onebillion: Using Technology to Ensure All Children Reach Their Full Potential in Reading and Math
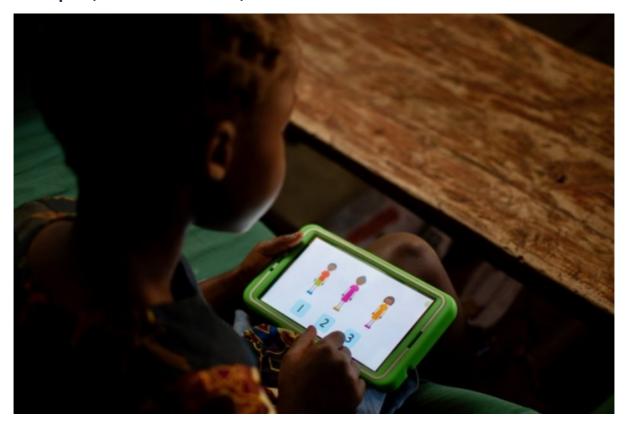
By Kyle Thornton

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A child in Malawi learning math on onebillion's onetab device

The **Transformational Tech** series highlights Cisco's nonprofit grant recipients that use technology to help transform the lives of individuals and communities.

With widespread school closures during the COVID-19 pandemic, the digital divide widened for children who lack access to the internet or electronic devices. A report from the International Telecommunication Union and UNICEF shows that **two-thirds** of the world's school-age children — or 1.3 billion children, aged 3 to 17 years old — do not have an internet connection at home, making it impossible for some children to access online learning resources.

Education technology resources are vital: **617 million** children and adolescents worldwide who are enrolled in schools are not reaching minimum proficiency levels in reading and math.

That is where onebillion comes in. This non-profit organization based in London has a mission to ensure that one billion marginalized children are confident readers in their own language and proficient at math. Cisco cash and product grants have enabled **onebillion** to localize its award-winning **onecourse** software, bringing this resource to more children who are out of school and not learning.

Transforming learning outcomes

Founded in 2014, onebillion has an international team of experts that have built comprehensive, scalable educational software for children, whether they are in or out of school. They collaborate with partner organizations worldwide to bring their software directly into the hands of children across sub-Saharan African countries, including Malawi, Uganda, Kenya, and Tanzania, and more recently, in the United States and Canada.

"At the heart of what we do is a genuine belief that technology can be a huge catalyst to significant changes in learning outcomes in a cost-effective way. With personalized, adaptive software, you can put the child at the center and create solutions that are going to work for them, whether or not they're in a school system," shared Nat Dinham, Partnerships Lead at onebillion.

The organization is aware of the opportunities that technology can create for children who may not be in school, have no access to a teacher, or lack caregivers who are digitally literate. With a focus on implementing their software with the child's needs at the center, they hope to ease the global learning crisis.

Using technology to make an impact

onebillion's software, onecourse, is designed to meet children based on the level of reading and math that they begin with and adapts over time. onecourse is currently available in over four languages (Swahili, Chichewa, French and English), delivering daily learning sessions (30-40 minutes per day) in math and literacy, exploratory and creative play, and access to an extensive digital library.

Nat shared, "As they move through the course, students begin to explore the library by themselves and become more confident about choosing stories that are interesting to them. We focus on creating a big library of stories that both reflect the world that the child already knows and share a window into other cultures, countries, and people."

onecourse has a digital teacher, named Alefa. She guides each child through the course one step at a time, giving instant support and encouragement. She appears on-screen herself or as a pointing hand. For each new activity, she shows how to go through a task and gives short, simple, and clear instructions. Depending on which language she speaks, Alefa's name changes. In Swahili, she is called Mahira, and in English, Anna.

They also offer a solution called **onetab**, a tablet that is installed with onecourse software. The reason onebillion delivers its software on this dedicated device is because in some regions, there isn't a great deal of personal device ownership or distribution. They have also customized onetab to address local issues like energy poverty. For example, the device comes with a solar charger because users may not have electricity. It works fully offline because there may be no internet. It is designed so children can learn without the assistance of an adult and quickly adapt to using a tablet.

Since 2020, over 30,000 onetabs have been distributed around the world – mostly in North America and Africa. It's likely that each one has been used by multiple children (and in some cases, adults). In an optimized implementation model, a onetab could be used by up to ten children. Given that it costs around $50 and is designed to take a child from zero to numerate and literate, that's a cost of just $5 per child.

Collaborating with Cisco

Cisco has given cash and product investments to support the development of onebillion's onecourse software. The onecourse software itself (which previously was available on other devices besides onetab) is being used by approximately 200,000 children in government schools in Malawi. This project has been significantly supported by Cisco Meraki technology with the donation of Mobile Device Management (MDM) licenses.

Nat also shared how a previous Cisco grant helped onebillion develop localization tools to massively scale up and make it more efficient. "There are around 180,000 words in just one language, and you have to contextualize it thoroughly, so it is culturally relevant and introduces letters in an order that makes sense. All of these things take a huge amount of time. Previously, we were doing it manually and therefore were only able to do one language at a time, and that would take at least a year," she said.

With the grant, onebillion can focus on creating tools that streamline the localization process and enable multiple languages to be localized simultaneously. For example, it has already enabled onebillion to simultaneously develop Portuguese for Mozambique and Hausa for Nigeria. French (the first language onebillion localized with the new tools) is now being used with refugees from the Democratic Republic of the Congo.

Cisco is currently helping onebillion to localize a digital assessment tool into more languages. It will help education ministries, implementation partners, and researchers get rapid insights into both the reading and the math levels of an individual child. It also goes down into the sub-skills and presents the information to teachers so they can see the progress of each student visually. This grant also supports research on voice recognition technology that could help determine a child's reading level. Nat shared that the research is still underway, but it would be very exciting if it could work, "Every time we've been involved with Cisco, it has leapfrogged us several miles down the road."

onebillion's software = a more inclusive future for all

At onebillion, those who are most vulnerable, including children with special educational needs, refugees, and children in remote areas are at the heart of everything they do. Despite more children attending school than ever, there are still persistent disparities in learning outcomes.

FULCRUM, an Oakland-based NAACP-led education initiative, partnered with **Open Up Resources** and onebillion to ensure that children could continue their lessons during the pandemic through onetab. "Teachers and parents were relieved that onetab didn't require Wi-Fi or supervision and enabled children to have engaging, adaptive math and literacy activities that were more targeted and more fun than packets of worksheets. We had overwhelmingly positive feedback from families who received onetab, sharing that not only did they see a difference in their child's math and literacy achievement, but that their attitudes about learning were also changing," shared Jessica Sliwerski, CEO of Open Up Resources.

Open Up Resources has been supporting school districts and partners all across the United States. Nat shared, "They're definitely interested in developing similar partnerships as they had with FULCRUM. They're tremendously ambitious in their plans for scaling onetab in the US, particularly to marginalized children." Through FULCRUM's distribution of 900 onetabs in Fall 2020, onebillion's technology played a vital role in ensuring that the most vulnerable learners, those in pre-K to first grade, were not at risk of losing foundational literacy and math skills during the pandemic.

Nat reflected, "The sheer number of barriers that children face to completing primary education is just astonishing. We have partnerships in Malawi, Sierra Leone, Uganda, and the United States, and Canada. Although the languages may be different, it is all the same quality software. "It shows an opportunity for genuine equity in education through technology, which can be delivered at scale."

At Cisco, our approach is to invest in early-stage technology solutions that have measurable outcomes and that can scale and be replicated. This is the stage where

funding is most needed and where we can make the biggest difference. Learn more about our **Nonprofit Partnerships and Grant Programs**.

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