British are discontinuing the very thing we are about to introduce, one said. Are we doing the right thing?*

The answer to this question may well vary depending on where you find yourself, and your time horizon. But it is certainly a good question to be asking.

[This is a sort of companion post to School Computer Labs: A Bad Idea?]

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Note: The public domain image of famed British actor David Garrick as Hamlet ("to teach, or not to teach, basic ICT literacy?") comes via Wikimedia Commons.
10. Ten things about computer use in schools that you don't want to hear (but I'll say them anyway)

by Michael Trucano
originally published on Friday, 13 April 2012

At an event last year in Uruguay for policymakers from around the world, a few experts who have worked in the field of technology use in education for a long time commented that there was, in their opinion and in contrast to their experiences even a few years ago, a surprising amount of consensus among the people gathered together on what was really important, what wasn't, and on ways to proceed (and not to proceed). Over the past two years, I have increasingly made the same comment to myself when involved in similar discussions in other parts of the world. At one level, this has been a welcome development. People who work with the use of ICTs in education tend to be a highly connected bunch, and the diffusion of better (cheaper, faster) connectivity has helped to ensure that 'good practices and ideas' are shared with greater velocity than perhaps ever before. Even some groups and people associated with the 'give kids computers, expect magic to happen' philosophy appear to have had some of their more extreme views tempered in recent years by the reality of actually trying to put this philosophy into practice.

That said, the fact that "everyone agrees about most everything" isn't always such a good thing. Divergent opinions and voices are important, if only to help us reconsider why we believe what we believe. (They are also important because they might actually be right, of course, and all of the rest of us wrong, but that's another matter!) Even where there is an emerging consensus among leading thinkers and practitioners about what is critically important, this doesn't mean that what is actually being done reflects this consensus -- or indeed, that this consensus 'expert' opinion is relevant in all contexts.
An *EduTech blog post* from last year, for example, identified a dilemma faced by many Caribbean countries: They are putting lots of computers into schools. Consistent with what is considered 'best practice' from around the world, policymakers in the region recognize that providing more training and support for teachers is crucial if the investments in technology are to have real impact. But if teachers are better trained, many may emigrate in search of better paying teaching jobs in other countries. *If this is the case, what is a policymaker to do?*

*Examples like this do tend to complicate some of the 'expert' opinion that is congealing into conventional wisdom. ("When my information changes, I change my opinion. What do you do, Sir?" famously asked economist John Meynard Keynes.)*

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The comments below are adapted from a presentation I put together for senior policymakers in a developing country who have high level oversight of the use of technology in thousands of schools. Complemented by a separate discussion about *worst practices* in ICT use in education, there were meant to be provocative, and to serve as a springboard for subsequent discussion and debate. They may or may not be useful or relevant to the people who read this blog (especially those with a lot of experience using ICTs in schools over many years), but I thought they potentially were relevant to the group with which I was speaking. To the extent that they might be of any interest to others, here are:

**Ten things about computer use in schools that you don't want to hear**

*(but I'll say them anyway)*

**1. Computer labs are a bad idea**

In most places I visit, putting all (or most) of a school's computers into a special 'computer lab' is seen as the obvious thing to do when a school is being 'computerized'. This may seem obvious ... but *is it really a good idea?*

The trend in industrialized countries has largely been away from computer lab-centric models for educational technologies. One reason for this is quite practical --
the computer labs are already full of computers, and if you want to buy more of them, you need to put them in other places. Fair enough. There is also a recognition, however, that if you want computers and other ICTs to contribute directly to impacting the learning process in core subjects, you need to put them where core subjects are being taught -- like in the classroom. The move toward 1-to-1 computing, where each student (and/or teacher) has her own dedicated laptop, can be seen in some ways as a further extension of this belief.

This is not to say that school computer labs are a bad idea. Or, for that matter, that they are a good idea. Rather, it is to argue that, where the decision is made to invest in them, it should be for the right reasons -- and not just because "that's what everyone else seems to be doing (or did in the past), so we should do it too".

2. **ICT literacy classes are a bad idea**

Why do you need to put computers in schools? So that kids can 'learn how to use computers'. How do kids best learn how to use computers? By deliberately being taught their basic functions as part of a special 'computer class'. Right?

Some people don't think so, and contend that using ICTs primarily to build 'ICT literacy' tends to crowd out other educational uses of the technologies, and that desires to develop skills that conform to narrow definitions of 'ICT literacy' (i.e. basically the mechanical stuff -- opening a document, word processing, etc.) can often be met by utilizing ICTs in other ways. Might it be better, they ask, to help students develop their 'computer skills' as a natural by-product of ICT use as part of other learning activities than to 'teach' them, for example, how an operating system works and how to use basic office productivity applications? Of course local context is important here: What works in one place (or time) in this regard may not work so well in another. This is not to say that vocational computer-related instruction is a waste of time. Certainly not! (Although it may be worth asking what extent basic 'computer courses' are really appropriate in places where likely usage scenarios for ICTs going forward do not involve someone sitting at a desk, but rather using a mobile phone or -- soon -- a tablet device.) Nor is it meant to imply that children do not need to learn how to perform basic tasks with a computer. But there is more than one way to accomplish the task of making students 'ICT literate'.

3. **Don't expect test scores to improve**
Most 'research' studies I receive from vendors tout a marked, immediate positive impact on test scores as a result of their product or service. Precious few of these, at least in my experience, stand up to much scrutiny.

(Quick side note to vendors: I look at the methodologies used by your researchers before paying any attention to your conclusions. The more open you are about how you have come to your conclusions, and what the limitations of your reasoning may be, the more interested I will become.)

While acknowledging that there are some good studies out there that do show a (modest) improvement in test scores as a result of computer use in schools, I don't think much has changed since infoDev's Knowledge Map on ICT use in education contended that "impact of ICT use on student achievement remains ... open to much reasonable debate".

My goal here isn't to revisit or summarize the 'reasonable debates' in this area. Instead, I would like to turn things around for a second. Where there has been compelling evidence of improvement in test scores, it may be worth asking: Are these bad tests? We have known for decades how useful 'computer-aided instruction' can be in promoting the rote memorization of facts. 'Drill and kill' is the derisive term some use to describe the use of computers as little more than digital flash cards. In some cases, the use of 'drill and kill' educational software may indeed be the most 'effective' use of ICTs in schools, especially where rote memorization and regurgitation of facts is what is currently tested in national assessments. Just because something is expedient doesn't mean it is a good idea, however.

Now, I am not against flash cards per se -- they certainly have their utility in some instances and contexts. (When I was learning Chinese I found them invaluable when trying to recognize common characters, for example, and three minutes using simple flash card mathematics apps on my phone with my son can serve as a useful diagnostic, providing me with quick insight into what concepts he may be having trouble with.) That said, essentially building an entire (expensive) roll-out of educational technology around the use of high tech flash cards ... well, that seems to me to be missing most of the potential power of what the technology can do. I expect that few people will disagree with what I’ve said here at a conceptual level. That said, I challenge you to look at how computers are actually being used in your schools.
These days, the rhetoric around computer use in education is often that computers can be used to help develop sets of '21st century skills' (variously defined). Few examination systems, however, do a very good job in testing these sorts of skills. If your rationale for putting computers in schools is to develop these sorts of 21st century skills, but your examinations don't test for them, don't expect test scores to improve.

(I'll also note parenthetically that, if you are moving more and more of your instructional and learning activities into the 'digital realm', but you are still testing your students using traditional pencil and paper exams ... well, you may also want to take a step back and reconsider some things.)

4. What students do outside the classroom with technology is more important than what they do inside it

"Technology is revolutionizing education everywhere but in the classroom" – so goes a saying quite popular in many education and ICT communities. Just because it may have past into cliche in some circles doesn't mean that it isn't true. While a review of research about the impact of ICT use in schools on educational outcomes around the world is decidedly mixed, results from the OECD research investigation of New Millennium Learners proposes (while controlling for things like income levels, etc.) interesting correlations between technology use outside of school and impact on learning. We shouldn't confuse correlation with causation, of course. That said, to what extent are you aware of how students are using technology outside of school, and using this information as an input to your decisions about how it is meant to be used in support of the formal learning processes in which your schools are engaged? If you are not doing this now, your calibrations for how technology is 'best' (and most cost effectively) used in schools may well be off the mark.

5. Digital citizenship and child safety will become an important part of what schools teach

You may say that this something you agree with. Why don't you want to hear this, then? Because few of you are doing it now -- or preparing to do it in any impactful way. Yes, in many instances, filters have been installed on school servers to keep kids 'safe', and laws have been established to help 'protect kids from online predators', but 'keeping kids safe online' is not just about insulating children from
threats and vigorously prosecuting those who seek to do them harm. Schools are particularly well placed to help teach children to better identify and evaluate the various types of risks they may face when going online, and how to deal with them. This is especially true in communities where computers are not available in all homes, but are increasingly to be found in schools, connected to the Internet. At the same time, the proliferation of mobile phones and Internet cafes means that young people are increasingly operating in two separate digital worlds - that of the controlled environment of (for example) a highly policed school computer lab, where 'digital literacy' often means instruction in basic word processing applications, and the 'anything goes' context of private Internet kiosks and personal mobile phones, where the knowledge, skills and attitudes necessary to navigate through one's 'digital life' are much more difficult to acquire. *Might education systems have a role to play here beyond teaching basic 'computer literacy' and filtering objectionable content?*

**6. Most kids aren't 'digital natives'**

One of the arguments often connected to discussions about technology use in schools is that 'children today are *digital natives*, and schools need to connect to them differently as a result'.

Proponents of this line of thinking contend that a *new generation* of young people have developed a set of attitudes and skills as a result of their exposure to, and use of, ICTs. While we have all observed (certain groups of) young people as they (for example) quickly explore how a device's menu'ing system works, how to turn on unfamiliar gadget, or 'intuitively' discover the rules of the way a particular piece of software or hardware 'works' without being so 'instructed', we may do well to resist the impulse to extrapolate from such observations that *all* (or even most) children magically know how to use technology successfully and ethically in support of their own learning.

While the digital natives hypothesis is compelling in its simplicity, academic research in this area is painting a picture that is much more differentiated and nuanced than popular opinions that, when it comes to technology, kids naturally "get it". Quickly learning and demonstrating a mastery of the mechanics of a particular process or use of a given technology (posting to Facebook, for example, or playing a video game one has never seen before) shouldn't be confused with a mastery of how to successfully use various technology tools with which young
people come into contact in ways that are relevant to their own lives and communities.

It is one thing to be able to 'find' a 'fact' using a search engine. It is something else entirely to find the most relevant facts, and then successfully analyze and evaluate these 'facts' and their relevance to a particular task at hand, synthesizing this relevance and sharing the results of this processes with other to result in some sort of particular action or response. The first demonstrates familiarity with a particular process, the second forms a fundamental part of many people's definition of 'learning'.

7. You will never 'catch up' (technological innovations will always outpace your ability to innovate on the policy side)

Education systems are often one of the most conservative institutions in a society. One thing I often hear from policymakers is that they feel 'far behind' when it comes to considerations of technology use in education. My response to this may not be very comforting: You never will catch up, you will always be behind.

Now, I must admit, this is said a little bit for effect (there are of course many educators who are at the cutting, if not the bleeding, edge of technology use), but at a certain point, it might be more useful to change your perspective than to look back fondly at the 'good old days' when technology was not such a continually disruptive force.

I don't mean this to imply that policies (nor the policymaking process, given that the process of consultation around policy formulation can perhaps be as important as the resulting policy that results) related to the use of ICTs in education have no value. Of course they do. Articulating some sort of principle or rule to guide decisions (which is a basic definition of what a policy is) is quite important, I think, even in areas that are fast moving, like those related to technology. (Some may argue, in fact, that it is *especially* in areas that are fast moving where policy direction can be most helpful in many regards.) While it is important to acknowledge our limitations here, saying we will never catch up doesn't mean we shouldn't try -- and the way we frame our policies just might help us as we try to do so.

(A parenthetical note of caution: In some cases, where education systems have made a bold move to be 'visionary' and anticipate future trends, they
have found that the abilities of some of the most senior officials to serve in
effect as technology prognosticators has, to be charitable, left a little to be
desired. Buying into technologies and/or philosophies at scale that are
‘experimental’ -- especially those that are closely tied to a proprietary
standard and/or single organization or vendor -- can leave education systems
quite exposed if things do not work out exactly had been originally
envisioned. One of the truisms of investments in technology is that things
rarely proceed as neatly as planned.

8. 'Cheating' may well increase
Wherever computers and the Internet are introduced into schools for the first time -
- whether this in a suburban Canadian school in the 1990s or a rural school in
South Asia in the 2010s -- run-of-the-mill 'copy-paste plagiarism' invariably sky
rockets, and other, more inventive ways to cheat are subsequently discovered and
put to use by students (a process enabled by the willingness of some to freely
share their related 'expertise' via the Internet.) This is an issue that, in my
experience working with education officials in high, middle and low income
countries alike -- and almost without exception -- grows in importance over time as
a preoccupation of policymakers charged with oversight of ICT/education issues
within education systems.

9. Like it or not, mobile phones (and other mobile devices like tablets) are
coming (fast)
Yes, 'mobile phones' (or whatever you choose to call the little handheld devices that
have more computing power than what sat on the desktops in computer labs a
generation ago) may not be able to do what it is possible to do with a PC connected
to keyboard and large monitor. But they are the technologies that are increasingly
to be found in the pockets and pocketbooks of people around the world.

This is not to say that students should not have laptops. Nor that they should not
have interactive whiteboards, or _____ [insert name of another technology device
here]. The technology choice should flow from a consideration of a lot of things
(what's available, what's affordable, what's usable, what's appropriate, and most
importantly: what's relevant for a particular learning or developmental objective).
Yes, mobile phones may well be 'digital distraction devices' today in most
classrooms. (Talk to a teacher in a room with 30 students with laptops -- she
might well say the same thing about those devices, with kids instant messaging
each other and sneaking in quick trips to Facebook and check sports scores.) That
said, educational policymakers who do not include the use of mobile phones and other mobile devices like tablets as part of their future considerations of technology use in education are, in many ways, driving forward by looking in the rear view mirror.

10. ______
I have deliberately left #10 blank as an acknowledgement that there is much more 'conventional wisdom' related to the use of ICTs in education that could perhaps be challenged. I also do it as an acknowledgement that my knowledge of the specific contexts of technology use in education, and among young people, pales in comparison to your knowledge of how ICTs are used in your own country or community. There are a lot more things I could share on this topic, but I expect that, given your experience and expertise in this regard, you may wish to share some of them based on your own experience. Please feel free to do so [below].

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OK, so that's my list. You may not agree with all of my points. (To be honest, I may not agree with all of them, at least not 100%.) The purpose in presenting them is to provoke some different thinking around and approaches to some of these issues discussed.

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Note: The public domain image of one of the three monkeys at the famous Tōshō-gū shrine in Nikkō, Japan used above ("I don't want to hear this") was adapted from a picture on Wikimedia Commons taken by Frank "Fg2" Gualtieri.
When people think of projects around the world to blanket schools with low cost laptops, initiatives associated with the One Laptop Per Child (OLPC) project often spring first to mind. On a country level, it is the example of Uruguay that is probably most drawing attention from around the world from people interested in learning about how exactly a country can go about providing computing resources to all of its students, and what might happen as a result. Indeed, Uruguay is increasingly a 'must visit' stop for education officials from countries planning for massive investments in technology use in their education systems for the first time, as well as from more 'advanced' countries who have not moved forward as quickly as has in attempting to utilize ICTs to transform the way educational activities are delivered and empower students and communities in new ways. (Just last month, the World Bank sponsored delegations from Armenia and Russia to visit the Plan Ceibal headquarters in Uruguay and learn firsthand about the Uruguayan experience from those who have been leading it.) There is another country whose experience is less well known around the world than Uruguay's, but which is every bit as interesting, but in many different ways: that of Portugal.

In many ways, Portugal offers some potentially useful models and lessons for less developed countries seeking to quickly 'computerize' their education systems. While part of the European Union, its per capita GDP is, according to recent data from the IMF, currently slightly lower than that of Barbados, and only a generation or so ago it perhaps had more in common (from an economic development perspective) with a number of emerging middle income countries than it did with more affluent EU member states like Germany or
France. *In other words*: Portugal is no longer a 'developing country' -- but it wasn't so long ago that it was. This makes it perhaps a more relevant potential model for many emerging economies seeking to quickly introduce ICTs in education at scale than places (like the United States, Canada, Australia, Sweden, the UK and South Korea) which have been traditional 'ports of call' for ministries of education seeking practical insights and know-how about what to do (and what not to do), and what the related impact might be.

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Next week the World Bank will host an event in DC open to the public meant to showcase how Portugal provided every student with a laptop, connectivity, and free educational content -- and what has happened as a result. (For more information about this event, which will take place in the late afternoon on Thursday 10 May, please see the related event web page. The event is free, but space is limited, and an RSVP is required.) Over the past decade, Portugal has rolled out an ambitious, far-reaching set of related initiatives to:

- invest in a *comprehensive program for educational 'transformation'* to help improve education through the widespread introduction of new technologies, low-cost laptops, broadband connectivity, educational content, and related training and support

- create a local, sustainable *economic model to fuel local job creation in local IT industries* and expand international trade opportunities

- explore *new sorts of public-private partnerships* to help lower the costs of acquiring and sustaining new technologies across broad segments of Portuguese society

The potential for the introduction of a variety of new technologies to help improve education has been long recognized, but the history of such investments around the world has been decidedly mixed. Few countries have moved as quickly -- and comprehensively -- as Portugal in its efforts to provide all students with laptops, connectivity, and free educational content as part of a larger initiative to help fuel economic development and transform society.
So what has actually happened in Portugal? Perhaps the most immediately visible effort over the past half decade or so has resulted in about a million and a half 'Magellan' laptops being distributed to students. While the hardware inevitably tends to get the most attention in press reports about educational technology initiatives (and to anticipate the inevitable question: in this case, it is a re-skinned Intel Classmate -- sort of like what has been used in Georgia), perhaps even more notable has been the broadband connectivity and free educational content that has been rolled out in parallel (with related training and technical support part of the package as well).

A follow-up blog post (with lots of links to more information) will go into greater detail about the actual mechanics of what has happened (and is happening) in Portugal, informed by new information that will be released at next week's event, and in a World Bank-sponsored case study that is under development.

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The first question that is asked by the sorts of folks who work at the World Bank when they hear about initiatives like what has been rolled out in Portugal (and in places like Uruguay and Peru) is: What is the impact of this sort of thing, and how should we be measuring it? Many leading voices that have emerged from the Portuguese experience point to an OECD study (PISA 2009 Results: Students On Line. Digital Technologies and Performance) that showed remarkable progress by Portuguese students in a number of areas during the period in which the massive roll out of laptops, connectivity, educational content and related training occurred. I am reflexively skeptical of claims to equate large (and fast) positive improvements in learning outcomes of various sorts to the introduction of new technologies (correlation is not causation, after all), especially given how complicated the whole activity of 'education' is and how delayed the impacts can often be. This is not to say that such claims are not to be believed, just that they are worth additional rigorous scholarly attention, I think, before we can credibly draw any hard conclusions in this regard. (Flipping things around: It is perhaps notable that Portugal did not -- at least judging by the OECD study -- see a notable drop in student achievement during the time that computers were introduced in a massive way in schools; given the related disruptions that usually accompany such activities, this is a phenomenon that has marked some other educational technology initiatives in other places.)
It is a mistake, I think, to judge the success or failure of what has been happening in Portugal based on what has been happening in the classroom alone. (This -- or better stated, the impact of the use of technology on student learning, behavior, attitudes and ambitions, inside and outside of the classroom -- is my primary interest in such things, but there are lots of other legitimate impacts that one can seek to investigate and measure.)

When speaking with many colleagues who work in education, I often find that the potential impact of educational technology initiatives on larger economic development activities is downplayed (or even, in some cases, dismissed). The 'dirty little secret' of large scale educational technology initiatives in many places is that they can sometimes be more about the development of a local tech industry as they are about what actually happens in the classroom. About two years or so ago, I started to notice that, when traveling around the world to participate in events and meetings related to educational technology issues, I was regularly bumping into representatives from Portuguese firms marketing their goods and services, especially representatives from the industry consortium that was at the heart of the public-private partnership that Portugal has used as an implementation mechanism for the various initiatives laid out in its national technological plan for education [warning: link is to a very large PDF file]. This was rather new to me -- I have worked on educational technology issues for about 15 years around the world, but had never before run into a Portuguese company. Now I run into them frequently, and take the opportunity to pepper them with questions about the Portuguese experience, and how they are finding this compares and contrasts with what they are learning in other places as they 'go abroad'.

In speaking with many countries who have grand plans to quickly introduce lots of new information and communication technologies for the first time in their education systems, one of the first questions that is usually asked (after the inevitable "which gadget should we buy?") is: How are we going to pay for all of this? In Portugal, government used proceeds from the auction of wireless spectrum to help fund things, and strategically engaged with the local private sector to help share costs and spread risk. The scale of the public-private partnership in Portugal in this area is rather unique, I think -- I know of no comparable activity in another country against which to benchmark Portuguese experience. Exploring just how this partnership worked in Portugal (and where or how it didn't, or hasn't) from a practical perspective is one of the objectives of an upcoming World Bank case
study, and something that will be featured at next week’s eEscola event at the World Bank in DC.

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One of the remarkable features of what happened in Uruguay is that Plan Ceibal continued with little/no interruption when the government changed. In some other countries, ambitious educational technology projects are all but abandoned when the party or coalition in power leaves office -- this is especially true when announcement about 'shiny new computers for kids' were as much about making political promises as about doing something fundamentally useful for students, teachers and schools. It will be interesting to see how this plays out in Portugal. In many quarters, the ambitious recent educational initiatives there were closely identified with a previous government (have a look at the comments section in response to this blog post to get a sense of some of the related passion and rhetoric), but it is notable that the project itself has largely continued (so far) despite the change in power. Most of what has been written for international audiences in languages other than Portuguese about the Portuguese experience occurred when various initiatives were originally announced. To date there has not been much written for international audiences about what has actually happened since these announcements, but this is now beginning to change.

It is not only countries like Portugal and Uruguay (and South Korea -- another country that the World Bank monitors quite closely) that will be interesting to watch going forward. New, high profile large educational technology initiatives in places as diverse as Argentina and Thailand and Turkey are starting to draw international attention as well. Whatever the future may hold for such programs, the time is ripe to pay attention to learning from them right now. Lots of other countries appear on the verge of embarking on similar types of large scale efforts to 'transform' their education systems with the help of large investments in educational technologies, and the few examples we have of how to do this in practice -- and, perhaps just as importantly, how not to do it -- offer great potential to inform the way related grand ambitions expressed in high profile speeches and presentations translate into concrete realities on the ground.
Portugal's eEscola Project

How one medium-sized European country provided every student with a laptop, connectivity, and free educational content -- and what has happened as a result

10 May 2012
4:00 - 5:30 pm (reception to follow)
World Bank Executive Gallery
12th floor
The World Bank
1818 H St., NW
Washington, DC

event page (rsvp to WBeducation@worldbank.org)

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Note: The picture of famed Portuguese explorer Fernão de Magalhães ("Magellan is not the only famous Portuguese export these days") comes from the Biblioteca Nacional de Portugal via Wikimedia Commons. It is mashed up with an image of a speech bubble also obtained via Wikimedia Commons. Both images, and the resulting mash-up, are in the public domain.
12. Textbook policies in an increasingly digital age

by Michael Trucano
originally published on Monday, 14 May 2012

The World Bank is revising its Operational Guidelines for Textbooks and Reading Materials [pdf]. Commonly referred to as our ‘textbook policy’, this is a guidance document for our ‘clients’ and partners in ministries of education and finance, our own staff and (to a lesser extent) broader stakeholder communities interested and involved in the development, procurement, dissemination, and assessment of the use, of learning materials (especially within the context of World Bank-funded projects in the education sector).

The current policy dates from 2002. My first reaction when I heard that the World Bank would be revising its “textbook policy” was to the term itself. In 2012, surely we should be thinking beyond just 'textbooks', more broadly encompassing a wide variety of educational resources than the traditional conception of a printed book landing with a thud on the desk of a student? Despite regular proclamations from certain quarters about the impending ‘death of the printed book’, printed textbooks – especially in the developing countries where the World Bank is active -- aren’t going away any time soon. That said, there is no doubt that the landscape of and business climate for ‘educational publishers’ is changing radically in much of the world, and that this change is being fueled in large part by the increased distribution and adoption of a variety of disruptive technologies, which are increasingly to be found in schools and local communities, even in some of the poorest.
How might, or should, a new World Bank ‘textbook policy’ be relevant and useful in such a world going forward?

How narrowly – or expansively – should it consider its guidance related to learning materials?

To what extent should such a policy attempt to signal or highlight the potential relevance or importance of certain trends, approaches or perspectives – especially as they relate to the emergence of a variety of new technologies?

In the past, World Bank policies in this area have often been conceived to help inform the procurement of printed textbooks under World Bank education loans to countries. This is perhaps not surprising, given the outsized role that the World Bank and other international donors have played in financing the provisioning of textbooks in many countries around the world. While this sort of thing will not disappear any time soon – the current World Bank education project in the Philippines is one noteworthy example of current World Bank support for large scale textbook procurement -- one presumes that, for a variety of reasons (including more direct budget support), the Bank may be doing less targeted lending to countries to help them buy textbooks in the future, but that the institution’s role in providing technical assistance to countries as they attempt to navigate a changing landscape may become more pronounced. As/If this change occurs, it will be interesting to see if there is a related transition from considering textbooks as a one-off, large scale procurement exercise (which is how some critics characterize donor activities in this area, rightly or wrongly, and perhaps a bit simplistically) to more strategic considerations of the provision and use of learning resources as integral components of an on-going process (both within the education system to promote learning and discovery in various ways, and from an economic development perspective as well).

Given the changes that have occurred over the past decade, and a presumption that many more are to come, the current World Bank textbook policy document, which mentions technology-related issues to a very limited extent -- almost as an aside and largely when talking about ‘distance learning’ -- may seem to some observers to be (bluntly speaking) more an historical artifact in many places than something of relevance to the increasingly crowded space where ‘education’ and ‘technology’ meet and overlap. This is not to say that there is nothing from the
2002 document that is relevant today. Far from it! For the most part, the components of the general ‘statement of operational guidelines’ that begins on the first page of the current document remain as relevant in 2012 as they were a decade ago. The importance of textbooks and reading materials for education; of having an affordable, sustainable supply system; of involving the private sector and promoting choice and competition; of ensuring that there is equitable access to materials and that cost should not be an obstacle for poor students; of local language instructional materials; and of promoting transparency in purchasing decisions and respect for intellectual property, etc. – these sorts of things seem to me to remain quite reasonable high-level guidance for any policies and practices in this area going forward.

Once you get beyond such statements of high level principles, however, the current policy offers little to no practical guidance useful to help answer many of the sorts of questions I receive regularly from ministries of education. Things like:

- How do we develop and maintain an online national educational portal featuring digital learning materials?
- How can we make sure that our content is available on as wide a variety of devices as possible – and which devices will be the most important for us to consider in our purchasing decisions?
- We have announced plans to buy lots of tablets for our teachers and students – what sort of content should we develop for such things? (And what about things like dedicated e-readers – and mobile phones?)
- Korea has announced its intention to move to all digital textbooks by 2015 – how are they (and others) going to do this in practice, and should we be thinking about doing something similar?
- What role should social media play in our strategies and policies around educational learning materials?
- How can we promote the development of a vibrant digital media industry?
- Should we consider adopting, or promoting, the use of open education resources?
- Given that teachers and students have access to millions of education resources on the Internet, how should we consider the use of such materials, and how should this influence our learning content strategies?

These are just a small sample of the types of questions related in some way to ‘digital learning materials’ that I have received from ministries of education over
the past year. In addition to these sorts of queries, I note that I often find that many of (what I consider to be) the most important questions are initially not asked, and so I usually try to introduce into such discussions sets of questions related to topics like intellectual property, piracy, the differences in working or partnering with technology firms compared with old-line publishers, ‘digital safety’, user-generated content and other themes that either are not currently on the radar screen for such groups (but should be) or are beyond the scope of how ministries of education often (narrowly) approach the topic, based on how things were done in the past.

I have never worked on a ‘textbook’ project per se, and so have little substantive advice to offer the World Bank team preparing the new guidelines related to the production or dissemination of textbooks the ‘old-fashioned way’. That said, since joining the World Bank fifteen years ago, I have been quite active in dozens of projects (and an eager observer of scores more) that have sought to fund, develop, introduce, sustain, monitor, and evaluate digital learning resources of various sorts in low and middle income countries. I have also participated in various activities related to the theme more generally in sets of ‘advanced’ countries, including being part of the OECD team that eventually produced Beyond Textbooks: Digital Learning Resources as Systemic Innovation in the Nordic Countries, which looked at a set of countries consider by many to be at the frontier of thinking and practice in this regard. With that in context/perspective in place, and it case it might add anything to current debates and discussions that are occurring as a result of the World Bank’s announcement that it is revising its ‘textbook policy’, I thought I’d offer, in no particular order and with no pretensions to comprehensiveness,

Ten comments related to digital learning resources of potential relevance to the development of the World Bank’s new guidelines for textbooks and reading materials

1. Procurement decisions can promote – or inhibit – the development of competitive, innovative, sustainable local digital educational publishing industries

In many lower income countries (especially in Africa), educational publishing makes up over 90% of the overall publishing market. In places where disposable income is at a premium, and where the culture of buying books is not well ingrained, the health of the local publishing industry largely depends on procurement processes in the education sector. To the extent that you believe that education systems – or
more broadly, opportunities for personal learning and growth in general – are well
served by having vibrant, dynamic local publishing markets, is it worth considering
how the way government tenders for textbooks impact such markets? (Some
governments may decide that this is not important, and prefer that only
government publish educational materials for use in government schools – that is
another case entirely, and one that I am not trying to address here). There are
potentially some very real tensions in many places between the desire for an
education system to acquire educational content at the lowest price per pupil while
at the same promoting the development of competitive local markets and
educational publishing ecosystems that can help best support the needs of an
education system, as well as the needs and desires of individual learners, over
time. Does lowest cost in the short run equate to lowest cost in the long
run? Where a large tender for textbooks run for (for example) a period of five
years, and this is the only large scale tender of consequence in a given market,
might this not damage the prospects for a diverse set of competitive local actors to
develop and strengthen over time? If the ‘losers’ can not afford to stay in business,
leaving only a few ‘winners’ (or in the worst case, only one), how might this impact
the provision of educational materials over time in a given place?

The links between the health of local publishing and local tech industries appear to
be growing in many places. Where a country is actively promoting the
development of local technology firms and vibrant, competitive local industries (in
both technology and publishing), while at the same engaged in procurement
processes in the education sector that are potentially at odds with such goals, are
there any useful models to consider to help meet both objectives? In some places,
for example, large procurements are broken into many smaller pieces (I have heard
this referred to as ‘micro-procurements’, but I assume there is actually a specific
term for this) as a way to foster industry development while at the same time
meeting the more immediate needs for low-cost, high quality educational content
(digital and traditional). I don’t know how this sort of thing works in practice, and
what trade-offs it might entail. I do know that, where donor money is involved,
procurement activities can often be very complex, and there is an understandable
desire for countries to lump as many things together as possible into large tenders
so as to help ‘lessen the pain’, as it were. Is this the right approach, and if not,
what other options might there be?
2. Partnerships – international/local, publishers/tech firms – are increasingly important
In speaking with both technology firms and publishers, international and local, I have noticed the extent to which partnerships of various sorts seem to characterize emerging markets for digital educational materials in many low and middle income countries. International publishers teaming up with local publishers; local publishers partnering with local tech firms; local tech firms partnering with international publishers; international tech firms partnering with local publishers: The combinations and permutations are often difficult for me to track and follow. Conversations with firms in each of these four ‘quadrants’ often highlight to me the importance of having a diverse set of potential partners to choose from.If a government considers this sort of thing to be desirable (and I concede that some may not), how might it -- and the donor agencies with which it partners -- support such linkages as part of its larger effort to ensure that the highest quality educational materials are available in the most accessible ways at the lowest possible cost to learners, both inside its formal education system and outside of it?

3. Intellectual property issues should be high on the agenda, and carefully considered
Once content is digitized and made widely available, it becomes easier and easier to steal it. This phenomenon has brought about a radical restructuring of the music industry; the movie and ‘video’ business are currently being reshaped by it as well; and the educational publishing industry is beginning to feel its effects. The digitization of learning materials, together with the proliferation of ‘alternative’ approaches to licenses for various type of digital content (like Creative Commons, which has helped spawn the OER movement, see next item), is causing many education systems to re-think approaches to educational content. Piracy has of course always occurred – incidents where countries ‘buy’ textbooks from publishers and then decide to just print more copies as they see fit, feeling that they now ‘own’ the content itself, are not unknown. That said, these sorts of issues become much more acute when content is digitized, connectivity enables this content to be distributed in the blink of an eye, and an explosion of low cost end user devices make accessing and reading such content as easy as flipping a switch or pressing a few buttons. Some countries (like Indonesia, and Poland) are beginning to mandate that publishers make their printed content available for free in digital versions, and others are promoting, or contemplating, a variety of alternative approaches to intellectual property and publishing as a result. Many intellectual property issues
are challenging traditional approaches to the ownership and use of education content today, and it is hard to see that things will become any simpler or less complicated in this regard in the future. Is there any guidance that can fruitfully be offered in this regard?

4. The ‘open educational resources’ movement is changing the way educational materials are created – and used

The current World Bank textbook guidelines were drafted in an era when discussion about things like ‘open access’ and ‘open educational resources’ were still largely fringe topics discussed among various niche groups. Over the past decade, we have seen an explosion of interest and activity in promoting and utilizing ‘open education resources’, which are (in the words of the Hewlett Foundation, which through its grants has been a key supporter and enabler of related activities) "teaching, learning and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others." The OER ‘movement’, which has been to a large part been made possible by the rapid diffusion of ICTs, challenges traditional approaches to the production, procurement and use of educational materials. Should you buy what you can get for ‘free’? Should government-funded or -purchased education resources be 'open'? How can, or should, ‘open’ resources and traditional textbooks be considered together as part of an educational system’s larger approach to ‘content’? In an age where Khan Academy content is increasingly being incorporated into national educational portals and where the World Bank itself has prominently gone ‘open access’, silence on related issues in its advice and guidance to governments would be, at the very minimum, rather curious.

5. Content and assessment are becoming more closely linked

Over the past few years I have noted to myself, when sitting through many PowerPoint presentations and in subsequent informal conversations, that more and more educational publishers are referencing their work in the field of ‘educational assessment’. I have had a few ‘publishers’ tell me that they are actually ‘assessment companies’. (At the same time I find that the line between ‘publishing companies’ and ‘technology firms’ is getting quite blurred in many ways.) If this is indeed true -- my evidence for this phenomenon is purely anecdotal -- there are a few potential explanations for this. As the traditional educational publishing business is disrupted in many ways, and where certain types of learning content are increasingly seen (rightly or wrongly) as commodities in certain quarters because they are available ‘for free’, closely anchoring educational content within an
assessment platform or tool might make compelling business sense. It is (I would assume) more difficult to pirate and then market an assessment engine or platform than it is to copy and re-distribute education content that someone else has created. However one feels about the value of open education resources, one potential Achilles heel of the ‘OER movement’ is that, while there are lots of groups working on ‘open content’, there do not appear to me to be many organizations working on ‘open assessment systems’. To what extent might it be useful to consider issues related to ‘assessment’ when offering guidelines about textbooks and other educational content?

6. The lines between the delivery of ‘content’, and the devices or technologies on which such content is used, are blurring
Just as issues related to content and assessment may be starting to become more closely linked, making less clear the distinctions between a ‘good’ and a ‘service’, so too (from a procurement perspective) the lines between ‘content’ and the hardware and software that enable the use of such content are blurring. When many countries seek to ‘computerize’ their schools at a mass scale for the first time, they often leave aside serious contemplations of just what educational content will be accessed and used (and created) on such devices. (This phenomenon is so widespread that it was #3 on the EduTech list of ‘worst practice in ICT use in education’.) In some countries, there are very real worries that purchases of hardware may actually divert monies from budgets used to purchase learning materials – at least in the short run. While all of this is going on, the very nature of the textbooks themselves are changing in some places (one oft-cited example of this is the ‘flexbook’, an initiative which is assembling lots of educational content and then enabling educators to pick and choose from it to, in effect, ‘create’ a textbook out of many disparate parts, in line with governing curricular standards). Content developed for a specific device may not be usable at all on another device, leading to potential dependencies in the tendering process and increasing the potential danger of ‘vendor lock-in’ in ways that have not bedeviled the market for printed textbooks in many countries like what has happened in the technology sphere. Even if the tools and marketplaces continue to change, might there useful approaches to help inform decisions that will be made while these changes are occurring? Given all of this confusion and increased ‘blurriness’, to what extent might new guidelines help countries achieve some greater clarity on how they might proceed going forward?
7. The move to using more digital content creates new opportunities to promote greater equity – while at the same time potentially erecting some even higher barriers that can exclude various groups
The current World Bank guidelines contain some very important and strong statements about equity of access to, and use of, educational materials. As learning materials are increasingly available in digital formats, how places consider issues related to ‘equity’ may need to change. Indeed, approaches to ensuring equitable ‘access’ to digital materials will need to carefully consider how such access may be different based on gender and for traditionally marginalized groups and special needs populations. To what extent is guidance in this regard useful, relevant, and possible?

8. In a fast-changing area like digital learning resources, care needs to be taken to promote innovation – and not stifle it
Whatever shape or form new guidelines related to the procurement, production and usage of education materials might take, such guidelines might do well to consider, and potentially attempt to anticipate (as possible), mechanisms which are open to ‘new approaches’. One challenge in many places is how to translate functional specifications into the technical specs that are quite often the salient feature of individual tenders. Given how quickly things are starting to change, might it be useful to help alert and orient key stakeholder groups and partners to the variety of ways that the ‘industry’ is changing and innovating, in the hope that doing so might avoid instances where innovative approaches, products and services are effectively not considered because they do not represent business-as-usual?

9. International donors can play important roles in fighting corruption and promoting greater transparency
I have never worked on a textbook project myself, and have no first-hand knowledge about any of these sorts of things, but typing words like ‘textbooks’ ‘tender’ ‘corruption’ into your favorite search engine will quickly yield lots of news reports and allegations that do raise a number of red flags for me. As procurement of digital learning materials becomes more prevalent, many of the traditional watchdog groups that monitor malfeasance in tendering processes may be challenged to figure out how to cope with terms of reference that include new technology-related approaches, tools and practices where various sorts of chicanery and skullduggery could potentially hide. To what extent might guidance in this area be appropriate and useful – to say nothing of (potentially) welcome?
10. ____
As I have done with other ten-item lists that have been published on the EduTech blog, #10 is left deliberately blank, both as an acknowledgement of my own limitations, as well as a prompt for others to add their thoughts and suggestions.

The point here is not to be comprehensive. This list is meant to be a bit idiosyncratic, and to highlight some technology-related topics that perhaps are perhaps not always considered within mainstream textbook-related discussions within the international donor community.

In a recent article in the Washington Post, the chief executive of one of the leading education publishers is quoted as saying that the printed textbook is dying: "The only real question is when." The 'when' may come sooner in a place like South Korea (which has announced that all textbooks will be digital by 2015) than it will, for example, in most lower income countries. But the change is coming ... to what extent should we attempt to speak to, and be relevant to, this new reality?

As with all posts on the EduTech blog, my goal in presenting these thoughts and questions informally (and incompletely) here is meant to serve in a small, modest way to help continue the conversations the World Bank is having with numerous different stakeholder groups as a result of our decision to revise our current 'textbook policy'. My views and opinions are not necessarily those of the World Bank – feel free to contribute your thoughts and perspectives below.

Of potential related interest:
- The World Bank’s Operational Guidelines for Textbooks and Reading Materials [pdf] and Standard Bidding Document: Procurement of Textbooks and Reading Materials
- OECD study Beyond Textbooks: Digital Learning Resources as Systemic Innovation in the Nordic Countries (and a related publication, Inspired by Technology, Driven by Pedagogy: A Systemic Approach to Technology-Based School Innovations)
- From a consortium of leading groups in the United States, an interesting policy note: Making Progress: Rethinking State and School District Policies Concerning Mobile Technologies and Social Media

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Note: The image used at the top of this blog post ("Should we continue along our current path, or acknowledge that others are blasting off in other directions?") of the launch of the U.S. Space Shuttle Atlantis was taken in the course of an airman's official duties and, as a work of the U.S. federal government, is in the public domain. [United States Air Force image ID 100514-f-0000c-603; author: Capt. John Peltier]. It comes via Wikimedia Commons and was a finalist in that organization's Picture of The Year 2010 competition.
13. CheckMySchool.org, websites that call you, and other innovations connecting schools to communities

by Michael Trucano
originally published on Friday, 18 May 2012

The World Bank recently hosted two events showcasing innovative tools and practices that can be used to help build bridges between schools and their local communities, helping to promote and support greater transparency, good governance and citizen engagement along the way.

The CheckMySchool (CMS) initiative in the Philippines (“promoting social accountability one school at a time”) is one of those projects that people intuitively ‘get’. Why not use tools like the web, Facebook, and mobile phones to help inform communities about the types of resources that their schools are supposed to have – and offer a way for them to report back when something is not as it should be?

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The project was born as a result of a large project to distribute textbooks to schools. How can you ensure that textbooks are delivered to over 44,000 schools located on over 1000 islands, on time and in acceptable condition? Recognizing the complexity of the task, and that the national department of education and its regional and district level equivalents would need some help, community and civil society groups were enlisted in key ways to help prepare schools for delivery (refurbishing, and in some cases building new, rooms), to deliver the textbooks to schools once they had arrived in local hubs and to then inventory and check the textbooks once they had reached the schools. Groups involved in this process faced basic challenges related to the availability, flow and accuracy of information, things like: Where was a school located? How many books was it supposed to get
(and later: did it receive them?)? Was the school's physical plant prepared to be able to store the books safely?

CheckMySchool was born from the lessons of this experience. Originally this was, essentially, a public web site, detailing basic information about schools – where they are, what they are called, how many teachers and students and classrooms and toilets (etc.) they have – developed and sustained by a small team at a Philippines-based NGO (the Affiliated Network for Social Accountability East Asia and the Pacific (ANSA-EAP), which entered into an agreement with the national department of education to publish this sort of education sector-related data. Through a variety of outreach activities – including public service messages on TV and radio, coordination with journalists and media outlets, politicians and, especially, civil society groups and volunteers who served as ‘infomediaries’, helping to disseminate and contextualize information for the local constituency groups with which they work – the project offered a way for an individual to find out what resources her local school was supposed to have, and to report back when local reality did not match what was being reported out of Manila. Check your school, the initiatives challenges residents in communities across the Philippines, to make sure you have the number of classrooms for which funds have been allocated, that the toilets are working, or to ensure that teachers are reporting for work. As detailed in a short feature story published on the web site of the Word Bank Institute, “Comments and complaints can be channeled through the website, email, Facebook or Twitter and even through text messages. The information is fed into the geo-referencing database by local school monitors who send in real-time data via their cell phones using SMS text messaging.”

For a quick overview of CheckMySchool, please see the video embedded at the top of this page or the archived video from the recent event at the World Bank featuring a presentation by Dondon Parafina, who coordinates the project, and a related discussion. The World Bank Institute published a short article, Check My School – Not Just a Website, after the event. To see CheckMySchool in action, visit the project web site, including the CheckMySchool interactive map, or the CheckMySchool page on Facebook. (This initiative was also profiled in its very early days in an EduTech blog post, School computers not working? There's an app for that!)

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As an initiative still in its infancy (CheckMySchool has yet to celebrate its second
birthday), it will be interesting to see how this effort in information sharing, community engagement and crowdsourcing evolves over time. And not interesting only in the context of the Philippines: A number of people attended the recent at the World Bank specifically because they wish to replicate much of what CheckMySchool is doing in other countries with similar sorts of information needs.

So, while many other countries around the world look to the Philippines for inspiration and practical guidance on how they might be able to take advantage of ICTs to help improve governance and transparency of related to resources and resource needs in schools, are there lessons from other parts of the world which might be of relevance to the people leading and guiding the project in the Philippines itself?

While the CheckMySchool is in many ways a global pioneer in specifically targeting the education sector, there are scores, if not hundreds, of projects around the world that people lump together under the general category of ‘e-governance’ or ‘e-transparency’. During the World Bank event, I was asked to offer some quick suggestions or recommendations for potential consideration by the CheckMySchool team, based on what people are learning as a result of experiences and lessons from other countries from sets of these sorts of ‘e-governance’ or ‘e-transparency’ initiatives. In case they might be of interest more broadly, especially to groups embarking on, sustaining, or considering similar sorts of initiatives, here are the five general comments I made (please feel free to offer your own perspectives and suggestions in the comments area below):

1. **Remain outside, but linked to, government (close ... but not too close)**

The role of CMS in ‘speaking truth to power’ is an important one. It is also, of course, a potentially dangerous one. Initiatives that trumpet the fact that the initiative will serve to ‘hold people accountable’ may unnecessarily put some key stakeholder groups on the defensive – positioning CMS as a way ‘learn’ about where the needs are the greatest and improve data quality may be less threatening, while at the same time accomplishing the same things in the end. The decision for CMS to seek and sign a memorandum of agreement with the Department of Education to ensure access to government data has no doubt been critical in both ensuring timely access to data and in establishing the legitimacy of the CMS effort. That said, many ICT-related initiatives – even quite successful ones – have trouble surviving changes in administration if they are considered to be linked to closely with the previous government. All of this is a
delicate dance in many ways, and one which I presume CheckMySchool has been adept at performing, but it is perhaps worth mentioning again from time to time.

2. Use the technology people are already using
It is encouraging that you have welcomed people visiting your Facebook page instead of compelling them to visit the main CheckMySchool.org web site, which was initially seen to be the primary interface between CMS and the public. This shows a level of comfort, and pragmatism, with meeting people where they are, and not making them come to you. Where most people ‘are’, of course, is on their mobile phones, and incorporating more and more SMS capabilities into CMS will no doubt continue to be more and more important. Given that CMS is built on the Drupal platform, considering ways to use tools like VoIP Drupal (see below) might be another way to connect with users in ways with which they are already comfortable. Given the impending plans to bring CMS to Indonesia, and the huge popularity of mobile Facebook there, I expect that you will be well prepared to ‘meet people’ there in the virtual places where they already are.

3. Don’t confuse your beneficiaries with your users
Your choice to explicitly target ‘infomediaries’ – i.e. the people who serve as information brokers or sources for your target populations – seems to be a good one. Many initiatives make the mistake of trying to directly target the beneficiaries of their efforts, instead of connecting with the ‘middlemen’ who are the closest and most familiar with the groups of people who could most benefit if the objective of their particular ‘e-governance’ initiative is to be met. As you grow and you explore new types of activities, maintaining a close focus on serving the information needs of groups of infomediaries may become even more important.

4. Consider yourself a permanent pilot project, adapting to user needs and quickly iterating your tools and services, based on what you learn, in ways that are ‘open’
As they become more established, and especially as their activities have greater impact and/or assume a higher profile, many initiatives find it increasingly important to demonstrate just how ‘open’ they are. Consciously choosing ‘open’ tools – i.e. technologies with which tech communities are familiar and so can vouch that you are not hiding things – may become more important over time, as might a willingness to be more and more open about how you do what you do more generally. Being as transparent as possible in your actions might be especially important for an initiative that is at its core about transparency!
5. Be careful of friends bearing gifts – their objectives may not be the same as yours

When international donors and funding organizations get excited about a program – as they evidently are about CMS – lots of new opportunities may present themselves. There is a danger that such interest from abroad can smother a nascent initiative like CMS if you are not very careful. Many outsiders, for example, will want to measure the ‘impact’ of what you are doing. Be careful here – while the importance of careful impact assessment is hard to overstate, you should be careful to resist the call of international donors and research communities to prematurely ‘evaluate’ the impact of CMS where such activities might distract you from your core task at hand or where such activities dictate the ways certain new activities are rolled out, because these don’t meet the research design objectives of outside groups. This is not to say that CMS shouldn’t be open to such activities – far from it! they are a great opportunity for learning, at the very least, and at some point such studies will be valuable tools to demonstrate the impact of what you are doing – but that you should participate in such activities conscious of the fact that they might entail certain trade-offs. This is especially true in the early days, when you are still refining your approach and tools, and where ‘premature’ summative evaluation might lead some people to conclude that ‘there is no impact on ___’, and thus damage the momentum and support that is building behind your activities even while you are still iterating your approach to best figure out how you might be able to realize this impact. And: Given that the core team of CMS totals only four people, and the evident interest of many other countries in learning from your emerging experience, one could imagine a scenario where invitations to speak at international conferences and perform targeted technical assistance to other places could compromise the ability of key staff to continue to focus like a laser beam on the needs of your target communities in the Philippines.

What actually has happened as a result of CheckMySchool? Anecdotal evidence of certain individual actions was cited during the event, and I expect the upcoming World Bank case study of CheckMySchool will include mention of additional anecdotes, but these are still early days for the project. Watching some of the compelling personal video testimonials on YouTube, I do worry that highlighting individual cases where ‘action’ resulted quickly because of information posted on CMS may raise unrealistic expectations in some quarters – setting the stage for a potential backlash when complaints don’t result in remediation in short order. This
is not to say that initiatives like this shouldn’t be assessed on the tangible actions that they help catalyze. Of course they should. There is more to transparency initiatives such as this, however. There is a real value in letting in a little sunshine into places where data of this sort have often been obscured from wide public view, in providing a mechanism to give people a voice, and in hearing and acknowledging those voices publicly. Even where a response isn’t immediately forthcoming from those in charge, this helps provide information and documentation that groups can use to advocate for action, and eventually to report on any response that results. Many countries are reluctant to release even the very basic sorts of data that the Department of Education in the Philippines have made available to CheckMySchool. *We know the data is not accurate, they say, and so we have to wait until it is accurate before we put it out for public consumption.* Unfortunately, the result of this in many places is that the data never see the light of day. It is possible to look at this from another perspective, however: How do you expect your data to improve if you don’t let people know what data you have – and by doing so, potentially enlist their help in improving what you have, and filling in the gaps where you don’t have anything?

One undeniable impact of CheckMySchool outside of the Philippines is that this concept has excited a diverse set of countries, from Eastern Europe to Central America to Eastern and Southern Africa, to attempt something similar. Explorations are currently underway to bring this initiative to Indonesia, and I expect we’ll see a few more countries follow the example of Moldova in rolling out small beta test of this approach, and the enabling technologies, this year. To me, it seems that one key feature of the CMS ‘model’ in the Philippines is that it takes advantage of the fact that there is a vibrant civil society in the country that can both benefit from the type of information sharing that CMS is meant to promote, as well as to help enable this information sharing in the first place. How well the CMS model may work in places where there is not a diverse, robust, well-established civil society ecosystem already in place will be interesting to observe....

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The day after the CheckMySchool event, the World Bank welcomed Leo Burd of the MIT Center for Civic Media to present lessons from a variety of pilot activities exploring the use of the VoIP Drupal online platform as part of a talk on “Technologies for Social Inclusion and Civic Empowerment”. VoIP Drupal is a
versatile open source communication toolkit that adds the power of voice and Internet-telephony to web sites. It can be used to build hybrid applications that combine regular touchtone phones, the Web, SMS, Twitter, and other channels in a variety of interesting ways, facilitating community outreach and providing an online presence even to those who are technically challenged, or who do not have regular access to computers.

The general premise behind VoIP Drupal, as Leo explained it, is that the Internet is a very good tool to connect people with similar interests/backgrounds who are in different places, but that it is not so good at connecting people with different interests/backgrounds who are in the same place. Lots of people are thinking about how to bring the Internet to smartphones, and the rapid growth in smart phone penetration in communities around the world is undeniable, but the fact remains that most people are still using 'less smart phones'. Might there be some way to effectively bring those people with such low end phones onto the Internet?

One potential way to answer this question, Leo suggests, is to consider the use of tools like VoIP Drupal. Drupal, for the uninitiated, is a commonly used, free open source platform to help build web sites (this blog, for example, runs on Drupal) and there are Drupal developer communities all around the world – even in some of the poorest countries. VoIP Drupal essentially runs on top of, or plugs into, Drupal. Under development for the past seven years, the VoIP platform is now quite stable. One challenge for the VoIP team is that this tool/platform is so powerful and versatile – some people refer to Drupal as the ‘Swiss army knife of web tools’ – that it is in many ways a strong technical ‘solution’ that is search of specific ‘problems’ that it can help address. Because it can be of potential usefulness in some many different contexts, it can be difficult to ‘sell’ it to potential user communities in ways that are simple and quick. One of the challenges I find here at the World Bank is that non-technical people, when being presented with a new tool that they have trouble getting their head around often ask questions like ‘is it possible to do ___’? To a technical person, the answer to such question is invariably ‘yes’, but of course this simple ‘yes’ often obscures that fact that what is possible is not always quick or easy to implement, especially in cases where the user is not sure what exactly she wants the tool to do. In order to help ‘educate’ the consumer on what is possible without too much difficulty with the current tool, Leo spoke about a number of pilot implementations of VoIP Drupal in communities with a variety of information needs. [A link to Leo’s presentation is available on the related event page.]
**My Dot Tour** is a multimedia walking tour in the Dorchester area of Boston (not too far from MIT). The web site allows people to take a virtual tour through the neighborhood listening along the way to stories recorded by people related to specific places. People can add stories themselves through a variety of means – including calling a phone, clicking on a link on the web page and speaking into their computers microphone, or calling or texting a number posted ‘in real life’ at the specific place. This is one example of how web and voice content can be accessible – and created by – people with access to the Internet or to phones in ways that are very simple for the end user. While there is a lot of technology making all of this happen, from a user perspective, things can be as easy as just calling a number, responding to a few voice prompts, and then either listening to a story recorded by someone else or contributing a story herself.

Wisconsin Rapids is a rural community (population: 45,000) in the one of the north central U.S. states that is suffering the effects of the closure of a paper mill plant that employed many of this residents. The **SameBoat** system is designed to give residents timely information about services and events from over 200 local community organizations that can help families during employment transitions.

Initiatives like CheckMySchool, and tools like VoIP Drupal, point to some potentially exciting ways that new technologies can be used to connect people and institutions within local communities in ways that take advantage of the power of the Internet.
in ways perhaps considered ‘unconventional’ within such communities themselves to help enable citizens to be better informed, in the belief that information can help lead to action. They take advantage of the fact that people use new information and communication technologies in multiple ways, and that it is important to make the power of these tools accessible through a variety of inventive means, especially targeting beneficiaries who would benefit from access to the Internet but who may not have the ability or means to ‘connect’ to things like web sites. They are built largely on free software tools, contextualized through processes of constant iteration to explore how best to meet the needs of individual schools and communities that aren’t being well met through other means. They are just two examples of some of the exciting things happening in the places where new technologies, education systems and community needs intersect. Watch this space – there is more to come!

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*Note:* The embedded videos in this blog post come via YouTube and are used with permission of CheckMySchool and the MIT Center for Civic Media.
About four years ago, the World Bank's infoDev program secured funding to do a 'global survey of the use of mobile phones in education in developing countries', based on the belief that the increasing availability of the small, connected computing devices more commonly known as 'mobile phones' was going to have increasing relevance to school systems around the world. For a variety of reasons -- including regrettable internal bureaucratic delays and, more fundamentally, the fact that, when we looked around at what was actually happening on the ground in most of the world, not much was actually going on (yet), and so we concluded that a global survey of expert thought of the potential future relevance of the use of mobile phone in education wouldn't yet be terribly useful -- we ended up scrapping this research project, hoping that others would pursue similar work when the time was ripe. (The funds were re-programmed to support EVOKE, the World Bank's online 'serious game', the second version of which is scheduled to launch in September in Portuguese and English, on both PCs and mobile phones, with a special focus on Brazil.) A few of the organizations involved in the mEducation Alliance, an international collaborative effort in which the World Bank participates that is working to explore cutting edge intersections between mobiles, education and development and to promote collective knowledge sharing, have just published some short papers that have accomplished much of what we had hoped to do with this sort of survey. We'll look at two of these efforts this week on the EduTech blog: the first led by UNESCO, the second (in a follow up post this Friday) by the Mastercard Foundation, working with the GSMA.
This month, our (sort of) sister site, the EduTech Debate, has been focusing on the release of a series of working papers from UNESCO that attempt to provide regional overviews of 'mobile learning' initiatives in various parts of the world, as well thematic papers looking at the use of mobile technologies to support teachers and teacher professional development. The last two papers, which were published late last week (there are twelve in all), synthesize the key messages and lessons identified in the first ten documents and provide some additional global context and insight. While the papers don’t pretend to be comprehensive, they do nevertheless offer perhaps the most comprehensive overview to date of what is actually happening 'on-the-ground' with initiatives utilizing 'new' mobile technologies like phones and tablets -- a topic commonly explored here on the EduTech blog as well.

UNESCO traces its interest in this topic to "a simple, if profound, observation: today there are a staggering 5.9 billion mobile phone subscriptions on a planet with 7 billion people.... If mobile phones – by far the most ubiquitous interactive information and communications technology (ICT) on Earth – can be used to help deliver and improve education, then they carry a tremendous potential to assist the learning of people everywhere." At the same time, it notes that "just because a particular technology is widespread does not necessarily mean it is suitable for education. To be sure, many parents and even experienced teachers cringe when they hear the words 'mobile phone’ and ‘education’ used in the same sentence."

The UNESCO working paper series on mobile learning seeks to describe and analyze a number of initiatives from around the world that fall under the general category of 'mobile learning', most of which feature the use of mobile phones to meet a variety of different objectives in the education sector. Individual papers look at what's happening in different regions of the world, investigating what some of the emerging policy implications from various emerging activities and practices might be, with a particular interest in the potential impact of mobile learning on teachers and teaching practices. Report authors acknowledge that it is still 'early days' when it comes to mobile learning, but hope that, by dipping into the pages of the 12 reports, readers may catch glimpses of what might be coming.

The papers themselves are quite varied in their approaches, formats and content, but, taken together, UNESCO has identified five key trends worth considering (please note that the words are from UNESCO, we have rendered certain of them in bold for added emphasis):
1. Many parents, teachers and even students tend to view mobile technology as out of place in education and potentially harmful to students, despite the fact that mobile devices are well-situated to improve and extend learning opportunities.

2. There is currently a dearth of national, regional and local education policies that acknowledge mobile learning, let alone embrace its potential to help students and teachers work more effectively.

3. Mobile technology can provide rich educational opportunities to students who have traditionally lacked access to high-quality schooling.

4. As mobile technology continues to make inroads in education it will be necessary for policy-makers to ensure that programmes help rectify educational inequities and bridge, rather than widen, the digital divide.

5. For mobile learning to positively impact education in a substantive way, educators and policy-makers will need to forge new partnerships with industries and stakeholders that have not historically been involved in teaching and learning.

For people interested in learning more about the uses of mobile phones and related devices based on what is observable across the world today, this series of papers is highly recommended reading, given its geographic diversity and the breadth (if not depth) of initiatives it considers.

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We have now read through all of the papers a few times. In case they might be of any interest to a wider audience, (especially where they may help generate interest in this topic generally, as well as to help point people to this particular UNESCO initiative), we thought we’d offer the following set of quick comments, based on our quick understanding of what is in the papers:
Despite increasing interest in the potential for 'mobile learning' over the past half-decade around the world, there is still comparatively little actual activity taking place, when compared with the use of other ICT devices like PCs and laptops. That said, diverse initiatives are emerging beyond the sets of 'usual suspects' that are often featured in related reports and presentations about the topic. We follow the topic of 'mobile learning' quite closely, and were delighted to find many initiatives mentioned that we had not previously known about.

There is tremendous variety in what is happening across regions -- and within the regions themselves. In Asia, much of what is happening appears to be occurring at the tertiary or higher education level. In Europe -- where the European Commission has for many years played an outsized role in funding early mobile learning projects and where the United Kingdom (through projects like MoLeNET) has been a real leader, with a few notable activities also occurring in Denmark and the Netherlands -- some leading programs were actually completed before similar activities even began in earnest in other parts of the world. In North America, only 14 U.S. states and Canadian provinces reported efforts to support mobile learning in various ways. In Latin America, there are a few leading projects in a few countries like Argentina, Colombia, Chile and Paraguay (initiatives from Brazil are notable for their absence), while in Africa and the Middle East most initiatives are quite small, usually text-centric pilot projects, often largely supply-side interventions in urban areas (with the important exception of South Africa, which is home to much leading edge practice and thinking on mobile learning topics).

Despite many common trends identified across countries, some specific topics seemed to be of more importance in specific regions. For example: In North America, scalability is an apparent real consideration in many places -- as are issues related to a number of potential negative effects of mobile use (e.g. cyberbullying, sexting, cheating). e-Waste issues were only notably mentioned in the Latin American context. In Asia there is specific mention of the dangers of 'over-use' (this focus is consistent with the treatment of educational technology issues across many Asian countries more broadly). The discussion of mobile devices in Europe perhaps went the farthest beyond just mobile phones. Perhaps due to activities related to the 'Arab Spring', the Africa and Middle East report highlighted the potential positive impact of accessing social media via mobile phones to a greater extent than was done with other regions. (These regional reports were also
the only ones to consider issues related to open educational resources.) It is difficult to tell to what extent these areas of focus were related to actual trends, the specific backgrounds and interests of the authors of the individual reports, available information, or simple space limitations, but we did find this variety rather interesting.

Compared with many other, more 'traditional' educational technology initiatives, BYOT (bring your own technology) is an important characteristic of many mobile learning programs. This helps lower costs, but also raises very real equity issues related to access. We were encouraged to see that equity issues received prominent attention in almost all of the reports.

We would have loved to see a simple list of all of the initiatives included in the surveys. To our knowledge, this would represent the most complete global list of diverse mobile learning projects, and the places where these initiatives are occurring. Such a list would be useful in helping to monitor developments in this area going forward. (Perhaps such a list is coming ... or perhaps someone else -- like an enterprising student, perhaps? -- will do this, in response to this blog post. If not, we'll just put one together ourselves and upload it somewhere.)

Despite the buzz of 'new-ness' around mobile learning in some quarters, a large number of the projects surveyed featured very 'un-sexy', practical uses of devices to enable users to do things like view course syllabi and schedules, notify parents of attendance and grades, etc.

The most memorable factoid all three of us took away from our reading of the 12 papers: "In Africa, the continent facing the most pressing educational needs, the number of mobile phone subscriptions, which totaled 600,000 in 1995, is expected to surpass 735 million before the end of 2012. (It is perhaps worth noting that the last technology to spread this fast in Africa was the AK-47.)"

We are not sure if this is true or not, but, now that it's mentioned in a UNESCO publication, we expect we'll now hear this repeated in many news articles and in countless conference presentations.

'Anti-mobile phone sentiments' present significant barriers to the adoption of mobile learning across the world (this observation was particularly strongly made in the Africa and Middle East regional reports).
Those are just a few of our initial reactions to the reports. We look forward to more papers in this series from UNESCO in the coming months. As these are working papers, UNESCO and the individual authors certainly welcome comment and feedback -- feel free to use the comments section below or, even better, comment directly in the related sections of the EduTech Debate site itself.

UNESCO Working Paper Series on Mobile Learning
[please note that all links are to PDF documents]

Global

- Turning on Mobile Learning: Global Themes
- Mobile Learning for Teachers: Global Themes

Africa and the Middle East

- Turning On Mobile Learning in Africa and the Middle East: Illustrative Initiatives and Policy Implications
- Mobile Learning for Teachers in Africa and the Middle East: Exploring the Potential of Mobile Technologies to Support Teachers and Improve Practice

Asia

- Turning On Mobile Learning in Asia: Illustrative Initiatives and Policy Implications
- Mobile Learning for Teachers in Asia: Exploring the Potential of Mobile Technologies to Support Teachers and Improve Practice

Europe

- Turning On Mobile Learning in Europe: Illustrative Initiatives and Policy Implications
- Mobile Learning for Teachers in Europe: Exploring the Potential of Mobile Technologies to Support Teachers and Improve Practice

Latin America

- Turning On Mobile Learning in Latin America: Illustrative Initiatives and Policy Implications
- Mobile Learning for Teachers in Latin America: Exploring the Potential of Mobile Technologies to Support Teachers and Improve Practice
North America

• Turning On Mobile Learning in North America: Illustrative Initiatives and Policy Implications
• Mobile Learning for Teachers in North America: Exploring the Potential of Mobile Technologies to Support Teachers and Improve Practice

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Note: The image at the top of this blog post of a red and black mobile in the style of Alexander Calder ("what constitutes a 'mobile device' can sometimes be in the eye of the (be)holder") is copyrighted by Andrew Dunn; it comes via Wikimedia Commons and is using according to the terms of its Creative Commons Attribution-Share Alike 2.0 Generic license.
This week we are looking at two sets of new reports that provide insights into the area of 'mobile learning' -- especially the use of handheld devices like mobile phones to help meet a variety of educational objectives. Earlier this week we devoted a post to twelve new reports from UNESCO that provide a broad overview of what is happening in different regions of the world in this area. Shaping the Future – Realizing the potential of informal learning through mobile [pdf], which was released at last week’s eLearning Africa event in Benin, provides a nice complement to the UNESCO working paper series. Whereas the UNESCO reports collectively provide some very useful insights on the supply side, surveying notable 'm-learning' programs currently underway around the world, Shaping the Future examines the demand side of the equation:

"In late 2011, researchers went into four very different emerging markets – Ghana, Morocco, India and Uganda – and asked 1,200 people (aged 15-24) about their day-to-day lives, their ambitions, their education, the way they use mobile now and how mobile could help them achieve their aspirations in the future. At the same time, over 250 young people from those countries took part in detailed focus group discussions where, with great generosity, they shared their hopes, worries and beliefs with us."

The report was authored by the GSMA Development Fund, with financial support from the Mastercard Foundation. [Disclosure: One of the authors of this blog post, Mike Trucano, serves on an external advisory group convened by the Mastercard Foundation, representing the World Bank.] The GSM Association, for those who aren't familiar with
it, represents the interests of mobile operators (i.e. mobile phone companies) worldwide. The potential biases here, then, should be pretty obvious -- by design, industry associations promote the products and services offered by the industries they represent -- and it will probably surprise few people to find that the report includes statements like "It is GSMA’s belief that mLearning can and will provide another valued source of educational information." Mobile operators themselves are one target audience for this report, which offers many suggestions and recommendations for how such firms might consider offering or supporting a variety of services and practices of potential relevance to young people via handsets related to their professed education needs and individual contexts and aspirations. In a few places, it contains some jargon and abbreviations that may not be familiar to wider audiences (e.g. VAS = value-added service; MNO = mobile network operator, i.e. a company that packages and re-sells airtime from another firm; 'churn' is when users switch from one mobile provider to another). That said, it also explicitly targets the 'international development community' as another key audience. Many donors are exploring potential support for m-learning initiatives of various sorts (indeed, it is a 'hot new topic' within many donor groups and NGOs in the way that, for example, community telecentres were a decade or so ago), but there is little useful guidance to help people and organizations interested in this topic 'get their heads around' the related topics, separating the hope from the hype, while at the same time receiving some very practice insights into potential ways forward. As the report authors say, "Organisations involved in developing and delivering mLearning services need to understand the day-to-day lives of young people if they are to create services that will improve education and employment prospects. Developing that understanding is the primary purpose of this report: Shaping the Future."

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Simply put: This is a great report, useful on a number of levels, and should be considered required reading for people and groups interested in the potential uses of mobile phones by young people in developing countries to help meet some of their educational needs. If forced to distill the key points from the report into a single sentence, we'd probably say something like "most young people want to learn, they have phones, they see the potential for using phones to learn, and here are some considerations for groups who wish to help them realize this potential". The report itself [pdf] is not too long, and is formatted in ways (lots of white space, bullet points, pictures) that make it very easy to read and digest. In
the hope doing so may intrigue people enough that they decide to read the full report, here are a few things that caught our particular interest:

For many young people, schools are not the primary source of 'educational information'. "Just one quarter of the young people surveyed named the classroom as their primary source of information and education, reflecting the fact that many young people had left formal education as well as the current limitations of mainstream education in these countries. Friends and family were more important as an information source, named by 41%, while 43% relied on TV."

Even those who don't have phones have relatively easy access to them. "Amongst the young people we surveyed across the four selected countries, 85% had access to a mobile phone or SIMcard.... [J]ust because a young person is able to access a mobile phone doesn’t mean they own one. One thing which became clear in focus group discussions was the variety of creative sharing arrangements in place." SIM swapping (the phenomenon of owning not a phone, but of a SIM card that you could snap into someone else's phone when you needed to use it, so that you, and not your friend, would incur any related charges), for example, was widespread among many groups. Use of smartphones, which are becoming more widely available in general, is still relatively rare among the groups surveyed. While most young people surveyed had regular access to mobile phones, only 44% of those surveyed had ever used the Internet.

Mobile phones are already being used informally in many cases in ad hoc ways to support learning activities. Communication with friends about homework assignments, recording of lectures, discussion of an education nature via SMS -- these types of things are happening already, but not in any systematic way linked to formal educational delivery programs.

A majority of young people surveyed see clear potential in mobile learning. Skill development was cited as the number one education need by students, with language learning a close second. Reading materials were also in relatively high need.

Learner anonymity is an important potential attribute of learning activities that utilize mobile phones. "[Some people surveyed] said they would enjoy the opportunity to learn anonymously (particularly those who lacked confidence in
classroom-type environments) while others liked the fact they could repeatedly access the information/lessons, which would be valuable if they didn’t understand first time."

**There are a few very important barriers to the use of mobiles.** Costs to users -- of the phones themselves, of air time, for access to individual services -- is not surprisingly a key potential barrier to the adoption of m-learning services. The potential disapproval of a spouse or other family members is seen as a key potential barrier as well -- especially for women and girls. The usability of content on the small handset devices was also cited as an important barrier, as was the fact that, in many cases,

'Others know best' (?) One notable finding from the research was that, when it comes to the potential for m-learning by young people, in many cases many older, influential people have already come to some conclusions. The report quotes a representative from one mobile operator who doesn’t see that the use of mobile phones for learning has much practical value. As the authors note, "Opinions like this within the mobile industry could result in a lack of commitment to mLearning and an unwillingness to support the development of new services. Our researchers found that young people themselves were generally much more positive."

While specifically meant for industry, a few of the key recommendations that emerge from the report may also be of interest to other groups who are exploring the use of mobile phones as part of various educational initiatives in developing countries. These include:

- "Industry will need to target the whole family when marketing mLearning services, so that parental gatekeepers” see their value and are willing to loan their handsets for the purpose."

- "Linking mLearning to activities that are currently embedded in the lives of youths will have the strongest “immediate appeal” to young mobile users. One example might be mixing sports information with educational information: in a football game listened to on a mobile, for example, half time breaks could feature short educational lessons."
• More controversially, the report recommends that groups that offer m-learning services consider "incorporating advertising in mLearning services to drive down costs."

The report also contains a useful chart on the potential motivations and incentives for key stakeholder groups (e.g. learners, parents, content providers, vendors, mobile operators) and, when discussing an "aspiration gap", makes some useful distinctions between the young people whose educational needs are “underserved” versus those who are “severely underserved”.

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Side note: One thing we would like to have seen in the report was a link to the actual survey instruments, focus group protocols, research assumptions and approaches, etc. that were used to support the writing of this report. (The actual data collected would have been welcome, as well.) This would be useful not only because it would have made us more comfortable accepting some of the findings of the report, but because doing so would have enabled other groups to build on and further this sort of research going forward. Perhaps the Mastercard Foundation or GSMA have plans to do this sort of thing at some point on their web sites -- if they do so, this would not only be useful to help readers of this fine report put its findings into greater context, but also because doing so could help put informal pressure on other organizations to mandate more open access to the methodologies and data that inform the writing of reports such as this.

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Much of what is laid out in the Shaping The Future report is consistent with things we have observed -- or intuited, but without an evidence base to back up such intuition -- during our work on the edges of various m-learning initiatives of the past half-decade or so. We regularly meet with groups who have 'lots of great educational content' who now would like to simply 'port' this content over to work on small handheld devices. This sort of supply-side approach may work ... in certain cases ... but we have always been, and remain, rather skeptical of it. Many of the potential affordances of a mobile phone as a potential personal learning device are well understood. While most people see the small screens of phones as a decided drawback, this does have its advantages as well, especially where it allows learners to be comfortable to make mistakes, in ways that they may not be
when speaking with someone face-to-face, or when having their activities displayed on a large monitor during a visit to an Internet cafe.

**Know your users**

In discussions at infoDev around the middle of the decade, the emerging hype around mobile phones led some of us to think of the small handheld devices as a sort of 'telecentre in your pocket', given that beliefs about the many potential uses for phones to serve diverse needs among diverse communities mirrored some of the rhetoric supporting the roll-out of so-called community telecentres, where groups could come together to access computing resources and the Internet. Some purpose-built community telecentres, however, offering only one type of service targeted at one specific community, often had trouble attracting large enough audiences to sustain them over time. With that in mind, when we were asked by groups how we would recommend promoting the usage of phones for education purposes, back then we usually advised people to wait until other services had first taken off. (Might we be at such a point in time today? Perhaps -- and if not, we are certainly much closer to it.) If you want people to use their phones for learning purposes, we suggested back then, you might want to consider getting them using their phones first regularly for other purposes of relevance to their daily lives (things like, for example, accessing daily prayers or scripture, or sports scores, or horoscopes, or weather information, or celebrity gossip). Once they were comfortable with the medium, and the technology, you could then think about offering targeted education-related applications and services to groups of potential learners who already know how to use and valued the technology. Now, of course, few development organizations would be bold (or foolhardy) enough to develop information services that enables access to (for example) the latest football scores or musings about the activities of Bollywood starlets as a means to a larger end. But private industry and civil society groups typically have fewer constraints about exploring more 'orthogonal' approaches. Especially where it involves opportunities to offer informal learning activities to young people outside of school (where, let's be honest, phones are often banned as devices of distraction), the GSMA's guidance to "link mLearning services into existing behaviors, priorities and interests of young people, for example, through sport activities, music or informal social settings" may be especially valuable -- and practical.

"Know your users" has always seemed to us to be good advice (if not perhaps practiced often or well enough within certain segments of the international
development community), and this report provides some useful insight into at least what some of the types of beneficiary groups often discussed in the abstract by well-intentioned folks sitting in meeting rooms in places like DC and Geneva and Tokyo and Silicon Valley actually want and need and aspire to become, and how the use of mobile phones might be relevant to helping to meet some of these wants, needs and aspirations. Hopefully this is just the first report among many of this sort to receive wide circulation.

Also of potential interest:

- **Surveying Mobile Learning Around the World (part one).** Mobile phone use in education is a common theme explored on the EduTech blog, here's a link to a list of the posts that explore this topic.

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*Note:* The image at the top of this blog post of a modern hanging mobile art sculpture by Julie Frith (“your perspective on mobiles depends on your point of view”) comes from Wikipedian Julietchristine via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution-Share Alike 3.0 Unported license.
As a result of reading the recent IDB study on the impact of the One Laptop Per Child project in Peru, my World Bank colleague Berk Ozler recently published a great post on the World Bank's Development Impact blog asking "One Laptop Per Child is not improving reading or math. But, are we learning enough from these evaluations?"

Drawing insights from his readings of a few evaluations of technology use (one in Nepal[PDF] and one in Romania) he notes that, at quick glance, some large scale implementations of educational technologies are, for lack of a more technical term, rather a 'mess':

"The reason I call this a mess is because I am not sure (a) how the governments (and the organizations that help them) purchased a whole lot of these laptops to begin with and (b) why their evaluations have not been designed differently – to learn as much as we can from them on the potential of particular technologies in building human capital."

Three members of the team at IDB that led the OLPC Peru evaluation have responded ("One Laptop per Child revisited") in part to question (b) in the portion of Berk's informative and engaging post excerpted above. I thought I'd try to try to help address question (a).

First let me say: I have no firsthand knowledge of the background to the OLPC Peru project specifically, nor of the motivations of various key actors instrumental in helping to decide to implement the program there as it was implemented, beyond what I have read about it online. (There is quite a lot written about this on the web;
I won't attempt to summarize the many vibrant commentaries on this subject, but, for those who speak Spanish or who are handy with online translation tools, some time with your favorite search engine should unearth some related facts and a lot of opinions -- which I don't feel well-placed to evaluate in their specifics.) I have never worked in Peru, and have had only informal contact with some of the key people working on the project there. The World Bank, while maintaining a regular dialogue with the Ministry of Education in Peru, was not to my knowledge involved in the OLPC project there in any substantive way. The World Bank itself is helping to evaluate a small OLPC pilot in Sri Lanka; a draft set of findings from that research is currently circulating and hopefully it will be released in the not too distant future.

That said, I *have* been involved in various capacities with *lots* of other large scale initiatives in other countries where lots of computers were purchased for use in schools and/or by students and/or teachers, and so I do feel I can offer some general comments based on this experience, in case it might of interest to anyone.

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A number of years ago, infoDev, UNESCO and a few other groups put together a 'toolkit' for use by policymakers that was eventually used as part of ICT/education planning processes in about 30 countries. Watching Wadi Haddad, the principal author of the toolkit, walk senior policymakers through the decisionmaking processes at the heart of the toolkit was always an educational experience for me, especially when he discussed the various pressures that ministers of education faced when trying to figure out to what extent, and how, they should be introducing and utilizing new technologies into the education systems in their countries. A former minister of education himself, he would receive immediate smiles and nods of recognition when he discussed the 'pressures' exerted from various quarters:

**vendors:** "it's a new world, we have new technological answers to help solve many of your old problems"

**business community:** "you run your schools like it's still the 19th century, we need workers who know how to use the tools of the 21st century"
parents: "by buying lots of new technologies, you can demonstrate to us -- quickly -- that you care about our children"

academics: "if you want to transform what you are doing today, you need to adopt the new technology-enabled methods and approaches that we, the real experts, are championing"

international competition: "look at the countries with real vision around the world -- if Uruguay and Rwanda and Singapore are doing it, why aren't you?"

fashion (this one should be self-explanatory)

This is not to say that all such pressures are bad, just that they are there. The extent that these essentially political pressures can be leveraged to help bring about useful courses of action is often a function or measure of good leadership. 'Education' is a famously long term enterprise, the results of which, at an aggregate level, may not be felt for a generation or two. The visual and political impact of buying lots of computers is much more immediate, and can (in theory) buy policymakers space to make other, more fundamental changes.

This is not to say that the short term effects are all necessarily positive, of course. In a recent presentation at the World Bank on a pilot initiative in India exploring the use of mobile phones in low income private schools, Matthew Kam shared findings from ongoing research that showed that one good way to spur technology adoption in schools in certain communities is to use ICTs for basic test preparation activities -- something which many parents like a lot, even if the type of pedagogy reinforced by many such activities makes many educators cringe. (See #3 in the recent EduTech blog post on Ten things about computer use in schools that you don't want to hear for more on this topic.)

You can agree that there are lots of political pressures compelling policymakers to invest in educational technologies, note that there are lots of long-standing challenges that may require new approaches to overcome (and that technology use may be integral to such new approaches), and concede there may need to be sacrifices in the short run to help build consensus and momentum that can help in the long run, but this doesn't really answer the question:
Why aren't more decisions to embark on large scale educational technology projects more evidence-based?

Here are the most common answers I hear to this question that can't be simply dismissed as 'politics':

'**We can't make evidence-based decisions when we don't have the evidence.**' This is especially true, many feel, when it comes to the evidence base related to educational technology investments (a topic frequently explored on the EduTech blog), but, as the IDB team note in their blog post, citing a recent study by Glewwe, Hanushek and others, it still very difficult in many cases to get clear, useful policy guidance about what works in education generally.

'**People do make decisions based on the evidence ... only the evidence comes from sources with a financial stake in decision.**' Vendors are often blamed in this regard, but it is important to note that NGOs and other groups can be at fault here as well.

'**This stuff is so new, the evidence that we do have doesn't really apply.**' Whether or not one believes this, it doesn't necessarily follow (at least for me) that there is no value in rigorously testing our assumptions, and documenting and testing what we are doing, so that we can learn as we go somewhere we haven't gone before.

'**We don't need to evaluate ... because we just know it works.**' This argument, which is seen to be compelling in many circumstances by key decisionmakers and proponents of certain approaches to the use of new technologies in education, is admittedly a hard one to counter with facts. (One response is to say "OK, we agree with you that it works, but how do we know that it works more/better than if we used the related resources in some other way that might have even greater impact?" Unfortunately, in my experience, folks who don't believe in the value of evaluation in general don't tend to be convinced that there is a great comparative value in evaluation either.)

There are often critical mismatches between the rationales put forward to justify large investments in educational technologies and what is actually implemented and what is actually measured. Despite the scientific rigor that defines good impact evaluations, there is no denying that the act of evaluation itself
is often a very political act. I have spoken with many countries who said that they didn't have money for evaluation ... and then, when they did find money for this purpose, the price of access to do research -- e.g. only pursuing certain sorts of questions in certain sorts of places -- was too dear for the researchers to pay. In other cases, researchers make accommodations, calculating that some access is better than no access. In yet other cases, researchers may misunderstand the types of impacts that project proponents really desire. Looking for evidence of the impact of an ambitious program like Uruguay's Plan Ceibal only on student performance in school, for example, ignores that fact that the project there has been to a large extent about 'societal transformation through technology', with the education system the most convenient vector through which to introduce sets of technologies and technology-enabled approaches which are intended to have impacts far beyond the education system.

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If you don't know what works, there can be an understandable temptation to try to create a picture that more closely resembles things that work. In some of his presentations on the dire state of student learning around the world, Lant Pritchett invokes the zoological concept of isomorphic mimicry: the adoption of the camouflage of organizational forms that are successful elsewhere to hide their actual dysfunction. (Think, for example, of a harmless snake that has the same size and coloring as a very venomous snake -- potential predators might not be able to tell the difference, and so they assume both have the same deadly qualities.) For our illustrative purposes here, this could mean in practice that some leaders believe that, since good schools in advanced countries have lots of computers, it will follow that, if computers are put into poor schools, they will look more like the good schools. The hope is that, in the process, the poor schools will somehow (magically?) become good, or at least better than they previously were. Such inclinations can nicely complement the "edifice complex" of certain political leaders who wish to leave a lasting, tangible, physical legacy of their benevolent rule. Where this once meant a gleaming monument soaring towards the heavens, in the 21st century this can mean rows of shiny new computers in shiny new computer classrooms.

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Near the end of his post, Berk states that
"One important role larger development organizations like the World Bank or IDB can play is in testing big ideas like these across multiple countries or settings. No one with a pulse in 2012 thinks that cheap laptops are not a good thing: we’re just trying to decide whether we should be spending precious funds on subsidizing them for families with young children. Same with Millennium Villages: perhaps the ‘big bang’ approach has merit. But every such idea needs to be assessed properly, allowing us to learn as much as possible from each study. The bigger the idea and the hype, the more important the evidence becomes.

We have come some distance from the days when we used to implement projects and programs with the belief that they would work – without much in the way of thorough evaluations."

I certainly would like to believe that we have indeed "come some distance" ... but, at least as relates to the use of ICTs in education, I am not so sure. Given the lack of rigorous evidence to inform related decisions in the United States, a staffer at the U.S. Department of Education once remarked to me that educational technology was in some ways the real faith-based initiative that was being championed in many schools. By repeating this rather clever (if exaggerated) witticism, I don't mean to criticize 'faith' in this context. It is, after all, an important ingredient that can compel action. Combine it with some rigorously gathered and analyzed evidence, however, and you have a potentially potent concoction that could help catalyze real change.

In conclusion, Berk states that

"As researchers and as policymakers, we all have to be more proactive in producing evidence before decisions are made. Until then, studies like the ones covered here will be second-best solutions putting out fires instead of preventing them."

This is certainly true, and well said. In my experience, however, many policymakers become frustrated with 'experts' who are quite adept at putting out and preventing fires, but who offer little practical guidance on alternative courses of action. (I deliberately place the word 'expert' in quotation marks here, as this is a role in which I often find myself cast in such discussions; given my own limitations,
this designation is perhaps best understood as convenient shorthand, noting that those assigned this label are often only a little less ignorant about what to do than some others involved in the same discussion.) Given the rather checkered history of many large scale educational technologies initiatives around the world over the past two decades, we do have an increasingly dense knowledgebase on what not to do. If it is true that 'fortune favors the bold', as the ancient Roman saying holds, it is a pity when the bold are advised by people who advocate 'revolutionary' courses of action that lead to sadly predictable dead ends.

Way back in AD 79, noted Roman man of letters Pliny the Younger similarly invoked Fortuna, the Roman goddess of luck, when charting a course that brought his ship closer to Vesuvius. Unfortunately, he and his crew perished soon afterward when that volcano erupted. In retrospect, the truly bold move may have been to turn instead to the open seas and set sail for the unknown. Would he have been more successful as a result? Maybe, maybe not, but at least he would have made a different mistake. To increase the likelihood that his journey might have been a success, however, he undoubtedly could have used some better navigation tools. Providing such tools (and not just hypotheses) to policymakers today as they consider large investments in new technologies to help make current education practices a little more efficient, or cheaper, or more impactful -- let alone to 'transform education', to adopt the rhetoric that so often accompanies announcements about large scale purchases of ICTs in the education sector and which motivates so much of us -- should be a high priority for all of us working in the field. The science fiction author Arthur C. Clarke famously contended that "Any sufficiently advanced technology is indistinguishable from magic." Maybe -- but expecting magic to happen just because you buy a lot of shiny new gadgets often results simply in conjuring up the ghosts of past failures.

*The deliberately provocative title of this blog post is inspired by the rather cheeky title of an article in The Economist on the recent large-scale purchase of tablets for use in education in Thailand ("Let them eat tablets: Trying to stop the rot in Thailand’s schools by giving out tablet computers"), just one of a number of countries currently pursuing large scale educational tablet initiatives. I have been challenged to come up with titles to my blog posts that are pithier and more memorable. With this title here, I certainly mean no offense to the many visionary leaders who have championed various large scale educational technology projects
around the world, many of which have been referenced on this blog over the years. That said, and generally speaking, asking some basic and pointed questions of this sort about the motivations behind some of the high profile announcements of big educational technology purchases probably can’t hurt.

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*Note:* The image of Marie Antoinette at the top of this blog post from an oil painting by Elisabeth Vigée-Lebrun (“in my hand I have a very precious gift for you”) comes from the Google Art project via [Wikimedia Commons](https://commons.wikimedia.org/) and is in the public domain.
17. Ten trends in technology use in education in developing countries that you may not have heard about

by Michael Trucano, Robert Hawkins & Carla Jimenez Iglesias
originally published on Tuesday, 26 June 2012

Much of what we read and hear discussed about 'emerging trends' in technology use in education is meant largely for audiences in industrialized countries, or for more affluent urban areas in other parts of the world, and is largely based on observations on what is happening in those sorts of places. One benefit of working at a place like the World Bank, exploring issues related to the use of ICTs in education around the world, is that we get to meet with lots of interesting people proposing, and more importantly doing, interesting things in places that are sometimes not widely reported on in the international media (including some exciting 'innovations at the edges').

We are often asked questions like, "What trends are you are noticing that are a bit 'under the radar'?” In case it might be of interest to wider groups and/or provoke some interesting discussion and comment, we thought we'd quickly pull a list of these sorts of things together here.

Inclusion on the list below doesn't mean to imply that a given trend is 'good' ... just that it is apparent and interesting to us in some way. We don't mean to suggest that these trends are apparent everywhere; they are largely born of our personal experiences, and so are perhaps informed more by strings of compelling anecdotes and 'gut feelings' about what is relevant than on hard data that we can cite. We have deliberately omitted a number of trends that we have noted in prior posts that didn't necessarily have a specific developing country focus (including those mentioned in an entry on 10 Global Trends in ICT and Education that is now a few years old) or which are cited in widely read publications like the Horizon Report.
(whose K-12 edition for 2012 was released earlier this month). In some cases, the trends have been observed and noted in more 'advanced' countries for some time, but are only now gathering momentum (sometimes with a twist) in many less economically privileged parts of the world. In other cases, the trends may have emerged in developed country contexts, and are finding particular resonance in some less economically developed places.

With that explanation out of the way, here are, in no particular order ...

**Ten trends in technology use in education in developing countries that you may not have heard about**

1. **Tablets tablets tablets**
   Whereas five years ago there was a great deal of (new) excitement about low cost laptops for students in so-called 'developing countries', in 2012 much of the mindshare previously occupied by such programs is being taken up by large scale initiatives to put tablet computers into the hands of students. While in industrialized countries there are scores of iPad in education projects, in developing countries much of the discussions is around the use of lower cost Android **tablets** or simple **e-book readers**. Large projects like those in Russia, Turkey and Thailand, where plans to purchase hundreds of thousands, and in some cases millions of low cost tablets, are now underway and, we expect, represent the leading edge of a very large wave of activity in this regard.

2. **My learning network is a social network**
   One use of ICTs whose use has exploded among students and teachers in developing countries is social networking (especially Facebook). In few cases do we find this being harnessed in systematic ways by education systems (apart from isolated instances by rather atypical educators), and in fact, many education systems filter the use of social networks in their schools. (We do note that increasing numbers of schools are establishing an official 'Facebook presence', although this is often meant as a sort of website replacement for basic one-way communication purposes.) Outside of school, however, the phenomenon is quite apparent in many places, and while, in our experience most of this use by students is, well, *social*, it is being utilized by students as part of their learning activities outside of school, especially as a homework and test prep aid.
3. Lost and found in translation
It may be true, as a 19th century English travel author once said, that ‘translation is at best an echo’. Where silence is at hand, however, such sounds, no matter how faint, may be quite welcome. Efforts to translate Khan Academy content or to make use of crowdsourced translations of popular TED Talks are representative of a trend that we see picking up steam -- translating readily available digital learning materials into other languages. Sometimes part of open educational resources (OER) activities and/or taking advantage of various Creative Commons licenses, it is true that many such translation efforts are to transform educational content created in industrialized countries for use in developing countries, and that comparatively little efforts have been made to translate education materials created in the global 'South' for use in other developing countries (or indeed by countries anywhere). It is also true that translating and contextualizing content to meet local circumstances and needs are not the same thing. That said, what was once largely the domain of enthusiasts utilizing new digital tools to make available their own translations of (for example) Japanese comics and animation for wider audiences is becoming an activity that, while perhaps not mainstream, is of increasing relevance to learners in many countries.

4. The great firewall of ... everywhere
While rhetoric perhaps doesn't match action in most cases, there does appear to be an increasing recognition by educational policymakers in developing countries of the important roles schools can play in digital safety and digital ethics issues. Where there is lots of action is in the use of a variety of filtering tools to help keep 'bad content' off schools networks (sometimes complicating the work of teachers and students who are blocked from accessing relevant educational content because the filters are too broad). Whether such activities are a first step in a larger process that slowly leads to the inclusion of important topics like digital citizenship and cybersafety as part of the roll out and use of new technologies in schools in developing countries, or if beliefs that child digital safety issues are really technical problems that are best met with technical 'solutions' (e.g. web filtering software that blocks access to certain types of web sites) continue to dominate related discussions, remains to be seen.

5. Earlier and earlier
Ten to fifteen years ago, when decisions were first made to introduce lots of computers into schools into many developing countries, it was often considered 'obvious' to start first with secondary school students. ('Obvious' in many cases
because it was felt that older students would be less likely to break them, that their use would be of more relevance to their studies, because there were fewer secondary schools; because secondary schools typically had better security -- to prevent theft -- and access to reliable power; and because higher qualified secondary school teachers would be more likely to know, or figure out, how to use them. Practical experience has led some folks to question many of the things that they previously considered 'obvious', but that's another issue.) Now, many places are specifically interested in investigating the use of ICT devices at the pre-school or early childhood development level. There are, we presume, a few reasons that might account for this, including the fact that, as other levels of education have already been introduced to computers, ECD is the next frontier; companies are more explicitly targeting this area as a potential growth area, both on the hardware and software side; the demonstration value of the pass-back effect, where parents give their phones to their children to keep them occupied, has convinced people of the potential utility of using ICT devices at increasingly younger ages; more attention to ECD in general in many places, so rising funding tides raise the boat of educational technology for young kids as well (we are a little skeptical of this explanation, but we hear it often enough to include it here); and the fact that gesture-based computing is more relevant to young learners than typing-dependent applications often found on computers. While there has long been robust debate about the 'impact' of ICT use in education on the development of various cognitive skills, it is particularly acute at the ECD level; while this debate goes on (and benefits from increasingly useful research), many countries, especially in Asia and Latin America, are moving aggressively forward.

6. Special needs
Even where many countries have been aggressively taking measures to ensure 'education for all' and have signed on to key international standards like those articulated in the Convention on the Rights of the Child, there is a very long way to go in many places to ensure that students with a variety of *special education needs* are able to participate as fully and productively as possible in formal and informal schooling. As ICTs are introduced into schools in ever larger numbers, some countries are trying to use them as part of their efforts to engage with special education needs students in new ways. Most such activities appear to be in their infancy (albeit, in some cases, highly touted), and often times limited to dedicated schools in urban areas, but they are starting to occur more frequently than even five years ago.
7. All this tech is going to my waste
Five years ago we often had to struggle to get issues of 'e-waste' included into discussions and plans for large scale ICT/education schemes in schools in many developing countries. In 2012 the reluctance to discuss this topic has dissipated in many quarters, and we find increasingly widespread acknowledgement of the importance of the issue -- even if, as a practical matter, this acknowledgement has not yet translated into actual action.

8. Open data, big (brother?) data
As more flows of information are digitized, and as more people have access to (and know how to use) computers and other ICT devices, there is an increasingly recognition that such data can be 'mined' in new ways that are quite relevant to many key issues facing educational decisionmakers. At the same time, there is an often not unrelated movement to ensure that data are 'open' and available for use by the public in standard formats. (The World Bank itself has been moving aggressively to open its data.) This confluence of trends -- together with a recognition by many vendors that they can sell their related products and services into new markets -- has, in our experience, not yet resulted in lots of action in the places where we work. That said, we are increasingly finding it a theme of and for discussion, whereas even a year or two ago this was only a hypothetical, and prospective, topic for consideration.

One area where we have seen tangible activities related to the collection and use of los of new data relates to the 'tracking' of students and teachers. A widely circulated BBC report from earlier this year about the use of 'intelligent uniforms', containing a small chip that would allow schools in a city in northeastern Brazil to know automatically if students were at school or not (with a automated text message sent to the parents of truant pupils) is just one example of a increasingly evident trend to use new technologies to monitor student attendance. And it's not only students: There are numerous efforts to monitor teachers as well, via programs that introduce video cameras into classrooms or projects where teachers are photographed at the start of each day to confirm their attendance.

However one feels about one things, this is a trend that appears inexorable, and is perhaps only the edge of a much larger wave of the use of various types of inexpensive sensor and monitoring technologies to 'help' schools and parents track what students and teachers are doing. When we mention such activities to
counterparts in government (often as part of an attempt to initiate discussions about the privacy and ethical implications of such activities), we often find that many folks are quite excited about the potential to do similar things in their schools. 'This', one education leader once said to us, 'is one use of technology in schools that I can get behind, as its impact is clear.' Whether or not you agree with such a statement, in our experience it is not an outlier opinion.

9. Getting school leadership on board
Especially in countries where the first wave of large scale investments in educational technologies is subsiding, we see a recognition that some of the cost effective investments education system can make are in related outreach to and training for school headmasters and principals. If you've spent tens (or hundreds) of millions of dollars on putting computers in schools, training teachers and digitizing content, spending a small sliver of such amount to do targeted outreach to school leaders can help remove many barriers to the productive realization of the potential benefits of such investments. Where a principal is not perceived to be supportive of uses of new technologies in a school, they often tend not to be used productively in new ways by many teachers. Providing relevant 'training' (for lack of a better term) for them can help turn them from indifferent observers (or even wary adversaries) into people supportive leaders for changing attitudes and practices. This makes perfect sense, of course, and we do often wonder why this is a 'new trend' -- but, in our experience, it is.

10. _____
There are other trends that we expect (and in some cases hope) to see in developing countries in the not too distant future, but have not included here, as, where they exist at all, they are still largely in very embryonic stages. These include things like the 'maker' movement (often linked with educational robotics movements -- something that has been around for a long time in various forms in developing countries); BYOD/BYOT (shorthand for 'bring your own device' or 'bring your own technology', i.e. the phenomenon of education systems taking advantage of the technology devices that students themselves already own and bring to school); and the use of assessment systems that bundle in educational content (including OER content) in ways that make it difficult to separate the two. We don't mention the OER movement because, well, we expect most regular readers of this blog already know a lot about it. (Those who don't should have a look here.) There are a few 'trends' which are not infrequently presented at international conferences (augmented reality is one example that springs to mind) that we don't see in
evidence in any fundamental way beyond, perhaps, some high profile but small pilot efforts, so we didn't include them here.

As we have done with other 'lists of ten' published on the EduTech blog, we have left #10 deliberately blank as an acknowledgement that that are many more things happening out there related to the use of educational technologies in developing countries that are perhaps 'under the radar' which we, given our own limitations, have not included here. (We have also run out of space.)

Please feel free to add in your own #10 below.

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So there you go: That's our list of "ten trends in technology use in education in developing countries that you may not have heard about". As a lot of these things seem to us to be happening a 'bit under the radar', we have had trouble finding lots of links (in English) which illustrate examples for all of these trends. (We have also been told that recent blog posts have been a bit long, and so we wanted to shorten things up a bit, although we are not sure we succeeded in that regard.) As we noted at the start of the post, we concede that our impressions are just that -- our impressions -- and are based on specific projects and discussions in which we have been involved, and so they may well not be representative of anything other than our own individual experiences (and biases). If past experiences are any guide, we do expect to receive emails from folks who say the equivalent of "this isn't new, I was involved in [#___] with my students in [Leeds or Brisbane or some other urban area in an industrialized country] way back in the 1980s". We don't doubt that such statements are true ... but knowledge of such practices, let along the practices themselves, has made little impression on policymakers in developing countries with whom we regularly speak until very recently. Our goal here is to offer up these 'ten trends' in case they might be interest to wider communities as they debate and discuss what will, or should, 'come next'. Inclusion here is not meant as an 'endorsement' of a particular trend as necessarily a good thing; it is just an observation about what we are seeing happen across lots of countries where we work. Hopefully at least one of them will provide you with some new food for thought.

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Note: The image used at the top of this blog post of a surfer enjoying a ride in the famous Mavericks competition ("not everyone is riding these big waves ... yet") comes from Shalom Jacobovitz via Wikimedea Commons and is used according to the terms of its Creative Commons Attribution-Share Alike 3.0 Unported license.
18. Developing ICT Skills in African Teachers

by Michael Trucano
originally published on Friday, 6 July 2012

What guidance is there for countries across Africa that are 'computerizing' their schools (or planning to do so) to help ensure that teachers know how to use ICTs productively?

To help provide some answers to this and related questions, the UNESCO International Institute for Capacity Building in Africa (IICBA) recently released its *ICT-enhanced teacher standards for Africa* (ICTeTSA), the result of a multi-study and consultation process with 29 countries across the continent. By releasing this document, UNESCO-IICBA doesn't meant to advocate that developing ICT-related competencies and skills be the highest priority for African teachers -- there are certainly many other more pressing and immediate concerns with the teacher corps in many African countries. It does, however, note that a teacher education and development program will not be complete if it does not address the use of ICTs by teachers, now and in the future. Across Africa, teachers are core to the educational process, and ICTs are becoming more and more relevant in many educational contexts.

As IICBA states:

*Good teaching is probably the most critical part of a solid education. The critical importance of teaching is also acknowledged by educators, practitioners, ministers of education, teacher unions, and society at large. The ways teachers are recruited, trained and deployed across schools play a key role in learning outcomes and in reducing inequalities. A high quality teacher education is of critical importance for the quality and relevance of education at all levels, and to the high status of the teaching profession itself. For quality teaching to materialize in the 21st century, we in UNESCO-*
**IICBA believe that there is a need for teacher education programs to work towards high standards in terms of the pedagogical integration of ICTs.**

UNESCO isn’t the only group working across Africa in this area, but its global **ICT teacher competency framework** and standards have provided the general direction for many related activities. The World Bank, for example, has supported **training for teachers** in countries such as Tanzania, Nigeria and The Gambia based on the UNESCO framework, and groups such as GeSCI have explored how the high level UNESCO framework can be contextualized for use in places like Nigeria [pdf], just one of numerous activities it has sponsored looking at the **use of ICTs in teaching and learning in Africa** [pdf] more generally.

The ICT-enhanced teacher standards for Africa released by UNESCO-IICBA, which are an attempt to help contextualize the broader UNESCO framework and standards based on specific needs and contexts expressed by education policymakers from across Africa, are organized around six broad 'standards' or domains meant to help develop related skills in teachers as they:

(i) Engage in Instructional Design Processes  
(ii) Facilitate and Inspire Student Learning, Innovation and Creativity  
(iii) Create and Manage Effective Learning Environments  
(iv) Engage in Assessment and Communication of Student Learning  
(v) Engage in Professional Development and Model Ethical Responsibilities  
(vi) Understand Subject Matter for Use in Teaching

This publication was preceded by a related paper from UNESCO-IICBA, **ICT-enhanced Teacher Development Mode** [pdf] and was informed by a related needs assessment that looked particular at teacher training institutes and eight key recommendations that emerged from a five-year project under the **Pan-African Observatory**:

1. Develop a national policy for the pedagogical integration of ICT.  
2. Develop a national policy for teacher training in the pedagogical integration of ICT.  
3. Provide ongoing training for school staff.  
4. Develop technopedagogical resource banks for different education levels.  
5. Set up incentive plans for teachers and students to use ICT.
6. Set up spaces for collaborative dialogue (e.g., forums, annual conferences) on the pedagogical integration of ICT.

7. Identify the academic competencies to which ICT can be applied for teaching and learning.

8. Establish public–private partnerships (“Resource mobilization” is cited in this context.)

(more information here, here, and here [pdf])

No doubt some people will question some of these recommendations, and may take issue with some of the specific components of the new UNESCO-IICBA standards that were developed as a result. *Fair enough*: Related debate is expected, and even encouraged. Rather than offer a ‘last word’ in these areas, it is hoped that the articulation and publication of these standards will represent a common starting point for further dialogue and activity in this area. Coming as a result of such a lengthy process of inquiry, reflection and consultation, and just as a few countries are in the early stages of discussion and implementation of some sizable educational technology programs that have large hardware components, it is hoped that focused attention and guidance to the related professional development needs of teachers may help some African countries avoid having to learn for themselves some of the (expensive) related lessons learned by countries in other parts of the world.

The One Laptop Per Child (OLPC) program in Peru, which has helped distribute almost a million laptops to students in rural schools in Peru over the past few years, has been the subject of much international attention since the publication of an evaluation earlier this year by the Inter-american Development Bank (a recent post on the independent OLPCnews.com web site carries links to many good related articles, discussions and comments). The new head of that project within the Peruvian Ministry of education was recently quoted as saying, "In essence, what we did was deliver the computers without preparing the teachers." Let's hope that countries in Africa don’t have to learn that same lesson the hard way.

*Related items that might be of interest:*

- Teacher professional development related to the use of ICTs was a theme of the education section of the World Bank’s recent eTransform Africa paper.
- It can sometimes be difficult to navigate the main UNESCO web site and find all of the key documents related to its *ICT Competency Framework for*
Teachers. Here’s a good place to start (and have a look at this document [pdf]). UNESCO is current on version 2.0 of this work; you may also be interested in the first version of its ICT competency standards for teachers, especially the original policy framework, implementation guidelines, and competency standards modules.

- The World Bank’s SABER-Teachers project documents teacher policies for public schools in developed and developing countries in order to inform policy choices and promote policy dialogue, globally.

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Note: The image used at the top of this blog post of an Acacia tree at sunrise in Tanzania’s Serengeti National Park (“is this the dawn of a new era?”) comes via Wikimedia Commons courtesy of Daniel Zaas, who has released it into the public domain.
19. ICT and rural education in China

by Michael Trucano
originally published on Friday, 24 August 2012

Last year on this blog, I asked a few questions (eLearning, Africa and ... China?) as a result of my participation in a related event in Dar Es Salaam where lots of my African colleagues were ‘talking about China’, but where few Chinese (researchers, practitioners, firms, officials) were present. This year’s eLearning Africa event in Benin, in contrast, featured for the first time a delegation of researchers from China, a visit organized by the International Research and Training Centre for Rural Education (INRULED), a UNESCO research center headquartered at Beijing Normal University (with additional outposts at Baodin, Nanjing and Gansu). Hopefully this is just the beginning of a positive trend to open up access to knowledge about what is working (and isn’t working) related to ICT use in education in places in rural China that might more resemble certain situations and contexts in many developing countries than those drawn from experiences in, for example, Boston or Singapore (or from Shanghai and Beijing, for that matter). Establishing working level linkages between researchers and practitioners (and affiliated institutions) in China and Africa, can be vital to helping encourage such knowledge exchanges.

China’s official “Plan for ICT in Education 2011-2020”, which was published in March 2012, states that “Special focus should be put on ICT use and infrastructure building in rural areas, poor areas, and ethnical areas, aiming to narrow the digital divide among regions and schools.”

(Note: We are working off a quick and unofficial translation done internally as part of our on-going activities monitoring governmental ICT/education policies under our SABER-ICT initiative. To the best of our knowledge, there is there is no official
With that in mind:

What do we know about how ICTs are being used in schools in rural parts of China, and how might related lessons emerging from these areas be relevant to similar sorts of communities in other parts of the world?

If you are looking for answers to these sorts of questions, work emerging out of both INRULED (documenting major initiatives) and Stanford’s REAP program (examining the impact of various small programs) may be of some assistance. In its latest newsletter (April-June 2012, available here as a PDF), INRULED provides a helpful list of some of the largest and most interesting ICT/education initiatives that have taken place in rural China over the last decade. As part of its work under its iERD (ICT in Education for Rural Development) research program, INRULED is documenting good and best practices from these (and other) initiatives to help provide insight into lessons emerging that may be of interest to policymakers in other countries. These initiatives include:

**INRULED’s list of 'Good Cases' on ICT use in Education for Rural Development from China**

Case 1: Distance Education Project "School-to-School Project“
(launched in 2000, this aimed to bring Internet access to ~ 90% of Chinese schools via three basic models: instructional DVDs played on televisions; satellite TV + computers; and Internet-enabled computer classrooms plus satellite TV)

Case 2: Experiment on Leap-forward Development and Innovation of Basic Education
(228 'experiment' schools in rural areas are involved in this project overseen by Beijing Normal University)

Case 3: MOE – Microsoft "Partners-in-Learning” Project
(large scale public-private partnership begun in 2003)
Case 4: Modern Distance Vocational Education Resources Construction Project
(from 1999-2003, the Ministry of Education developed and delivered more that 130 online courses)

Case 5: "One Village, One College Student" Plan
(begun in 1999 by the open University of China, this higher education project offers courses of study in 18 agriculture-related majors)

Case 6: Poverty Alleviation through Distance Education Project
(begun in 2003 by Tsinghua University, 1,018 county-level and 2,440 village and township level teaching stations have been set up in 539 high poverty sites)

Case 7: University Agricultural Science and Technology and Education Network Coalition
(since 2003, agencies in this coalition have trained over 500,000 people)

Case 8: Village and Township Digital Learning Demonstration Center Based on the Public Service Systems
(targeting farmers and others engaged in rural agriculture)

Case 9: National Teacher Education Network Coalition Plan and National Training Programme
(building a teacher education network in China since 2003, latest initiative is training 435,000 teachers through distance learning)

Case 10: Continuing Education Network for Primary and High School Teachers
(continuing education network launched by Northeast Normal University in 2002)

Case 11: New Form of Distance Teacher Education for Less-Developed Regions
/small pilot project exploring creation of distance education learning centers in Yulin, Shaanxi/
Case 12: Training of Substitute Teachers in Primary and Junior High Schools through E-learning
(training substitute teachers in 15 less developed cities in Guangdong province)

If you are interested in this sort of thing, you may find it useful to bookmark the INRULED site and visit it from time to time in the coming months. This list may also provide a useful starting point for international researchers and policymakers looking to learn more about related Chinese experience.

let's have a look inside and see what we might learn
Based out of Stanford University, the **Rural Education Action Project (REAP)** is “an impact evaluation organization that aims to inform sound education, health and nutrition policy in China. REAP’s goal is to help students from vulnerable communities in China enhance their human capital and overcome obstacles to education so that they can escape poverty and better contribute to China’s developing economy.” REAP researchers, who are drawn from Stanford, the Chinese Academy of Sciences and China’s Northwest Socioeconomic Development Research Center, have a special interest in “exploring the use of technology to improve schooling and health outcomes, both by providing children with extra help inside and outside of school, and by educating parents in remote, hard-to-penetrate areas.”

REAP has been publishing a series of fascinating **working papers** that attempt to document and evaluate the use of computers by students in rural schools. Interestingly, and notably, this research features the use randomized control trials, considered a ‘gold standard’ in many evaluation circles (including by lots of folks here at the World Bank). Back when I worked a lot in China a decade ago on ICT/education issues, I don’t recall ever coming across Chinese researchers using RCT techniques as part of their impact evaluation work – the fact that such methodological approaches are appearing with greater frequency as part of the published research output in the sector is to me an encouraging sign. Here is a sample of some **recent working papers** published by REAP that may be of interest to readers of this blog:

<table>
<thead>
<tr>
<th>REAP working papers on ICT/education topics</th>
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<tbody>
<tr>
<td>#228 Does Computer-Assisted Learning Improve Learning Outcomes? Evidence from a Randomized Experiment in Migrant Schools in Beijing</td>
</tr>
<tr>
<td>#233 Can One Laptop per Child Reduce the Digital Divide and Educational Gap? Evidence from a Randomized Experiment in Migrant Schools in Beijing</td>
</tr>
<tr>
<td>#234 The Roots of Tomorrow's Digital Divide: Documenting Computer Use and Internet Access in China's Elementary Schools Today</td>
</tr>
<tr>
<td>#235 Computer Assisted Learning as Extracurricular Tutor? Evidence from a Randomized Experiment in Rural Boarding Schools in Shaanxi</td>
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Few people are unaware of the remarkable growth the China has experienced over the past three decades. According to World Bank figures, since 1978 the country has grown at an average rate of 9.7% a year, and became the world’s second biggest economy in 2010. The high scores of students in Shanghai as part of the last round of PISA (the highly regarded international academic assessment scheme for 15 year olds coordinated by the OECD ) are the envy of much of the rest of the world. At the same time, as noted on a World Bank China country overview briefing note, “with the second largest number of consumption-poor in the world after India, poverty reduction remains a fundamental challenge”. This is especially true for the hundreds of millions of people who live in China’s rural areas. Education – aided by the judicious and cost effective use of technologies, old and new – will no doubt play a role in how this story develops. Lots of countries are keenly interested in the Chinese experience with educational technologies. Groups like INRULED and the REAP program are helping in small but key ways to make sure that others around the world can access and learn lessons from this process. Let’s hope that many others join them in doing so.

[Special thanks to James Liu for his help in translating related documents and insights into emerging issues in ICT use in education in rural China.]

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Note: The picture of terraced rice fields in China’s Yunnan province used in this blog post ("answers on how best to proceed may come in all shapes and sizes") comes from Jialiang Gao via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution-Share Alike 2.5 Generic license. The picture of a door to a house in rural Yangshuo in the south of China ("let’s have a
look inside and see what we might learn") comes from Wikipedian Stougard via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution-Share Alike 3.0 Unported license.
20. Re-thinking School Architecture in the Age of ICT

by Michael Trucano
originally published on Thursday, 30 August 2012

What will the school of the future look like?

Most likely, it will largely look like the school of today -- but that doesn't mean it should. Few will deny that it will most likely, and increasingly, contain lots of technology. Some may celebrate this fact, others may decry it, but this trend appears inexorable.

To what extent will, or should, considerations around technology use influence the design of learning spaces going forward?

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Of course, with the continued rise of online 'virtual' education, some schools don't (or won't) look like traditional 'schools' at all. Various types of structured or semi-structured learning already take place as part of things that we consider to be 'courses', even if sometimes such things don't conform to some traditional conceptions of what a 'course' is or should be. The massive online open course (or MOOC) in artificial intelligence offered by Stanford has received much recent attention, but the phenomenon is not necessarily new (even if its current exemplars are marked by many characteristics that are indeed new, or much more developed, than those previously to be found in, for example, large 'distance learning' courses).

Let's leave aside the case of the 'virtual school' for a moment and assume that there will continue to be a need for a physical space at which students and educators will gather and interact. (Such places may be access points to virtual education, or featured various types of so-called 'blended learning', where face-to-face interactions are complemented by interactions in the virtual world -- or vice versa.) Indeed, let's assume, for our purposes here, that the school as a concept...
will presumably be along for many decades to come, and that it will have a physical representation of some sort. **What might such a school look like, especially in the era of ICTs?**

There has long been experimentation on the margins or at the fringes exploring new approaches to school architecture, but, generally speaking, such actions have usually been confined to isolated pilots on the periphery of mainstream practice and/or the result of an indulgence in high profile (and admittedly sometimes quite cool) architectural fancy.

I regularly see presentations on 'the school or classroom of tomorrow'. Usually, to be honest, this largely looks to me like most classrooms or schools do today, just with a lot of cool gadgets introduced. And often, if I am brutally honest, it looks **like a school of yesterday with lots of technology added**. I sat through one of these sorts of presentations a few weeks ago that left me and my colleagues shaking our heads, and recalling the pictures of typing classes from the 1930s and 1940s that accompanied an EduTech blog post last year that asked, *School computer labs: A bad idea?* I also thought back to a visit I made a few years ago to a school in Cambodia where a 'future classroom' meant that rows of sewing machines had been replaced by computers. In these sorts of cases, one can concede that the rooms do indeed look superficially different, while at the same time suspecting that pedagogical practices and learning activities may remain the same.

Given the changes that massive investments in new technologies are bringing about in some places, policymakers and planners are asking themselves whether it is more cost effective to retrofit old classrooms, or if instead it might be more economical to build new ones. Even in eras of fiscal austerity, new schools do continue to be, and are being, built around the world, especially in countries whose ambitious Education For All goals continue to require new school construction to accommodate the many new students entering (or re-entering, or continuing) formal schooling. In some places, the success of EFA initiatives in helping to swell primary school enrolments is having a knock-on effect at the secondary level, where new schools are required as a result. It is perhaps worth noting that, in some of these places, plans are simultaneously underway for large scale introductions of ICTs and computers for the first time.
If indeed building new schools is feasible, should we take this opportunity to reconsider our approach to school architecture, and how it might support or inhibit various types of learning practices that are desired?

Each year the World Bank co-sponsors a **global symposium on ICT use in education** with the government of Korea and other partners. As part of this event, hundreds of policymakers from around the world have journeyed to Seoul to share experiences and learn lessons from Korea's efforts to use educational technologies. For many of these folks, Korea represents a potential model for the future of education in their countries about which they want to learn more. Given the strong results that South Korean students have demonstrated recently on international assessments like PISA, and the large investments to introduce educational technologies into schools during roughly the same period of time, this interest is not too surprising. (We, and our Korean partners, are of course quick to remind participants that correlation is not necessarily the same thing as causation.) The symposium always includes a site visit to KERIS, the country's national ICT/education agency, which has been at the forefront of the planning and implementation of ICT-related educational initiative in Korean schools and whose headquarters includes a prototype 'classroom of the future'. It's neat stuff -- these things usually are -- but each time I leave the 'u-class', I am more convinced than before that, as these things age, they often reveal as much about a particular vision of the future from the past as they offer insight about what actually might be coming next. (The phenomenon is not unique to the school sector, of course: The folks at Disney are in a constant struggle to make sure that the version of
'tomorrowland' in their theme parks does not morph into 'yesterdayland'.) This is not to criticize attempts to imagine the future in this way, whether in Korea or in Europe or elsewhere -- prototypes of these sorts have very real practical values and can be important tools to move policy and planning discussions along in useful ways -- but rather to highlight how difficult the whole exercise can be.

As many countries embark on ambitious plans to build new classrooms, and retro-fit old ones, in part to accommodate (or anticipate) the introduction of new technologies, what guidance might we have for them?

Currently, many places are struggling with questions like how (or whether) to introduce new network cabling (and allow for this cabling to be easily accessible and easily replaced when more advanced options become available); how to plan the physical structure of a school keeping in mind the potential topologies of wireless networks (should more permeable walls be considered?); and how to meet current and projected future needs for access to electricity and electrical outlets in new places.

While the specifics of such questions may be changing, people have been asking (and anticipating) these sorts of questions for many years. (Here, for example, is a study from Australia in 2000 on *The Impact of ICT on Schools: Classroom Design and Curriculum Delivery* [pdf]; such questions were being explored more than a decade before that as part of the seminal *Apple Classroom of*
Can Tomorrow project [pdf], and anticipated in speculative academic papers even earlier).

Will their environment shape their learning, or vice versa?

Given that technological life cycles can be measured in years, while buildings last for decades (and that traditional pedagogical practices often persist even longer), how can policymakers plan for the unexpected?

In some places (like in the example of the Cambodian school mentioned above) places that were once meant for practical hands-on 'handicrafts' instruction and courses are being converted to computer labs. In some 'advanced' school systems (some schools in Finland come to mind), there is renewed interest in tradition crafts instruction -- not, as in the past, to meet labor market needs for handicraft skills, but rather as part of an interest in education in design, with physical modeling in clay and wood complementing virtual modeling with computers.

Often as a result of partnership with industry, some planners are exploring the extent to which 'normal' classrooms should model 'modern workplaces'. Just which sorts of workplaces such classrooms should model can, not surprisingly, be a hot topic of discussion in such places. Historically such considerations have often been related to planning for so-called TVET initiatives (technical and vocational education and training), but the large scale introduction of ICTs in an era where ICT-enabled services industries continue to grow has broadened such discussions in many places.
The promise and potential for new technologies to enable increasingly 'personalized' learning activities and approaches has led some planners to consider how to allow for classrooms (or 'communal learning spaces') to be re-configured and segregated as needed. This can allow individuals to pursue different learning activities at the same time in the same classroom. It is also an acknowledgement of the fact that, in a space where the traditional 'front' of the classroom (represented by a blackboard and podium or teacher's desk) may just be one focal area among many -- with (for better or for worse) the screen in front of a student perhaps the most important visual focus point during much of a class period.

(Have a look at some of the classroom set-ups that characterize the School of One initiative in New York City, or San Diego's High Tech High, to get a flavor of how some of this might look in practice.)

For many years the OECD has run programs that have explored various topics in 'architecture for education' and has supported a related Centre for Effective Learning Environments [pdf]. It maintains a useful Database of Best Practices in Educational Facilities Investment and every few years publishes a sort of showcase document highlighting new and best practices in school design around the world. The latest volume, Designing for Education: Compendium of Exemplary Educational Facilities 2011, is well worth browsing, as a related slide presentation from Professor Christian Kühn of Technical University of Vienna and a
short essay from 2010 by Peter Lippman which asks, *Can the physical environment have an impact on the learning environment?*

Whatever decisions are eventually reached, considerations of ICTs use in schools as well as planning related to school architecture should flow out of larger, more fundamental considerations of the educational strategies and learning philosophies at the heart of a schooling system, and of the role of education in helping communities and societies realize their larger developmental objectives.

(In some countries, I have remarked to myself the similarity in the architecture of schools and prisons ... but I am sure this is just a coincidence ....)

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*Note:* The first four images used in this blog post come from the [World Bank Photo Collection on Flickr](https://www.flickr.com). The image of a **young boy entering a school in rural San Jose, Colombia** ("in Colombia, entering a school of the past ... or the future?") is © Charlotte Kesl / World Bank; the picture of **students in a computer course at a school in Cambodia**("looking down ... or forward?") is © Masaru Goto / World Bank (it is *not*, I should note, the school that I visited which I reference in the body of this blog post); the **image of two girls** entering a courtyard of a school in rural Antioquia, Colombia ("framed by their environment") is © Charlotte Kesl / World Bank; the **picture of delapidated classrooms** in the Jakob Basson Combined School in Namibia ("will their environment shape their learning, or vice versa?") is © John Hogg/World Bank. All are used according to the terms of their respective [Attribution-NonCommercial-NoDerivs 2.0 Generic (CC BY-NC-ND 2.0)](https://creativecommons.org/licenses/by-nc-nd/2.0) licenses. The final picture of a village school in the Netherlands ("... and people say that introducing technology into schools will lead to chaos!") is from a famous painting by Dutch artist Jan Steen that hangs in the National Gallery of Scotland; it comes via the [Icelandic Wikipedia](https://is.wikipedia.org) and is in the public domain. Its placement at the end of this blog post was inspired by its inclusion in the presentation by Professor Kühn mentioned above.
The World Bank is currently working with a few countries that are planning for the procurement of lots of digital learning materials. In some cases, these are billed as 'e-textbooks', replacing in part existing paper-based materials; in other cases, these are meant to complement existing curricular materials. In pretty much all cases, this is happening as a result of past, on-going or upcoming large scale procurements of lots of ICT equipment. Once you have your schools connected and lots of devices (PCs, laptops, tablets) in the hands of teachers and students, it can be rather useful to have educational content that runs on whatever gadgets you have introduced into to help aid and support teaching and learning. In this regard, we have been pleased to note fewer countries pursuing one of the prominent worst practices in ICT use in education that we identified a few years ago: "Think about educational content only after you have rolled out your hardware."

At least initially, many education authorities in middle- and low-income countries seem to approach the large-scale procurement of digital learning materials in much the same way that they viewed purchases of textbooks in the past. On its face, this is quite natural: If you have tried and tested systems in place to buy textbooks, why not use them to buy 'e-textbooks' as well? (We'll leave aside for a moment questions about whether such systems to procure textbooks actually worked well -- that's another discussion!) As with many things that have to do with technology in some way, things become a little more complicated the more experience you have wrestling with them.
Pretty much all schools with decent connectivity access free educational content on the Internet. (Indeed, this is one reason that schools are connected in the first place!) Many schools buy (or are given) subscriptions to web sites that contain learning materials and, at the district, school, classroom or even individual teacher level, digital educational content of various types is regularly bought and used in ad hoc ways. As ICT use becomes more widespread across many education systems in middle- and low-income countries, many education ministries prefer to have schools accessing content from one central place that is in some way overseen by the ministry itself. There are many reasons for this impulse -- the inevitable desire of a bureaucracy for control is one, of course, but there are also perhaps more legitimate educational reasons related to ensuring quality, child digital safety, security issues, clear linkages between educational content and curricular objectives, privacy, a desire to link teacher professional development activities to specific educational content, concerns about intellectual property violations, and cost savings through bulk purchases, to name just a few.

**If you are acquiring and using digital educational content, what is the nature of that content?**

*Increasingly, it is ‘free’.* By free, we mean here that its use comes at no cost, either because it is it is available as a so-called 'open education resource', because the copyright holder does not charge for its use, or because it is pirated.

(For what it's worth, I notice the use of pirated content in schools I visit more often now that I did in the past; I have *always* remarked to myself on just how widespread the use of pirated software is in many schools. Mentioning this here is not meant to condone such activities -- far from it! -- just to acknowledge that this is a practical reality in many places, and that suppliers of educational content and education systems alike have to contend with this reality.)

In some cases, 'free' also refers to the fact that users can adapt, modify and redistribute this content. My goal in talking about 'free' here is not meant to start a conversation about the merits of open educational resources, or about proprietary vs. 'open' content. There are plenty of other places where you can tap into vibrant discussions of this sort on the web. Rather, it is to highlight the cost issue is not what it once was.
Increasingly, certain digital content has rather complicated 'ownership'. A piece of content, for example, may be 'owned' by a publisher, but include within it content licensed for a fee from a third party, and well as content licensed without a fee from a third party under a Creative Commons license. Not sure what this means? Imagine a 'page' in an electronic textbook that you bought from a publisher that incorporates a graph that was created by university professor and made available for educational use under a Creative Commons license and an accompanying video that the publisher had licensed for use from a news organization. When a government 'buys' such content, what exactly is it buying?

Sometimes, the content is delivered, or made available, in a way that is closely linked to the use of certain devices or certain technologies but which can make it difficult to utilize this content once such specific devices or technologies are no longer used. What good is it if you 'own' content but you no longer have devices on which you can access this content?

Recognizing such things, some places are exploring a decidedly pragmatic approach. They take the position that they are buying not a free-standing product (like they did with "a textbook"), but rather that they are buying what is essentially a time-bound service("access to what a textbook contains"). We need digital materials to use as part of our biology instruction, a ministry of education might say. We'll buy some that we can use over the next five years. At that point, we'll looking into buying some more to use over the subsequent five years.

What does this mean, why might it be an important and useful distinction, and is this a prudent course of action?

Let's take the last part first: Whether this is prudent depends on your particular circumstances. Based on what I've observed in practice and through talking with education ministries making decisions in this regard, there is no one correct approach to this issue. In addition, technological changes can regularly complicate whatever approach you are currently taking.
In some cases, we find that the private sector is starting, for better or for worse, to push ministries of education to think in terms of services versus products.

In order to understand what is happening in various related markets around the world, we meet irregularly (but often) with educational publishers to inform ourselves about what they are doing, and what trends they might be seeing. A few years ago, I began to notice a change in the language used by some of the educational publishers with whom I was speaking. We are no long just selling books, some companies would tell us, but rather learning management systems [or, in some very interesting cases, assessment systems] in which educational content is inextricably embedded. Like their counterparts in 'content' industries like in the music industry found, and which the video entertainment industry is currently finding, many educational publishers are confronting an emerging reality that electronic content delivery is quickly re-shaping their longstanding business models, whether they like it or not. Embedding content into some sort of learning management system, especially when this is closely linked with formative assessment tools, is one way for publishers to respond to challenges represented by piracy and the 'open content' movement. (While there are lots of 'open educational resources' in wide use around the world, and I often see open source learning management systems like Moodle used in school systems, I have never seen a dedicated 'open source educational assessment system' in widespread use in multiple countries. I don't doubt that such things exist -- I have had people pitch them to me -- but I have never actually encountered such a thing being used in a school I have visited.) Monthly or yearly subscriptions do tend to have more regular cash flow consequences than large, one-off sales of textbooks or other
types of non-digital learning materials. (As many publishers evolve into what look in many ways an awful lot like IT or software firms, there are obvious parallels here with the steady growth in business models deployed to help service corporate clients using a 'software as a service' model.) As ministries of education struggle with challenges related to running their own data centers to host and serve digital educational content to lots of schools at once, many are wondering if it might not be more cost effective to off-load this responsibility to some other organization -- where publishers have close links to firms that can do just this, outsourcing this work starts to appear more attractive to some educational authorities.

Such arrangements can have numerous advantages from the perspective of governments. Payments can be smoothed out over time, and not done as a large 'lump sum' as when, for example, textbooks are delivered. An education ministry is freed from having to worry about, plan for, and react to the inevitable changes in technology that happen regularly, and can instead focus on an area which is presumably its core competence: running a school system and educating children. But this sort of arrangement carries with it some very clear disadvantages and drawbacks as well.

At a basic level, there is a challenge when trying to do something that you have not done before, where your past experience does not offer ready guides for your future actions. Some specific challenges that we see ministries of education struggling with, especially in middle income countries, include:

**What happens when a contract is complete, and you don't 'own' any of the content you have been using?**
When you buy textbooks, they last a long time. If you need to make them last another year beyond what you originally envisaged, you can probably make this happen. (This is not always a good thing: Some countries are infamously for continuing to use textbooks that are long out of date.) If you do insert a sort of 'rent-to-own' clause into your contract that says the government will own the content at end of the contract, how can ensure that you do in fact have full ownership rights to the content you have purchased (especially where third-party licensing may be involved) and that the content itself still is of value, especially if it is deeply embedded into a learning management or assessment system to which you may not have the rights, or which needs to be updated (or indeed is obsolete).
How can you avoid 'lock-in' of various sorts?
This includes being locked into not only the products and services of a particular company, but also to particular technologies.

What if you buy content, or access to content, drawn not only from a publisher's own intellectual property, but which also includes content that is freely available, and which the publisher itself simply re-packaged and did not pay for -- should you care?
Some places are asking themselves the extent to which the value is in the individual content itself, versus the curation and sequencing of such content, linked to specific curricular objectives (and in some cases, specific means of formative assessment).

How can you ensure that you are getting value for money?
Most places have pretty widely known and transparent historical and market benchmarks for the costs of textbooks. What benchmarks should you use for costs in fields changing as quickly as that of digital content and information technology?

How can you ensure the privacy of teachers and students who are regularly accessing digital learning content maintained by a third party, or which contains potentially personally identifiable information which is accessible by third parties?

These are just five of dozens of such questions that we see ministries of education (and the finance ministries who fund them) asking, and struggling with, around the world as they embark on large scale purchases of digital education content. In almost all cases in which I have been involved, initial discussions almost always consider the procurement of digital learning content to be a product. Over time, however, some places are wondering if in fact it might be more useful to consider such things to be a service, challenging both existing approaches to procurement, and the nature of what it is exactly that schools are buying when they acquire new educational content.
On somewhat related notes, here are two recent reports that you may have missed:

The 2012 Paris OER Declaration was formally adopted and released at the 2012 World Open Educational Resources (OER) Congress, held back in June at UNESCO headquarters in Paris. The OER movement has helped to re-shape opinion in various ways in many ministries of education about intellectual property rights and the use of educational materials.

Released this week by the State Educational Technology Directors Association in the United States, Out of Print: Reimagining the K-12 Textbook in a Digital Age, highlights "the sea change underway in the multi-billion dollar U.S. K-12 instructional materials market enabled by recent technology and intellectual property rights innovations." It begins by stating:

"Technological innovation is driving fundamental changes in all aspects of our lives. This is especially true of digital content, as our use of e-books, downloadable music, streaming television and movies, and online social networks has exploded. However, the explosive growth in our use of digital content seems so far to have eluded many of the 50 million students enrolled in public K-12 education. In spite of the fact that states and districts spend $5.5 billion a year in core instructional content, many students are still using textbooks made up of content that is 7 to 10 years old. In 2012, it is still the exception—not the norm—that schools choose to use digital content, which could be updated much more frequently, or opt to use the multitude of high-quality online resources available as a primary source for teaching and learning.

The reasons are many, but the result is this: Too few schools are exploiting digital instructional content for all of its benefits. While many in education continue to perpetuate the decades-old textbook-centric approach to providing students and teachers with instructional materials, the gap is widening between what technology allows us to do in our lives—how we communicate, work, learn, and play—and how we’re educating our kids."
Nonetheless, it is not a question if the reimagining of the textbook will permeate all of education, but only a matter of how and how fast."

Whether or not you ultimately agree or disagree with the messages, conclusions and recommendations contained in these two documents, reading them may force you to confront some of your thoughts, practices and assumptions related to the creation, acquisition and use of digital learning materials. In the end, you may decide that how you have been doing things in the past is still a useful template for action as you move forward. Fair enough. That said, forcing yourself to challenge your existing practices and assumptions from time to time -- especially if you are about to spend a *lot* of public monies -- perhaps isn't such a bad thing either.

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*Please note:* The image used at the top of this blog post of a sculpture which stood across from the Humboldt Universität during the 2006 World Cup in Germany as part of the Berliner Walk of Ideas ("tell me again why we didn’t buy the digital version?") comes from Wikipedian Lienhard Schulz via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution 2.5 Generic license. The sculpture itself, "Der moderne Buchdruck", is meant to commemorate Johannes Gutenberg. The second image used in this blog post of Sir Isaac Newton’s copy of *Philosophiae Naturalis Principia Mathematica* ("a decidedly old school textbook") is © Andrew Dunn 2004 and comes via Wikimedia Commons. It is used here according to the terms of its Creative Commons Attribution-Share Alike 2.0 Generic license.
22. Planning for an edtech RFP: Technical vs. functional specs

by Michael Trucano
originally published on Sunday, 30 September 2012

ICT-related procurements in the education sector, especially large scale ones, are not easy. A recent World Bank Internal Evaluation Group report noted that "ICT procurement has been highlighted as a major implementation constraint in several country and regional portfolio reviews and is a critical dimension of design." Rapid changes in technology mean that many ministries of education have a hard time keeping up with what's current in the market, let alone what might be coming next.

Even in places where anti-corruption measures are well considered and implemented, government auditors and external watchdog groups may be challenged to identify dodgy practices in some ICT-related areas. (Have you ever read the fine print on large scale bandwidth contracts for schools? Such things are often not for the feint of heart.) It is not unknown to hear whisperings about vendors -- or consultants close to them -- providing 'assistance' of various sorts in writing a request for proposals (or certain technical specs that appear in such RFPS), and of course vendors often hope that their showcase pilot projects may inspire ministries of education to think in certain ways about what is possible, and even desirable. For many ministries of education, the line between 'influence' and 'undue influence' in such cases can be very clear in some circumstances, but rather hazy in others.

As part of a very interesting Q&A period after a presentation at the World Bank a few years ago, mention was made about some of the challenges faced in a state in southern India which was exploring whether so-called thin client solutions might be worth considering in its schools. Essentially, the issue was this: Traditional practice...
when procuring computers for schools had focused on ensuring that each computer met a defined set of minimum technical specifications. In an alternative, 'thin client' set-up, it was possible to use workstations that had less robust specifications, provided they were connected to a powerful server whose processing power substitutes for that of the client computer. To oversimplify:

*traditional* approach: lots of pretty powerful computers

*alternative* approach: lots of relatively underpowered computers, connected to one very powerful computer

The point here is not to imply that one type of arrangement is on its face better or worse. Rather, it is to highlight that, if you write an RFP in a certain way -- in our example here, requiring that *every* computer meet a certain relatively high technical specification (processing speed, hard drive size, etc.) -- you may exclude proposals that feature non-traditional or 'alternative' or new approaches.

One way around this is to put more emphasis on functional specifications, rather than technical specifications, in certain components of your RFP. Not sure what this means in practice? When discussing such issues with ministries of education, I often point to an RFP at the heart of a procurement process in the U.S. state of Maine as a way to highlight an approach to procurement that is, at least in terms of most of the places where the World Bank works helping to advise education leaders, rather rare. While I am certainly no procurement expert -- thankfully we have plenty of very good ones at the World Bank to whom I can refer people -- I offer the comments below based on many discussions with ministries of education about their challenges in this regard, in case doing so might be of any interest.

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The Maine Learning Technology Initiative (MLTI) has been seen as a pioneer in exploring so-called "1-to-1 computing", where each child has his/her own computing device. (For more information, please see a previous blog post, *The Maine thing about 1-to-1 computing*, or visit the MLTI or Maine International Center for Digital Learning sites.) As a result, Maine, despite being a small U.S. state, has had an outsized influence on thinking on educational technologies matters in many places.
I sometimes share Maine's 2006 RFP [pdf, full text] as a way to provoke discussion around approaches to planning for, and purchasing, not just individual pieces of hardware, software and related training and support, but rather a whole integrated package of such things in ways that may help a ministry of education meet its objectives.

Maine will be releasing its next big RFP in December, and has been soliciting public input and feedback this year via a number of channels, including a dedicated web site. The good folks in Maine explain their approach to RFPs in this way:

"The RFP process is designed to describe a challenge and the desired outcomes. It is intended to provide specifications and parameters for the solution that may be proposed by a bidder. Finally, it is intended to be allow bidders as much flexibility as possible to propose innovative solutions to help solve the challenge and support the outcomes as defined by the RFP. This means that an RFP should avoid being prescriptive (i.e. defining what equipment or software tools should be included)."

Most RFP processes related to educational technologies that I have looked at are all about being prescriptive, about defining -- often to a very exacting degree -- what equipment or software tools should be included. In Maine, they are (roughly speaking) happy to leave it for the market to propose specific technical specifications, which are then assessed during the evaluation of the proposals that are submitted. Such an approach is potentially risky. It pre-supposes that there is a vibrant marketplace of firms who can propose workable, innovative solutions to meet the specific objectives that the government has identified. It also assumes that there is a highly competent set of people who can evaluate -- using a set of clear, rationale criteria -- proposals that could potentially feature radically different approaches to meeting the government's stated objectives. On the other hand, might it be more risky for the government itself to assume up front that it can accurately predict what the best specific technology 'solution' might be, especially in an area where technologies are changing so quickly?
at first glance things may look a bit strange
when you see how they’ve been cooking things up in Maine,
but you might find the approach there rather interesting ...

Some very quick examples of language from the 2006 Maine RFP:

3.3.2.2 Device Portability

*What the RFP says:* "The device will be able to be carried conveniently and easily by students and teachers – either via a provided carrying case or some built-in carrying ability. The portable computing device shall be lightweight. While the Department will not mandate a specific maximum weight, as a guideline the Department would prefer to see a device and all its components that weighs six pounds or less. In general, the lighter the better."

*What the RFP does not say:* The RFP does not identify the specific type of device, i.e. laptop, 'netbook' or tablet. Instead, it offers some guidance about what the attributes of such a device might be.

3.5.2 Device Reliability

*What the RFP says:* "The solution will provide device reliability and a service level that ensures no student is without a functioning device for more than one (1) school day. This may mean that different support plans need to be in place for different schools."

*What the RFP does not say:* The RFP does not mandate a specific approach to solving technical problems with the devices. Instead it says that, whatever
the problem is, a student can not be without a device he/she can use for more than 24 hours, and that the vendor is responsible for coming up with creative solutions to making sure this objective is met.

3.7.2.2 Services by Provider

What the RFP says: "The bidder should describe the full potential for curriculum integration and system capabilities within the application of the proposed wireless network in the educational setting; describe how it would assist schools in identifying and achieving their desired level of curriculum integration and system capabilities; and describe the bidder’s experience in maximizing student achievement with wireless networks in educational settings."

What the RFP does not say: The RFP does not mandate a specific approach to the use of the vendor’s equipment, content, etc. to help meet learning objectives. Instead, challenges the vendor to identify how its 'solution' will work, and how this will make a difference for student learning.

The examples are meant to illustrate how an RFP can articulate some specific functional requirements while at the same time challenging a vendor to demonstrate how it will help educational authorities and institutions meet their specific objectives. (For more examples -- including perhaps some better ones -- you are invited to have a look at the language of the RFP itself.)

Even assuming (a) that an RFP is well crafted, informed by a clear vision for what a ministry of education wishes to accomplish; (b) that a sufficient number of competitive proposals are generated in the market; and (c) that government is able to evaluate such proposals according to a systematic, rational process; governments still need to negotiate and write a contract to guide the implementation of the project. In doing so, they need to ensure that they can effectively monitor the actions of the vendor, with clear penalties if certain objectives are not met, and provide for enough flexibility that, if things simply aren’t working out or if technological innovations result in new opportunities for reaching project goals more effectively, both sides can come together to restructure things in ways that are legal, transparent and practical. Translating the grand ideas and visions and that animate proponents of doing lots of transformative things with technology in the education sector into concrete, measurable, workable contracts is no easy thing.
Many large scale educational technology initiatives are billed as 'public-private partnerships'. While I am not expert on such things, I do find that the 'partnership' component of many such initiatives is rather ill-defined. For me, PPPs are at their heart about the sharing of risks -- if the vendor is not sharing risks, what you have is really a basic contracting relationship, perhaps with a little corporate social responsibility thrown in to sweeten the sauce. There is nothing wrong with this approach, but it can at times be difficult to characterize such an arrangement as a real 'partnership'.

My former World Bank colleague Charles Kenny has been talking recently about "The Case for Routine Publication of Government Contracts", arguing that, while public monies are used by governments to buy things, "the contracts that say who is going to provide what services, where, when, and how; those contracts aren’t public so citizens don’t know what they’re paying for.” Whether or not you buy Charles's argument, disclosing -- and archiving in a public, permanently accessible place -- RFPs related to government educational technology procurements would be an important first step toward greater openness and transparency. We are regularly asked here at the World Bank for examples of RFPs so that other countries can learn from them. Maine has done a good job of archiving the RFPs it has used, as well as other key documents that have informed its history. You might wish to have a look; there's some interesting stuff there. Most other high profile educational technology initiatives around the world have not done quite as good a job of this. It would be interesting to see what might happen if some of the related contracts that results from these RFPs were made publicly available as well.

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some related resources that might be of interest:

- World Bank's procurement site provides some specific guidance related to Information & Communications Technology Procurement, including preparing standard bidding documents and a useful short guidance note [pdf] from the Europe and Central Asia department. You may also find this document on procurement arrangements applicable to Public-Private Partnerships (PPP) contracts financed under World Bank projects helpful in highlighting a number of key issues.
• NASPO's Comparative Review of State IT Procurement Practices [pdf] in the United States may help places benchmark their own approaches to such things.

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*Note:* The image used at the top of this blog post of a marriage proposal in Helgoland ("should she be more interested in ensuring that he meets her technical or functional specifications if this partnership is to work?") comes from a painting by the Canadian genre artist Henry Ritter via Wikimedia Commons. It is in the public domain. The second image of a group of people in Maine preparing some lobster ("at first glance things may look a bit strange when you see how they've been cooking things up in Maine, but you might find the approach there rather interesting ") was taken by 'schooner guest' and originall uploaded to the Internet by 'CaptBren'; it also comes via Wikimedia Commons and is in the public domain.
In the decade since the term 'open education resources' was formally identified and adopted by UNESCO, related "teaching, learning or research materials that are in the public domain or released with an intellectual property license that allows for free use, adaptation, and distribution" have been slowly but surely creeping into mainstream use in many education systems around the world. North America has recently seen prominent announcements about projects to provide free, online open textbooks in British Columbia and California, following similar sorts of headlines out of Poland earlier in the year. In June, the so-called 'Paris Declaration'[pdf] was released as part of a prominent international effort both to "increase government understanding of the significance of open education resources and to encourage more governments to support the principle that the products of publicly funded work should carry such licenses." In conversations with education ministries in many low and middle income countries over the past year, I have seen a marked increase in the interest in exploring the relevance of the 'OER movement' to national efforts to procure and develop digital learning resources. Traditional educational publishers have been monitoring such efforts closely, identifying both potential threats to existing business models, and in some cases, ingredients for potentially new business models as well.

How might we be able to track related initiatives around the world?

Two good places to start are the OER Policy Registry maintained by the folks at Creative Commons and the recent Survey on Governments’ Open Educational Resources (OER) Policies [pdf] published by UNESCO and the Commonwealth of
Learning. A number of useful search engines can help identify specific open educational resources for use.

Tracking such efforts might be useful for a number of reasons. At a perhaps mundane level, a number of prominent groups have been promoting the development and use of such things, and this may help us discover whether such support and advocacy is having any substantive impact. More interestingly, doing so may help us better identify some of the fault lines that are opening as a result of the increasing widespread use of ICTs in education systems around the world. In many ways, the open education resource movement embodies an influential line of thought and set of activities that are helping to shape plans for the large scale roll-outs of ICTs in many educational systems, especially in developing countries. A number of rationales have been advanced in support of OER initiatives. What impact might such initiatives -- and the various reactions to them -- have for learners and teachers around the world?

Some countries that are in the process of planning for huge increases in the number of learning resources they will make available to students and teachers are finding that, in the digital age, with the potential for content to be easily copied, adapted and re-used in other contexts, the challenge of keeping track of just who owns what piece of content, and what usage rights or restrictions follow from this ownership, is adding layers of complexity to their efforts to provide access to digital learning materials. As governments continue to go into the open market to procure digital learning materials, to what extent do they need to, and should they, care about the different sorts of intellectual property rights associated with that content? We might discover some relevant insights by asking a few more general questions, like: Are there governments that are using lots of ‘open’ content already? If so, how might we know this is happening -- what might we learn from this experience?

Mapping the use of OER around the world might be a useful exercise to help inform some of the answers that emerge to these sorts of questions. Canada's Athabasca University is currently trying to catalyze the diffuse global ‘OER community’ to explore collaboratively how OER projects around the world might be better identified, how the resulting data might be made available in useful formats, and how related tracking and mapping activities might be supported over time. If you are interested in learning more about this initiative, taking part in it, or even monitoring its progress, you would do well to visit a related page on
the University of Athabasca web site. A related online discussion kicks off on 12 November, and the eventual results will, I expect, be openly available to all.

Some additional items that may be of interest:

- A Basic Guide to Open Educational Resources (OER) from the Commonwealth of Learning, a group that has sponsored a lot of work in this area.
- Through its support for scores of related projects and organizations, the Hewlett Foundation has been instrumental in the growth of the open educational resources. Hacking Education with Hewlett’s OER Grantees is a short blog post as a result of the most recent meeting of organizations that have benefitted from Hewlett support. Hewlett’s work in this regard would make for an interesting case study of how a single funding organization can catalyze innovation by focusing substantial resources on a particular issue and helping to grow and nurture an entire ecosystem of groups with similar interests and goals. (How might such an ecosystem survive and evolve if -- or once -- its lead benefactor inevitably turns its attention to other issues and causes? That might potentially make for an interesting future case study as well.)

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Note: The image used at the top of this blog post ("openness -- packaged and available for your use and consumption") comes via Wikimedia Commons from a graphic used on the cover of the book Open Initiatives: Offenheit in der digitalen Welt und Wissenschaft and is used according to the terms of its Creative Commons Attribution-Share Alike 3.0 Unported license. (That book, by the way, available for free download [pdf] from the Saarland University Press, although if you want to read it, you'll probably want to know some German!) It is used according to the terms of its Creative Commons Attribution - Share Alike 3.0 Germany license and is inspired by this work, which was originally uploaded to Wikimedia Commons by Joadl.
24. Analyzing ICT and education policies in developing countries

by Michael Trucano
originally published on Friday, 9 November 2012

For the last year or so, we have been collecting policy documents related to ICT use in education from around the world, with a specific interest in trying to document policy intent in developing countries, especially in East Asia. This is one component of a larger initiative at the World Bank called Systems Approach for Better Education Results, or SABER. As part of our SABER-ICT project, we are trying to help policymakers as they attempt to assess and compare their own policies against those of comparator countries around the world. Here's a very real scenario:

An education minister approaches the World Bank and asks for help in formulating an 'ICT in education' policy, in preparation for what is intended to be a large scale investment in educational technologies. She asks us:

What might be important to include in such a policy?

While a lot of useful things have been written on this topic, it can often be difficult to present evidence-based policy advice related to ICT use in education to inform large scale investments in educational technologies across an education system based on hard, rigorously collected data for the simple reason that there is actually not a lot of rigorously collected, globally comparable data out there.

(This is slowly beginning to change: For a few years the World Bank has participated in an international Working Group on ICT Statistics in Education (WISE) led by UIS, the UNESCO Institute for Statistics, that is gathering internationally comparable data in this area as part of a larger international, multi-stakeholder initiative to improve the availability and quality of ICT data and indicators, particularly in developing countries. The results from
This important initiative will provide key inputs into the World Bank’s SABER-ICT initiative going forward.

This is not to say that we know nothing about policy development in this area. Here at the World Bank, we have of course had some quite useful and successful experiences in helping dozens of countries with the process of developing such policies, and we do try to stay connected to and learn from experiences in other countries where we are not, or have not been, directly involved. (For many years, we used something called the ICT-in-Education Toolkit for Policymakers, Planners and Practitioners to help facilitate this process; unfortunately this web-based collaborative planning tool is no longer maintained).

Rather, it is meant as a reminder that

(1) much of what we do 'know' is based on anecdotal evidence, or on theories (hypotheses might actually be the more accurate term) that are not supported by a rich evidence base demonstrating cause-and-effect (or sometimes, even loose correlation)

(2) much of what we collectively 'know' is derived from experiences from OECD countries that may or may not be relevant to middle and low income countries

(For what it's worth, we do seem to have an increasingly good handle on what doesn't work.)

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Back to the question that was posed near the top of this blog post: One response to the challenge from the education minister would be to present what global best practice suggests are the important components of an ICT/education policy in a general, abstract sense. This is useful, but only to a certain point. We find that ministries of education are often more (or at least just as) interested in studying the specific policies in place in other countries as part of an exploratory process of investigating, identifying and articulating what they wish to include in their own policies.
In our experience, countries are interested in policies from four types of places:

1. **Global 'best practice' examples**
   As a practical matter, these usually tend to be policies from places like the United States, Singapore and South Korea. While often rightly considered leading global examples, the relevance of such policies for (for example) a low-income country in Africa just now seriously considering investments in educational technologies, and so contemplating the development of its first related policy, or even for a middle income country from Eastern Europe or Central Asia which has had more experience over a longer period of time, but only a very basic related policy to help guide new investments, can often be somewhat questionable.

2. **Countries that are ‘just a bit more advanced than we are in this area’** *(aspirational comparators)*
   While policies from Country X may represent global best practice, policies from Country Y, which not too long may have been in the position much like that of the country considering the development of a new ICT/education policy, may actually offer better models.

3. **Similar countries (comparators)**
   Ministers are often interested in what countries 'like us' (essentially at the same general stage of development, with similar characteristics, etc.) are doing.

4. **Neighboring countries**
   Not surprisingly, ministers are also often quite interested in 'what the neighbors are doing'.

It is not terribly difficult to find the small number of policies that fit under category #1, as most places look to OECD examples in this regard, and policies from such places are often quite easy to track down on the Internet, or via consultants who regularly work providing related advice.

Do experiences from OECD countries (or those at similar level of economic development, like Singapore) in this regard really represent 'best practice'? I am reminded of the story about the man who lost his keys, and so was found looking for them under a lamp post, 'because that's where the light is'.
Perhaps the keys are indeed to be found in the near vicinity … but it just might be useful to shine some light on other places as well.

Policy documents from middle income or upper lower income countries that may offer more relevant short and medium term inspiration (category #2) are often more difficult to locate, however, and those from categories #3 and #4 can often be *extremely* difficult to find. We are especially interested in investigating and sharing policies from these last three categories. As part of this effort, we maintain a big list of policy documents that we have collected. (Here’s some background on this effort, and a link to the latest full document list. If we are missing any, please send them along to us!) And who knows: It just might be possible that some of the policies under categories #2-4 may belong in category #1 as well!

We readily concede that there is a major limitation in just examining policy documents: They only signal *intent*, and typically contain little insight into whether a given policy (or policy component) was or is being implemented faithfully, *nor* do they document what impact (if any) resulted from the implementation of related policy guidance. Still, we think there is a value in trying to investigate and analyze policy intent -- if you don't know what you hope to achieve, how will you know what you should be monitoring over time, let alone to link any observed outcomes or impact with specific policy guidance that may have been offered?

Based on our preliminary review of policy documents, we find that most ICT/education policies address the following topics to varying degrees:
1. Vision & planning
2. ICT infrastructure
3. Teachers
4. Skills and competencies
5. Learning resources
6. Education management information systems
7. Monitoring & evaluation, research & 'innovation'
8. Equity, inclusion and safety

We have also noted a number of 'cross-cutting themes' that regularly appear in a few policies, related to things like distance education / distance learning; 'mobile learning'; early childhood development (ECD); open educational resources; community engagement; and data privacy that are on the agenda for certain sub-sets of countries.

Now, reasonable people can perhaps disagree on whether or not these are in fact the components that good ICT/education policies should contain. One (decidedly modest, perhaps) initial goal under SABER-ICT is to try to document what such policies actually do contain, in the belief that such information is operationally relevant to ministries of education and their partners who are devising such policies going forward. Over time, it appears that how various national policies address these eight topics appears to change, and so we are also trying to assign a general 'stage' to each country's consideration of a particular topic. Our intention in doing so is not to judge -- given that we can't link various policy components to specific outcomes, we don't pretend to be able to say what is necessarily a 'good' or 'bad' policy approach to a given topic. Instead, our hope is that, by making this classification, countries may be able to more quickly locate policies that are relevant to their particular circumstances.

Here's a concrete example of what we're talking about:

As part of a policy component that seems to relate to 'vision and planning', many countries identify specific institutional arrangements related to the oversight and implementation of ICT/education initiatives. Generally speaking, policies seem to address this issue in four ways by articulating intentions related to having:

1. No dedicated group/unit/agency for ICT in education
2. A plan to set up a unit/agency on ICT in education (or a very small group exists with this responsibility)
3. A dedicated, professionally staffed unit/agency for ICT in education
4. A dedicated, professionally staffed focal unit/agency charged with implementing policies on ICT in education which actively coordinates with other organizations on ICT/education issue

If a country is currently at stage #1 here, it may be useful for them to have a look at what policies from countries that have be classified as being at stages #2 and #3 might say, as such countries might offer useful opportunities for learning and comparison. If you are considering doing something that another place has already been trying to do (or indeed has done), perhaps there might be some relevant lessons that can be learned from related experiences in that other place?

Now, there is room for interpretation here, obviously, and the assignment of a policy's consideration of a particular issue to correspond to one of these four 'stages' is perhaps rather artificial. The World Bank's education sector has decided to use this sort of four-stage categorization across all of the different policy domains ("ICT' is just one of them, here's a full list), and so we have adopted it as well. Conveniently, the Working Group on ICT Statistics in Education (WISE) in which we participate has for many years also utilized a four-stage categorization of this sort to inform its analyses of ICT use in education around the world, so our efforts under SABER-ICT to analyze national ICT/education policies correspond to the general approaches under both SABER and WISE.

As this work continues to develop, we'll be publishing more information on the EduTech blog in the coming months, in case it might be of any interest.

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Note: The image used at the top of this blog post meant to be of a policymaker wielding a sabre ("find me some policies that I can learn from ... or else!") is a Thomas Nast cartoon that comes via Wikimedia Commons and is in the public domain. The second image, of a set of French light cavalry officer sabers ("which one should we look at first ... and how do we know?"), comes from Wikipedian Rama via Wikimedia Commons and is used according to the terms of its CeCILL and Creative Commons Attribution-Share Alike 2.0 France licenses.
25. Reporting back from WISE, the World Innovation Summit for Education

by Michael Trucano
originally published on Friday, 23 November 2012

The World Innovation Summit for Education (WISE) annually brings together "more than 1,000 prominent education, corporate, political and social leaders from over 100 countries to explore how collaboration in many forms and at many levels can become the driving force of efforts to inspire innovation in education and to design long-term strategies for its renewal". Now in its fourth year, WISE is one high profile example of how the small but natural gas-rich Middle Eastern nation of Qatar is seeking to establish itself as a locus for discussion and dialogue on a number of key global issues (another example is the hosting of next week’s global climate change conference), with a particular interest in education (in addition to WISE, Qatar is also home to Education City) and sport (in addition to high profile Qatari sponsorship of the FC Barcelona jerseys and investment in the French soccer club PSG, the country will host the 2022 World Cup.)

The annual WISE Prize for Education, which comes with a gold medal and USD $500,000 and was awarded this year to Madhav Chavan of the Indian NGO Pratham, is an attempt to, in the words of the sponsoring Qatar Foundation, "[raise the] status of education by giving it similar prestige to other areas for which major international awards exist such as science, literature, peace and economics". (Think of the WISE Prize as a sort of Nobel Prize or Fields Medal for education and you'll get a sense of the ambition at work here.)
The use of new technologies to help meet various challenges in education is, rightly or wrongly, labeled 'innovative' in an almost de facto way these days, and so perhaps it is not surprising that an event focusing on innovations in education should attract people and organizations with decided interests in technology-related issues. Walking the halls at WISE you could bump into people from the public, private and NGO sectors who are leading efforts, large and small, seeking to introduce and sustain new educational practices through the use of ICTs. As with many such events that I attend, I found that serendipitous collisions with such people were often more interesting than the official program -- even when such people were on the program itself! This is not to say that the sessions themselves were not of interest -- far from it! -- but WISE does a fantastic job of archiving video from many of the individual sessions on the WISE web site, which meant that I didn't have to choose between attending a session and continuing a conversation, as I knew I could always catch a session in full via the web at a later date. (WISE also did a great job of providing quite robust, and free, wi-fi throughout the conference venue, which made integration of streaming video feeds and tools like Twitter and Facebook during individual sessions quite seamless. Other conferences would do well to emulate this!) Smaller ‘spotlight sessions’ on things like Uruguay’s Plan Ceibal offered the opportunity to interact with the people actually running various interesting initiatives and research projects. A special address by Conrad Wolfram on Stop Teaching Calculating, Start Learning Maths was particularly well received by many in the WISE crowd, who were intrigued by the call for a re-thinking of the way mathematics is typically taught, and learned, in schools (many people, I suspect, were familiar with his related TED Talk on Teaching kids real math with computers).

While, 'ICT' was not an explicit specific focus of any of the individual sessions at WISE this year, the heavy presence and accent of the technology crowd could not be missed. Six initiatives were presented with WISE Awards in recognition of their "innovative approach[es] to solving important global problems", and programs as diverse as PSU Educarchile and Robobraille highlighted the diverse ways that new technologies are transforming education practices in various parts of the world. While not itself an educational technology project, one of the evaluations of ICT use in education that I have recommended that people read is of a program sponsored by Pratham itself (see Linden, Banerjeet, Duflo: Computer-Assisted Learning: Evidence from A Randomized Experiment [pdf]). 'Tech' was certainly a recurrent
Generally speaking, there was a decided oversampling at WISE 2012 of government and policy types -- a group to which I guess I belong -- and underrepresentation of the venture capital-seeking (or -providing) 'education innovation types' one often encounters in events of this sort elsewhere (especially as you get closer to Silicon Valley). Whether this was by conscious choice of the organizers, a consequence of geography, or just a coincidence, the energy (and, some critics would argue, the occasional vapor as well) that characterizes many in the (for lack of a better phrase) education start-up community was still evident in some of the smaller sessions. The New Entrants session, for example, attracted many folks to discuss some of the innovative approaches that a variety of 'new players' -- from high tech manufacturers to IT start-ups to social entrepreneurs and other 'new entrants' -- have been pursuing in the education sector.

What gaps are these sorts of providers seeking to fill?

What opportunities are there for these sorts of 'new entrants' to influence the broader education ecosystem (for lack of a better term), especially outside of formal school systems?

What are some of the key the emerging lessons that have emerged from this experience about what has worked, and just as importantly, what hasn't?

Like it or not (and many traditional providers of education, especially in government and in certain segments of civil society, are quite wary of the motives of many of these sorts of 'new entrants'), there is no denying that these groups are challenging many of the approaches that have long been established fact in education systems in many parts of the world. One expects that these sorts of questions will continue to provide rich material for WISE Debates for many years to come.

Also of potential interest:
• My World Bank colleague Harry Patrinos has written on the general World Bank education blog about the session at WISE in which he participated, *Education and Finance: Evaluating Innovative Models*.

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*Note:* The image used at the top of this blog post of many construction cranes dotting the skyline in Qatar’s capital city ("some new approaches to development were on display at WISE 2012 ...") comes from Wikipedian Amjra via Wikimedia Commons and is used according to the terms of its Creative Commons Attribution-Share Alike 3.0 Unported license.
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**Michael Trucano, Sr. ICT & Education Specialist, The World Bank**

Mike Trucano is the World Bank's Senior ICT and Education Policy Specialist, serving as the World Bank's focal point within the education sector on issues at the intersection of technology use and education. He leads the World Bank's related analytical work under its flagship Systems Approach for Better Education Results (SABER-ICT) initiative as it relates to information and communication technologies. At a working level, Mike provides advice and support to education projects around the world supported by the World Bank seeking to utilize ICTs in the education sector in various ways. Current areas of focused activity and attention include: ICT/education policy development; the use of mobile phones in education; assessing the impact of technology use in education; 'new economy skills for Africa'; the development of national ICT/education agencies; child Internet safety; and low-cost 'ICT devices'.

Mike is also the principal contributor to the World Bank's widely read EduTech blog (http://blogs.worldbank.org/edutech). His essays and posts on the World Bank EduTech blog have been collected into four separate volumes, available for free download. Popular posts from the World Bank EduTech blog include:

- Worst practice in ICT use in education
- Ten things about computer use in schools that you don't want to hear
- Textbooks of the future: Will you be buying a product ... or a service?
- Ten trends in technology use in education in developing countries
- Crowdsourcing, collaborative learning or cheating?
- Education & Technology in 2025: A Thought Experiment
- School computer labs: A bad idea?
- Laptops for education: $10, $35, $100 and points in between (but not above!)
- Searching for India’s Hole in the Wall
- Educational technology and innovation at the edges

as well as pretty much anything written about the use of mobile phones.

Mike is a frequent public speaker on the use of ICTs in education around the world, and on ICT use for development (ICT4D) purposes more broadly. He has helped organize a number of FAILFaires, exploring how can people and organizations can more openly talk about, and learn from, 'failed' projects and initiatives, in the hope that sharing lessons from 'failure' might make 'success' more likely in the future. As part of his official 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 previously served as the ICT and Education Specialist at infoDev, the multi-donor 'ICT knowledge shop' housed within the World Bank's Global ICT Department (GICT), where he coordinated activities related to information and communication technologies and the Millennium Development Goals ("ICTs for MDGs"), especially as they related to education. He also led infoDev's work exploring the use of
various low-cost ICT devices to meet developmental objectives in the social sectors, and managed the program's mobile banking work. Highlights during his time at infoDev include Knowledge Maps: ICT and Education (what we know, and what we don't, about ICT use in education in developing countries), over 75 country-level surveys of ICT and education in Africa and the Caribbean, a handbook on Monitoring and Evaluation of ICT in Education Projects, and the ICT in Education Toolkit for Policymakers, Planners & Practitioners (with UNESCO, used in over 25 countries to date). Mike joined the World Bank Group in 1997, first working at the International Finance Corporation (IFC), and as part of the education team at the World Bank Institute, where he was a core member of the team that developed the World Links for Development Program.

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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.

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Carla Jimenez Iglesias is an ICT and Education Specialist at the World Bank, where she collaborates with the World Bank's flagship (Systems Approach for Better Education Results) initiative as it relates to information and communication technologies (SABER-ICT). Before joining the Bank, she worked in the Latin America and Caribbean region in the development of analytical work in ICT and Education policies and indicators, as an ICT and Education Consultant for the Inter-American Development Bank. She has also worked in citizenship and human rights education at the Organization of American States and at the Inter-American Institute of Human Rights developing online training tools for teachers and human rights advocates in Latin America. She has been an active volunteer for CISV conducting leadership training for youth worldwide.

**James Liu, Intern, World Bank ICT & Education team**

James Liu is currently an intern with the World Bank's ICT and education team. A rising senior at Stanford University studying economics and education, he is the executive core member of an NGO in China, the Sunshine Library Rural Education Initiative, that is exploring the use of Android-based tablets in education in rural communities based on the One Tablet PC Per Child model. Before interning at the World Bank, he also interned at Rural Education Action Project (REAP) at Stanford.
EduTech

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