

Alan Pierce
pierceaj@optonline.net

Empowering Children

Those involved in the nonprofit organization One Laptop per Child (OLPC) have a mission that is easy to articulate but most difficult—perhaps impossible—to achieve. They want to provide laptop computers to the almost 2 billion children who live in parts of the world where poverty and the lack of an adequate structured educational system make it impossible for them to receive an adequate education.

To further complicate the goal, OLPC announced, in 2005, the intent to design, manufacture, and distribute its notebook XO computer, built from the ground up, at a cost of \$100 per unit. The announcement indicated that this machine would have to be very different than the average notebook computer that was then selling for approximately \$1,500. OLPC's computer needed to meet the specific educational needs of recipients who often live off the electric grid in climates that range from very hot to very wet.

Often, impossible dreams come to fruition when they are channeled into existence by brilliant leadership. The founder and chairman of OLPC is Nicholas Negroponte, a Massachusetts Institute of Technology (MIT) graduate, MIT professor, co-founder of the MIT Media Laboratory, author of *Being Digital*, and famous for his many contributions to our continually expanding digital world. Negroponte's diligence brought much of corporate America on board and OLPC's dream of building the XO computer is now a reality.

As I write this column, the Beta-4 fourth iteration of an entirely new type of computer has started to roll off the assembly line ready for distribution to needy recipients. Though it failed to meet the \$100 per unit goal, OLPC's \$188 machine is an amazing piece of hardware and software engineering.

Drop tested at 15 feet, this machine is built for hard knocks in hot, cold, wet, dry, and other environments that go hand in hand with the poverty found in third world countries. Its very-high-resolution screen has a reflective black-and-white e-book mode for use in bright sunlight and a full color mode for indoor use. It consumes very little electricity, is designed for human power recharging, and it can run for up to eight hours on a single charge. Each unit will come with its own hand-powered recharger such as the yoyo-style pull cord unit shown in the photo.

The XO has a “transformer” hinge similar to the one found on expensive notebook computers. This hinge allows the XO computer's screen to be shifted around into many different configurations, including a full flip-over, which makes the XO computer a perfect e-book.

It has built-in shock absorbers to protect against falls, and a microphone and camera for enhanced communication. Since the computer will most likely be used in a wet-and-muddy or dry-and-sandy environment, its screen, keyboard, and touch pad are sealed with rubber membranes so students can read, write, and draw using a machine that is reasonably moisture- and dirt-resistant. The XO also has an automatic networking system that allows for instant communication and collaboration among its users.

If children lack access to electric-

ity, they will also likely lack access to the Internet. One of the most interesting features of this computer is that it automatically creates its own mesh network with all the other XO units in its range.

The two ears shown in the illustration are the mesh network antennas. This network allows for the full sharing of information between the machines on the network. If one of the computers on the network has an Internet connection, they all have Internet access. Each machine enhances the range of this network even when turned off.

The XO computer



Suppliers of the XO computer hope to introduce a new paradigm of learning that leapfrogs all past attempts to bring education to the poverty-stricken areas of the third world. The machine is built for self-guided or teacher-guided learning that can provide endless possibilities to children.

You can learn more about the XO computer and the One Laptop per Child initiative at <http://laptop.org/en/laptop/hardware>.

Recalling the Facts

1. What can the XO computer do that your current notebook can't do?
2. Would your local Internet provider encourage or discourage the inclusion of mesh networking on future notebook computers? Why? ©

Alan Pierce, Ed.D., CSIT, is a technology education consultant. Visit www.technologytoday.us for past columns and teacher resources.