Technology for Development: Why Training Trumps Technology

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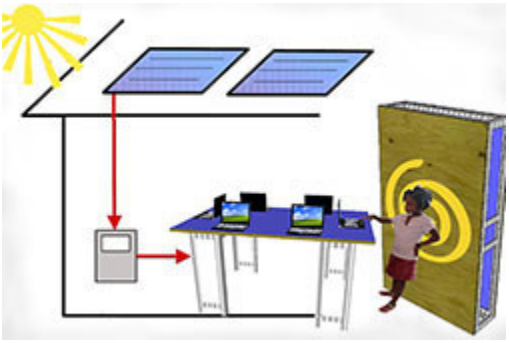

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This past spring semester, I led an entrepreneurship class at my university that focused on creating a Solar-Computer-Lab-in-a-Box designed for off-grid schools around the globe. And at a January 2012 conference that joins academia and industry, my collaborator and I pitched our concept to a representative of a large company.

His reaction to the Solar-Computer-Lab-in-a-Box: "That's fantastic! Wouldn't it be great to test it out on some really isolated, remote island, where there's no electricity, no communication with the outside world, and where people have never even heard of, let alone used, the Internet?"

Our response? "We can make that happen! We know the perfect place. Have you ever heard of Chuuk, Micronesia?"

Long story short, we are making that happen.

In August 2012, we will launch the Pacific Islands Schools, Connectivity, Education, and Solar (PISCES) project. We are excited to bring our first Solar-Computer-Lab-in-a-Box—as well as solar-powered Internet connectivity—to Udot Primary School, on Udot Island, Chuuk, in the Federated States of Micronesia.

The project is about far more than just technology: training, skill-building, and partnering are equally important components of the endeavor. We hope to demonstrate a complete, replicable model for bringing computers and Internet connectivity to underserved schools and communities in the Pacific islands and beyond, starting in Chuuk.

The first half of the project is a workshop in solar-powered, long-distance wireless connectivity at the University of Guam, which is (relatively) nearby. Micronesian college students—some of whom we hope to bring to Chuuk—will receive hands-on training directed by team members from Illinois Institute of Technology, Green WiFi, the International Center for Theoretical Physics, and the University of Guam.

The project's second half, in Chuuk, consists of the Solar-Computer-Lab-in-a-Box and solar long-distance WiFi deployment at the Udot School, as well as the team's participation in a Chuuk Department of Education summer program for teachers and administrators from across the state. The technology being deployed in Udot will allow the teachers at this rural, off-grid school to participate in an already-established technology-in-the-schools project that, up to now, had only been able to include—due to lack of electricity and Internet connectivity—a handful of schools on Chuuk's main island.

The partners joining the project in Chuuk include the Department of Education, Pacific Resources for Education and Learning (PREL, which is leading the aforementioned technology-in-the-schools program), and iSolutions, a locally-based technology consulting company.

So, why so many partners just to install one computer lab and set up one Internet connection? Well, the role of the technology itself in its deployment to novel locations is actually quite small. In fact, we believe that the only possible path to long-term sustainability—which is how we define success for this project, or for any technology-for-development project—is that it become locally adopted, owned, managed, and maintained.

For this to happen, the technology must enable the people using it to meet a perceived need, and locals must develop the skills not only to use the technology, but also to be able to maintain, repair, install, and adopt additional previously unknown technologies. While we are excited to bring breakthrough technologies more appropriate and

affordable to Chuuk, the main emphasis in the PISCES project is on the partnering and the carrying out of local capacity building and skills training, both in terms of the computer and Internet technology, but also vis-à-vis the teachers' use of computers in the classroom, as it will be their first time using either computers or the Internet.

The PISCES project attempts to incorporate what we believe are best practices, but it was born out of lessons learned, or one might even say, experiences of failure.

We learned from our previous work installing a macro-sized solar powering system at a primary school in Haiti that without true buy-in from the organization responsible for the schools—be it the Ministry of Education at a macro level or a faith-based NGO at the micro level—projects won't be sustainable, supported, or successful.

I learned from worldwide visits at schools experimenting with different forms of computers-in-the-schools technology that computer labs are still effective in the teaching of technology to students. Teachers want computer labs not just so that a single technologist is in charge of the technology and the computers won't disappear, break, or never return when children bring them home, but also because computers do not need to be involved in every single topic taught. Students should not be in front of computers all day, and teachers should not be forced to invent new computer-based curriculum to cover every subject.

I learned from my in-depth research in Macedonia that teacher training is paramount to the success of a computers-in-the-schools program. Yet, one-time training—no matter how good—is simply not enough. It takes years of follow-up support, training, and goal-setting to see long-term adoption of technology in the classroom and alignment with the curriculum.

Research also indicates that a top-down-only approach does not result in long-term project sustainability. This is why I've been focusing on partnerships for the past few years. I believe these partnerships must be formed at multiple levels and cover every area of expertise needed to address the challenges inherent in complex projects—such as those that bring technology to where it was previously unknown. These partnerships can adopt a model of top-down-meets-bottom-up to ensure that necessary feedback loops are established and to allow for the germination of creative ideas at all levels. To wit: though we were invited by locals to bring technology to schools in Chuuk to improve educational opportunities, other locals have since pointed out the life-saving possibilities of these same Internet-connected computer labs. For example, they afford the ability to report and communicate about missing boats and fishermen in the area—a real problem in Chuuk, and something my students and I back in Chicago hadn't considered.

I've also learned that perhaps the most important factor in the success of such initiatives is the building of local capacities. This is why the training and skill-building of locals features so prominently in the PISCES project. I've seen a number of promising and successful technology-for-development projects, initiated by the United States Agency for International Development [USAID], whose initial successes withered once the projects ended (USAID projects always have an end date) and it was time to turn them over to be locally run and managed. This is not necessarily the fault of the USAID projects: sometimes ministries believe they can do things better on their own than USAID did; sometimes there is a lack of local support for the projects in the first place, so they don't continue; sometimes the skill-building did not take place and the local authorities simply don't know how to run the projects on their own.

There have been countless failed attempts to bring technology to emerging regions in the name of development, and yet the interest in carrying out such projects seems only to be increasing. At least the failures are beginning to be acknowledged. FailFaires, intended to showcase failure in technology-for-development projects, began in New York City in 2010 and have grown exponentially in popularity. They are now being held regularly in Washington, D.C., London, and at major ICT4D [information and communication technologies for development] conferences, as well, in New York. The FailFaire at the ICT4D conference in Atlanta this past March was the best-attended (standing room only) and by far the most talked-about panel of the conference. This is undoubtedly a step forward. We learn more from our failures than from our successes—but only if the failures are acknowledged and an attempt is made to figure out what went wrong, why, and how to do better next time.

We should know by now, for example, that technology is no panacea for development. Far from it! Yet I still hear arguments being made along the lines of:

- "Helicoptering in laptops is sufficient; the state of education for the poorest of the poor will improve simply because children have laptops. (And since that hasn't actually worked out so well, maybe tablets will work out better than laptops!)"

- "We cannot train enough teachers to solve the developing world's educational challenges, so we need to rely upon technology to fill the gap: computers, tablets, mobile phones, and distance education are the new proposed solutions."

These arguments are non-starters because they seek simplified, short-cut solutions to the complex, sociopolitical and economic challenges that are part and parcel of development. In fact, I'm not even going to attempt to define "development" here, precisely because it is such a messy, complex, complicated, multi-faceted undertaking. Development takes place incrementally over years and years, driven by hard work on behalf of those committed to seeing it through; there are no shortcuts, no silver bullets.

Unfortunately, there is an exceedingly strong historical precedent—on the part of development organizations, policymakers, project funders, and others—of looking for silver bullets, easy answers, quick fixes, shortcuts, and one-size-fits-all approaches to the challenges of development. And, of taking a top-down approach: of looking at the wealthy countries and what made them wealthy, then looking at poorer countries and attempting to determine which "Missing X-Factor" explains why they just weren't developing.

The first Missing X-Factor was deemed to be Physical Capital, because that's all that Western European nations were missing after World War II, and they managed to successfully (re)"develop" themselves. But somehow that didn't prove enough for the poorer countries to develop, so the new Missing X-Factor was determined to be Too Little Government. That didn't work either, so the problem appeared to be Not Enough Entrepreneurship. Then it was Too Much Government. Then not enough International Trade. Then not enough Skilled Labor. Then the Missing X was a lack of Good Governance. Now, it's Technology's turn to be the Missing X-Factor.

And technology might just be the most tempting of the silver bullet, quick-fix, Missing X-Factor approaches yet, given the pace at which technological innovation takes place and the corresponding mindset of always looking for the "Next Big Thing" technologically, the ability of technology to increase efficiencies for those who use it (and the corresponding shorter and shorter attention spans it may produce). . . . But helicoptering in technology will never address the complex sociopolitical, economic, or other non-technology issues actually at the root of development challenges. In fact, trying to apply simple, quick fixes to complex, long-term problems sets up such initiatives for failure, disappointment, and the wasting of already-scarce financial resources.

However, despite my argument against seeing technology as a quick-fix silver bullet, I remain extremely pro-technology! One point of view I've discovered everywhere I've traveled, among everyone with whom I've spoken, is that people want the ability to communicate with others, and to have access to information—they want their ICTs [information and communication technology]! The unprecedented global uptake of mobile phones is clear evidence: The International Telecommunications Union (ITU) estimates today's global mobile phone penetration rate at over 85 percent—nearly 6 billion users!

Computers, tablets, mobile phones, and technology-enabled distance education are all great, but quick-fix shortcuts, they are not. My own experience in speaking with and surveying teachers around the world is that they overwhelmingly want computers in the classrooms and believe that this technology can improve educational quality and opportunity for students. Making this happen in resource-constrained conditions (including the lack of electricity and extremely limited funds) is a both a difficult undertaking and only the first step. Developing the local human skills and ecosystem to be able to use the technology is a long-term challenge.

So, will the project in Micronesia be successful? We don't know, but we're giving it our best shot. We've made a plan that attempts to incorporate training and skill-building, as well as partnerships, to carry out the project. It will certainly take a long-term commitment by the partners involved. I'm very excited to be able to bring our Solar-Computer-Lab-in-a-Box and solar-powered WiFi to a remote, isolated island, but I'm even more excited about the local skills and capacity-building that our project includes: that's the starting point of the long-haul effort. There are no shortcuts to development—not even with technology.

Find out more about the entire PISCES project and read the team's blog during their time on Udot. (Lots of photos!)

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