*What's Next*
# Curling Up with E-Readers
By Suzie Boss

# Action ❯ What's Next

By Suzie Boss

## EDUCATION

## Curling Up with E-Readers

▶ Efforts to improve global literacy typically focus on getting books into the hands of children. Could electronic reading devices leapfrog old-fashioned paper books and catalyze a new culture of reading in places like sub-Saharan Africa? That's the idea behind Worldreader.org, a start-up nonprofit with world-changing aspirations.

Dispensing Kindles and other e-readers in the developing world may seem like a fancy solution to a low-tech problem. But Worldreader founder David Risher, a former Amazon executive, says the big goal is to drive down "the cost per book *read* to the absolute lowest it can be." Reading selections in many village schools are too limited and, he adds, often too Western to engage young readers. If donated books gather dust in the back of classrooms, they do little to engender a love of reading.

"Lack of access to books has been solved by e-books," says Risher, noting that thousands of titles are available as digital books. "But there's no market-driven plan to get e-readers to the developing world." Worldreader, strong on corporate experience, intends to "prime the market pump," he says, "and put thousands of books into millions of kids' hands."

The infrastructure for supporting e-readers already exists in much of the developing world, thanks to a network for connecting and charging mobile phones in even the most remote regions.

E-readers use the same network to download books. During Worldreader's trial in a village school in Ghana, students used an existing solar charging station to power up their Kindles, which were donated by Amazon. Their comfort with mobile phones and texting meant students had little trouble using e-reader features such as an online dictionary or text-to-speech capability. Because the devices include a built-in light source, students were able to introduce family members to a new activity: reading at home after dark.

Jonathan Wareham, professor and director of research at ESADE in Barcelona, Spain, has been studying Worldreader's early efforts. The low cost of distributing digital books offers great potential to improve literacy, he says, but the idea is not without challenges. Technical issues will be the easiest to solve, he predicts. "Getting the supporting ecosystem around the device itself is where the work is."

To gain traction, Worldreader needs to create "a system of content, distribution, pedagogy, administrative, cultural, and political support. These challenges are nothing less than massive," Wareham admits. "You go in expecting to address literacy, and you end up trying to rewrite cultural rules."

Teachers may find e-readers easier to adopt than classroom computers because they don't call for a wholesale change of teaching methods. "Teachers already know how to use books," Risher says. Compared with technology initiatives like One Laptop per Child, Worldreader
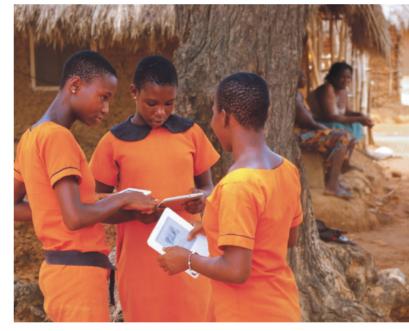
"is trying to solve a narrower problem," he adds.

Nor is Worldreader interested in pursuing a brick-and-mortar solution. Risher applauds global school-building initiatives like Room to Read, but says his organization is focusing on "the other side of the same coin. When people come together to learn, they still need access to books—as many as possible."

Ideally, those books will in-



*Students with their Kindle e-readers, provided by Worldreader.org, outside a school in the village of Ayenyah, Ghana.*

clude culturally relevant titles by local authors. Worldreader is encouraging local publishers to digitize their book lists, which can then be sold online internationally. "We want to make sure they understand this is an economic opportunity for them," Risher says, emphasizing that digital book sales is not a business Worldreader wants to get into. "We want to be the catalyst

to help make it happen."

Worldreader's start-up costs have come largely from Risher and his co-founders, along with in-kind donations from Amazon and other businesses. Fundraising will be required to grow the lean organization, which currently operates from Seattle and Barcelona. There are plenty of unknowns, Risher admits. "We don't know the cost of e-readers in five years.

We don't know the scale we will get to. We do know that Moore's Law is on our side. The cost continues going down."

Worldreader expects to learn more from its next round of testing in Ghana. Will children read more if their reading choices are virtually unlimited? Will the novelty wear off once students get used to e-readers? From firsthand observation, Risher is encouraged. In a village in Ghana, he says, "I'd watch kids read one book, finish, then ask if they could download another. That's magical." ∎

URBAN DEVELOPMENT

# Here Comes the Neighborhood

▶ Cleveland's Greater University Circle, home to three major Ohio institutions, employs some 50,000 people in health care and academia. It's an economic engine for the region—with one major omission. Most



*Ohio Cooperative Solar workers install solar panels atop a building on the campus of the Cleveland Clinic.*

of the 43,000 people who live in adjacent neighborhoods are mired in poverty, with household income averaging $18,500.

Evergreen Cooperatives of Cleveland aims to change this picture by developing a network of worker-owned small businesses for Greater University Circle. From doing laundry to growing produce, each business will focus on meeting a supply chain need for community anchor institutions, and doing it in an environmentally responsible way. For workers who face employment challenges ranging from lack of education to criminal records, there's an additional draw: the chance to own a piece of the action.

"We want to put people to work and build wealth," explains Ted Howard, executive director of the Democracy Collaborative at the University of Maryland and a leader of the Cleveland project. "And we want to do it in a way that doesn't get up and leave. With owner cooperatives," he adds, "the capital stays rooted in neighborhoods where people live."

Planning for the initiative began five years ago when the Cleveland Foundation convened a conversation with leaders of three institutional anchors: Case Western Reserve University, the Cleveland Clinic, and University Hospitals. "We recognized a huge opportunity to harness the purchasing power of the anchors," says Lillian Kuri of the Cleveland Foundation, "and revitalize these neighborhoods after years of disinvestment."

Next came roundtable discussions and interviews with more than 100 stakeholders from across the city. "We didn't come in saying we have to focus on procurement or that we need to develop green worker cooperatives. All of that emerged," Howard says, along with a business planning process to identify local opportunities.

Start-up capital was another piece of the puzzle. The Cleveland Foundation seeded the Evergreen Cooperative Development Fund with $3 million. Each of the three anchors added another $250,000. That leveraged additional funding, such as $1.5 million in HUD loans from the city of Cleveland. In October 2009, the first two businesses emerged.

Evergreen Cooperative Laundry bases its business plan on the mountains of hospital linens generated in the community. The laundry trains workers to use the greenest equipment in the industry, saving energy and generating social capital with each load. At capacity, the laundry will employ 50 workers who will process some 12 million pounds of linens annually.

Ohio Cooperative Solar installs solar panels and weatherizes buildings. It was in the black within six months of launching and had a staff of 23 by its one-year anniversary, with plans to grow to 75. After six months on the job, workers have the opportunity to be voted into ownership. An ownership share costs $3,000, regardless of job title, and is paid for through payroll deductions. "That money is yours to take with you if you leave," Howard explains, along with a share of profits.

Worker-owners are responsible for selecting their board of directors and deciding how to allocate profits. Training in business management comes with the job, whether you're an insulation installer or an entry-level laundry worker.

Stephen Kiel, president of Ohio Cooperative Solar, says making the model work requires a collegial management style. "It's more like coaching," he says. Day-to-day challenges are plentiful, Kiel admits, including "lifestyle issues" such as problems with housing, transportation, or probation. In return for investment in staff development, he says, "what you get are people who have bought into the success of the operation. You get a better product and people who are ready to innovate."

That's what has occured in Mondragon, Spain, where a network of 120 worker cooperatives has been in development for half a century and now generates $20 billion in annual sales. Cleveland has looked to Mondragon for inspiration. "If we can develop a robust network of many businesses working together under the Evergreen brand," Howard predicts, "we'll be able to eventually employ several thousand workerowners here in Cleveland." ▪

HUMAN RIGHTS

# Stopping Child Porn

▶ Not so long ago, those who trafficked in pornographic images of children kept to the shadows, operating their nefarious business far from mainstream channels. Then along came the Internet. The advent of instant publishing and file sharing has opened a global e-marketplace for child porn, with law enforcement lagging far behind tech-savvy traffickers.

Hany Farid, a computer scientist from Dartmouth College, was appalled to learn that not only is this illicit business booming, "but the children are getting younger and the images more violent. This is a problem that technology has gotten us into," Farid mused. "Let's see if we can use technology to help get ourselves out of it."

Farid collaborated with researchers from Microsoft to develop a new tool intended to disrupt online trafficking in child porn. The core technology is called PhotoDNA. It extracts a unique signature from any digital photo using a process called "robust hashing." This numeric

signature, which Farid likens to human DNA, does not change even if a photograph is resized or edited. The signature can be used to identify matches across very large data sets.

The process is automated, meaning no human has to review potentially offensive images. It's also lightning fast—five milliseconds to extract a signature—and has proven highly reliable in massive testing. For law enforcement and online service providers on guard against child porn, Farid adds, "this means being able to find the proverbial needle in the haystack."

Microsoft has donated PhotoDNA to the National Center for Missing & Exploited Children (NCMEC), including the right to sublicense the technology to online service providers. In recent years, the nonprofit NCMEC has worked closely with law enforcement to identify nearly 30 million photos of child porn. With the use of PhotoDNA, those images can be used to generate a vast data set of digital signatures to detect known photographs of child pornography.

If online service providers detect any of these images, they can report them to the NCMEC. The long-term goal, according to Sue Hotelling of Microsoft's Digital Crimes Unit, is to "help stop the distribution of these illegal and horrific images and help stop revictimization of children whose images may otherwise be viewed again and again online."

Pulling down those images won't keep new child porn from being uploaded, but it may help to reduce the problem. "People who traffic in child porn seem to pass around the same images, person to person," Farid says. Getting known images offline "is a little more tractable" than cleansing the entire Internet of child pornography, he says.

Because PhotoDNA is a generic tool, it could be applied to any type of image. "It may have other applications down the road," Hotelling says. "We are exploring other ways to put it to use, including incorporating the technology into tools to help law enforcement in their child protection investigations," she adds.

Implementation of the tool is still in the early stages, with Microsoft starting to search public sources for some of the worst known instances of child porn. The goal, Farid says, is to have it implemented "at all the Internet service providers around the world. We're still working on that." ∎

# Mentoring India's Youth

▶ Earning a spot in one of India's elite universities is no easy feat. The grueling entrance exam weeds out all but 2 percent of those vying for an education at one of the campuses of the Indian Institute of Technology (IIT). There's no consideration for extracurricular activities or personal obstacles overcome. "It's one test on one day. Every child gets a national rank. On the basis of that, you get in or you don't," says Akshay Saxena, who graduated from IIT Bombay with a degree in chemical engineering. "The system is quite brutal."

Avanti Fellows is a new program designed by Saxena and fellow IIT alumni to make the system a little kinder for talented but underprivileged students. The idea is to provide academically promising youth with mentoring, academic coaching, and financial aid during their high school and undergraduate years. Avanti Fellows started with a chapter at IIT Bombay and is on track to reach 100 youths on three IIT campuses by the end of 2010. Eventually, the goal is to have self-supporting chapters at all 16 IIT campuses.

Avanti Fellows' model appeals to IIT graduates, according to Ashok Kalbag of PanIIT Alumni, as a way "to give back to their alma mater and the nation. By identifying children from lower strata of society who cannot afford coaching for admission to IITs, Avanti Fellows provides opportunities that were otherwise out of reach. Student mentors provide the much needed handholding for these students, who find the cultural and academic situations challenging, once admitted to IITs."

During his own undergraduate years, Saxena says he got to know classmates from slums and villages who had managed to gain admission without benefit of private tutoring and other support that he and most of his peers enjoyed. "You realize these kids are way smarter, much more gifted than you are," he adds. "The fact that they're there, despite their background, says a lot."

But even getting into college is no assurance of a level playing field. Students from poor backgrounds may excel at academics but struggle with "things you can't find in a book," Saxena says. "Being successful also has to do with your aspirations, how you deal with pressure, whether you're able to take risks or do well in interviews." He watched talented but poor classmates "lose their confidence, their raw enthusiasm, when confronted with unfamiliar social situations."

While still undergraduates, Saxena and a group of classmates started a peer mentoring program. They recruited seniors to mentor freshmen and smooth their transition into college. At the same time, they began pondering how to reach out to younger students.

"All these issues are more stark when you look at high school kids," Saxena says. Children growing up in the Mumbai slum of Dharavi may be living in one-room shacks with no electric lighting. "Yet some of them manage to score in the top 5 percent in their high school exams. What would it take for them to go from being a smart high school student to going to the best colleges in the country?"

Saxena found himself returning to that question while a graduate student at Harvard Business School. He was also drawn to the idea of social enterprise—something that he says is "almost unknown in India."

Avanti Fellows got a boost in May, when it won the BASES Social E-Challenge competition sponsored by the Business Association of Stanford Entrepreneurial Students. Judges helped Avanti Fellows hone its plan, and the $25,000 prize enabled it to hire its first full-time employee, CEO Krishna Ramkumar, who works in India.

The prize brought media attention in India, where the IIT alumni network has endorsed Avanti Fellows. The organization also was selected by Dasra, an Indian nonprofit that mentors start-up social enterprises, to join a cohort poised for growth. "Avanti is a highly credible and talented team," says Alison Adnitt of Dasra. "They have all the ingredients: focus, realistic ambitions, an excellent model, a viable partnership approach, and an extremely cost-effective program."

Once Avanti Fellows reaches scale, its alumni could become an influential voice in education. "I hope we end up with a powerful group of advocates," Saxena says, "with some good stories to tell." ∎