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Scientist's idea could help India kids out of poverty

His 'I-slate' runs on solar power and should cost less than \$30 each

By ERIC BERGER
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ISAID/NTU

The I-Slate got its first test run in August, when Lauren Pemberton, above, and another Rice undergraduate traveled to southern India to have schoolchildren put the device through its paces.

The I-slate isn't flashy like an iPad, and you can't download John Grisham's novel to it, either.

But the tablet device invented by a Houston computer scientist eventually might help raise many of India's children out of poverty and into the country's emerging economy.

An estimated 100 million children in India attend schools without reliable electricity, said Rice University computer scientist Krishna Palem. And many of these schools lack adequate teachers, especially for subjects like math.

Palem's answer is an I-slate device, enabled by a novel area of computer science he's helped pioneer called "probabilistic computing."

It's a powerful idea that, at first blush, sounds crazy. Palem's computer chips make tiny errors, but they don't materially affect the performance of the device. And it turns out a few inconsequential errors in a torrent of calculations can yield a wealth of critical power savings.

Such power savings have allowed Palem to design an I-slate tablet that can be powered by a few tiny solar cells the size of those used in a solar-powered pocket calculator. It should cost less than \$30 to manufacture.

"We want to help children in these villages get the vocational skills they need to be functional members of society," Palem said. "I believe this is a way of giving large groups of young people a chance in this emerging economy."

The first generation of the I-slate is fairly bare-bones, running no operating system and containing interactive math programs for fourth-graders. Eventually, he says, it will be possible to add wireless Internet access and other frills.

A prototype of the I-Slate got its first test run in August, when Rice undergraduates Lauren Pemberton and Shelby Reinhardt traveled to Mohd Hussainpalli village in southern India to have a class of 10- to 13-year-old students experiment with the device.

"The school we went to had one donated computer, and it was usually broken," Reinhardt said. "But these kids picked up the technology pretty quickly."

And they were excited.

"There was definitely a spark in their eyes when they tried out the I-slate," Pemberton said.

The prototype was built this summer at Palem's Institute of Sustainable and Applied Infodynamics at Singapore's Nanyang Technological University.

Once the researchers identify the most kid-friendly interface for the device — a second test run is coming later this month in India - they hope to spread them around a number of Indian villages to teach children basic math skills.

During a March 2009 meeting to mark the 125th anniversary of the IEEE, a large organization of technology professionals, the I-slate project was chosen as one of seven technologies the society believes "will have world-changing implications on the way humans interact with machines, the world and each other."

Although the promise of probabilistic technology has broad applications to consumer technology - imagine not having to charge your smart phone for a week - it's the outreach aspects that excite Palem the most.

"This gives these students a fighting chance to get into higher education in India," Palem said. "Education is the key to living a decent and humane life, and it's that dimension of the project that's new to me ... it's incredibly satisfying."

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