Too many children in developing countries don't read well, and because people learn to read by reading, addressing the dearth of reading materials is a priority of development agencies. Digital technology offers the hope of filling the gap. But as we will argue, the cost of hardware is still a bottleneck; and more seriously, since readers need materials of high quality that are relevant to their lives, there is a need to sustain viable publishers in developing counties who can produce those materials. But the flood of digitized materials from abroad and the push for open licensing runs the risk of undermining local publishers. A sustainable way to improve literacy in developing countries should include support to those publishers.

While definitions of "literate" and "illiterate" vary from measure to measure, a widely accepted estimate holds that there are one billion illiterate adults in the world, two thirds of them women. A quarter of a billion children are following their parents into illiteracy. Education for All coordinated efforts of the world's governments and development agencies between 1990 and 2015, and succeeded in reducing the number of out-of-school primary-age children by half. But there are still 250 million children in the world who cannot read, according to the British development agency, DFID, and most of those non-reading children are enrolled in schools. The literacy achievements of children in most developing countries are abysmal - many sixth graders still cannot read a sentence, according to EGRA (Early Grade Reading Assessment) and other measures. The largest concentrations of illiterate children are found in Africa and South Asia. Especially vulnerable are children in conflict zones, children who speak minority languages, and girls.

In recent years, many electronically-based initiatives have been launched to boost children's literacy in the developing world. Perhaps the best example is the African Storybook (ASb) a web-based literacy initiative hosted by Saide in South Africa that provides openly licensed picture storybooks for early reading in the languages of Africa.

1 http://www-01.sil.org/literacy/LitFacts.htm
2 http://www.unesco.org/new/en/education/themes/leading-the-international-agenda/education-for-all/
3 https://gemreportunesco.wordpress.com/2014/04/04/250-million-children-not-learning-but-has-there-been-any-progress/
4 https://globalreadingnetwork.net/eddata
6 http://www.africanstorybook.org/
A more formulaic example is Bloom, a free software program offered by SIL International that supports the writing and publishing of stories through book templates that can be read digitally or reproduced in hard copies and distributed locally. Such projects are producing thousands of new titles in local languages and providing voluntary reading materials where there weren't any. Bloom software, which is distributed by USAID's Global Reading Network, provides a library of books in many languages, as well as templates that are suited to a range of cultural settings with illustrations and ideas for content that can be translated into local languages. As the Bloom website puts it,

[R]ealistically, we know that it takes stacks of titles to make reading worthwhile and give the practice needed to develop true literacy. The problem has been who will make all those books? How will we find the time? Where will we get the content? So we settle for the possible and hope for the best.

Bloom software can make an enormous contribution to literacy initiatives in developing countries. But the reservations about the impact implied in their statement are justified.

Studies by the OECD suggest that for literacy to make a difference in people's lives—to increase their access to information; boost their reasoning power; and make them productive, healthy, and thoughtful citizens—people must learn to read at fairly high levels of sophistication. Surprisingly high levels: according to one large-scale study, half of the adults in the US, a country that is considered almost universally literate, haven't attained the levels of literacy they need for successful participation in economic and civic life. Literacy demands vary from country to country depending on local economies and other circumstances, and the level of literacy needed to be successful in, say, Liberia may be lower for the average citizen than it is in a high-income country. But literacy and development are in a reciprocal relationship: countries need more literate citizens in order to develop their resources and opportunities for the population, and citizens will need higher levels of literacy to participate successfully in society.

Sophisticated reading is evoked by well-written literature. Works of fiction should have engaging plots with surprising twists, characters with whom readers can identify, rich vocabulary, room for readers to make inferences, pithy themes, and sufficient ambiguity to invite discussion and debate. Informational text should address their topics in provocative ways and inspire and guide readers' inquiry. While computer-generated mass-produced reading matter may help develop low-level reading skills, it will be a considerable challenge to use this medium to inspire and support readers to reach higher levels of literacy.

Dissemination of well-written literature is obviously not limited to traditional print. A world of opportunities is made possible by digital means. Many international projects distribute books to readers via cell phones and tablets. E-books hold the promise of leap-frogging the tasks of printing and distributing large numbers of hard-copy books. Literacy workers and donors are inspired by the fact that cell phone access in Africa in recent years has increased at the fastest rate of anywhere in the world. Cell phone ownership in South Africa and Nigeria is now on a par with the United States, at close to 90%. But the penetration is uneven: in Liberia the rate of cell phone access was half that, and access to the Internet via cell phones was under 3%, according to the most recent study we could find. Access to cell phones and the Internet is heavily skewed toward urban areas, too; with many rural areas largely left out, particularly in areas that have suffered conflict, where wanton destruction of infrastructure is common. Access to power is also a roadblock, according to the 2018 Global Education Monitoring Report, 4/5 of African primary schools do not have electricity.
In the poorest countries, devices for reading e-books are still in short supply. Though cell phones are ubiquitous everywhere but the rural areas, most devices have small screens, unsuitable for the youngest readers. Not surprisingly, a recent study by UNESCO showed that most readers of e-books in Africa were educated young adults, whose reading fare was smaller print, presumably, without pictures. While tablets have a viewing area that can display larger type with illustrations, even the cheapest tablets, at $50, are beyond the reach of many families in countries such as Liberia, where the median annual family income is $782\textsuperscript{15}. Compared to the median family income in the US of $43,585, a $50 investment in Liberia is proportional to almost $3000—too much value to send down the road to school in a young child's backpack, even if one could afford to.

Tablets do have the potential for providing up-to-date reference material to schools, even when a limited number of tablets are used by teachers to update their lessons, or shared among students. In many countries in Africa, few primary schools have electricity, but more secondary schools do\textsuperscript{16}. The Rumie Initiative offers a promising approach to updating the reference materials of secondary schools, by distributing relatively inexpensive tablets pre-loaded with reference materials and skills tutorials\textsuperscript{17}. The tablets are periodically returned to a central site and updated with new content, skirting the issue of limited Internet connectivity in the schools. The enormous potential of the Rumie Initiative, and others like it, will be clear to anyone who has visited a typical African school library where reference books may be half a century out of date.

To make electronically-disseminated literature more widely available, many development agencies are promoting “Creative Commons” publications, which allows free use of reading matter via the Internet\textsuperscript{18}. We won't argue with the benefits here; but as a group who has worked to develop and sustain local publishers in African countries, we point to the possible challenges Creative Commons poses for local publishers. In Tanzania, for example, the Children's Book Project offers workshops for local publishers, authors and editors, and solicits books to be published by subsidizing their purchase rather than their production\textsuperscript{19}. The purchased copies are distributed free to learners through schools and libraries while other copies are retaining on the open market by the publishers -- in support of both readers and a book trade. The publishers do market research, recruit works from local authors, hire and direct illustrators, provide editing, and arrange for printing and distribution of books. Proprietorship of the books, including copyright, protects the publishers' possibility to make a profit and stay in business, which in turn helps guarantee the very right of freedom of expression. If African countries are going to become literate societies, ones that take pride in their own culture, they need viable publishers and authors who can address the needs of the marketplace and make a living without being dependent on patronage, corporate sponsors or third parties --- all of whom tend to support what they like. We should be careful to promote policies that support local publishers, not undermine them.

“Pride in one's own culture” is more important than one might first think. In the case of young readers, there are clear advantages to having reading materials about places and circumstances that are familiar to the learners. For older readers, as Lebanese-French author Amin Malouf argues, the torrent of media from the West that celebrates or normalizes Western ways of living can be alienating and marginalizing to people living in other cultures, sometimes with violent results\textsuperscript{20}. Countries everywhere need literature—fiction and non-fiction—that focuses on their own realities. The rest of the world needs to read about those realities, too. All of these points argue for strong local publishing, in addition to the global distribution of reading matter, which is still heavily sourced from the West.

\textsuperscript{15} http://unesdoc.unesco.org/images/0022/002274/227436e.pdf ; http://news.gallup.com/poll/166211/worldwide-median-household-income-000.aspx
\textsuperscript{17} https://www.rumie.org/
\textsuperscript{18} https://creativecommons.org/
\textsuperscript{19} The Children's Book Project, founded by CODE 30 years ago and locally run, won UNESCO's International Literacy Award in 2005.
\textsuperscript{20} In the Name of Identity: Violence and the Need to Belong (Arcade Publishing, 2012).
Another issue is the quality of the literature. Creative Commons can by-pass the barriers of traditional publishing, and those barriers are significant. In the US, to publish a book for adults or for children with a traditional publisher requires that a writer first work through the large crowd of would-be authors to find an agent, who then elbows through another crowd of agents to get an editor's attention. The competition reduces to less than one or two in a thousand the odds of an unpublished author making it into print. To publish a children's book, writers typically narrow the odds by joining a professional writers' organization such as the Society of Children's Writers and Illustrators and attending workshops such as those offered by the Highlights Foundation. Published books are reviewed in literary journals and compete for a range of awards. The reviews, the awards, and the reputation of the publishing houses strongly influence the books that are purchased by community and school libraries, and by individuals. By-passing all of that apparatus can make publishing more democratic, but arguably at a cost of the quality of the publications. If intensive vetting results in works of higher quality being published, and if poor countries are being targeted for electronically-produced literature that by-passes the vetting associated with publishing in the West, a question of equity arises. Why do readers in Africa and South Asia deserve less quality than readers in the West? The response to the equity question has motivated CODE of Canada to work with local publishers in developing countries to produce and distribute high-quality books.

**CODE: A CASE STUDY FROM TANZANIA**

Over the last 60 years CODE has worked with local publishers to produce millions of copies of hundreds of titles of engaging trade books in local languages for young Africans, from early primary through secondary school. In the past dozen years, others in the development community have followed suit with the production of “supplemental readers” (a term that implies that textbooks are primary).

In the 1960's, for post-independence Tanzania, prioritizing education was the key to unlocking the country's vision of liberation and democratization, and nothing was more important in that regard than the reform of the colonial schooling system. Under the leadership of Jules Nyerere (known as Mwalimu or 'teacher'), this meant among other things, adopting the Swahili language as the compulsory medium of instruction in the primary school curriculum and monopolizing all textbook publishing under government bodies.

Impressive social and educational gains did follow – the country achieved Universal Primary Education (UPE) by 1973 for example-- but cracks were also surfacing. The socialist economy was failing, high expenditures on education were considered increasingly unsustainable, and the seemingly commendable government policy of becoming a publisher and providing free textbooks to all had the undesirable effect of killing the book trade and putting private sector publishers out of business. By the mid-80's school fees were re-imposed, enrollment was falling, books were disappearing, and Tanzania's much vaunted literacy rates were in retreat. Schools were functioning, but conditions were worsening and gross enrollment at the primary level began to plummet.

It was in this context that the Children's Book Project for Tanzania was established in 1991 by CODE (originally titled the Canadian Organization for Development through Education). The organization's mandate was to support programming that improved the quality of education, advanced literacy, and promoted the love and habit of reading. CODE recognized that this would require access to as wide a variety of books in Swahili as possible --books that could entertain, arouse interest, and excite curiosity. The problem was that by the 1980's, Tanzania -- the epicentre of Swahili culture in Africa-- no longer published children's books, in Swahili or otherwise.

With time, consultations, debate, and wide cooperation a plan was brought forward with the aim of creating a sustainable supply of relevant, high quality children's books in the Swahili language. This meant working in light of the publishing process -- recognizing that publishing is essentially an entrepreneurial activity, one where the publisher is the architect of the book, responsible for a process that starts with research and financing and ends with selling the finished product so the cycle can begin anew. From writers to booksellers, the plan was to support the links that connect the 'book-chain' and which permit the existence of an entrepreneurial publishing sector.

21 www.scbwi.org; www.highlightsfoundation.org
The result of this planning was *Mradi wa Vitabu vya Watoto* or the *Children’s Book Project* (CBP), conceived not as a publisher but as a mechanism to activate a book trade by subsidizing demand while supporting the development of skills at every link in the book chain: writers, illustrators, editors, and publishers. These ideas were put into practice through RFPs with clear criteria for submission of manuscripts by publishers, informed feedback as part of the manuscript assessment process, and payment only upon delivery of finished books through a wholesale-level pricing, guaranteed purchase of 60% of initial print runs that covered all production costs. Purchased books were put into schools and libraries, and the publishers’ profits lay in their ability to successfully market the remaining 40% of the print run.

The main features of the Children’s Book Project approach as originally established were these:

- support to indigenous publishing critical for support to indigenous culture and language
- focus on children’s supplementary materials (fiction and non-fiction)
- diversity of publishers needed for diversity of materials
- subsidize purchasing power rather than production
- participation in the book trade (wholesale and retail)
- quality motivated by competition
- skill development training for all aspects of the book chain
- strong libraries means ready access to materials for readers, and markets for publishers

The idea took root. Twenty-five later, CBP and its approach to book development continues. Results include the creation of some 350 titles of children’s books, locally written, edited and illustrated, and published by a robust national industry of private sector publishers. Over two million copies have been distributed to thousands of Tanzanian schools and libraries. It has been written up as an exemplary initiative by the Dag Hammarskjold Foundation and the Swedish International Development Agency and it has received the National Kiswahili Council award for its contribution in promoting Kiswahili language; the National Writers Association of Tanzania award for its contribution in establishing writers’ associations and the Zeze Award, Tanzania’s most important cultural recognition, for “pioneering the publication of children’s books and training of authors.” In 2007, CBP was awarded the UNESCO/King Sejong International Literacy Prize for its work promoting the love of books among children and adults.

Given CBP’s mandate of establishing a reading culture in Tanzania and not just distributing great books, it became apparent that it was important to ensure that educators – teachers, librarians, parents – had the skills to effectively help children get the most out of the books. In 1997, CBP embarked upon a National Reading Campaign to foster the professional development of teachers in the teaching and acquisition of reading and writing skills and in the understanding and adoption of progressive child-centered teaching methodologies. CBP continues this work today through *Reading Tanzania*, first implemented in the primary schools of Kongwa District in Dodoma Region in the geographic center of the country. A 2015 evaluation showed impressive results -- on measures of reading fluency, reading with understanding, and writing coherently and correctly, scores of children in the project schools were far superior to those of children in control schools, even by factors of two or three.

**CONCLUSION, AND OTHER USES OF TECHNOLOGY**

Those of us who work to get reading fare into the hands of readers, especially young readers, in low-income countries have looked on the advances of electronic publishing with as much excitement as anyone, convinced it can be done while still supporting viable local publishing and ensuring the quality of the fare. With this in mind we point out that a number of donor initiatives aiming to increase access to reading materials seem to be conflating Creative Commons and digital publishing as two sides of the same coin when in reality they are different issues that are interrelated, but certainly not one and the same. One is about rights and the other is a medium of delivery. In high income countries established publishers are surviving by reinventing their offerings to include CC content while making money on higher value-added services, offering bundled content with simulations, labs, project work, quizzes etc. They are evolving along with the rest of

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the world and learning to fit in (or not) with developing technology, but it takes an enormous effort, both in terms of technical expertise and in dollars.

If we expect publishers in low income countries to embrace CC content we need to be aware of the need for a greater understanding of rights and licensing writ large and what can be done with those rights including buying, trading and selling them, and how CC rights can complement this. Additionally, publishers and the industry as a whole would benefit from a much greater understanding and training in technical expertise related to digital skills and know-how including digital marketing and selling.

We also raise the fact that most learners in low-income countries simply do not yet have regular access to suitable devices with affordable service. Until that day happens, there remains a need to use technology to ensure the quality and lower the cost of printed books. For example, when CODE began projects in Liberia and Sierra Leone ten years ago, there were no viable publishers to work with, so we encouraged new partners, the We Care Library in Monrovia and PEN-Sierra Leone in Freetown, to recruit and train writers and illustrators of children's books. Initially, CODE sent professional authors, illustrators, and publishers overseas to train their counterparts, but since then we have maintained the relationships via the Internet. The local partners continue to offer writers' workshops, and have set up vetting committees for the blind review of manuscripts. The most promising manuscripts are emailed to professional children's authors and editors in Canada and the United States, who communicate with the African authors to refine their works. Illustrators are then commissioned, and they scan their preliminary works and send them to editors in North America for review. Edited text and art are then sent electronically to an established publisher in Ghana, who formats them into electronic files which are emailed back to North America for review. The finished book files are transmitted electronically to a high-volume printer in Abu Dhabi, who prints the books in four colors on durable paper with card stock covers, and ships thousands of copies in freight containers to Monrovia and Freetown, at a final delivered cost of fifty cents for a 32-page picture book. The books are delivered everywhere in both countries, even to the most remote schools in places where the Internet and cell phones and electricity have yet to reach.

Our partners in Liberia and Sierra Leone are moving toward becoming independent enterprises, capable of sustaining their publishing efforts. When the dawn of e-book publishing eventually shines brightly in their countries, we trust that they will make the transition to electronic publishing as easily as anyone. We hope and expect that they will continue to take pride in publishing high quality books that reflect their local environments.

23 http://we-carefoundation.org/program/we-care-library/
24 https://code.ngo/program/code-in-sierra-leone