Laptops for Literacy

According to the UN, 759 million people (one in five adults) around the world lack basic reading and writing skills; two thirds are women and girls and most live in the world's least developed countries[1]. For these individuals, illiteracy presents a major obstacle to greater economic and political participation in their societies. The inability to read and write isolates already vulnerable communities by cutting off their access to information and denying them the means to communicate with a wider audience. One Laptop Per Child aims to support the literacy development of children from these communities by providing them with low-cost, rugged laptops in order to empower them for lifelong learning and thereby contribute to breaking these cycles of poverty and exclusion.

Traditionally, the primary means for improving literacy rates has been for governments to expand access to formal education. Unfortunately, this expansion has failed to reach everyone. An estimated 72 million children remain out of school and these children disproportionately come from countries torn apart by conflict and from situations of extreme rural poverty[2]. There is growing recognition that expanding access to formal education is an insufficient means of reaching the world's most marginalized children. Furthermore, merely providing access to schooling does not ensure that children will acquire basic literacy skills. The quality of instruction and the availability of literacy resources in and outside of school constitute two of the major factors that mediate children's literacy development.

While myriad factors impact literacy acquisition, one significant barrier for children from poor families is their limited access to reading materials. In the United States, for example, most children from middle-income families grow up in households where literacy activities play a prominent role. Toddlers learn their ABC's by playing with alphabet letters on the refrigerator and watching educational programming like Sesame Street. Bedtime routines involve reading stories selected from large collections of children's literature and nursery rhymes. These activities help children learn the relationship between text and oral language, broaden their vocabulary, and they plant the seeds for a love of reading. Children who grow up in poverty rarely have access to such resources. The XO laptop has the potential to transform literacy development for these children by providing, in one machine, a wealth of literacy activities.

When learning to read, children must acquire an understanding of the relationship between written symbols and their corresponding sounds in oral language. The XO laptop comes

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[1] Education for All Global Monitoring Report, UNESCO, 2006.
[2] EFA Gobal Monitoring Report, UNESCO 2010

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with a text-to-speech processor, called "Speak," which can facilitate this learning. When a child uses the Speak activity, she can type a letter or word and the computer will pronounce it aloud. Thus, the connection between letters and sounds becomes clearer. Speak has been localized into dozens of languages, ranging from Spanish to the Native American Mohawk language. The XO's "Memorize" activity functions like the classic card game memory, with the added feature that it's customizable. By encouraging children to create their own games, Memorize promotes creativity and critical thinking skills. To promote basic literacy skills, teachers and parents can create Memorize games that encourage young learners to match pairs that rhyme, begin with the same letter, or match pictures to their corresponding words. Playing these types of games can improve children's phonological awareness and expand their vocabularies. Children who are acquiring literacy skills also need repeated practice reading aloud. Unfortunately, the large class sizes found in many developing countries often do not allow individual children much time to exercise their reading skills in class. The XO's "Record" activity creates the opportunity for children to record themselves reading a passage aloud and then send it to their teachers. In this way, Record allows each child to spend more time on task, frees up the teacher to spend more time with struggling students, and still allows for personalized feedback. When children create their own games and recordings, they're eager to share these with family and friends, thus with the XO, learning quickly extends beyond the classroom.

In both learning how to read and write, it is critical that children are provided with authentic purposes for which to put their newfound literacy skills to use. This enables children to see that literacy skills are directly relevant to their lives and it fosters their motivation to continue learning. One of OLPC's core principles is that children's laptops must be connected in order to support maximum learning opportunities. The XOs connect, not only to the Internet, but also to each other via the Mesh network. One of the most popular activities that children engage in via the mesh network is the "Chat" activity. Unlike writing exercises assigned for homework, when children engage in personal communication on their XOs they are independently motivated to write.

While connectivity can foster student motivation, it also facilitates learning that caters to individual curiosities. When children browse the Internet, they can search for reading materials that directly relate to their lives and interests. When they use the XO to write and illustrate their own stories, they are able to share this with a local and global community. For children writing in a language that is underrepresented on the Internet, the ability to share their writing online offers the opportunity to provide critical literacy resources for other children in their language community.

Perhaps the XO's most powerful literacy tool is its function as an e-book reader. Results from the 2006 Progress in International Reading Literacy Study, which tested fourth graders in 35 countries, identified a positive relationship between the number of books in a child's home and their reading achievement[3]. A recent longitudinal study that followed

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[3] The Progress in International Reading Study, 2006.

children in 27 countries, demonstrated that growing up in a household with books has a dramatic impact on the level of education a child attains[4]. In fact, the difference between children who grow up without any books and those who grow up in a household with a 500 book library led to an average of 3.2 additional years of education. Across countries, the gain from having access to a household library was equal to or higher than the gain associated with having college-educated parents. These findings demonstrate that providing children who grow up in poverty with books can dramatically improve their educational and employment prospects in the future. The XO makes it possible to deliver hundreds of books into the hands of children in even the most remote areas. In fact, each XO laptop can locally store up to 100 books, which means that a group of just ten children can share a collection of 1000 different titles.

Yet, OLPC is not merely interested in providing children with access to any books. Too often when children in poor communities in the developing world are able to find books, they are out-dated, written for adults, and oftentimes in a language other than the child's mother tongue. OLPC is working with partners to ensure that the books children can access via their XOs are written in the local language, developmentally appropriate and culturally relevant to children in that community. One such OLPC partner, the International Digital Children's Library, hosts a collection of thousands of beautifully illustrated books in 54 languages. OLPC is actively pursuing collaboration with local and international partners to build collections of books that will capture children's imagination, spark their creativity, and encourage them to make a lifelong habit of reading.

Providing access to high-quality children's literature is just the beginning of how the XO can transform children's reading experience. The beauty of reading on a laptop is that supports for emerging readers can be embedded into the books. For example, on the XO, books can include audio-recordings. In fact, the OLPC team in Gaza has already loaded their XOs with children's books that offer the option to have the story read aloud. This feature is particularly important for children whose parents have low literacy skills and may not be able to read aloud to them. When families use this type of software together, parents and grandparents can develop their literacy skills alongside their children. In this way, the XO becomes a resource for the entire family. OLPC is engaged in research to identify support for vocabulary development and reading comprehension which can be built into the XO software.

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[4] Evans, M. D. R., Kelley, J., Sikora, J., and Treiman, D. J. (2010). Family scholarly culture and educational success: Books and schooling in 27 nations. *Research in Social Stratification and Mobility*.

One Laptop Per Child is dedicated to improving literacy acquisition for the world's poorest children, not because literacy is an end in and of itself, but because literacy can empower individuals and communities to advocate for themselves and improve their quality of life. By providing children with engaging, relevant reading materials, authentic opportunities to develop their literacy skills and share their work, OLPC hopes to instill in them a love of learning which will continue to benefit children and their communities well into the future.