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A closer look at what '\$100 laptop' will be

The computer for schoolchildren boasts built-in smart Wi-Fi, a bright swivel screen, and highly efficient power consumption.By [Gregory M. Lamb](#) / *Staff writer of The Christian Science Monitor*

CAMBRIDGE, MASS. - It's an astonishing experiment: Design a cool computer, unlike anything on the market, loaded with innovative features. Manufacture it for not much more than \$100 apiece, a fraction of what other computers cost. Persuade government officials in developing countries to buy millions of them, and hand them to schoolchildren. Then stand back and see if you've done what you hoped – created a revolution in the way kids learn.

The next step in turning this techno-dream into a reality begins in February when prototypes of the XO laptop go out to be kid tested in a dozen or so countries from Brazil to Rwanda, Libya to Pakistan.

After the kids have their say, and necessary changes are made, the nonprofit group One Laptop Per Child (OLPC at www.laptop.org) plans to ship 5 million XOs around the world by the end of 2007, a first installment toward reaching the 1 billion school-age children now growing up in the developing world. The machines will be built by Quanta Computer in Taiwan.

What will the XO be like? While the final specifications may change a bit, the fundamental features are set. They include:

- Built-in Wi-Fi antennas that automatically create a "mesh network" with any other XO computer within about one-third of a mile. A screen displays icons showing the other XO computers within range at any given time. The mesh also means that if any one of the linked computers has access to the Internet, all of them will. That's important in places where Internet connections can be few and far between.
- A 7.5-inch diagonal super-high resolution color screen capable of being easily seen outdoors in daylight. The screen can swivel in all directions or fold flat to create a tablet computer for reading or playing games.
- Extremely low power consumption, about 2 watts, which is 1/10th the amount used by a typical laptop. In areas without a reliable electrical supply, the XO can be powered by a hand-held generator – pull the string for one minute to produce 10 minutes of operating time.
- A rugged water- and dirt-resistant rubberized keyboard and a body capable of withstanding five years of rough use and strong sunlight.

Inside, the operating system is based on Linux open-source software, ignoring both Windows and Mac. Instead of folders on the opening screen,

students see a figure representing a child (an X with an O over it, hence the "XO") surrounded by a circle of icons showing what activities are in use. The system also includes an Internet browser, a word processor, games, and a toolkit for a wide variety of musical activities.

Children can share photos, video, audio, and text over the network; work together on projects; or create music. OLPC expects students and teachers to create many more uses for the XO.

While the computers will be supported by some training, children will teach themselves and each other, taking advantage of mesh network technology that will allow them to constantly and easily communicate, says Walter Bender, who heads the OLPC's software and content development.

"One of the misconceptions about computers and kids is that kids need training, they need to be taught how to use a computer," Mr. Bender says. "There's overwhelming evidence over 40 years that that is not the case."

In one experiment, an academic in New Delhi installed a computer in a hole in a wall, Bender says. "Kids started using it. There weren't any classes, any trainers. They teach each other."

The computers are designed to forgo rote learning exercises and instead promote more creative methods: exploring (the Internet browser) and expressing (video, text, and music programs).

"There's no question that a computer can be used as a mimeograph machine on steroids. We can crank out work sheets to no end," Bender says, as he gives a reporter a test drive of an XO prototype at the OLPC offices overlooking the Charles River in Cambridge, Mass. "But that's not why we're trying to get laptops into the hands of kids."

When children use the screen to read a book, for example, every page will offer a chance to make comments and discuss it with others.

"I think that feature is of itself going to change the world," Bender says. "The idea that you're encouraged to critique, to engage in this discourse about whatever you're looking at. That's what learning is about."

Some who follow the project speculate that the XO's novelty may cause the students' impoverished families or even cash-strapped governments to try to sell XOs at a profit. (Only governments that buy in large quantities can get the \$100-plus price. Retail models are expected to sell for much more.)

Will the XO show upon eBay by next fall?

"I hope not," Bender says. "Because if they're on eBay, it means somebody got one from a kid, so I hope not."



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