

## Can the \$100 Laptop Change the World?

In this exclusive interview with LAPT... Nicholas Negroponte speaks freely on the ambitious One Laptop Per Child Project.

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In the tech world, \$100 can get you an iPod shuffle, a cheap digital camera, or even a cell phone with a two-year service agreement. But a laptop? Thanks to an ambitious nonprofit agency, children in developing nations can be given laptops for that exact amount.



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The One Laptop per Child (OLPC) Trade Association, founded in 2005 by Nicholas Negroponte, has one goal: to spread education around the world one laptop at a time. The XO laptop, also known as the Children's Machine and the \$100 Laptop (\$100 is OLPC's ultimate target price at the end of three year's), will be distributed to children in developing nations. And because \$100 is still too expensive for those in developing countries, their governments can purchase the machines at cost and distribute one per student.

Nicholas Negroponte, the founder and chairman of OLPC and chairman emeritus of MIT Media Lab, answered a few of our questions about the project.

**LAPTOP: What first inspired you to begin this project? Was it hard to get it off the ground?**

**NN:** One Laptop per Child was started as a nonprofit organization two and a half years ago. Every project I have ever done in my life has been a vector toward this one. The early work of Professor Seymour Papert, the creator of the once-popular Logo programming language, provides the foundational theories of children learning through computers--what we call constructionism. In 1981, we were using Apple IIs in primary schools in Senegal.

**LAPTOP: How are these laptops expected to help underprivileged kids? What will they learn from having them?**

**NN:** They will help in the same ways they aid privileged kids--and then some. Imagine schools without books, life without communications, even life without TV. Suddenly, a child [with a laptop] has access to millions of books. Even more important, children can collaborate, can make things and can learn by doing.

**LAPTOP: Critics of the OLPC project maintain that developing countries need food, development, and medical aid--not laptops. What's your response?**

**NN:** Substitute the word "education" for "laptop" and you will never ask that question again. The theory of OLPC is simple: There are 1.2 billion children in primary and secondary schools worldwide. Fifty percent of those schools have no electricity, and many are so rural they hold class under a tree. Many teachers do not show up, or have barely a sixth-grade education themselves. Under these conditions, while we build schools and train teachers (a 20- to 30-year process), let's leverage the children themselves, inside and outside of the school.

**LAPTOP: What are the hardware capabilities of the XO laptop?**

**NN:** It has three features your laptop does not. One, it runs on very low power--an average two watts instead of 30 to 40 watts. This means it can run on human power (like hand cranks or pull cords). Two, it has a dual-mode display, which means it's fully readable in both bright daylight and in grayscale reflective mode. It is important for children so they can be used outdoors and in bright light conditions. Also, in that mode, it consumes less than 0.2 watts of power. Three, it supports a mesh network, where each laptop routes signals to its neighbors, so the children in a town make their own network. Only one point of back-haul to the Internet can be shared among, say, 100 kids. Furthermore, 20 kids in a classroom, each of whom have 1GB of flash memory, can share their memory, giving the class 20GB at that time. ([Check out the photo and detailed diagram of the OLPC notebook.](#))

**LAPTOP: Why the emphasis on open source? Why not use versions of Windows or OS X?**

**NN:** We want the kids to modify and build software and learn from that. Think of our whole effort as akin to Wikipedia in nature. We will implement Wiki-textbooks. We have even gone to the extreme of including a "show source" key on the keyboard to view the operating source code.

**LAPTOP: What is the long-term impact of giving all these kids a programming environment and an open-source capability?**

**NN:** A far more creative society 20 years from now. Not to mention a chance to eliminate poverty and create world peace.

**LAPTOP: The laptop's design, complete with its green shell, is striking and already easily recognizable. What was the thinking behind the design?**

**NN:** I worked on it personally with Yves Behar, a brilliant industrial designer from San Francisco. We designed a laptop around harsh conditions (environmental as well as rough use), calculating the children's needs and desires. It is dust-, sand-, dirt-, and water-resistant and has features that children love, like a camera and powerful music hardware/software. It is designed to be both a laptop and an e-book.

**LAPTOP: How do you pick who gets the laptops, and how will they be distributed? Are there certain geographical areas you are targeting first?**

**NN:** Countries at the moment include: Argentina, Brazil, Libya, Nigeria, Pakistan, Palestine, Rwanda, Thailand, and Uruguay. And we are currently in discussion with Mexico, Romania, Ethiopia, Angola, Turkey, and the Central American states. We work with federal governments of developing nations to launch the idea, with five basic principles: child ownership, low ages, saturation, connection, free, and open source.

**LAPTOP: What obstacles does OLPC face in the coming months?**

**NN:** We face a great deal of debugging and modification of the industrial design. We are making the ears [antennas] rubber and the laptops more water-resistant, for example. A change of processor and memory specs are also in order to have one SKU for two years. These tests are still in progress and will be for three more months. The following months will then be those of closure, with real agreements being formed and mass production starting in September.

**LAPTOP: Intel has just introduced the Classmate PC. What is your reaction to that product?**

**NN:** We welcome Intel. The Classmate certainly is a reaction to and copy of OLPC's mission and validates it as such. Its name speaks for itself with regard to their emphasis on classroom technology. We do not compete with them, but they believe they compete with us. Such asymmetry is rare. They have been very underhanded and destructive in the process of sales--theirs is a market, ours is a mission. Since OLPC is a nonprofit, you can liken Intel's behavior to Johnson & Johnson beating up on the Red Cross because they use Ace bandages. ([Read more about the Classmate vs. XO laptop debate here](#)).

**LAPTOP: With the onset of your project perhaps the word "laptop" will start to mean something different around the world. Being the name of our publication, can you tell us what the word "laptop" means to you?**

**NN:** A laptop is a device that engages both hands (all fingers naturally posed, not just thumbs), peripheral and foveal vision (thus browsable), is portable and personal. It is a window into the world.

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