

# Supply and Demand for Open Educational Resources (OER) for Basic Education in Africa



Report and Recommendations

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## ABSTRACT

Open educational resources (OER) are an important emerging genre of teaching and learning materials with the potential for providing significant learning support on a global scale. OER have the capacity to enhance the availability of quality reading and learning materials to audiences who are not currently accessing traditional print materials.

However, the particular supply and demand features of OER give rise to questions about how they could best reach some of the least-resourced target audiences. This report aims to investigate these questions, particularly as they relate to the potential use of OER for helping to meet basic education needs in low-resource environments of Africa. The report draws primarily on three types of data: a review of written sources on OER in Africa, interviews of eight OER supply organizations, and interviews of thirteen teachers, headmasters and leaders of small NGOs in four countries of Africa. This data indicates that, while there is an abundance of OER available, the demand side is much less robust for a range of reasons.

Based on analysis and discussion of the data, the report makes several recommendations for enhancing OER use among the target audiences. A set of specific actions is also offered to OER stakeholders for their consideration, in order that the impressive gains in managing supply may be leveraged to provide maximum benefit to the 'least served'.

## ABBREVIATIONS USED IN THE REPORT

CIES	Comparative and International Education Society
DfID	Department for International Development
ICT	Information and communications technology
L1	First language or home language
L2	Second language or additional language
MoE	Ministry of Education
NGO	Non-governmental organization
OER	Open educational resources
OLnet	Open Learning Network
SIL	SIL International
STEM	Science, Technology, Engineering and Maths
UBE	Universal Basic Education program, Federal Republic of Nigeria
UNESCO	United Nations Educational, Scientific and Cultural Organization

A young child with dark skin is shown in profile, facing right, drawing on a chalkboard. The child is wearing a dark green shirt with a pink collar. The chalkboard is dark grey and has some faint white lines and shapes drawn on it. The background is dark and slightly out of focus.

# 1. INTRODUCTION

Open educational resources (OER) are an important emerging genre of teaching and learning materials with the potential for providing significant learning support on a global scale. UNESCO defines OER as “teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions.”<sup>1</sup> OER are distinguished from other educational resources (print and digital) precisely by their open licensing (Butcher 2015: 5).

OER have significant potential for enhancing the availability of quality reading and learning materials to audiences who are not currently accessing traditional print materials. However, the particular supply and demand features of OER give rise to questions about how they could best reach some of the least-resourced target audiences. Questions related to OER demand have to do with whether and how they are being used by the target audiences, the challenges and obstacles to OER use by those audiences, issues of cost, and ways in which knowledge, access and use of OER could be enhanced in the target environment. Supply-related questions have to do with how the current production and distribution of OER for key audiences could be improved, as well as comparing the feasibility and appropriateness of various strategies for OER delivery (online, downloading, downloading and printing) in particular contexts.

This report aims to address questions such as these, particularly as they relate to the potential use of OER for helping to meet basic education needs in low-resource environments of Africa. The report draws on three primary sources of data:

- A review of written sources, particularly on OER in Africa, relating to both the demand side and the supply side;
- Interviews with and presentations of eight OER supply organizations, providing a range of perspectives on OER supply;
- Thirteen interviews of teachers, headmasters and leaders of small education Non-governmental organizations (NGOs) in four countries of Africa, giving important local perspectives on OER demand.

Taken together, this data highlights some important strengths and weaknesses of the current OER movement.

<sup>1</sup> Open Educational Resources (OER). 2019. Retrieved from <https://en.unesco.org/themes/building-knowledge-societies/oer>.



## 2. REVIEW OF WRITTEN SOURCES

The literature review conducted on OER for this report focuses particularly on the impact of OER in basic education in Sub-Saharan Africa. The review outlines key events and documents related to the development of OER, from the introduction of *OpenCourseWare* by the Massachusetts Institute of Technology (MIT) in 2001<sup>2</sup> to the adoption of a draft recommendation on OER by United Nations Educational, Scientific and Cultural Organization (UNESCO) member states in May 2019.<sup>3</sup> Much of the relevant documentation has been generated around events such as congresses and workshops, in which rich discussion of OER by leaders and stakeholders in the field has been shaping possible ways forward in the domain. Over this period of time, a clear evolution in thinking about OER is evident: from its use in higher education to early literacy, from conceptual frameworks to practical problem-solving, and from a general lack of awareness to a sense of enthusiasm for OER – mixed with concerns about the very real technical and “human-related” challenges that exist.

### 2.1 OER READINESS IN AFRICA

A study was carried out for the Open Learning Network (OLnet)<sup>4</sup> in 2010 (Ngimwa 2010) to assess the readiness of African stakeholders to engage with and promote OER. Technical factors were assessed, related to the strength of the technological infrastructure to support OER on a wide scale. Human-related factors such as skills, perceptions and attitudes of potential users in Africa were also studied.

Where technical readiness is concerned, the report found that readiness for OER varies across different regions of Africa, especially in terms of internet connectivity. However, alternative technical solutions such as print and cached downloads are seen by domain stakeholders as having the potential to enhance OER use in these contexts.

Where attitudes were concerned, the study found that people already using OER perceive them positively, and believe that OER represent a means of expanding equitable access to education. However, numerous challenges were also noted: a) conservative attitudes towards ownership and sharing; b) an institutional sensitivity to intellectual property rights and the potential economic benefits and academic recognition that could be lost with open licensing; c) and unfamiliarity with this digital paradigm in predominantly oral societies.

<sup>2</sup> MIT to make nearly all course materials available free on the World Wide Web. 4 April 2001. Retrieved from <http://news.mit.edu/2001/ocw>.

<sup>3</sup> DRAFT text 18 April 2018 – Recommendation on Open Educational Resources (OER). 18 April 2018. Retrieved from <https://www.oercongress.org/wp-content/uploads/2018/04/Draft-OER-Recommendation-Version-Draft-18-April-2018-text-for-online-consultation-ENG.pdf>.

<sup>4</sup> Background to OER Hub. No date given. Retrieved from <http://oer-hub.net/what-we-do/background-to-oer-hub/>.

The report recommends that Africa could be made more OER-ready through activities such as awareness-building among the stakeholders and potential beneficiaries, local content creation, and advocacy for open access publishing and technically enabled development.

## 2.2 AFRICAN GOVERNMENT PERSPECTIVES

The majority of the participants in the UNESCO-sponsored OER events reviewed either were government personnel themselves, or were aware of government interests in the field. The Africa Regional Consultation on OER, held in March 2017 in Mauritius, included participants representing 22 Sub-Saharan countries. It was found that, except for South Africa and the Seychelles, no other country on the continent had an OER policy at the national level. The consultation recommended that governments promote the translation of existing OER, the development of new OER in local languages, and the creation of OER about local heritage and culture (Commonwealth of Learning 2017b).

The most significant statement of government commitment to OER to date has been the recent adoption of a UNESCO recommendation document on OER by member states.<sup>5</sup> This first UNESCO recommendation on OER reflects an increasing global commitment to promoting open licensed educational resources. Following a consultation process with UNESCO member states and OER stakeholders, this UNESCO recommendation on OER is expected to be adopted at UNESCO's General Conference in November 2019. The document builds on the two OER World Congresses and recommends policies and actions for member states. Areas of focus include capacity-building for OER stakeholders, developing supportive policy for OER, encouraging inclusive and equitable quality OER, nurturing the creation of sustainability models and facilitating international cooperation on OER. It is expected that UNESCO member states will report regularly on their implementation of the document's recommendations.<sup>6</sup>



## 2.3 LANGUAGE AND CULTURE ISSUES

The frequency with which issues of language and culture are mentioned in OER discussions is related to the long history of major-language dominance in teaching and learning materials. English, French and (to a lesser extent) Portuguese are the dominant languages of instruction in formal primary education settings in Africa, including textbooks and other reading materials. The 1994 DfID-funded (Department for International Development) Extensive Reading program in Malawi, which resulted in the delivery of more than 850,000 English-language books to primary schools across the country (Williams 2007: 66), is just one example of the traditional assumption that the former colonial languages are the best languages for learning in Africa. However, in discussing the potential of OER in Africa, stakeholders see possibilities for breaking out of this mold so that African languages and cultures can take their rightful place in learning contexts on the continent.

The importance of attention to local languages and cultures in the creation of OER has been repeatedly expressed, since at least the 2012 Paris OER Declaration. The declaration encourages “the production and use of OER in local languages and diverse cultural contexts to ensure their relevance and accessibility” (UNESCO 2012). Respect for indigenous cultures is specifically mentioned as a priority. A background paper to the 2<sup>nd</sup> OER Congress in 2017 notes that mainstreaming OER faces significant obstacles related to language and culture, including the need to produce OER in local languages. The Africa regional consultation preceding the 2017 conference recommended that

<sup>5</sup> UNESCO OER Recommendation: One Step Closer to Adoption. 4 June 2019. Retrieved from <https://creativecommons.org/2019/06/04/unesco-oer-recommendation-one-step-closer-to-adoption/>.

<sup>6</sup> Personal communication, Friederike Hoff, German National Commission for UNESCO, 4 June 2019.

*Educators and learners should be empowered to develop culturally and linguistically relevant OER,...*

governments promote the development of new OER in local languages as well as the translation of existing OER, and the creation of OER about local heritage and culture (Commonwealth of Learning 2017b).

Accordingly, the Ljubljana OER Action Plan 2017 (the outcome document of the 2nd World OER Congress<sup>7</sup>) specifically recommends that educators and learners should be empowered to develop culturally and linguistically relevant OER, with particular focus on the creation of OER in languages which are less used, under-resourced, endangered, and indigenous. The Action Plan directs that technologies to overcome language barriers should be sought; collaborative development and community engagement should be promoted to boost OER uptake in as many languages as possible.

However, this aim has not been easy to implement. As Butcher and Associates (2017) note above, even national policy favoring mother-tongue literacy in the early grades does not generally result in available books in those languages. Participants in a 2018 workshop on early literacy and open licensing (Neil Butcher and Associates 2018) noted that, although local African languages flourish in various oral sectors such as theatre, music, and the broadcast media, the production of children's books in local languages has lagged far behind. Many of these languages have a short or non-existent written tradition. As a result, non-standardized orthographies and spelling rules can pose practical challenges, and experienced writers can be hard to find. Dialect choice can also be problematic, on both political and practical levels.

Given these obstacles, OER supply organizations are nevertheless making impressive strides in the creation and adaptation of titles in local languages (Section 3.2. below).

## 2.4. CHALLENGES HINDERING MAINSTREAMING OF OER

Numerous challenges are mentioned related to the generalized use of OER in basic education contexts in Africa. Challenges related to the market for OER are a central concern for would-be suppliers of OER. On a continent level, supply hindrances such as limited Internet availability and electricity affect both awareness of, and demand for, OER.

The mismatch between the languages in which publishers are willing to publish and the languages of the young African children who are the potential beneficiaries is also a significant hindrance to OER supply. Butcher, Hoosen, Levey and Moore (2016) recognize that there are no traditional market mechanisms for sustainable investment in the creation of content for early literacy materials in local languages; traditional publishers cannot earn enough on sales in those languages.

An additional obstacle to mainstreaming OER has to do with the concerns of traditional publishers regarding potential decrease in their market share. The fear is that, if free or low-cost OER alternatives were to give rise to competitive publishing by non-traditional mechanisms, this could have a negative impact on the demand for traditional publishing mechanism. Of course, it is also possible that the establishment of alternative publishing mechanisms could help boost the demand for books in general. Nevertheless, the prospect threatens the established publishing industry.

A related challenge has to do with generally low support for local publishing. Participants in the 2nd World OER Congress recognized the need for new business models for the local publishing industry, suggesting that local publishers could focus on customized education services not covered by OER, assembling OER materials, and developing hybrid models for the use of OER (Commonwealth of Learning 2017a).

<sup>7</sup> Background to OER Hub. No date provided. Retrieved from <https://www.oercongress.org/>.

Improved local capacity in content creation and publishing for education will require new business models, given that simply supplying materials for early literacy programs is not profitable enough for local publishers to rely on. The Neil Butcher and Associates 2017 report repeats a call for a holistic approach to literature provision, in which early literacy is seen as the first step in creating truly literature-based societies with strong “cultural industries” and publishing markets beyond the education sector. Butcher et al. (2016) argue that building local publishing capacity is a way to develop such locally relevant cultural industries in countries of the global South. The authors suggest that targeting local content creation capacity in early literacy should be seen as part of a broader project of building sustainable publishing capacity for local languages in all sectors. This larger strategy would require partnerships between publishers, NGOs, donors, and government to support the early literacy ecosystem (Neil Butcher and Associates, 2018).

However, it is important to recognize that publishing costs are real, and that open licensing does not decrease the cost of local content creation. In a document entitled Support for the Establishment of a UNESCO Normative Instrument for Open Educational Resources (OER) (UNESCO 2016: 4), the author effectively argues against the popular notion that open content is free content:

*Open content can be shared with others without asking permission and without paying licence or other access fees. However, some important cost considerations must be taken into account. Taking effective advantage of OER requires institutions to invest systematically in programme/ course design and materials development and acquisition. Time must be invested in developing courses and materials, finding appropriate OER, adapting existing OER and negotiating copyright licensing (if material is not openly licensed). There are also associated costs such as the procurement and maintenance of Information and communications technology (ICT) infrastructure (for authoring and content-sharing purposes) and bandwidth.*

Two further core challenges to the mainstreaming of OER for basic education in Africa have to do with the capacity of users to find, create, adapt and share OER, and the difficulty of ensuring inclusive and equitable access to quality OER. These two challenges are addressed in detail in the interviews of OER supply chain organizations (Section 3 below) and the information gathered from teachers and education resource providers in basic education contexts of Africa (Section 4 below).





### 3. INFORMATION FROM ORGANIZATIONS AND INDIVIDUALS IN THE OER SUPPLY CHAIN

A number of international organizations focus on the supply of OER particularly at the basic education level. Information was gathered from eight of these organizations for this report. Several of them were represented at the 2019 *Comparative and International Education Society* conference (CIES), held in San Francisco, USA in April 2019. This allowed in-person interviews, as well as participation in presentations on topics related to OER for basic education in Africa. Additional organizations were interviewed by electronic means. A chart of the supply organizations and individuals providing information for this report is found in Appendix 1.

Certainly the supply side of OER lacks neither proponents nor content creation. Especially in the domain of international education and development, OER supply-side organizations are driven by a passion for providing books to young children around the world, as a means of educational equity: “a book in the hands of every child by 2030”.<sup>8</sup> The attainment of global literacy is seen to depend on providing a text-rich environment for young readers. Well aware that the greatest book deficit, as well as the lowest national literacy rates, are in the global South, supply organizations continue to look for ways to provide storybooks in as many languages and locations as possible. For example, the African Storybook<sup>9</sup> initiative’s project leader Tessa Welch notes that African Storybook website content is accessed and republished on a range of platforms and that content is also available in three online book stores: AfricShopping<sup>10</sup>, Okada Books<sup>11</sup>, and ITSI<sup>12</sup>.<sup>13</sup> Materials-writing workshops are also a common feature of supply-side activity.

However, beyond tracking downloads of their titles, supply-side organizations have few means for knowing specifically what use is being made of their titles, or by whom. They are aware of this lack of connection with the OER demand side. As Bloom’s Paul Frank observed, “there is no research on whether teachers are downloading, printing and using books in classrooms.”<sup>14</sup> Christer Gundersen of the Global Digital Library<sup>15</sup> noted that,

<sup>8</sup> Linda Hiebert, Global Book Alliance, 18 April 2019.

<sup>9</sup> African Storybook home page. No date given. Retrieved from <https://www.africanstorybook.org>.

<sup>10</sup> AfricShopping.Com. No date given. Retrieved from <https://www.africshopping.com/en>.

<sup>11</sup> Today a Reader Tomorrow a Leader. 2019. Retrieved from <https://okadabooks.com/>.

<sup>12</sup> ITSI Store. 30 August 2019. Retrieved from <https://store.itsi.za/home>.

<sup>13</sup> Email correspondence, 7 March 2019.

<sup>14</sup> Personal interview, 16 April 2019.

<sup>15</sup> Global Digital Library. No date given. Retrieved from <https://digitallibrary.io>.

even as supply-side organizations are making significant progress on putting books on a digital platform, the development of reading communities is a challenge that they have not been able to meet.<sup>16</sup> These organizations do know that their products are primarily downloaded and used, not by children, but by intermediary education organizations or (in some cases) school teachers.<sup>17</sup> African Storybook maintains a web page featuring stories of use of their materials around Africa, largely testimonials from education resource organizations that have downloaded and made them available in local classrooms or libraries.

### 3.1. THE STORYBOOK AS MEDIUM

OER of many genres – fiction, textbooks, teacher helps, and more – cater to adult and child learners at all levels of education. Textbooks (standard texts intended to teach particular subjects) are a popular form of OER in secondary and higher education. Even at the primary education level, pedagogical materials that have been funded by some large donors (such as USAID) are intended to be available as OER. However, the main concern of OER providers serving young children in the global South is these children’s lack of access to text that will enhance their ability to read, enjoy and learn from books. The text format that has been developed most extensively to meet that goal is the *storybook*, a genre of text featuring easy-reading fiction stories. This term is ubiquitously used by OER supply organizations, as the primary means of promoting reading and learning among young African children. It actually refers to a range of titles meant for both learning and pleasure:

- Levelled storybooks comprised of stories intended to teach reading comprehension and vocabulary skills. Levelled storybooks are controlled for length and complexity of the text, targeting children of various ages and abilities. This levelling of text facilitates growth in the child’s reading skills.
- Fiction stories composed of natural (not controlled or levelled) text. This is the type of text most commonly identified with the term *storybook*.
- Informational, non-fiction storybooks. Research indicates that young children benefit from exposure to informational text, in terms of both reading skills and content learning (Dreher and Kletzien 2015); yet even in the book-rich environment of the global North, there is some concern that young children do not receive adequate exposure to such texts (Wixson 2009: 3). Through informational storybooks, OER suppliers aim to provide opportunities for content learning as well as reading practice.
- Storybooks that focus specifically on STEM (science, technology, engineering and maths) topics (Butcher, Levey and von Gogh 2019: 10). The story genre readily incorporates a problem-solving approach to teaching STEM, a direction that is increasingly recommended in the field (LeFever-Davis and Pearman 2015: 61).

The OER suppliers for this target audience organize all of these offerings under the term *storybook*.

Are OER storybooks considered by OER suppliers to be adequate as stand-alone teaching and learning materials? On one hand, their attractiveness to young readers and the wide range of topics they cover make them ideal learning materials. The practice they provide in reading, the vocabulary development and knowledge of the world that they facilitate, and the possibility of accessing text in the child’s home language, are all valuable means of learning – especially for the child in low-resource contexts in Africa, where the print environment is limited and children’s books are uncommon. African

*However, the main concern of OER providers serving young children in the global South is these children’s lack of access to text that will enhance their ability to read, enjoy and learn from books.*

<sup>16</sup> Personal interview, 18 April 2019.

<sup>17</sup> Suzanne Singh, Pratham Books, 17 April 2019.

*But someone is mediating the books to them; so that requires a parent or teacher who can read.*

Storybook reports that teachers are enthusiastic about OER, since it allows them to create their own stories instead of trying to find them elsewhere.<sup>18</sup> Pratham Books has observed that these materials are being used in classrooms as a way to make up for the lack of textbooks.<sup>19</sup> On the other hand, OER storybooks tend not to be written or organized for systematic coverage of curriculum content.<sup>20</sup> In many cases, approval by national Ministries of Education as acceptable learning materials for classroom use has not been granted to these OER.

Perhaps most important, the initial skills instruction typical of early-grade textbooks (e.g. language-specific decoding skills for reading, or structured instruction in mathematical operations) seem not to be featured in OER storybook offerings. As Michelle Oetman, communications lead for the *All Children Reading Grand Challenge*, noted in describing the initiative: “The literacy model [for OER storybooks] is the same as offline: that children be exposed to print. But someone is mediating the books to them; so that requires a parent or teacher who can read.”<sup>21</sup> A few supply organizations are making inroads into explicit reading instruction. For example, SIL’s Bloom program has templates and assistive software for developing reading instructional materials in a given language.<sup>22</sup> The Global Digital Library is developing a gaming approach to reading instruction.<sup>23</sup> But this initial skills acquisition is not the primary focus of most OER supply organizations’ book development efforts.

Whether or not the storybook-formatted OER serve as stand-alone textbook substitutes, OER providers have found that these storybooks can be valuable for building children’s reading competencies and enthusiasm for reading, their cognitive abilities, their knowledge of their world and the worlds of others, and curricular competencies as well. Where made available in homes, they can draw family members into the child’s reading experience, providing opportunities to parents and siblings to learn as well as the child. These benefits are especially relevant for the audiences whom OER suppliers are targeting: children in low-resource contexts of the global South.

### 3.2. LOCALIZATION

Translation and adaptation of OER storybooks are a central means of increasing the number of titles and languages available in OER collections, though original content creation is also facilitated by OER suppliers. Making OER storybooks available in as many African languages as possible is seen as enhancing learning equity for African children. Localization is thus a high priority, largely accomplished through facilitating the translation of existing OER from international languages into lesser-served languages. Suppliers do recognize that the process of translation makes quality assurance difficult, and that issues of dialect and orthography accuracy cannot always be addressed.

While adaptation of story content from one language and culture to another has been found to be feasible, adaptation of culture-specific illustrations can be a thornier problem. Many translations keep the original illustrations and consider them as a feature of the child’s learning about other places and people. Other approaches to translation adapt the illustrations as well as the text to the target culture. These adaptations are not as readily done, but they have the advantage of being easier for the young child in the global South to understand.

### 3.3. POINTS OF DIVERGENCE

The supply organizations represented in this report share the same drive to see more young African children reading for learning and pleasure. However, some disagreement exists on the feasibility and desirability of digital end-products vs. print products. Con-

<sup>18</sup> Tessa Welch, 15 May 2019.

<sup>19</sup> Suzanne Singh, 17 April 2019.

<sup>20</sup> However, as a way to demonstrate the possibility of using storybooks to cover curriculum content, Storybooks Canada has mapped the content of 40 African Storybook titles to specific themes and competencies in British Columbia’s provincial curriculum. See <https://storybookscanada.ca/teachers/>.

<sup>21</sup> Michelle Oetman, World Vision, 18 April 2019.

<sup>22</sup> Paul Frank, Bloom, 16 April 2019.

<sup>23</sup> Christer Gundersen, Global Digital Library, 18 April 2019.

sultants with the blueTree Group, a supply chain support organization whose motto is *Books for the Other 90%*<sup>24</sup>, maintain that print books are more practical and sustainable in low-resource contexts than are digital devices: “The challenges of access and connectivity are too high for digitally-delivered OER; even access to a file for downloading and printing is not the reality in most of Africa.”<sup>25</sup> The experience of World Reader<sup>26</sup> is that print books dominate the textbook market because governments will not buy digital textbooks<sup>27</sup>. At the other end of the spectrum, the view of the Global Digital Library is that print books cannot match the flexibility and reach of digital books, and that “Africa’s future is digital”.<sup>28</sup> Still others in the field see value in both digital delivery and digital-to-print options.

Related to this issue are the formatting choices made by OER suppliers for digital storybooks. Some suppliers argue for formats that make it easy for publishers to download and print books on a relatively large scale; others prefer pdf files that can be read on a phone or a tablet. Pratham Books advocates the use of formatting that best serves the practitioner who makes “10 copies at a time”, rather than trying to make printing maximally easy for larger publishers.<sup>29</sup>

<sup>24</sup> blueTree home page. 2015. Retrieved from <https://www.bluetree-group.com/>.

<sup>25</sup> Roel DeHaas, 16 April 2019.

<sup>26</sup> Worldreader home page. 2019. Retrieved from <https://www.worldreader.org/>.

<sup>27</sup> Rachel Heavner, 18 April 2019.

<sup>28</sup> Christer Gundersen, 17 April 2019.

<sup>29</sup> Suzanne Singh, 17 April 2019.





## 4. DEMAND-RELATED INTERVIEWS WITH TEACHERS AND EDUCATION RESOURCE PROVIDERS IN BASIC EDUCATION CONTEXTS OF AFRICA

In an effort to gain some understanding of the on-the-ground demand for OER and education materials in general in Africa, a limited data-gathering exercise was carried out for this report in April 2019. Semi-structured interviews were conducted by education specialists<sup>30</sup> associated with SIL<sup>31</sup>, who are resident in or near the respondents' communities. The respondents were thirteen educators and education resource providers, working in a total of seven pre-primary or primary schools (two low-fee private schools, two NGO-sponsored private schools and three government schools) in four countries. Two of the respondents (one in Loitoktok, Kenya and one in Rivers State, Nigeria) oversee the work of an education resource NGO that runs a school.

The locations were chosen to reflect as much variety as possible in geographic location, community size and linguistic context. Appendix 2 gives details regarding the respondents and their contexts; information gathered in the interviews is presented in Appendix 3.<sup>32</sup>

The interview protocol was designed so that respondents who were familiar with OER would be asked more detailed questions about them, while respondents who were not familiar with OER would be asked about the provision of such educational materials as they have. Thus, the first question of each interview was whether the respondent was familiar with OER. If the answer was 'no', the interviewer described OER materials and then asked the question again. The respondent's answer to this second question determined the remaining interview questions.

<sup>30</sup> The interviewers were Ms. Clare Orr-Diédhiou (Senegal), Dr. Marianne Aaron (Nigeria), Dr. Angela Becker and Ms. Ruth Obunyali (Kenya) and Ms. Lydia Teera (Uganda).

<sup>31</sup> SIL (SIL International) is an international NGO focused on the development and use of local languages for learning and communication. See <https://www.sil.org/>.

<sup>32</sup> Names of respondents were not recorded, in order to ensure their privacy.

In response to this first ‘watershed’ question about OER, eleven of the thirteen educators interviewed in the seven schools said they were unfamiliar with either the term or the materials. In the NGO-run private school in Loitoktok, the two teachers interviewed were already familiar with OER and use them regularly. The enthusiasm and creativity with which these teachers use OER set their answers apart from the other eleven respondents. Notes on these two interviews can be found in Appendix 4.

#### 4.1. MATERIALS PROVISION

The respondents were queried about educational materials provision in their contexts. Staff from the three government schools reported that the Ministry of Education (MoE) is responsible for providing textbooks. However, these respondents noted that materials are significantly lacking in supply, and that digital materials in particular are missing. The Nigerian respondent who is involved in both the NGO-supplied private bilingual school and the government’s Universal Basic Education (UBE) Board noted that in Rivers State,

*“Government provides free education through the UBE scheme, including free textbooks for all the subjects. They also provide other core materials, such as curriculum books (which includes guidance on how to teach the topics), and books for class and school administration, as well as occasionally instructional wall hangings. UBE, however, does not provide these every year, so that some years there are, and some years there are not any free books.”*

This same respondent commented that

*“The textbooks appear to be more intended for the use of the teachers, who rely heavily on them, than for the use of the students since they are far beyond the reading levels of the students and their level of English. This is especially so for primary 1 – 3.”*

Staff from the four private schools indicated that the sponsoring NGO – or the teacher him/herself, if the NGO does not do so – is responsible for providing textbooks. In two cases, the sponsoring NGO does provide an adequate supply of books, but in the two other NGO/private schools, materials are reported to be lacking. A respondent from a private school in Senegal commented:

*“Some materials are provided, but a teacher has to send a request to the NGO for funding. The teacher buys the rest of the materials himself but still doesn’t have everything needed to teach all subjects.”<sup>33</sup>*

*The enthusiasm and creativity with which these teachers use OER set their answers apart from the other eleven respondents.*

<sup>33</sup> Interviews in Senegal were carried out in French; hence, the quotes here are the interviewer’s translation of the respondent’s comments.

## 4.2. DIGITAL POSSIBILITIES

Of the respondents who were unfamiliar with OER, a few demonstrated an awareness of the possibility of digitally-enhanced learning. A deputy headteacher in a government school in Entebbe, Uganda commented that “technology is growing fast, and people are going digital; there is a need for exposure.” Two of the teachers from the River State, Nigeria, reported seeing digitally-sourced print materials, either in their own classroom library box or in a government school library. A teacher in a government school in Entebbe, Uganda stated that there is a computer lab there, though “the lab needs to be updated, and there is no Internet at school.”

The country director and teachers in the NGO-sponsored pre-school in Loitoktok, Kenya indicated that Internet-based materials can be accessed there, through either a wireless modem or a teacher’s smartphone. Local cyber-café in town could print downloaded materials; the school itself could install and use computers and printers using solar panels, though it does not have this equipment at this time. As for other schools in the area not sponsored by the NGO, their ability to download and print materials “would depend on how rural the school is in relation to the town.”

The country director also commented that “government schools rarely use any materials outside of the national curriculum; private schools are freer to get their own materials. The question is “How do you know what is good material, when there is so much out there?” However, the two teachers in the Loitoktok preschool said that they access OER by downloading them, then using them primarily on their phones.

## 4.3. TYPES OF MATERIALS NEEDED

Respondents from the three schools in Entebbe, Uganda stated that teaching and learning materials on any topics would be welcome, and specifically reference books, wall maps, reading materials, games, etc. Other respondents answered similarly, specifying the need for updated educational materials, textbooks for all subjects, and textbooks for children. The distinction made in these requests indicate that teachers as well as children lack needed textbooks.

<sup>34</sup> As may be seen from the interviews in Appendix 4, the teachers did not mention specific OER platforms other than those available from the USAID-funded (United States Agency for International Development) Tusome early-grade reading project in Kenya.



The problem of outdated materials was also raised, particularly related to changes in official government curriculum. The two respondents in Ziguinchor, Senegal, raised this issue. One commented that “changes to the curriculum mean that new versions of the materials are produced, so I don’t necessarily have the latest version of everything.” The other respondent said that the new curriculum “is vague, and teachers need to use older books to have enough details to formulate lesson plans.” The Loitoktok, Kenya country director noted that “since the national curriculum has changed, it has become harder because of not knowing what copies are part of the ‘official’ release.” A teacher in this same preschool commented that the national curriculum requires the use of ICT for learning, but the government does not supply the ICT equipment.

#### 4.4. INTERNET AVAILABILITY AND PRINTING OPTIONS

None of the respondents reported having Internet access at their schools, and if there is a computer lab in the school, it is generally outdated or non-functional. One respondent from River State, Nigeria, commented that electricity is not reliable in the area. Another respondent mentioned that people tend to charge their phones during church services or other public occasions, when generators are already being used for a sound system. Three other respondents mentioned having private access to the Internet on their phones or at home; one other respondent mentioned cyber-café in nearby towns. The respondent from the private primary school in Ziguinchor, Senegal, said that the need to do his own research in order to teach well had forced him to buy a smartphone. One respondent from River State, Nigeria, has 4G service on his smartphone and knows how to print downloaded materials to the computer. He immediately asked the interviewer for the African Storybook URL, so that he could check which books they have. The two Loitoktok teachers reported accessing OER regularly on their phones and downloading them.<sup>34</sup> Printing was not a frequent strategy for them, however.

With regard to printing options, the prohibitive expense of Internet time to download, and of printing as well, was mentioned by five respondents. Respondents from the two NGO-sponsored schools (Loitoktok, Kenya and Rivers State, Nigeria) did see reasonable printing options, mainly because the sponsoring NGO is able to fund them.<sup>35</sup>

An additional source of perspective on demand-side issues was provided by the supply organizations interviewed for this study. Although most of the information gathered in those interviews concerned supply issues, the following comments were also relevant to demand.

##### *Building demand*

- “Universal literacy starts with an adequate supply of, and demand for, appropriate books for young readers.” (*Global Book Alliance*)
- “Teachers need to understand the importance of getting text in front of the children.” (*blueTree Group*)
- “We are running webinars in Africa to create communities of users.” (*Pratham Books*)
- “We want for-profits to take our materials and earn money from them.” (*Global Digital Library*)
- “OER could be useful for teachers to get ideas from, and create their own resources. A lot of this comes down to the teachers: do they know how to use any resources well, whether print or OER?” (*blueTree Group*)

<sup>35</sup> Personal interview, 15 April 2019.

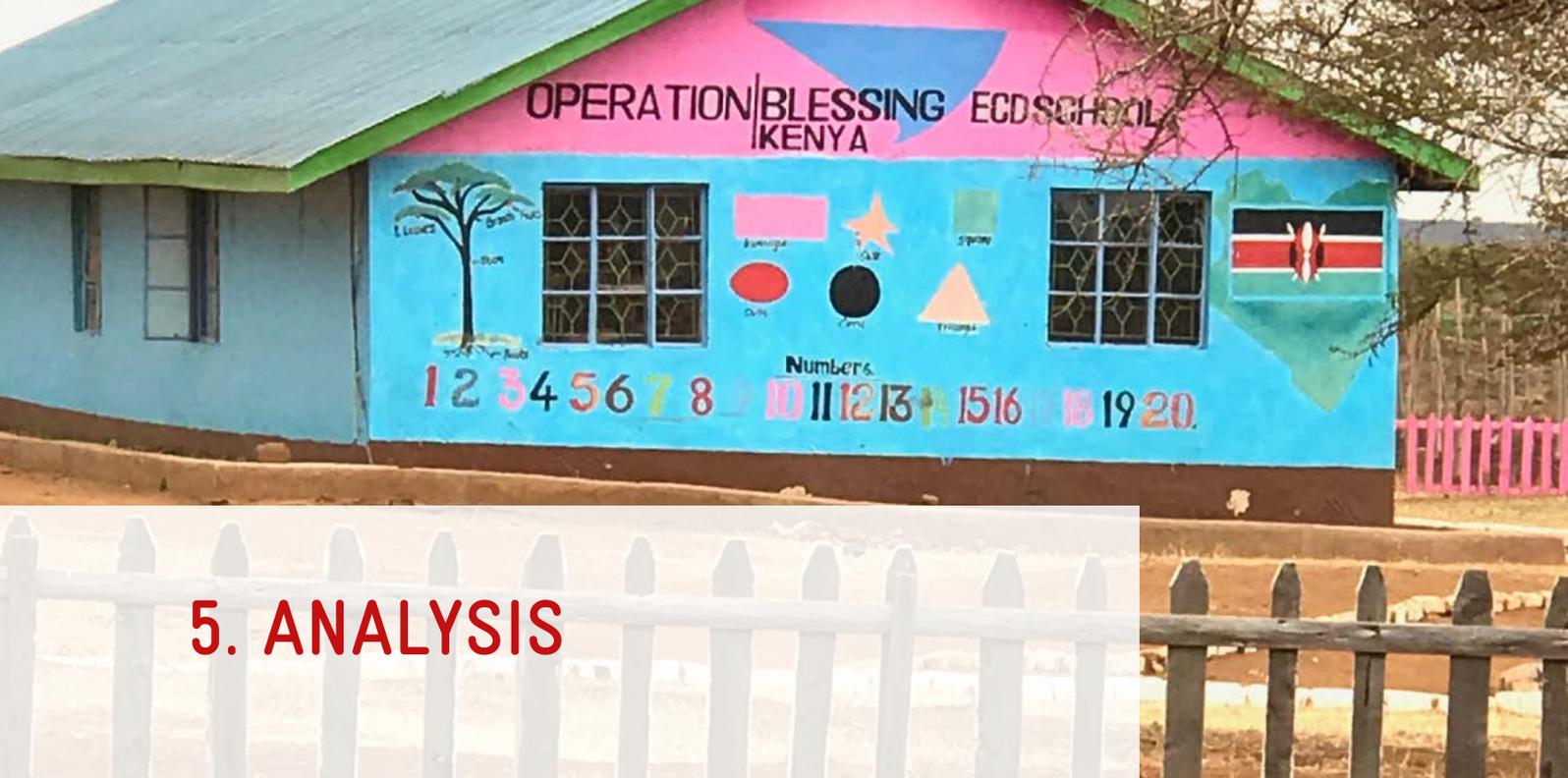
***Printing challenges***

- “Bloom [book development software] can be used as teacher support; but who would pay for the printing?” (*SIL*)
- “In the current publishing landscape in the global South, there is low market demand for print as well as for digital books, limited government support for publishing, and limited reading cultures. Textbooks dominate the publishing industry, and there is low demand for books that are not directly curriculum-related.” (*World Reader*)

***Other demand challenges***

- “We need a parent or a teacher who can read, so they can mediate books to children whether print or digital.” (*World Vision*)
- “Cell phones are not all smartphones, so having mobile phones isn’t what you think. Using a cell phone to [pay bills with] is not the same as a teacher using it to teach with.” (*blueTree Group*)





## 5. ANALYSIS

OER storybook supply initiatives are burgeoning. The number of titles and languages represented in the OER space is increasing, through institutional promotion of OER, development of increasingly user-friendly software and platforms for accessing and creating OER, and an increasing number of workshops around the world dedicated to writing and translating stories.

Judging by the number of downloads, demand for OER is also rising – a fact that is central to the ongoing drive of supply-side organizations. However, beyond anecdotal evidence, it appears that little is known about who is downloading the OER, where they are being used, or for what purposes. The energy and resources being put into OER supply thus seem to be based on a limited understanding of the nature of the demand.

The limited evidence that does exist indicates that accessing OER is not common in low-resource African communities, with education resource NGOs being the major OER users in these contexts. One major reason for this is ‘the technology side’: the cost and availability of Internet access, and the cost of printing and of digital devices, which are more easily borne by NGOs that have funding from outside the community than by local families or teachers. Supply organizations are continually looking for ways to diminish such technological and financial barriers, so as to enhance the availability and use of OER. Efforts are being made to provide wider access to OER, including support for local libraries and librarians (such as Pratham Books’ work with the African Library and Information Associations and Institutions<sup>36</sup>), easier digital access to stories, support for local publishers as well as translation tools and initiatives.

Certain cultural and institutional features of the target populations are also central to the uptake challenges of OER in low-resource African contexts: local understandings of learning and education, the modalities of serving underserved languages, the role of written language use in communities that are largely oral, beliefs about the appropriate language of education, the impact of the digital world on societies that are economically extremely divided, the role of the state in providing and monitoring the learning of its children, and the feasibility of facilitating teachers’ personal experience with OER as a marketing mechanism. The analysis section below explores each of these features in turn.

<sup>36</sup> Suzanne Singh (17 April 2019).



## 5.1. LEARNING AND EDUCATION

From the colonial era until today, formal education has been highly valued in African society. Formal learning is associated with economic success, social prestige and the acquisition of knowledge from the ‘outside world’; good performance on school examinations is seen as the avenue to these perceived goods. Families often make substantial sacrifices in order to send the most promising of their children to the best schools available, for the longest time possible. The use of former colonial languages to mediate formal learning is seen as entirely appropriate, even when it inhibits real learning of curriculum content (Trudell 2016: 285).

Of course, important learning takes place outside the formal classroom as well, including the acquisition of social norms and a variety of life skills. Mediated by parents and community, such learning is crucial for the child’s healthy social life and good citizenship. However, the value of this informal learning is not typically recognized, since it is not clearly linked to the economic and social outcomes of education that are so highly prized in society.

This view of learning and education differs significantly from current understandings in the global North of what learning is for and how it happens – understandings which underpin much of the drive of OER supply efforts. These include the value of independent and informal learning, flexible and child-focused curriculum, and distribution of the teaching/mentoring role to family members as well as teachers. This difference in these understandings of learning and valued knowledge does not imply that either view is correct at the expense of the other; each set of understandings is rooted in socio-cultural history and practices.

Parental engagement in children’s learning in low-resource African environments is certainly important to the children’s educational success. Such engagement often comes in the form of saving and sacrificing to buy uniforms and school materials, paying school fees, making sure the child goes to school, and disciplining the child who squanders the family’s investment in his or her education by not attending school or studying properly. However, particularly in the more rural areas, it is not generally assumed that the parents master school-based knowledge (including reading, mathematics, science, etc.) well enough to be adequate facilitators of the child’s learning.<sup>37</sup>

One implication of this view of education for OER supply has to do with the importance of legitimizing OER content as ‘real learning’, and of prioritizing support for school-based, teacher-mediated uses of OER. This may well mean that OER content for basic education must be broadened to include more explicit content instruction as well as pleasure reading.

## 5.2. SERVING UNDERSERVED LANGUAGES

The determination of OER suppliers to reach the least reached children has led to a focus on expanding the number of languages in which good-quality storybooks are available. For the OER supplier, this is a matter of justice and equity, at least as much as it is a matter of global reach. Limited fluency in the language in which most texts are written has much to do with people’s lack of interest in the reading material that is available. OER suppliers’ commitment to changing that lack of interest into enthusiasm for reading is laudable.

As suppliers have indicated, the most widely used method of increasing the number of titles in underserved languages is translation of existing stories. Translation results in the production of new books more quickly and cheaply than does original content creation. In many cases, individual OER users are invited to use digital translation facilities on the OER sites, or else to download stories, translate them and then upload the translations.

<sup>37</sup> Research by J. Trudell and Cheffy (2017: 761) indicates that literate parents do tend to be more involved in their children’s education. This plays out principally by ensuring that the child attends school, and helping him or her with homework if needed.

Dependence on the translation approach carries two challenges. The first challenge is quality assurance; OER suppliers are generally not able to assess the content, fidelity or quality of translations into underserved languages. The Global Digital Library reports having a quality-assurance check for books that are downloaded from its site, translated and then re-uploaded; however, not all suppliers have this checking feature. The second challenge is more linguistic, having to do with the accuracy of the orthography used in the translation and the choice of language dialect. Both of these issues become very unclear for languages that have a short (or non-existent) history of writing; such languages account for more than 57% of the world's living languages (Eberhard, Simons and Fennig 2019).<sup>38</sup> OER suppliers recognize these challenges, but they are nonetheless committed to making as much of a difference as they can for the speakers of these underserved languages.

*57% of the world's living languages have a short (or non-existent) history of writing.*

However, most OER suppliers are also involved to some extent in resourcing original content creation in underserved languages, a strategy that can yield higher quality, readability and cultural relevance than does translation. Research on local-language content creation in Kenya indicates that the development of written materials by, and for, the community of speakers – children, youth and adults – results in more interesting, easily understood content. Not only so, but when these materials are admitted into the local classrooms, the results include enhanced learning outcomes and greater involvement by the community in school learning (Trudell and Ndunde 2015: 1).

### 5.3. WHAT READING IS FOR

In low-resource African contexts particularly, the acts of reading and writing are closely tied to the formal school environment, an environment that is largely characterized by the use of an international language which the child does not understand. Children may or may not have textbooks available to them, but they nevertheless spend large amounts of time in choral recitation of text written on the blackboard, as well as transcribing text from the blackboard into their exercise books. Understanding the meaning of the text they are reciting or copying is not seen as a necessary part of the exercise. 'Reading' and 'writing' as activities, therefore, have much to do with decoding letter sounds and mastering letter shapes rather than receiving and conveying meaning. Nevertheless, these activities are seen as an integral part of the child's education.

The lack of books in homes in such low-resource contexts (RTI 2015: 10; Trudell 2006: 634) supports the belief that reading – such as it is – is a school-based activity. The lack of enthusiasm for out-of-school reading is also related to the high likelihood that few people in the community are able to read in their own language, even if they are literate in a second language (L2). Reading skill combines decoding and comprehension strategies with phonological and orthographic knowledge, all of which are language-specific (Schroeder 2013). Although fluent reading in any language is based on an understanding of sound-symbol-meaning correspondence, the nature of that correspondence varies from one language to another. This is why even a fluent L2 reader still has to learn to read his or her first or home language (L1), particularly where the L2 is English or French and the L1 is an African language. The advantage of learning to read in a language one speaks is that meaning is much more readily apparent, as opposed to learning to read in a language one does not master; this, along with the understanding of what reading is, makes reading fluency in the L1 more quickly gained by the L2 literate.

A further challenge for L2 literates in Africa has to do with the recent, or incomplete, development of the written form of hundreds of African languages. Marking of key units of meaning such as tone, length or vowel quality is highly inconsistent in these cases, and writers in these languages often leave them out altogether. Reading in these languages is difficult and often unrewarding, and so the needed practice in reading L1 texts does not take place (Walter 2016: 21).

<sup>38</sup> Paul Frank of SIL LEAD reports that the 5000 least-served languages of the world are spoken by approximately a billion people (CIES session discussion presentation, 18 April 2019).

So parents in this situation are caught in a dual problem: any level of literacy they have will most likely have been gained in an L2, which they may not speak well. At the same time, few opportunities for learning to read in the L1 are afforded to people in most African communities.

These discouragements from reading, whether in the L1 or the L2, are further reinforced by a widespread cultural prioritization of oral means of communication over written means. Evidence from South Africa, Botswana, Rwanda, South Sudan and Cameroon (see Trudell 2019 for references) indicates that oral communication in these contexts is seen as pleasurable, trustworthy and socially desirable, while written text is considered to be relevant only to the classroom. As a result, productive and entertaining use of written text is quite limited in these contexts; community members seeing little reason to prioritize reading over more valued opportunities for interaction with other members of the community (Trudell 2019: 437).

This general lack of interest in reading activities, compared to more enjoyable and culturally 'normal' interpersonal interaction, has been seen to demonstrate the lack of a 'reading culture' (Trudell 2019: 434). However, this deficit-based interpretation of community non-reading behaviors does an injustice to cultures that prioritize human interaction over isolated reading activities (Trudell 2019). The globalized notion of 'reading for pleasure' is equally a cultural feature, unrelated to any actual superiority of one set of cultural choices over another.

This is not to say that learners, their families and their society may not suffer from a lack of books; in many low-resource environments of Africa, they certainly do. But, as the demand-side interview data indicates, the books they feel the most need for are books that most clearly will help them succeed in school.

The implication for OER supply here is that the need for explicit, local language-medium learning (including reading instruction) is at least as high as the need for local-language storybooks. Stories in African languages require people who can read *in those languages* – the child, certainly, but if possible also the teachers and parents in the child's world.



## 5.4. WHAT LANGUAGE?

The view of reading described above helps explain why, although the importance of African languages and cultures is often mentioned in the literature reviewed and the supply data described above, only a few of the 13 African teachers and program supervisors interviewed mentioned the language issue at all (the exception being the two preschool teachers in Loitoktok, Kenya). In their requests for reading and learning materials, the respondents' assumption appears to be that those materials will be in the official language of instruction – English or French. The French-medium or English-medium school contexts of most of the respondents are shaping their perspectives on what language the learning materials should be in.

This data gives rise to questions related to the possibility of mismatch in language priorities between OER supply organizations and demand-side stakeholders. On the demand side, the identification of reading with formal learning in an official language – and the very evident lack of learning materials in any language – leads to very different assumptions about what is needed. The fact that most people do not read in languages other than the language of schooling, even if they speak those other languages fluently, further complicates the language-demand issue.

The implication for OER supply is that this mismatch in language priorities has to be negotiated. The dual obstacles to fluent, enjoyable reading – identification of written text with a foreign language, and an inability to read in the language of the home – are certainly affecting uptake of OER, no matter what language they are in.

*The fact that most people do not read in languages other than the language of schooling further complicates the language-demand issue.*

## 5.5. THE DIGITAL (AND DEVELOPMENT) DIVIDE

The burgeoning purchase and use of mobile phones (and to a much lesser extent, tablets and personal computers) across Africa may lead one to conclude that the digital divide between citizens of Africa and citizens of the global North is decreasing, a notion which in turn supports increased investment in education technology for use in Africa.

Certainly mobile phone coverage and use in Africa is higher than ever. In a 2019 *Wikipedia* collection of country reports on mobile phone coverage, the highest-use countries of Africa reported more than 94 phones per 100 Nigerians and 71 phones per 100 Kenyans, while Zimbabwe and South Africa boasted a startling 103 and 117 phones, respectively, per 100 citizens.<sup>39</sup> However these numbers do not address disparities in phone access related to urban/rural populations, gender, economic status or age.

In addition, linking mobile phone coverage with Internet connectivity, electricity provision, or other markers of development is a tenuous proposition. As reported in the *Economist*,<sup>40</sup> as of 2017 mobile phones were far more common in Africa than was electricity. A 2016 report by data-reporting agency *Afrobarometer* indicated that, while 93% of Africans have access to mobile phone service, 54% have access to paved roads, 63% have access to running water, and only 30% have access to sewage management services.<sup>41</sup> Along with the general picture this paints of the state of infrastructural development on the continent, it means specifically that many phone users in low-resource contexts must rely on local generators or solar panels to keep the phones charged, power sources which are expensive to purchase and maintain. Phone access for children in this context is even less certain. The data available on mobile phones and access to phone service does not indicate whether the phones are available to young children to use, or whether the data costs for children's use of phones are readily covered.

Internet access is even more uneven. As of March 2019, an estimated 64% of the African population overall lacked Internet access; of the 58 countries assessed, only four countries had Internet coverage for two-thirds or more of the population.<sup>42</sup>

<sup>39</sup> List of countries by mobile phone use. 20 September 2019. Retrieved from [https://en.wikipedia.org/wiki/List\\_of\\_countries\\_by\\_number\\_of\\_mobile\\_phones\\_in\\_use](https://en.wikipedia.org/wiki/List_of_countries_by_number_of_mobile_phones_in_use).

<sup>40</sup> Daily chart: In much of sub-Saharan Africa, mobile phones are more common than access to electricity." *The Economist*, 8 November 2017. Retrieved from <https://www.economist.com/graphic-detail/2017/11/08/in-much-of-sub-saharan-africa-mobile-phones-are-more-common-than-access-to-electricity>.

<sup>41</sup> Afrobarometer Dispatch No. 69. 14 January 2016. Retrieved from [http://afrobarometer.org/sites/default/files/publications/Dispatches/ab\\_r6\\_dispatchno69\\_infrastructure\\_remains\\_challenge\\_en.pdf](http://afrobarometer.org/sites/default/files/publications/Dispatches/ab_r6_dispatchno69_infrastructure_remains_challenge_en.pdf).

<sup>42</sup> Internet penetration in Africa. 30 June 2019. Retrieved from <https://www.internetworldstats.com/stats1.htm>.

*The use of digital technology in education does have potential, but care must be taken not to leave low-resource populations behind.*

Mapping the mobile phone phenomenon in Africa to changes in the digital divide is not straightforward. The primary factors driving the digital divide across the globe are economic, social, demographic, ethnic, gender-related and educational – factors which do not necessarily improve with advances in technology. The use of digital technology in education does have potential, but care must be taken not to leave low-resource populations behind. In this environment, providers and promoters of OER resources must ask the question: For rural, low-resource African contexts, is a ‘digital future’ a more equal future?

## 5.6. LEARNING AND THE ROLE OF THE STATE

The data gathered in this report makes repeated mention of challenges related to the responses of national Ministries of Education to OER provision. Disagreement about copyright issues features heavily, as does Ministry concern about the relationship of OER use in the classroom to the national curriculum.

One fundamental question underlying these challenges is, who should decide what children in a given country should know? As the state’s expression of ‘what our nation’s children should know’, formal education curriculum prescribes not only a set of knowledge and skills for the nation’s children at various stages, but also the priority of certain kinds of knowledge over others. National curricular priorities may not be congenial to optimal learning, for example when language of instruction choices impede learning; in addition, the state’s ability to implement the curriculum is questionable in some cases. However, from the state’s perspective it does not follow that national curriculum may simply be set aside by education program implementers – least of all in favor of what is seen as unrequested, unmonitored, non-controllable content originating elsewhere and delivered via the Internet. Information gathered in this report indicates that not all storybooks that have been archived online are suitable for all children; some OER texts also feature social perspectives that may not align with national curriculum goals. These and related concerns are obstacles to enthusiastic support by national MoEs for open licensing and OER in general.

It is also possible that OER providers’ emphasis on resourcing reading and targeting young children does not sit well with national education priorities. Given the general esteem for secondary and tertiary-level education, the potential of OER suppliers to leverage significant resources and deliver high-impact assistance to secondary- and tertiary-level learners may be of far more interest to national education leaders than is the potential for putting storybooks into the hands of young children.

The implication for OER suppliers here is that a collaborative approach with national government regarding OER storybook supply and use is advisable, if OER are to become a central feature of children’s learning.

<sup>43</sup> Angela Becker, a co-author of the present OER, was the lead researcher in this study. See <https://www.sil.org/resources/archives/79530>, S. 15–18.

## 5.7. EXPERIENCE AS THE BEST MARKETING

Evidence from the various OER congresses, described in the literature review above, is that educators who are familiar with OER are enthusiastic about their use in African classrooms. The interview responses of the two teachers who know and use OER in their classrooms confirms this fact (see Appendix 4 for notes on the full interviews). The two teachers, in a preschool in Loitoktok, Kenya, had in fact been part of a small study carried out in their classrooms by SIL researchers in 2018.<sup>43</sup> In this study, 40 donated tablets were loaded with stories that had been translated into Maasai, Kamba, Kikuyu and Swahili languages; the stories were recorded as well, so that the preschool children could both hear and see them. The study found significant gains, not only among the children but among the two teachers as well. Among other improvements in their teaching practice, OER became an accessible, normal part of the classroom for these teachers.

This speaks to the value of giving positive OER experience to educators ‘on the ground’ in African classrooms. A successful experience with OER appears to go a long way towards educators seeing them as a feasible, desirable addition to classroom teaching and learning.





## 6. RECOMMENDATIONS

Based on analysis of the information gathered for this report, the authors offer the following recommendations. These recommendations are not aimed solely at OER suppliers, whose capacity to respond to political and system-level challenges in African contexts is limited. Rather, the recommended steps below apply to all OER stakeholders, whether in Africa or the global North. Without the cooperation of bilateral donors, intergovernmental organizations, government ministries of education, corporate sponsors and OER supply organizations, attempts to apply these recommendations will meet with limited success.

### 6.1. UNDERSTAND THE REALITIES OF DEMAND

The OER supply community needs to learn more about the realities of OER demand and use in the low-resource basic education contexts of Africa. This is a challenge in the international education arena as a whole. Easton and Moussa (2019) observe that “it is the demand side of the issue or the ‘usage’ question that tends to be least well understood by educators.” Given the cultural, social and linguistic divide between many suppliers and the hoped-for demand side, understanding the target population is crucial for maximum impact.

A key aspect of this is understanding the demand for books in general: who wants them, for what, and at what cost? Mapping the nature of the demand for books among the target audiences will help to clarify OER demand issues.

## 6.2. UNDERSTAND THE PARAMETERS OF THE DIGITAL ENVIRONMENT IN AFRICA

The use of OER can take place in a number of digitally-mediated ways: online reading, downloads onto tablets or appropriate mobile phones, downloading and printing, teacher access to online OER libraries, and more. These options all carry specific expectations related to the availability of electricity, Internet, and suitable digital devices across the African continent, especially in the low-resource contexts that are the particular focus of OER supply. If OER are truly to meet the need for supplementary reading materials for children in these contexts, OER supply solutions need to include reliable, sustainable channels of availability that use a range of mechanisms for access by young children at home and at school.

## 6.3. UNDERSTAND THE ROLE OF LOCAL-LANGUAGE READING INSTRUCTION

Uptake of the thousands of created and translated stories available, in scores of African languages, is inevitably hindered by the fact that the low-resource African target audience may not read in those languages. This is a complex problem, as has been noted above; but it must be taken seriously at some point in the OER supply chain, if OER suppliers' efforts to provide local-language stories for children are to bear fruit. It is essential that teachers and/or older family members are literate in the language the child speaks, and thus are able to read to, and with, the child.

## 6.4. SUPPORT THE TEACHER AS A NEXUS OF LEARNING

The classroom teacher is central to the articulation and strength of OER demand in low-resource African contexts. The formal classroom is a key space for the implementation of national curriculum and formally recognized learning, and the teacher is the central implementer in that space. If OER providers can find ways to strengthen the teacher's uptake of OER materials, the outcomes will be more sustainable and better accepted on the demand side.

Support for teachers can be strengthened in several ways: 1) action research and pilot programs that target teachers as well as program directors and children, gaining their understanding and buy-in where OER are concerned; 2) finding ways to facilitate teachers' access to OER themselves; 3) engagement with teacher-training institutions, so that teachers graduate with an understanding of the importance of reading (and language of instruction) to children's academic development as well as a knowledge of how to acquire, create and use OER.

## 6.5. ADD TEXTBOOKS TO STORYBOOKS

Although OER supply for basic education in low-resource African contexts currently centers around the storybook format, much could be gained by expanding OER further into instructional materials aimed at young children – especially (but not only) in reading, second language acquisition and mathematics. Doing so would respond to the pleas of teachers and students for such instructional materials more effectively than a less

*If OER providers can find ways to strengthen the teacher's uptake of OER materials, the outcomes will be more sustainable and better accepted on the demand side.*

consistent, less systematic storybook approach can do. The instructional textbooks that are currently offered as OER appear to be available only for higher levels of education; providing them for primary-grade learners would meet an expressed need, and would enhance the potential audience for pleasure reading.

It is true that the lack of OER textbooks in basic education contexts has much to do with the concerns of textbook authors, textbook publishers and MoEs regarding copyright issues, quality control, approvals for classroom use and budget allocations for textbook provision. Well-informed national policies on OER are certainly necessary. Equally important is evidence that national governments appreciate the benefits that OER could provide if they were applied systemically to public education programming, including textbook provision. This underscores the key role of OER stakeholders such as the Global Book Alliance, who are negotiating with national government decision-makers regarding business models that will work for all parties concerned.<sup>44</sup>

## 6.6. DEVELOP LOCAL PUBLISHING MODELS

*A core problem for publishers in Africa is the lack of predictable demand for the books they can supply.*

A core problem for publishers in Africa is the lack of predictable demand for the books they can supply. This lack of demand has to do with: 1) a limited customer base for books in general, and particularly for books in languages other than international languages; and 2) lack of predictable access to systems for textbook production.

Publisher support models are needed that provide the local publisher with some measure of predictable demand, especially for local language titles. The novelty and attractiveness of OER storybooks in local languages could help provide such support, by building demand for locally-published books. An additional benefit of OER for the publisher is that the cost of acquiring and publishing OER is less than the cost of creating print titles. Textbook funders must also prioritize innovative solutions for licensing the production of textbooks – solutions that will provide the local publisher with access of some kind to the lucrative textbook publishing market.

## 6.7. FACILITATE THE INTEGRATION OF OER INTO NATIONAL CURRICULA

As long as OER are not integrated into national basic education curricula, neither their demand nor their availability can be ensured. The governments that are agreeing to UNESCO's recommendations on OER (which have so far been unanimously approved by UNESCO member states; see Section 2.2. above) are necessarily committing themselves to this integration. Government education authorities must overcome the challenges they face in appropriating OER resources for the classroom. In their turn, OER suppliers must consider how to shape their offerings so as to be good candidates for approved curriculum resources.

## 6.8. CONSIDER WHETHER OER MUST BE DEFINED AS ENTIRELY FREE

The UNESCO definition of OER, quoted in Section 1 above, includes the assumption of "an open license that permits no-cost access, use, adaptation and redistribution by others". However, the no-cost aspect of OER could in some ways be hindering their broader use in classrooms. Recommendations 6.5 (adding textbooks to storybooks),

<sup>44</sup> Linda Hiebert (15 April 2019).

6.6 (development of local publishing models) and 6.7 (integration of OER into national curricula), above, will depend to some extent on digital educational resources that for one reason or another may not be offered to the ‘customer’ at no cost. Consideration needs to be taken as to whether the no-cost stipulation of OER is a help or a hindrance to the overall goals of suppliers.

## 6.9. SPECIFIC SUGGESTIONS FOR ACTION

Several specific actions could be taken to enhance the impact of OER in low-resource, basic education contexts of Africa. A few such actions are suggested below.

### 6.9.1. A study on demand for books and OER

Despite the strength of supply initiatives, there is still little clarity on the actual nature of the demand for books in general, and OER specifically, in the context of basic education-aged children in low-resource areas of Africa. Yet it is clear that demand for books will affect demand for OER. A study could be undertaken that addresses questions such as: Who wants books? What kinds of books? What do they want them for? What priority do various types of books have for the target audience and for use in what social or educational contexts? What are the target audiences willing to pay for them? A related study could then examine the demand side of OER specifically in low-resource African contexts. It is also important to understand the comparative use of different OER formats and media (digital OER used digitally, digital OER used in print and print OER used in print) among the target audience and to determine the factors affecting the use of these formats.

### 6.9.2. A study of how the usage of online open licensed digital resources for the specific target groups could be improved by increasing exposure to OER

The evidence of this report is that people in Africa who are using OER find them attractive and useful.<sup>45</sup> It appears that once they try OER, they like them and will even invest in them.<sup>46</sup> A pilot study could be done, implementing one or more programs for introducing these audiences to OER to learn if an initial experience with OER leads to their sustained use.

### 6.9.3. A study aimed at improving knowledge of, and access to, OER by education resource NGOs

The evidence, from the small study of demand carried out as part of this report, is that NGO-supported non-government schools are more likely to be provided with needed learning materials than are government schools or low-fee private schools with no NGO connections. The staff of these NGO-supported schools are also more likely to be aware of and ready to access OER. A study could be carried out on a range of such schools in low-resource African contexts to determine what would be required to increase their use of OER, as well as reasons for their non-use of OER (awareness, access, relevance, cost, or other reasons).



<sup>45</sup> Welch and Glennie (n.d.) report that an African Storybook “Starter Pack” approach to classroom book supply in South Africa’s KwaZulu Natal Province effectively demonstrated that many more titles could be put into classrooms using OER than would have been possible for the same money using traditional publishing models.

<sup>46</sup> For example, several interview respondents in this study referred to purchasing smart phones and air time in order to access OER that they value.

#### 6.9.4. Development of an OER service that targets education resource NGOs in the low-resource context of Africa

Based on the research suggested in point 6.9.3. above, a service could be developed that reaches out to this target audience and provides them with information, appropriate solutions for their contexts, and any other support that will facilitate their use of OER in the schools they support.



#### 6.9.5. Development of literacy programming for teachers, focusing on literacy in the languages of the children in their classrooms

Children exposed to OER do not necessarily know how to read in the language they speak. As noted in recommendation 6.3 above, the involvement of someone who can read OER with, and to, the child maximizes the impact of OER. Although expectations of local-language literacy competency in local communities may be unrealistic, such competencies could be integrated into the professional development of primary school teachers in the target areas.

#### 6.9.6. Workshops for school staff (who have adequate digital access) on how to use OER

The evidence in this report is that school directors and teachers who begin to investigate OER on their own are faced with an overwhelming supply of resources and options. A workshop model could be developed that shows teachers, headteachers and school directors how to approach the OER supply system, what to look for, and how to match the resources available with their own need.

#### 6.9.7. A system to coordinate OER supply work targeting basic education audiences in low-resource contexts of Africa

The limited evidence in this report is that there is a great deal of innovative programming going on among the many OER suppliers in the field, but no central point where all of this effort is being catalogued or coordinated. It seems that communication and mutual awareness between supply organizations are informal and inconsistent, resulting in replication of effort and the development of competing products. If this perception is accurate, better organization and communication among these suppliers would enhance efficiency and cooperation and ultimately make it easier for demand-side stakeholders in low-resource environments of Africa to access the OER they need. Specific actions could include:

- consolidating and strengthening efforts to map OER suppliers along the lines of specific features (e.g. location, focus, activities, research);<sup>47</sup>
- tracking the many workshops for content creation and translation that are taking place on the continent;
- establishing and populating a clearinghouse of research being carried out by OER suppliers.

<sup>47</sup> For example, see the OER World Map (<https://oerworldmap.org/resource/?map=16.22689,8.03808,2>).



## 7. CONCLUSION

The remarkable strides made in OER supply represent an impressive application of technology to the global need for equitable learning and resourcing. The OER supply movement demonstrates a desire to serve the least-served children of the world, with very practical responses to their needs.

However, the progress made on the OER supply side, and the demand-side challenges that remain, demonstrate that supply issues are easier to assess, understand and control than are demand issues. Indeed, technological challenges of almost any kind are ultimately much easier to solve than are sociocultural challenges. The lived realities of Africans in low-resource and linguistically underserved environments are not easily predicted, and real solutions to their challenges are not easily found. Nevertheless, since OER demand must drive supply, particular attention to enhancing the productive engagement of African governments, classroom teachers and local publishers with OER is crucial.

At this point, the OER stakeholder community has the opportunity to balance the scales: to learn more about their target audiences and help strengthen demand so that the impressive gains in managing supply can be leveraged to provide maximum benefit to the 'least served'. This is the real challenge for the OER community today.

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## APPENDIX 1. SOURCES OF INFORMATION FROM OER SUPPLY ORGANIZATIONS

Organization	Individual Interviewee	Type of Interaction	Date
African Storybook	Tessa Welch	Email correspondence	7 March 2019
		Skype interview	15 May 2019
Bloom (SIL International and SIL LEAD)	Paul Frank	In-person interview	16, 17 April 2019
BlueTree Group	Roel deHaas, Maureen Ochako	In-person interview	16 April 2019
Global Book Alliance	Linda Hiebert	In-person interview	15 April 2019
		CIES session: Closing the Book Gap: Using Digital Models to Facilitate Distribution and Access to Early Grade Reading Materials	18 April 2019
Global Digital Library	Christer Gundersen	In-person interview	18 April 2019
		Presentation at CIES session on Building Sustainable Book Supply Chains Through Digital Platforms: Open Licensing, Content Creation and Support for Local Publishers and Authors.	17 April 2019
		Presentation at CIES session on Closing the Book Gap: Using Digital Models to Facilitate Distribution and Access to Early Grade Reading Materials	18 April 2019
Storyweaver/ Pratham Books	Suzanne Singh	In-person interview	17 April 2019
		Presentation at CIES session on Closing the Book Gap: Using Digital Models to Facilitate Distribution and Access to Early Grade Reading Materials	18 April 2019

Organization	Individual Interviewee	Type of Interaction	Date
World Reader	Rachel Heavner	Presentation at CIES session on Building Sustainable Book Supply Chains Through Digital Platforms: Open Licensing, Content Creation and Support for Local Publishers and Authors	17 April 2019
World Vision/All Children Reading	Michelle Oetman	Presentation at CIES session on Closing the Book Gap: Using Digital Models to Facilitate Distribution and Access to Early Grade Reading Materials	18 April 2019

## APPENDIX 2. INTERVIEWS OF 13 AFRICAN DEMAND-SIDE EDUCATORS

(TEACHERS, HEADTEACHERS AND EDUCATION RESOURCE NGO DIRECTORS)

Location	Type of School	Respondents	Languages of the Location
Entebbe, Uganda (population 70,000)	2 government primary schools 1 low-fee private primary school	2 primary teachers 2 headteachers 1 deputy headteacher	Luganda, English
Loitoktok, Kenya (population not registered)	1 private pre-school, run by an international NGO	1 NGO country director 2 teachers	Primarily Maasai; some Kikuyu, Kikamba and Swahili
Ziguinchor, Senegal (population 250,000)	1 government primary school 1 low-fee private primary school	2 primary teachers	Wolof, Kriol, Jola Fonyi, French, Mandinka, Mankanya, other Jola languages
Andoni Local Government Area, Rivers State, Nigeria (population of target language community: 200,000)	1 private mother tongue-based bilingual primary school, run by a local NGO	1 headteacher 1 teacher 1 coordinator of the program/Supervisor of Education with the local Universal Basic Education Board	Obolo, English

## APPENDIX 3. SUMMARY OF INTERVIEW DATA FROM 13 AFRICAN DEMAND-SIDE EDUCATORS

Responses to: “Are you familiar with OER?” after explanation of what OER are

			NO	YES
<b>Entebbe, Uganda</b>				
1	St Joseph Katabi Primary School	Primary teacher	X	
2	St Joseph Katabi Primary School	Headteacher	X	
3	Changsha Model Primary school	Deputy Headteacher	X	
4	Changsha Model Primary school	Primary teacher	X	
5	Victoria Montessori school	Headteacher	X	
<b>Ziguinchor, Senegal</b>				
6	State primary school	Primary teacher	X	
7	Private primary school	Primary teacher	X	
<b>Loitoktok, Kenya</b>				
8	Private pre-school	NGO country director	X	
9	Private pre-school	Teacher		X
10	Private pre-school	Teacher		X
<b>Rivers State, Nigeria</b>				
11	Private bilingual school	Headteacher	X	
12	Private bilingual school	Teacher	X	
13	Private bilingual school	Program supervisor	X	

## Responses on provision and availability of educational materials

			Provider	Status
<b>Entebbe, Uganda</b>				
1	St Joseph Katabi Primary School	Primary teacher	MOE	More needed
2	St Joseph Katabi Primary School	Headteacher	MOE	More needed
3	Changsha Model Primary school	Deputy Headteacher	MOE	More needed, including digital
4	Changsha Model Primary school	Primary teacher	MOE	More needed, including digital
5	Victoria Montessori school	Headteacher	Teachers	Some have none
<b>Ziguinchor, Senegal</b>				
6	State primary school	Primary teacher	Government	Few materials provided
7	Private primary school	Primary teacher	NGO/Teachers	Lacking in materials
<b>Loitoktok, Kenya</b>				
8	Private pre-school	NGO country director	NGO	Easy to get materials
9	Private pre-school	Teacher	NGO/donor Teachers	"Need better organization to avail the learning materials"
10	Private pre-school	Teacher	NGO/donor Teachers	ICT materials
<b>Rivers State, Nigeria</b>				
11	Private bilingual school	Headteacher	NGO	Materials provided
12	Private bilingual school	Teacher	NGO	Materials provided
13	Private bilingual school	Program supervisor	NGO	Materials provided

## Responses on materials needed

			Material Needed
<b>Entebbe, Uganda</b>			
1	St Joseph Katabi Primary School	Primary teacher	Learning materials, any topic
2	St Joseph Katabi Primary School	Headteacher	Reading materials, games
3	Changsha Model Primary school	Deputy Headteacher	Wall maps, Atlases, reference books, supplementary readers
4	Changsha Model Primary school	Primary teacher	Wall maps, Atlases, reference books, supplementary readers, drawing materials
5	Victoria Montessori school	Headteacher	Wall maps, Atlases, reference books, supplementary readers, drawing materials
<b>Ziguinchor, Senegal</b>			
6	State primary school	Primary teacher	Up to date educational materials
7	Private primary school	Primary teacher	Materials to teach all subjects
<b>Loitoktok, Kenya</b>			
8	Private pre-school	NGO country director	Craft materials, computer lab
9	Private pre-school	Teacher	
10	Private pre-school	Teacher	<p>"It would be better if the government provided materials to every child e.g. counting materials, toys, flash cards, cut outs etc. "</p> <p>"In the new curriculum, we are referred to ICT devices, even though the government has not given the ICT devices."</p>
<b>Rivers State, Nigeria</b>			
11	Private bilingual school	Headteacher	Textbooks for children, computers
12	Private bilingual school	Teacher	Science lab
13	Private bilingual school	Program supervisor	Better translations in Obolo

**Responses on Internet availability and local printing**

			Internet Status	Printing Options
<b>Entebbe, Uganda</b>				
1	St Joseph Katabi Primary School	Primary teacher	Lacking in many schools	Downloading is expensive
2	St Joseph Katabi Primary School	Headteacher	No internet	No downloads
3	Changsha Model Primary school	Deputy Headteacher	Outdated computer lab	Possible in the lab
4	Changsha Model Primary school	Primary teacher	Computer lab; not at school	Downloading is expensive
5	Victoria Montessori school	Headteacher	Computer lab; not at school	Downloading is expensive
<b>Ziguinchor, Senegal</b>				
6	State primary school	Primary teacher	Wifi at home	Ink to print is expensive
7	Private primary school	Primary teacher	Buy data access on smartphone	Costly

			Internet Status	Printing Options
<b>Loitoktok, Kenya</b>				
8	Private pre-school	NGO country director	Some cyber cafes	Possible in some places
9	Private pre-school	Teacher	"I can download them from the internet and use them offline."	"Some I translate verbally, to suit situation; for songs, we use them as they are. I download them on phone using bundles, then I can use them offline once downloaded. Some I use on phone as children need to see them on the phone, others I print. Some teachers do not have the phones so they have to print them from others, although majority may not have ways of printing."
10	Private pre-school	Teacher	"I use the picture books on the internet and explain to the children. The ones we download stay in the phone gallery or word. Other teachers may not have phones that can download the materials."	"We translate to the language the children understand, and especially those who are beginning school because majority are only familiar with the language of the catchment area. They like them and they pay attention."
<b>Rivers State, Nigeria</b>				
11	Private bilingual school	Headteacher	Through mobile phones only	Small "business center"
12	Private bilingual school	Teacher	Lack of electricity	At NGO office
13	Private bilingual school	Program supervisor	4G on his handset	At school

## APPENDIX 4. INTERVIEWER'S NOTES ON INTERVIEWS WITH TEACHER 9 AND TEACHER 10, WHO USE OER REGULARLY (LOITOKTOK, KENYA PRE-PRIMARY SCHOOL)

### TEACHER 9

#### 0. Do you know what Open Educational Resources are?

Yes, I know these resources e.g. songs and materials for math that children like, and I can download them from the internet and use them offline.

#### I. Questions about the supply of OER in your context

How do teachers and school heads in your area get teaching and learning materials for primary school classes?

- a. Who supplies them?
  - i. *The private schools are supplied by the donor or the proprietor of the school.*
  - ii. *Government supplies the public schools.*
  - iii. *The parents also provide some locally available materials, e.g. if the lessons require the learners to have some materials for making crafts, the teacher will ask the learners to tell the parents to provide them with the materials for the crafts e.g. strings, bottle tops, etc.*
  - iv. *The teachers also make some of the materials e.g. paper cut outs; teachers also do drawings in a chart.*
- b. Is there a better way to do it than what is being done now?
  - i. *There are times that the lessons require learners to go outside the class to learn some environmental topics, e.g. going to a nature park, river/lake or any water body; there could be better organization by management so that children do not walk to far places, transport could be organized.*
  - ii. *Better organization to avail the learning materials.*

Do you yourself create or make available any OER for primary school-age children?  
If so: *yes*

- a. What are they about?  
*I make charts, necklaces, bean bags etc. as learning aid, I also download short stories, story picture book etc.*
- b. Do you translate or adapt them at all, or just download and use them?  
*Some I translate verbally, to suit situation, for songs, we use them as they are.*

Do you know anyone else who creates or supplies OER for primary school-age children?  
*There are people who can draw art, you give them an order to develop what you need them to write. Interviewer's note: these may not qualify as OERs*

Do you know whether any OER are being created for any non-formal learning contexts around here, like community libraries, non-formal courses, etc.?

*There are adult literacy classes and some of the materials are made locally, they also use the formal materials that are availed through the formal channels. Some of the materials have to be improvised because teachers do not have all that they need.*

a. What formats are OER in: pdfs, mobile phone access, other?

*Word, save it as a file in the phone.*

b. What language(s) are they being created in?

*Most of the ones I am familiar with are in English.*

Do you know of any government support for the use of OER in [country]?

*They support it because in the syllabus they refer the teachers to the materials and encourage them (teachers) to download and use them.*

*(If the person is a teacher):* Were OER mentioned or used at all in your teacher training? If so, how?

*ECD [early childhood development] teachers in both private and public sector are trained in the Government special college for early childhood development. This is where I trained and we were encouraged to use these resources.*

## II. Questions about the demand for OER in your context

Do your coworkers or colleagues know anything about OER?

The other teacher is aware and she uses them. Other teachers use the materials as well.

a. If so, how did they learn about them?

*Information from college and co-teachers*

b. If not, do you have any ideas as to how might they be able to find out about them?

Do you use OER in your educational programs?

If so: *yes*

a. Do you use them online, or download them, or download and print them?

*I download them on phone using bundles, then I can use them offline once downloaded. Some I use on phone as children need to see them on the phone; others I print. Some teachers do not have the phones so they have to print them from others, although majority may not have ways of printing.*

b. Do you translate or adapt OER to fit the context?

*Some we translate so that the children can understand; we use others the way they are, e.g. songs and some stories; some are not appropriate for our context so we don't use them.*

If not:

c. Why don't you use them?

Do you know anyone else who is using OER to teach primary-aged children?

If so: *Other teachers are using them.*

- a. Do they use them online, or download them, or download and print them?  
*Some download them and use them on phone offline; others print them because they do not have phones to use. They can download from a cyber or a common computer and print them for use.*
- b. Do they translate or adapt OER to fit the context?

If you, or others you know, are using OER:

- a. Are OER used on mobile phones very much?  
*Some use on print, for use by children you have to print but there are those that you need the children to use on phone. Phone usage in class is not very common.*
- b. What subjects are the OER used for?  
*Math, Language, Music, Environmental (health sciences and social sciences)*

If OER are **not** being used in your programs, or others' programs:

- a. Why not?
  - i. *The schools that are in remote places are challenged in terms of access to resources, so even if the teachers know about them, they do not have a way of accessing them.*
  - ii. *Some teachers do not have the proper training to get the materials.*
- b. What do you think might make people use OER, if they aren't using them now?
  - i. *It gives children exposure country-wide e.g. when they see other places outside their home environments, and see things like animals, physical features e.g. rivers etc.*
  - ii. *Promotes language development/learning.*
  - iii. *When a child hears others in the programme being fluent, it motivates them to also want to know, and also know that they can be as fluent as the child they have seen in the programme.*
  - iv. *Helps children recognize numbers and number values.*
  - v. *They learn new things they have never seen. Identification of objects and pictures. I would recommend these resources to someone not using them.*
- c. How could the access to OER be improved?
  - i. *We were suggesting that the programmes be put in the tablets like we did with the story tablets. It would be easy to use them for teaching and easy for the learners. This is better than on a phone. If the materials are on tablets, they would be available to many learners. We have not added more but we would love to have more on the tablet.*
- d. What would make people use OER for primary-aged children?
  - i. *Sensitization about the availability of the materials.*
  - ii. *Provision of the materials and tablets.*
  - iii. *Training ICT in ECD because it is not taught, those who learn do it out of personal effort. If no training in ECD, then the training to be done for teachers in service e.g. when programmes are being rolled out.*

- e. What subjects or learning topics do you think would be best for OER?  
*Math, Language/Literacy, Music, Environmental Science.*
- f. What ages of learners would do best with OER?  
*Lower classes, because they are being introduced to these materials also because it's the introduction to their education.*

#### General questions

- a. What are the benefits of using OER in your context?
- i. Saves time because materials are ready and available once you get the right ones.*
  - ii. The materials are well understood by learners e.g. pictures are clear.*
  - iii. They are safe to use by children – e.g. if you are using physical crayons to colour pictures, it's possible that some children may eat crayons; on the tablets the colours have no direct contact with the children, the children just colour on the screen.*
  - iv. Creates awareness to the learners – exposure to physical education in early age.*
- b. What are the drawbacks or risks of using OER in your context?
- i. Some are not appropriate for the context in which the teacher is teaching.*
  - ii. Some are inappropriate/may not be understood for the catchment area e.g. animals that are not around and therefore not known to the learner.*
  - iii. Break easily – this is if the learners are using tablets.*
  - iv. Lack of electricity.*
- c. What are the challenges or difficulties of using OER in your context?
- i. Electricity.*
  - ii. Teacher has to create time to look for the materials.*
  - iii. Some teachers have to pay for the downloads themselves and have proper phones – at their own cost.*

#### Additional comments

- iv. The tablets are helping a lot and assisting to teach the languages, the languages learning is getting better in e.g. new words from the stories helping the children in building their vocabulary.*
- v. Promoting concentration span for the children, learning to concentrate which is a big challenge in ECD.*
- vi. Motivation on the teacher's side.*
- vii. When children see others in the stories going to school, they are motivated to also go to school because others are going and they see they too can learn.*

## TEACHER 10

### 0. Do you know what Open Educational Resources are?

Yes.

#### I. Questions about the supply of OER in your context

How do teachers and school heads in your area get teaching and learning materials for primary school classes?

- a. Who supplies them?
  - i. *The government supplies the materials to public schools depending on how many schools are in the locality, private schools get their materials from the owners of the school.*
  - ii. *We also use (and the government encourages) locally available materials available in the environment e.g. stones, tins, sticks etc.*
  - iii. *We are encouraged to use ICT where you go to the internet using your phone or tablets to get songs, pictures of food and others that learners can use etc.*
- b. Is there a better way to do it than what is being done now?
  - i. *It's better that the government provides materials to every child e.g. counting materials, toys, flash cards, cut-outs etc.*
  - ii. *For ICT, applications are better in the tablets than on phone, as the phone cannot get to every child and if there is something that the teacher wants them to see, they will strain/struggle because everyone wants to see. It's easier when the children have access to tablets.*

Do you yourself create or make available any OER for primary school-age children?  
If so: *yes*

- a. What are they about?
  - i. *More use of picture stories because the children are beginning schooling.*
  - ii. *I can get picture stories on the internet. I use the picture books on the internet and explain to the children. I mostly use picture stories to explain to the children.*
  - iii. *I draw pictures on manila paper, cutting boxes to make things like a hut, so that children can differentiate between hut and hat – it's easier for them to know the difference when they see. I also use egg shells, cups, more simple for the children to learn by touching rather than abstract things, they understand easily with tangible objects.*
- b. Do you translate or adapt them at all, or just download and use them?  
*We translate to the language the children understand, and especially those who are beginning school because the majority are only familiar with the language of the catchment area [the Maasai language], so if they don't understand Kiswahili then I explain to them in the Maasai language. They like them and they pay attention.*
- c. Do you know anyone else who creates or supplies OER for primary school-age children?  
*I don't know anyone creating them in Loitokitok.*  
(Interviewer's note: Although teacher Elisabeth says that she doesn't know anyone creating the materials in Loitokitok, she says in another question that Tusome [an

early-grade reading project] is on the ground, and they give materials to teachers – I would assume that Tusome is a supplier of the materials in this case)

- d. Do you know whether any OER are being created for any non-formal learning contexts around here, like community libraries, non-formal courses, etc.?
- i. *I know of an adult literacy teacher but not sure if they use them.*
  - ii. *When schools are closed people go for seminars not sure if they use them.*
  - iii. *he Sunday schools use flash cards, and books that are specifically picture books. Some of the churches have well established CED (Church Education) departments so they have their own materials, or they are given by the missionaries for free, not all churches though.*

If so:

- a. What formats are OER in: pdfs, mobile phone access, other?  
*The church materials are printed. The ones we download stay in the phone gallery or word.*
- b. What language(s) are they being created in?  
*The church materials are in English, we translate (verbally) and explain to the children in Maasai.*
- c. Do you know of any government support for the use of OER in [country]?  
*The government encourages use of these materials because in the new curriculum, every subject has a topics and subtopics, when we teach every day, we are referred to ICT device, even though the government has not given the ICT devices, that is why there are wrangles between the Ministry and the teachers' union. Some of the references to ICT:*
- i. *Math – after teaching rote counting, the teacher is to show the learners children counting -on the ICT device.*
  - ii. *Hygiene – children are supposed to see on the ICT device the process of washing hands, but because we do not have the materials, we show the children the practical bit where we show them to wash hands themselves. The curriculum requires that the children wash hands practically, and also see it on the ICT device.*

*(If the person is a teacher): Were OER mentioned or used at all in your teacher training? If so, how?*

*While training in ECD, in 2014, they mentioned the new curriculum, they encouraged us to use the OERs, every schools needs to have them. But unless the school provides, or the teacher makes their own effort, the materials cannot be availed.*

## II. Questions about the demand for OER in your context

- a. Do your coworkers or colleagues know anything about OER?  
*[The other teacher interviewed] is aware of OERs and we share and exchange information. The assistant teachers are not so much aware, and they may not have phones that can download the materials.*
- b. If so, how did they learn about them?  
*Peer communication.*

- c. If not, do you have any ideas as to how might they be able to find out about them?  
*Outside OBK [Operation Blessing Kenya], they also have information from the Tusome project, so the project has sensitized teachers, and Tusome sends teachers information. Teachers who are on whatsapp groups also get the materials from Tusome when they get the forwards. Tusome gives information free and they encourage use of these materials.*

Do you use OER in your educational programs?

If so: *yes*

- a. Do you use them online, or download them, or download and print them?  
*We use the materials in tablets, some we use in phone e.g. pronunciation can be listened in phone. I don't print because there are no means to print (the schools do not provide a means to print these materials).*
- b. Do you translate or adapt OER to fit the context?  
*We translate verbally for the children so the children and especially the new ones can understand, because they only know MT when they join school.*

If *not*:

- a. Why don't you use them?

Do you know anyone else who is using OER to teach primary-aged children?

If so: *yes*

- a. Do they use them online, or download them, or download and print them?  
*We hardly print because we do not have a way of printing.*
- b. Do they translate or adapt OER to fit the context?  
*We translate verbally so that the children can understand, and only use those that are appropriate for our context.*

If you, or others you know, are using OER:

- a. Are OER used on mobile phones very much?  
*Yes.*
- b. What subjects are the OER used for?  
*Math, literature/language, games, children games that aid in learning.*

If OER are **not** being used in your programs, or others' programs:

- a. Why not?
- i. *Some remote areas have no way of getting the materials, even though they may be aware of their existence. Someone visited a school in Amboseli [another region in Kenya], and they showed the children a word to read in a laptop, but the children were only impressed by the laptop itself and could not get off admiring it, leave alone reading the word.*
- ii. *Lack of enough equipment – schools do not have laptops or tablets for the learners to use.*

- b. What do you think might make people use OER, if they aren't using them now?  
*Sensitization and training of teachers.*
- c. How could the access to OER be improved?
- i. *If the applications can be put in the tablets that would be helpful.*
  - ii. *Provision of proper equipment – if a teacher uses their phone to download the materials, it can only do so much because it is a small gadget and she may not be able to do much with it in a class of 20-plus children.*
  - iii. *There is also the challenge of getting cash for buying the bundles to download the materials because the schools do not provide this to the teachers.*
  - iv. *There is the challenge of the community or parents wondering what the teacher is showing children on phone (“it’s easier to think of negative things than positive ones”). If the materials are on tablets then parents/community will be sure that children are being shown educational content.*
- d. What would make people use OER for primary-aged children?  
*Teachers need training on use of these materials as well as using the ICT devices to download the materials. The government is training teachers on the new curriculum one teacher or two per school at a time, but continuous training is required.*
- e. What subjects or learning topics do you think would be best for OER?  
*Math, language, hygiene, environmental, – hygiene and environmental is one [subject] in preschool - creative arts e.g. games, naming colours, describing pictures, religious education*
- f. What ages of learners would do best with OER?  
*All would benefit depending on levels of materials.*

#### General questions

- a. What are the benefits of using OER in your context?
- i. *They children understand better, if I teach them using the phone, they see, they will not easily forget because they refer to what they saw on phone, or touched. They remember real things better than abstract e.g. little cat followed us to class. I took the cat and I asked them what it was, they gave the name in Maa. I then drew the cat on board and then told them the name in English, and they now all know that it’s a cat in English. They saw it live so they will not forget. If there is a learner in that class who doesn’t know what it is called in English, that would only be a learner who was absent that day. They are also benefiting from the tablets and they are not forgetting easily what they have learned as they are interacting with them.*
  - ii. *Children are entertained.*
  - iii. *Easy to teach language. They like learning and attending classes so absenteeism is reduced.*
- b. What are the drawbacks or risks of using OER in your context?
- i. *Some people may not understand what you are doing on phone with children, some may misunderstand, so there are pros and cons.*
  - ii. *My phone cannot reach all the children so they struggle to get access and they can hurt each other.*
  - iii. *Cash for [data] bundles is not easily available.*
  - iv. *Phone battery goes off sometimes.*
- c. What are the challenges or difficulties of using OER in your context?  
*Some are of higher level than the children, some do not fit context*

Additional comments

- i. *The tablets are helping a lot coz the flash cards are helping children in identifying colours, fruits, plants, shapes etc. The English words that were in the TPR [total physical response] curriculum are very helpful to help teaching shapes and colours and they touch every activity area[...].*
- ii. *We are using them [the tablets] with the new learners even though slowly coz they are very new, only teaching one or two words. They are listening to the stories. They are helping the children with concentration span/attention to what they are doing.*





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