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# Two Billion Laptops? It May Not Be Enough

By RANDALL STROSS

ONE LAPTOP PER CHILD is a nonprofit group that thinks big. Since 2007, it has sold inexpensive but rugged laptop computers to the governments of less-developed countries. The goal is to equip each of the two billion children in the developing world with his or her own computer.



Students in Tamil Nadu, India, trying a Microsoft program that allows multiple users on a single computer.

It's been slow going. About 1.6 million of [the group's](#) laptops have been distributed to date, said Matt Keller, vice president for global advocacy at the O.L.P.C. Foundation, based in Cambridge, Mass. Today, the largest concentrations are in Uruguay, at around 400,000, and Peru, at 280,000, followed by Rwanda (110,000) and Haiti and Mongolia (15,000 each).

In 2006, the O.L.P.C. Web site pitched its laptop as a technology that “could revolutionize how we educate the world’s children.” Today, the “R” word is gone. Now the site speaks in more muted language of “developing an essential resource — educated, empowered children.”

“The biggest obstacle to our spreading the dream is cost,” Mr. Keller said.

Ninety percent of the machines have been paid for by the recipient countries’ governments, whose resources are extremely limited. I asked Mr. Keller if project leaders had

reconsidered the “per child” part of the program. “One Laptop Per Classroom” certainly doesn’t have the same ring, to be sure, but it would better diffuse the benefits in the short term, helping a greater share of those almost two billion children who have not been reached.

He said that such a change was out of the question.

“One-on-one, child-to-laptop — the interactive nature of that experience is the heart of what we do,” he said.

When a child owns a laptop, he added, the school day is effectively extended from a few hours to 12 to 14 hours — however long the child is awake, and wherever he or she happens to be.

Some [Microsoft](#) researchers in India have investigated how to give those same children better use of PCs that are already in place, even though one machine is shared by many. In one project, Microsoft’s programmers developed software that added multiple cursors on the screen, each controlled by a separate mouse. Software written for the paradigm allows students to compete or collaborate on multiple-choice questions. It was well received in schools, and Microsoft turned it into a free product called MultiPoint.

“We jokingly call it ‘One Mouse Per Child,’ ” said Kentaro Toyama, who led the [project](#) while he spent five years in the Technology for Emerging Markets group at Microsoft Research India.

Mr. Toyama, who received a computer-science doctorate at Yale, left Microsoft last December and is now a research fellow at the School of Information at the [University of California, Berkeley](#). He has been giving [talks](#) at American universities about the “technological utopianism” that he sees in initiatives like One Laptop Per Child, [Intel](#)’s Classmate PC, and even MultiPoint. He says such initiatives rest upon a myth that “technology is the bottleneck in developing countries.”

Lots of other things are bottlenecks, too, he says — including institutional limitations, economics, the basic service infrastructure and politics. Nor is technology synonymous with education.

“Initially, we had the idea that PCs could make up for teacher absenteeism or poor training,” he said. “But studies of PCs in schools are mixed, at best. Most show that a good school with good teachers can do positive things with PCs, but that PCs don’t fix bad schools.”

Describing technological utopianism, he said, “What it comes down to is this: Everybody is looking for a shortcut.”

Mr. Keller said of Mr. Toyama’s remarks: “There is no silver bullet, he’s right.” But Mr. Keller argued that literacy skills and access to information were prerequisites for economic and political growth and that “technology can help foster these things.”

Among the infrastructure problems that the Microsoft research team saw in rural India was unreliable electrical power. It spurred another Microsoft research project that provided farmers in one district with cellphones that supplied the same information via [text messaging](#) that the farmers had obtained from PC centers.

Many O.L.P.C. laptops are equipped with solar panels that can recharge the machine in three hours, providing four to six hours of use. Mr. Keller said a new model would be introduced early next year that would demand much less power. The new machines will have cranks and charge quickly: a minute of cranking will yield 10 minutes of use.

MR. KELLER has some moving stories to tell about his visits to villages that have received laptops — and about the natural facility with computers of children everywhere.

“I’ve been in Rwanda where the laptop was introduced into an environment where previously there had been no electronic devices,” he said, “and within three to four days you have 10-year-old girls and 8-year-old boys who are using the laptop as efficiently and effectively and creatively as I can.”

He is now lobbying to secure funding from the United States government to provide an Internet-connected laptop for every child in Afghanistan. At a cost of \$250 a laptop, the project would cost about \$750 million.

In Kabul, Mr. Keller said, Afghanistan's education minister told him that the project "would allow girls to study and connect within the safety of their own homes."

It's an almost irresistible vision. But a skeptic would point to the lessons of history and say that technology never works in isolation.

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