



© Mara Sirbu/A World at School

**Towards a Global Education
Platform: Potential Models
for Harnessing Technology to
Promote Education as a Global
Public Good**

September 2014

**GLOBAL BUSINESS
COALITION FOR
EDUCATION**

GLOBAL BUSINESS COALITION FOR EDUCATION

www.gbc-education.org

ACKNOWLEDGMENTS

This Global Business Coalition for Education (GBC-Education) discussion paper, *Towards: Potential Models for Harnessing Technology to Promote Education as a Global Public Good*, was prepared by Jonathan Glencross (Purpose Capital) and Sarah O'Hagan. GBC-Education would also like to thank Shane Dabor, Johnson Fung, Imran Husain, Kevin Kalra, Avet Khachatryan, Lauren Lichtman and Justin van Fleet for their research and insights that have shaped this report, as well as Hamoon Ekhtiari for his contributions. GBC-Education would also like to thank Andronicus Education for the production of the infographics within this report.

A special thanks to the ongoing leadership and contributions from the working group co-chairs who have steered contributions to this report: Rebecca Winthrop (Center for Universal Education at the Brookings Institution) and Jake Hirsch-Allen (Functional Imperative).

The report has benefited greatly from contributions from a number of leaders in the technology, academic, business and global development sectors. GBC-Education would like to thank the co-conveners of the initial meeting held in London in December 2013: Office of the UN Special Envoy for Global Education, Purpose Capital, Incentives for Global Health, Functional Imperative and A World at School. We would also like to thank the participants in the London meeting for their contributions toward outlining the

potential of a global education platform, with special thanks to the Fred Mulder Charitable Trust, whose generous support made the event possible.

GBC-Education would like to thank the leadership of its Advisory Board member Strive Masiyiwa, Chairman and Founder, Econet Wireless Group, as well as the Rt. Hon. Gordon Brown, UN Special Envoy for Global Education and Thomas Pogge, President of Academics Stand Against Poverty, Director of the Global Justice Program and Leitner Professor of Philosophy and International Affairs at Yale University, for their leadership on the issues of technology and education.

The report has benefited from the contributions of many members of the Global Education Platform working groups and participants in the groups' meetings. GBC-Education would like to thank all these individuals for their contributions through the working groups' meetings and individual conversations.

GBC-Education thanks the Good Planet Foundation, Dangote Foundation and Econet Wireless their generous support of this ongoing research and programmatic initiative.

CONTENTS

I. INTRODUCTION

II. PRINCIPLES FOR USING TECHNOLOGY TO DELIVER EDUCATION TO THE MOST MARGINALIZED

III. THE GLOBAL EDUCATION AND TECHNOLOGY CHAIN: MODELS FOR DELIVERING EDUCATION

IV. CONCLUSION

V. APPENDIX 1: EXAMPLES OF DELIVERY MODELS

VI. APPENDIX 2: NONEXHAUSTIVE LIST OF ORGANIZATIONS CONSULTED

SUMMARY

The Global Business Coalition for Education's Global Education Platform initiative has convened academics, technology entrepreneurs, business leaders, global development experts and educators in conversations to identify how technology could be used to deliver recognized skill development that leads to economic opportunity in a model that prioritizes learning as a public good for the most marginalized. Participants explored the potential added value of an initiative to enable content creation, dissemination, as well as the recognition of learning pathways for skill development. The process also examined the current challenges and opportunities surrounding the delivery of education with technology across different contexts, as well as gaps in learning opportunities best suited to the introduction of technological innovations. Discussions have focused on how these innovations could result in high-quality learning opportunities as a global public good. This discussion paper summarizes the current state of these conversations and presents five distinct models for consideration and debate.

I. INTRODUCTION

Introduction

Our world is afflicted by a skills gap that hinders local and global prosperity. This gap encompasses formal skills for employment as well as the life skills necessary for 21st-century global citizenship. This phenomenon—which is rooted in an uneven provision of learning opportunities around the world that is affecting the most marginalized and vulnerable—prevents the active and meaningful participation of young people as both citizens and economic actors.

Currently, the global education system cannot supply the quantity and quality of education needed. As the demand for skilled labor grows, leveling the playing field for the young and marginalized through greater learning opportunities becomes an ever more pressing need. Although by 2025, the majority of workers will require formal skills, over 1 billion people in the workforce will still lack a secondary education. Without change, the undereducated will be further marginalized, and the gap between the poor and rich will continue to grow, undermining global prosperity and social equity.¹

Given today's rapid global developments in technology and innovation, how can technology be used to deliver recognized skill development that leads to economic opportunity in a model that prioritizes learning as a public good for the most marginalized? This is the central question explored in the "Global Education Platform" technology initiative examined in this discussion paper.

Recent technological innovations have provided opportunities to deliver education and skills development to young people in new ways. Information and communications technology (ICT) can offer viable solutions to bridge the skills gap, exploiting economies of scale that are unattainable in traditional classrooms and allowing the expansion of high-quality learning at a very low cost. Yet in their current form, iterations of online education are fragmented and have had inconsistent results across different demographics of learners. In particular, online education has focused on higher education and has yet to reach the most marginalized or offer comprehensive content geared toward the earlier years of learning. Ultimately, we must better capitalize on the promise of online education to reach the world's young and future workforce.

Based on a careful analysis of the needs of potential students, educators and employers, this discussion paper identifies several opportunities to add value to the existing education ecosystem by synthesizing the conversations and consensus points to date. The paper outlines five potential models for a global education platform (GEP) to address the global skills gap. This paper does not include a comprehensive literature review, but instead provides a context to inform the next major milestones in the co-development of the Global Education Platform with our partners during a meeting on the sidelines of the UN General Assembly in New York.

¹ G. Brown, "Global Education Platform Working Paper," 2013.

² UNFPA, "Adolescents and Youth," n.d., <http://www.unfpa.org/public/adolescents>.

³ UNESCO, EFA Global Monitoring Report 2012: Youth and Skills (Paris: UNESCO, 2012), <http://www.unesco.org/new/en/education/themes/leading-the-international-agenda/efareport/reports/2012-skills/>.

⁴ Ibid, figure 3.2.

⁵ UNESCO, EFA Global Monitoring Report 2013/14: Teaching and Learning—Achieving Quality for All (Paris: UNESCO, 2014), figure 5.9.

⁶ Population Reference Bureau, "The World's Youth 2013 Data Sheet," 2013, <http://www.prb.org/pdf13/youth-data-sheet-2013.pdf>.

⁷ Ibid.

⁸ UNFPA, "Adolescents and Youth."

Who Are Today's Underserved Learners, and Where Do They Live?

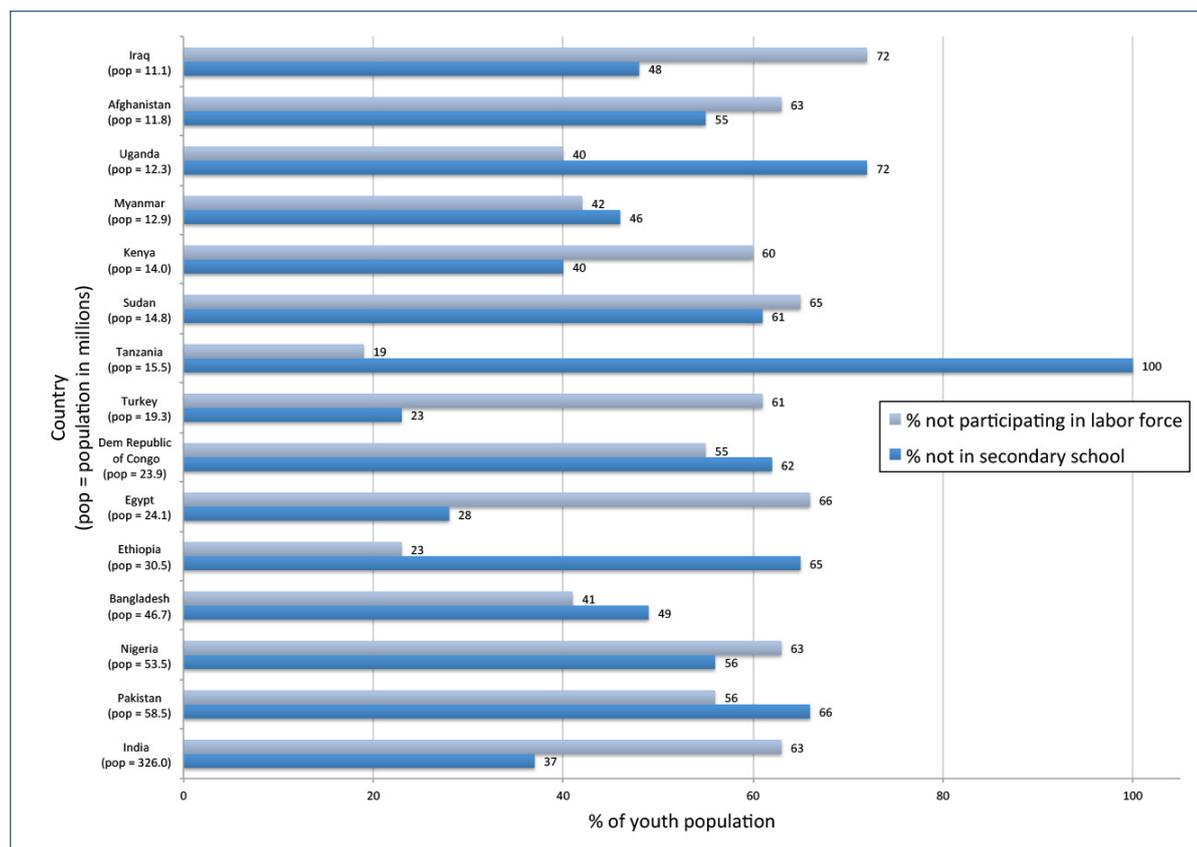
Adolescents and youth together number 1.8 billion—one-quarter of the world's population.² The critical need to address youth skills is underscored by the fact that the rate of unemployed youth is more than double the level of unemployed adults in many countries around the world, particularly in Sub-Saharan Africa and South and West Asia.³ It is anticipated that by 2030, the youth population of Sub-Saharan Africa will reach 3.5 billion.⁴ And in most regions, the youth unemployment rate is more than double that of adults.⁵

Although young people are enrolling into school in greater numbers than ever before, of growing concern are the young people who are not in education, employment or training (NEET). Countries like Pakistan and Niger have troubling statistics indicating that two out of every three young women are NEET.⁶

Opportunity for young people in terms of access to secondary education and skills training as well as employment is highly variable both across and within countries. While in some countries, such as the Dominican Republic and Mozambique, boys are less likely than girls to start secondary school, girls tend to be most at-risk.⁷ Some of the barriers to youth development include forced labor, early marriage and discrimination. Each year, about 14 million girls are married off before the age of 18. About 215 million underage children work full or part-time, while 75 million older youth cannot find work.⁸ Approximately 15 million children are not in school because of work.

The chart below highlights the countries with the largest proportion of out-of-school or unemployed young people:

Figure 1. Global youth data: Concentration of out-of-school or unemployed youth



Source: Population Reference Bureau, 2013

I. INTRODUCTION

Globally, there are 58 million children out of primary school and an additional 69 million adolescents who do not attend secondary or postprimary school, with South and West Asia representing the largest population of out-of-school adolescents.⁹ These numbers represent the more than 43 million children who are likely never to enter school¹⁰ and those who drop out. Even as young people enter the formal school system, they are not guaranteed high-quality-learning opportunities. It is estimated that 250 million young people leave school without mastering basic literacy and mathematics skills.

Nigeria has the largest out-of-school primary-aged population, with 10.5 million children. Moreover, the Brookings Institution Africa

Learning Barometer indicates that over half of those children in school leave after several years without mastering basic reading and math.¹¹ Pakistan is home to the second-largest out-of-school population, with 6.7 million children.

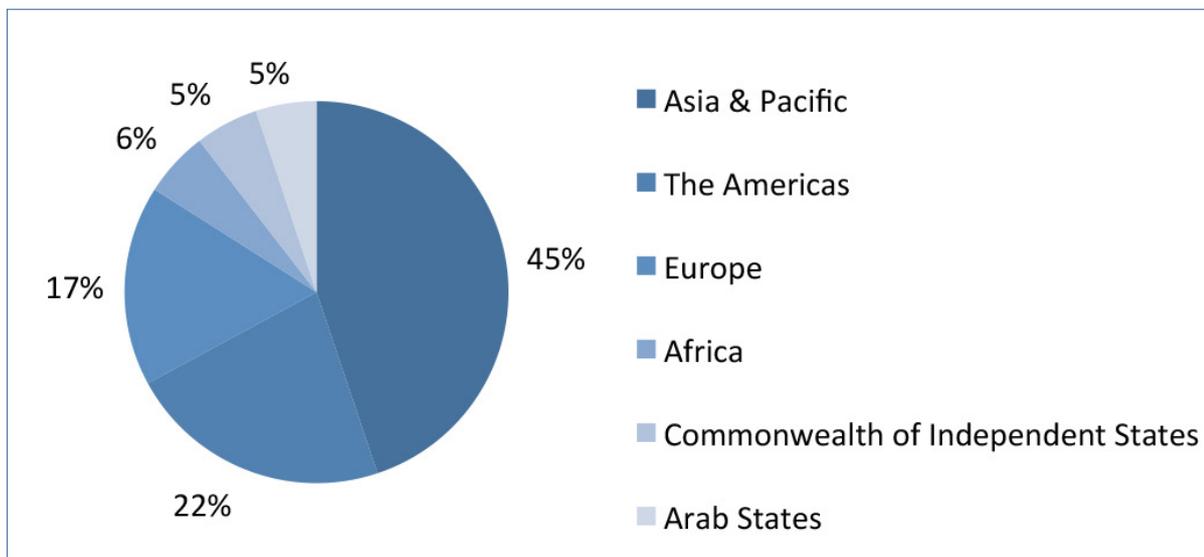
A lack of teachers also makes an impact on the supply of education and learning opportunities for children and youth. And as many as 29 countries, mostly in Sub-Saharan Africa, will not fill the primary teacher gap even by 2030 based on current trends.¹² The teacher gap is not limited to the shortage of new teachers; it also pertains to the need for on-the-job training for teachers in need of additional skills as well and professional development and support.

Who Has Access to Technology?

While 2.7 billion people worldwide use the Internet, and about 6.8 billion people have access to mobile phones,¹³ global access to ICT is unequal (see figures 2 and 3). It also is important to distinguish “access” from “use;” “access” depends on available resources, whereas “use” depends on demand. Thus, high

access levels do not necessarily translate into active use. In some countries, up to 30 percent of those who have a home Internet connection do not use the Internet.¹⁴ Even with access to a mobile device or computer, the costs of operation and subscription are a barrier to the use of technology.

Figure 2. Share of Internet Users by Region, 2013.
Source: ITU, 2014.



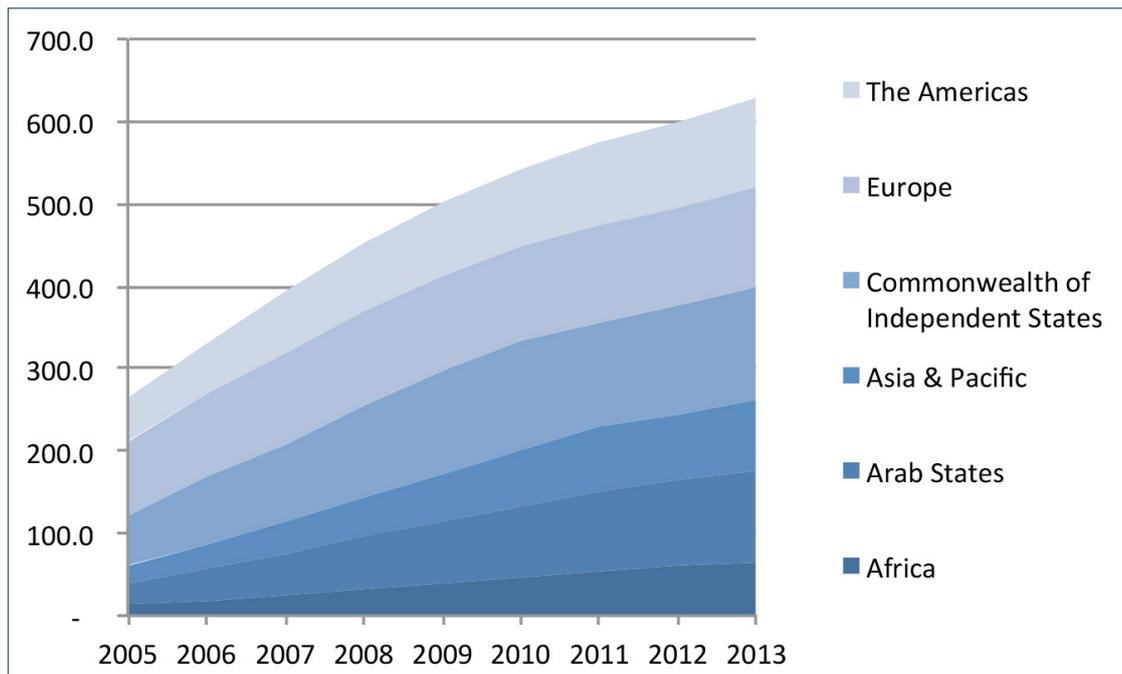
⁹ UIS, 2011, <http://www.uis.unesco.org/Education/Documents/fs-25-out-of-school-children-en.pdf>.

¹⁰ UNESCO, “Progress in Getting All Children to School Stalls but Some Countries Show the Way Forward,” Policy Paper 14 / Fact Sheet 28, June 2014, <http://unesdoc.unesco.org/images/0022/002281/228184e.pdf> <http://tellmaps.com/uis/ooscl/>.

¹¹ J.W. van Fleet, K. Watkins & L. Greubel, “Africa Learning Barometer, 2012,” <http://www.brookings.edu/research/interactives/africa-learning-barometer>.

¹² *Ibid.*

Figure 3. Mobile Subscriptions by Region, 2005–13 (per 100 inhabitants)
Source: ITU, 2014.



An analysis of ICT access and costs in developing countries reveals several trends. While access to electricity, computers, the Internet, and mobile phones is improving, even in the poorest countries, access to ICT is limited for large groups of people, and will remain limited in the foreseeable future.¹⁵

ICT access is dependent on more than just devices and infrastructure. A lack of knowledge on how to use ICT, or “e-skills,” is often a barrier to its widespread use.¹⁶ In spite of the growth of e-learning in developing countries, most people do not have sufficient access, incentive, and/or skills to independently access and use such platforms of delivery.

When considering the use of technology for education and scaling up learning opportunities, it is important to consider the usage requirements and access requirements (see figure 4). For instance, radio-assisted learning has low barriers to use and is widely available. Basic mobile phones can be used for learning via text message, but as phones have more technology requirements, such as Internet or mobile data, there is a more limited availability and a higher level of e-skills is necessary for usage. The broadband connectivity needed for more sophisticated streaming, which is most common in modern massive open online courses (MOOCs), is the most limited in terms of current levels of access and use.

¹³ Partnership on Measuring ICT for Development, “Final WSIS Targets Review: Achievements, Challenges and the Way Forward,” International Telecommunication Union, 2014, http://www.itu.int/en/ITU-D/Statistics/Documents/publications/wsisreview2014/WSIS2014_review.pdf.

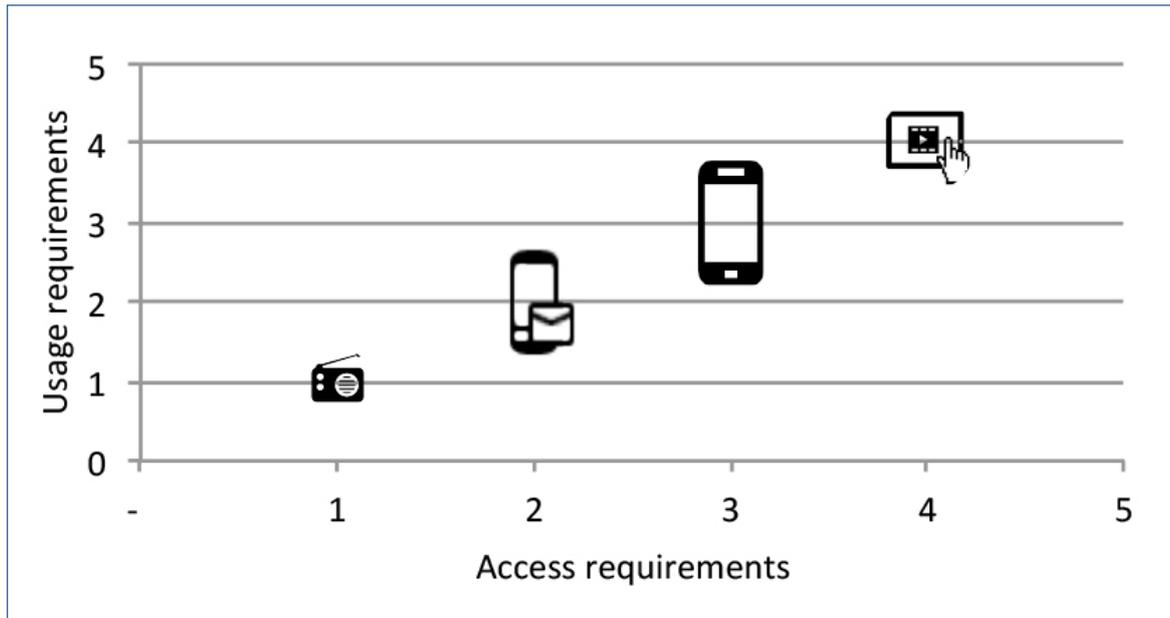
¹⁴ M. Balboni et al., “ICT in Latin America: A Microdata Analysis,” United Nations, 2011, <http://www.cepal.org/publicaciones/xml/7/43847/R.2172ICTinLA.pdf>.

¹⁵ Partnership on Measuring ICT for Development, “Final WSIS Targets Review: Achievements, Challenges and the Way Forward,” International Telecommunication Union, 2014, http://www.itu.int/en/ITU-D/Statistics/Documents/publications/wsisreview2014/WSIS2014_review.pdf. ITU, “Key ICT indicators for developed and developing countries and the world (totals and penetration rates),” 2014, http://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2014/ITU_Key_2005-2014 ICT_data.xls

¹⁶ Dalberg, “Impact of the Internet in Africa: Establishing Conditions for Success and Catalysing Inclusive Growth in Ghana, Kenya, Nigeria and Senegal,” 2013, http://dalberg.com/documents/Dalberg_Impact_of_Internet_Africa.pdf.

I. INTRODUCTION

Figure 4. ICT Use in Learning on a Scale Based on Access and Usage Requirements



Note: This figure is intended to be illustrative. It is neither based on data nor is a linear relationship.

More Than Just Technology

Even if technology is available and populations have the necessary e-literacy skills, there is no guarantee that technology alone can create a high-quality learning environment. To bolster youth skills, research has shown that “blended learning” is more successful, exposing students to a hybrid of face-to-face and online education and recognizing that not all students learn the same way. Blended learning uses online technology not just to supplement but also to transform the learning process.

Demand for blended education is growing in developing countries. A 2009 survey of universities, governments, nongovernmental organizations, and the private sector in 34 African countries revealed that about 51 percent of respondents use e-learning in rural and urban contexts.¹⁷ Another African survey reveals that almost 80 percent of respondents from educational institutions see educational value in Internet use.¹⁸ In a Kenya university survey, about 73 percent of student respondents expressed their preference for blended learning, combining classroom education and e-learning,¹⁹ while less than 15 percent preferred only e-learning.

¹⁷ D. Hollow & ICWE. “eLearning in Africa: Challenges, priorities and future direction.” 2009. <http://www.gg.rhul.ac.uk/ict4d/workingpapers/Hollowelearning.pdf>

¹⁸ Dalberg. “Impact of the Internet in Africa: Establishing Conditions for Success and Catalysing Inclusive Growth in Ghana, Kenya, Nigeria and Senegal.” 2013. http://dalberg.com/documents/Dalberg_Impact_of_Internet_Africa.pdf.

¹⁹ M. Kashorda, & T. Waema. “E-Readiness Survey of Kenyan Universities (2013) Report.” (Nairobi: Kenya Education Network, 2014). http://www.kenet.or.ke/sites/default/files/E-readiness%202013%20Survey%20of%20Kenyan%20Universities_Exec%20Summ.pdf

II. PRINCIPLES FOR USING TECHNOLOGY TO DELIVER EDUCATION TO THE MOST MARGINALIZED

In exploring how technology can be used to deliver recognized skill development that leads to economic opportunity in a model that prioritizes learning as a public good for the most marginalized, a set of principles were discussed as the baseline parameters and principles. In considering new models, the consensus among those participating in the meetings, focus groups and interviews was that any solution must be **technologically accessible**, **linguistically appropriate** and encourage **locally developed content**.

An overarching set of principles was established to guide the next phase of work. The following are points of consensus for how a global education platform could add the most value in the provision of education:

Support the most marginalized: Strive to assist the most marginalized, including youth who have not been afforded the opportunity to attend school or who need additional support to achieve high-quality learning. Ensure that activities are accessible to and useful for these marginalized groups.

Equal access for end-users: Promote education as a global public good and remove barriers for the end users—students, parents or families—for skill development.

Support the efforts of governments: Do not supplant the roles and responsibilities of governments, school boards and local organizations to deliver high-quality education but instead support these entities in the delivery of high-quality education for all.

Public-private networks of support: Serve as a lattice of learning and skill-development that will be supported by governments, educators and employers.

Sustainability: Understand the existing ecosystem, align with local policies and promote technologies with long-term implementation and management strategies that respond to local adaptation, to ensure ownership and relevance for users.

Democratic and driven locally: Co-design with the user and be driven by local stakeholder participation; and encourage adaptation to local languages, contexts and economies; do not act as a one-way flow for information from English-language, developed-country institutions.

Promote global citizenship: Aim to serve the long-term needs of the global society and not simply develop a pipeline of “ready order students” for employers. A global education platform should provide economic opportunity within the context of skills for engagement in society and positive citizenship.

Foster employment outcomes that include self-employment: Ensure that learning is directly linked to participation in the local economy.

Harness existing content and create incentives for high-quality content: Harness the existing content that has been developed and create incentives for the ongoing development and adaptation of high-quality learning resources. A global education platform should not aim to create its own content.

Technology as a means, not an end: Do not assume that technology is synonymous with innovation. Like capital, technology can be a driver of innovation; however, its application in education does not necessarily lead to innovation or better learning outcomes.

II. PRINCIPLES FOR USING TECHNOLOGY TO DELIVER EDUCATION TO THE MOST MARGINALIZED

Following the discussions, two questions remained and these questions will need to be addressed once a model is determined. The answers to these questions will be guiding principles in the next phase of developing a global education platform.

1. Type of experience: Is a 21st-century learning environment aided by technology an individual journey, a peer-to-peer experience, or an experience of group learning?

2. Role of educators and teachers: Is a technology-aided learning environment teacher-aided, or teacher-led—or a hybrid?²⁰

Narrowing an Audience for a Pilot

During the consultation phase, discussions were held regarding the most appropriate audiences for piloting initiatives. The consensus was that an initial target populations should include developing countries where there is a growing demand for skilled young people, where the extent and rate of mobile technology penetration are significant, and where there is policy and public interest in using ICT in education.

Identifying an initial target audience reflected the desire to identify a clear value proposition

for a global education platform that avoids duplication of effort and leverages existing initiatives. Priority was given to selecting an audience(s) cutting across geographic regions, making an impact on the greatest number of learners, and addressing gaps in provision. The two populations for whom it was deemed a global education platform would have the most value-added were (1) postprimary and secondary youth for skills development, and (2) teacher training and professional development for those levels.

Target Audience 1: In- and Out-of-School Youth—Postprimary Skills

Youth skills initiatives are a market imperative for economies where a large population of youth age 25 years or younger with a basic education still find themselves without employment. In West Africa, for example, the continuing increase in youth unemployment among high school leavers and graduates of higher institutions demonstrates that schools are producing graduates without equipping them to fill the existing jobs or needs of society.

The drop in enrollment from primary education to postprimary learning is a major barrier keeping young people from gaining relevant life and employment skills. As such, the activities supported by a global education platform should

focus on the learning gaps that emerge at the postprimary or secondary level, and the skills needed by both students and teachers to bridge those gaps.

The global education platform approach to youth skills should be broad-based, including technical or vocational education while recognizing the importance of 21st-century, or “soft,” skills. These skills of critical thinking and problem solving go beyond traditional content domains and encompass an individual’s personal development, sense of agency and relationship with others.

²⁰ In September 2013, Education International and Intel Foundation announced guidelines to improve the quality of learning and teaching for all through aiding international technology suppliers to connect to educators in deploying modern technology. The policy, launched with the Global Business Coalition for Education, mapped out ways in which teacher organizations, school authorities, and students can collaborate to best use technology systems and strategies to further the learning process.

Target Audience 2: Teachers—Training and Professional Development

To reach the Millennium Development Goal of universal primary education by 2015, there is an estimated need for 5.2 million primary school teachers in developing countries alone. In addition, many countries rely on a teaching force whose skills do not meet minimum standards.²¹ This will add further pressure on systems with limited resources, while the quality of education, as measured by levels of secondary and tertiary completion, is inadequate to the demands of economies to grow.

The provision of high-quality in-service training can help elevate the teaching profession and enable teachers to reach new levels of

professional development and keep pace with the demands of 21st-century learners and employers. There was a broad consensus that a global education platform could serve the teaching profession and take high-quality learning to a wider scale in developing countries. In particular, a global education platform could be developed to address the needs of teachers working far from teachers' colleges and professional development centers that need support to strengthen their teaching skills, subject knowledge and use of educational technology itself. Training new teachers presents an additional use for a global education platform.

ADAPTING A GLOBAL EDUCATION PLATFORM TO LOCAL CONTEXTS AND LOW-RESOURCE ENVIRONMENTS

SOME BEST PRACTICES AND LESSONS LEARNED:

- The best device is often the one already in the hands of users.
- Providing content free of cost does not automatically result in greater, or equal, access.
- Translation of content is an insufficient means of localization.
- Teachers and school leadership are critical allies in the adoption of any education innovation.
- There is a current market failure in curating content for marginalized populations, including proper vetting and course sequencing.
- To date, the ICT-for-education space lacks a rigorous evidence base and coherent message for initiatives.
- Beyond infrastructure constraints, enduring gaps will persist in local demand for education due to a mix of cultural, practical and physical barriers. GEP local activities must consider ways to lower those barriers to demand for education.
- Seek to measure impact via outcomes, not outputs.

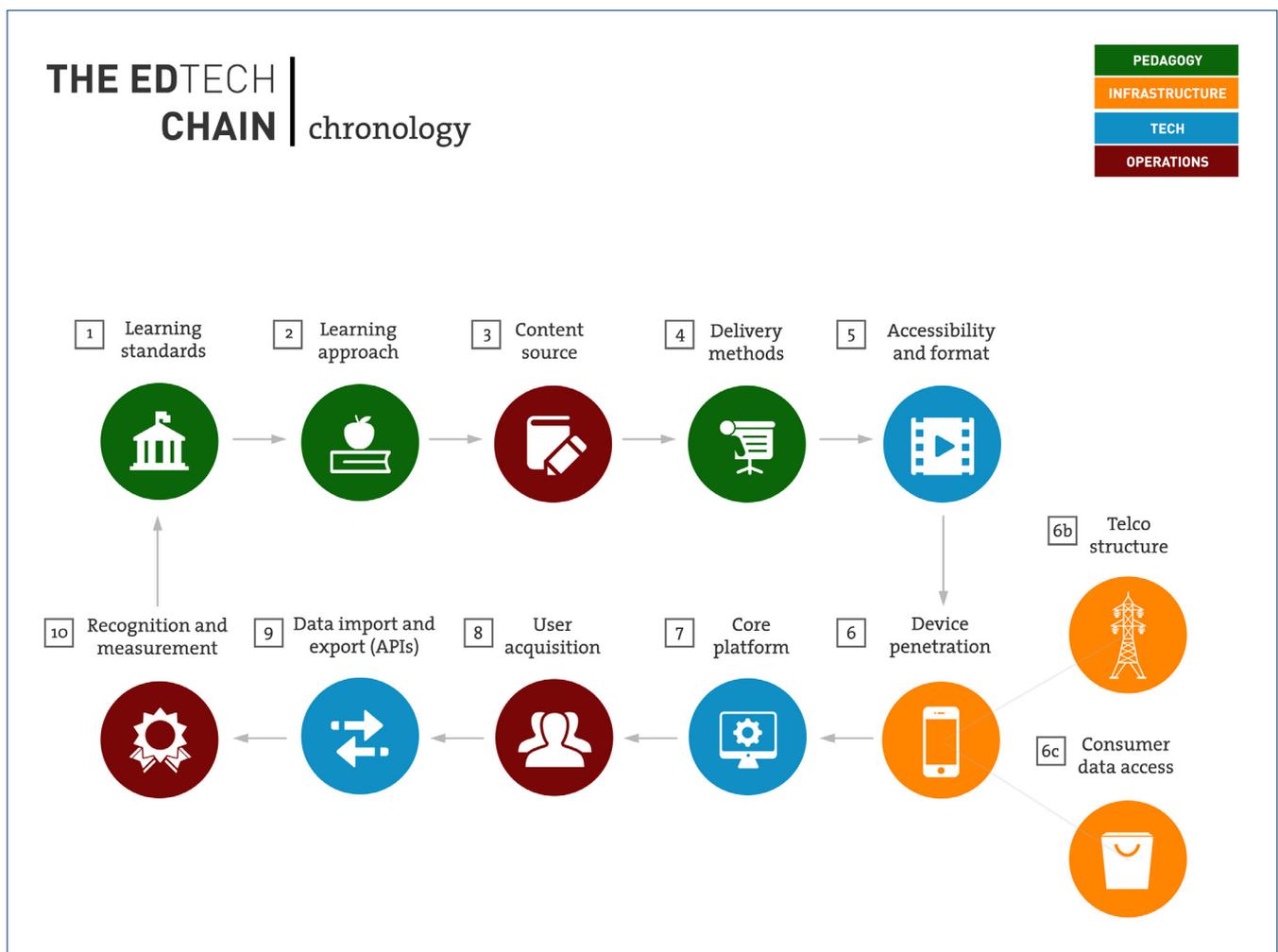
²¹ UNESCO, EFA Global Monitoring Report 2013/14.

III. THE GLOBAL EDUCATION AND TECHNOLOGY CHAIN: MODELS FOR DELIVERING EDUCATION

THE GLOBAL EDUCATION AND TECHNOLOGY CHAIN: MODELS FOR DELIVERING EDUCATION

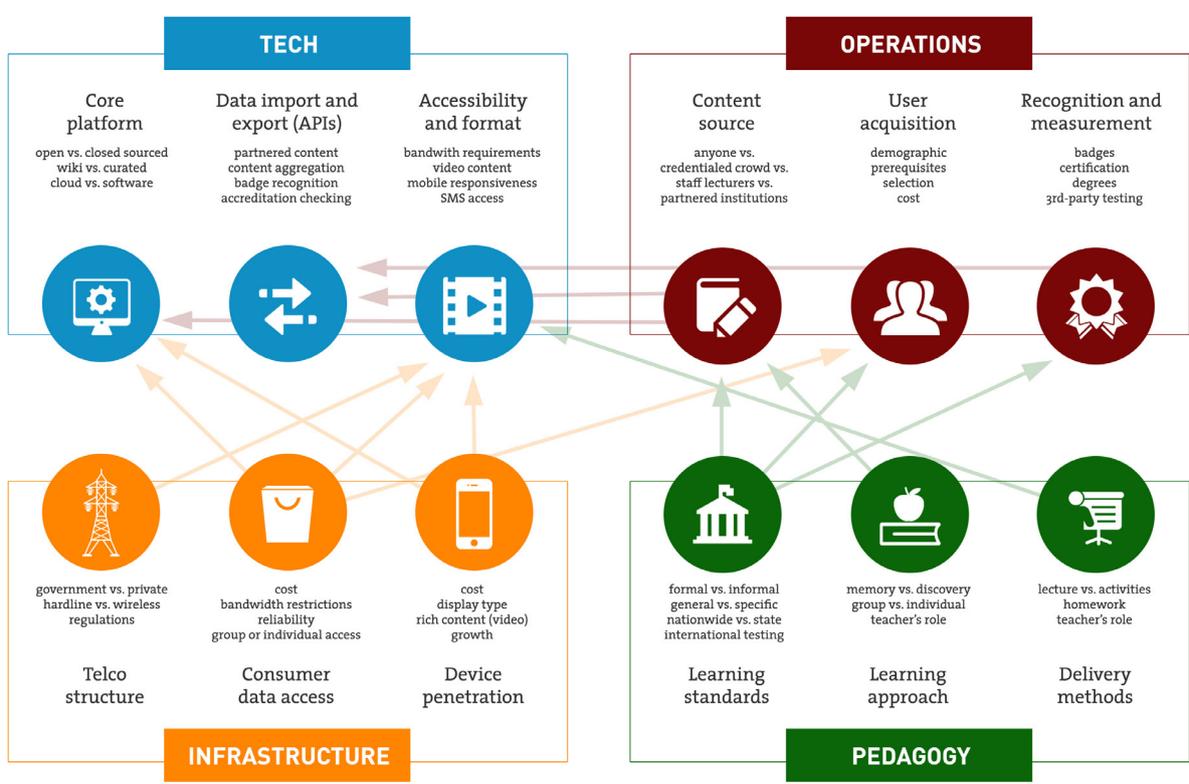
Given the scale and complexity of the global youth skills gap, no single intervention will be the solution. But the interrelated challenges in education delivery systems could benefit from the thoughtful application of innovations in ICT. The Education and Technology Chain below outlines 10 components of applying technology to deliver learning through a GEP

concept: learning standards, learning approach, content source, delivery methods, accessibility and format, device platform, core platform, user acquisition, data import and export, and recognition and measurement. Each of these components is classified as technology, operations, pedagogy or infrastructure.



THE EDTECH CHAIN | mapping dependencies

The EdTech chain components can be categorized into four main categories. The design of some components are heavily dependent on others. For example, the format of content is based on the availability of devices.
A — INFORMS —> B



An analysis of the different aspects of the Education and Technology Chain and the challenges associated with provision of education to the most marginalized resulted in five models for consideration and evaluation as a the basis of value-add in a GEP. Each model prioritizes a different set of components of the chain and where a gap could be filled.

III. THE GLOBAL EDUCATION AND TECHNOLOGY CHAIN: MODELS FOR DELIVERING EDUCATION

THE FIVE MODELS ARE:

1. Global certifier/accreditation/standards body: A borderless acknowledgment system of online learning/contributions that is portable and ubiquitous, providing linked recognition pathways within and across geographies.

2. Aggregator platform/portal: A central source of content with different user interfaces by region, encouraging both interest-based and core competency content.

3. Full delivery system and last mile infrastructure²² (top-down model): In partnership with local actors, this model would provide all the required components of an online education delivery system to targeted regions of the world (e.g., education platform, Internet, device, localization, blended learning, tutoring/mentorship, inspiration).

4. Global education “do-it-yourself kits” and last mile infrastructure (bottom-up model): This model would provide technologies, course authorship tools, local hub and content creation spaces and necessary training to teachers and students. This model would allow the creation of content and learning environment at the local level.

5. Incentivize/market builder: This model would provide capital via grants, equity, or debt to incentivize innovation for specific regional gaps in the market in areas such as content creation or delivery mechanism.

Below, each model is explained graphically; and a summary page outlines the goal, rationale and required elements (e.g., content, connectivity and devices, and recognition pathways). Each model also contains requirements for how it should be organized, an overview of the model and steps for implementation. A discussion section highlights advantages, disadvantages and similar models that are already being deployed (see appendix 1).



²² Last mile technology is any telecommunications technology that carries signals from the broad telecommunication backbone along the relatively short distance (hence, the “last mile”) to and from the home or business.

MODEL 1: Global Certifier/Accreditation/Standards Body

Goal: A borderless acknowledgment system of online learning and contributions that is portable and ubiquitous, providing linked recognition pathways within and across geographies.

Rationale: In order to legitimize online learning and contributions, students need an accreditation system that is recognized by the local and regional authorities, such as employers, governments and school boards.

REQUIRED ELEMENTS:

Content: This model requires that locally relevant content exists and/or can be provided by partner organizations.

Recognition pathways: This is the core offering of this model.

Connectivity and devices: This model requires that users have (or partner organizations provide) access to the Internet, device and/or other delivery channels, and that content creators and/or educators have (or partner organizations provide) access to course authorship technology.

Organizational Form: This model would create a new international association or third-party certifier and requires establishing an interconnected network across all sectors.

Overview: In this model, the GEP would liaise across national and local governments, institutions, and job markets to develop global learning standards for an online education tool. Each subject or competency would have a set of standards for the curriculum component (what is learned) as well as a governing component (how it is learned). Entire learning platforms can have the option to be certified by the GEP to ensure that the process of learning meets the established standard. This GEP certifying body would seek partnerships with local or regional organizations that provide, certify and/or recognize learning.

STEPS FOR IMPLEMENTATION:

1. Define the outlines and pathways of courses, subjects, competencies and certifications
2. Define standards for the learning process
3. Define standards for learning outcomes
4. Assess method of evaluation for each learning outcome
5. Implement assessments through onsite (e.g., exam centers) and remote (e.g., secure websites) means
6. Build credibility of standards and certifications

III. THE GLOBAL EDUCATION AND TECHNOLOGY CHAIN: MODELS FOR DELIVERING EDUCATION

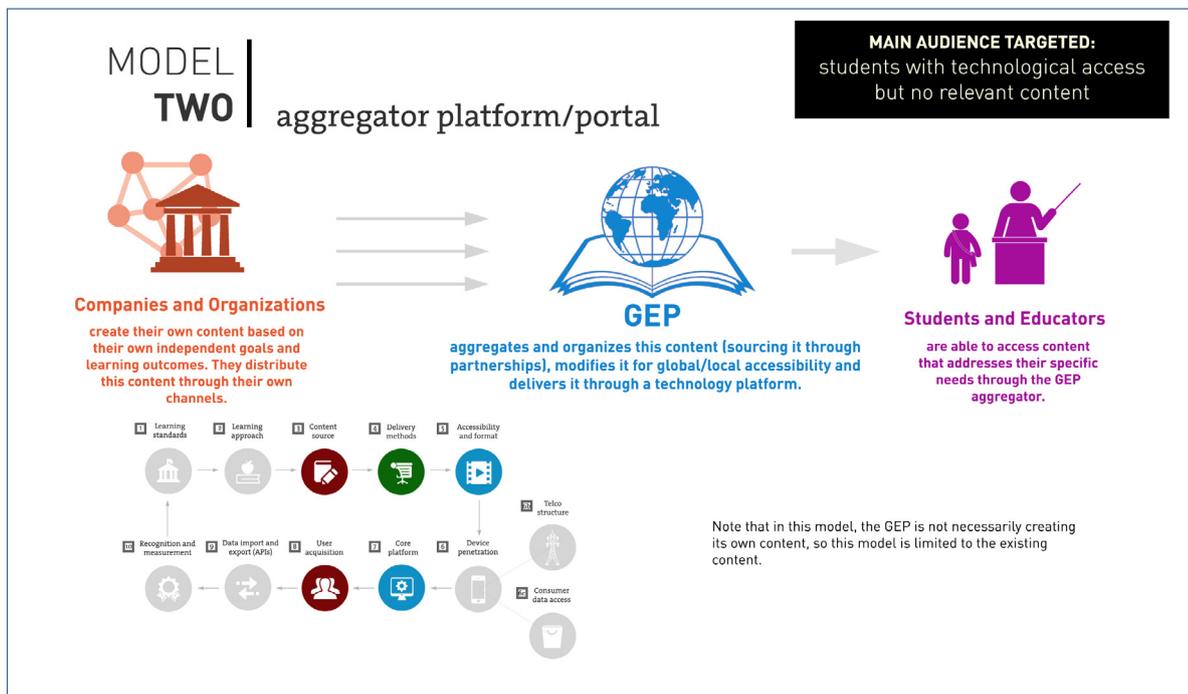
RISKS/DISCUSSION:

- Strong network effects (demand-side increasing returns) make this model extremely scalable but hard to establish at the start.
- Lack of credential portability is the prevailing norm globally. Portability across borders should be facilitated, addressing education for populations that migrate due to conflict, crisis or other factors.
- Certifications are a form of currency, and a global currency is more likely to succeed when it is ubiquitous. The high school or university degree is universally produced and recognized globally. At

present, most online platforms are creating their own proprietary certifications that lack transferability. The online badging movement is encouraging a more crowd-sourced system of legitimization, especially for informal learning. However, practitioners report that employers (human resources departments) still select stringently for a recognized degree as the minimum barrier to entry.

- Standardized testing has been heavily criticized, yet is hard to imagine implementing a global certification system without it.

Examples of model one include: Cities of Learning - MacArthur Foundation, Mozilla Open Badges, Learning Metrics Task Force (see appendix 1).



MODEL 2: Aggregator Platform/Portal

Goal: “Mothership” of content with different user interfaces by region, encouraging both interest-based and core-competency based content.

Rationale: The sorting and unifying functions of an aggregating platform will drive more students and teachers to learn and use online content suitable for their contexts.

REQUIRED ELEMENTS:

Content: This model requires that locally relevant content exists and/or can be provided by partner organizations.

Recognition pathways: This model requires that content is certified by a third party.

Connectivity and devices: This model requires that users have (or partner organizations provide) access to Internet, device and/or other delivery channels, and that content creators and/or educators have (or partner organizations provide) access to course authorship technology.

Organizational Form: This model would require the creation of an international nonprofit with regional representation.

Overview: In this model, the GEP would aggregate all existing content from active learning platforms. It would then translate and adapt content to the local cultural context. This content would be categorized and packaged, and adapted for appropriate technical presentation to the region. For example, in low-connectivity areas, this model will offer a simple text-only version of an otherwise video-rich lesson. The major benefit of this model is that users have a central landing point for content originating on multiple learning platforms in order to find the one relevant to their needs or resources.

SETTING STANDARDS:

All content on the platform would be required to conform transparently to a set of basic norms demonstrating the following:

- **Languages** in which the material can be available
- **Bandwidth** the material is accessible in
- **Portability**
- **Measures of quality**, both user feedback ratings as well as objective measures of quality such as the percentage of learners completing the course/activity, and learning levels achieved.

III. THE GLOBAL EDUCATION AND TECHNOLOGY CHAIN: MODELS FOR DELIVERING EDUCATION

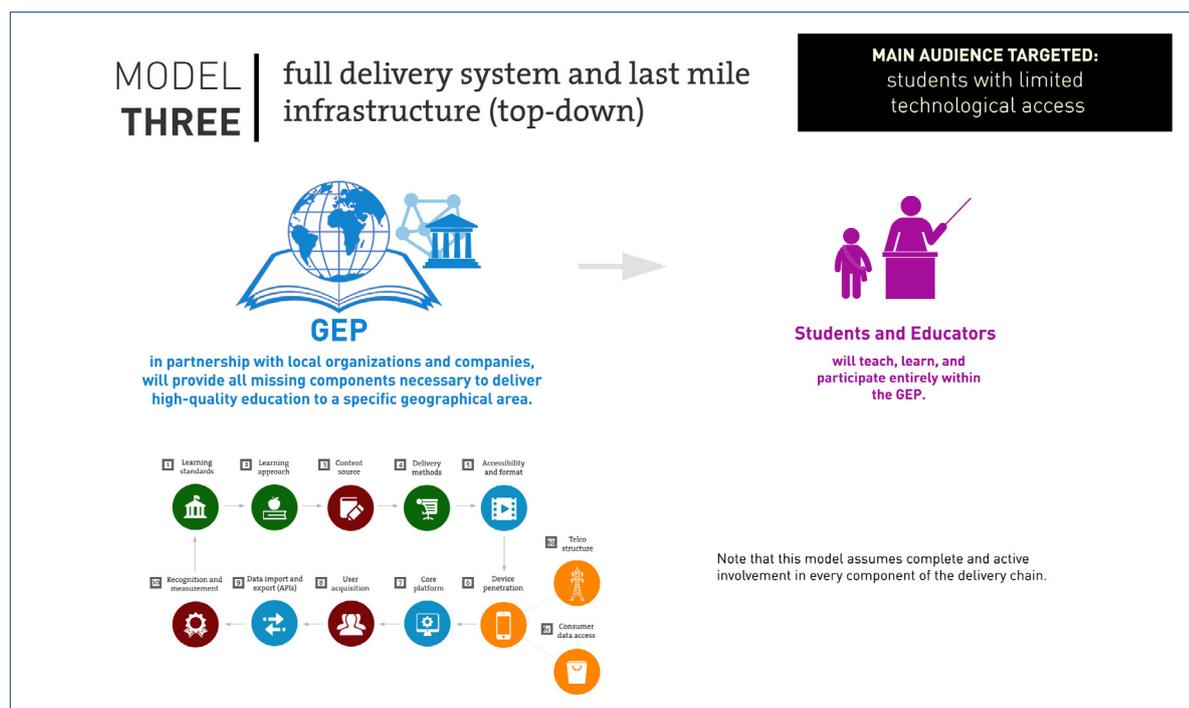
STEPS FOR IMPLEMENTATION:

1. Create partnerships (both business and technical) with as many existing learning platforms as possible
2. Adapt content to the context and adapting to the set of standards outlined above
3. Market partnerships in all the local areas to increase awareness of portal

RISKS/DISCUSSION:

- Infrastructure and access will remain a major problem.
- Translation of externally sourced content is insufficient for providing a truly culturally appropriate learning environment.
- Providing content free of cost does not lead to equal access. As the demographic profile of MOOC users demonstrates,²³ differences of gender, ethnicity, and economic class are not resolved simply by making content free. Successful engagement with online tools requires specific learning skills and foundational knowledge on the part of the learners.

Examples of model two include: Open Edx/MOOC.org, Newsela, TESSA (see appendix 1).



²³ University of Pennsylvania, "MOOCs4D: Potential at the Bottom of the Pyramid," Conference Report, July 2014. <http://nebula.wsimg.com/832d31b1a1e95f24bb2a8d0b1086fc15?AccessKeyId=A8CECD67C777CBD7A503&disposition=0&alloworigin=1>

MODEL 3: Full Delivery Systems—Last-Mile Infrastructure (top-down model)

Goal: In partnership with local actors, this model would provide all the required components of an online education delivery system to targeted regions of the world (e.g., education platform, the Internet, device, localization, blended learning, tutoring/mentorship, inspiration).

Rationale: By ensuring the provision of all required components of the education delivery system, this model would allow the GEP to reach the most underserved communities that would otherwise lack access and local capacity.

REQUIRED ELEMENTS:

Content: Working with stakeholders from the local education delivery systems, this model requires incentives for content and/or provides locally relevant content.

Recognition pathways: This model requires working to ensure online learning and local employers' recognition of course completion.

Connectivity and devices: Working with stakeholders from the local education delivery systems, this model requires support for the provision of connectivity and devices best suited to the region.

Organizational Form: This model would require a partnership or consortium of international, regional and local organizations.

Overview: In this model, the GEP would provide all missing components: access to internet and devices; content being learned; blended learning environment; and an accreditation that is relevant to the local job market. Deployed in one region at a time, this model is designed to fit the specific needs of the local context (e.g., a refugee camp) under the assumption that long-term operations would be locally managed.

STEPS FOR IMPLEMENTATION:

1. Gain expertise across all parts of the education delivery chain
2. Identify target regions
3. Perform a needs-and-constraints assessment for partnership development
4. Design and deploy infrastructure, hardware, software, and delivery and recognition pathways for all regions

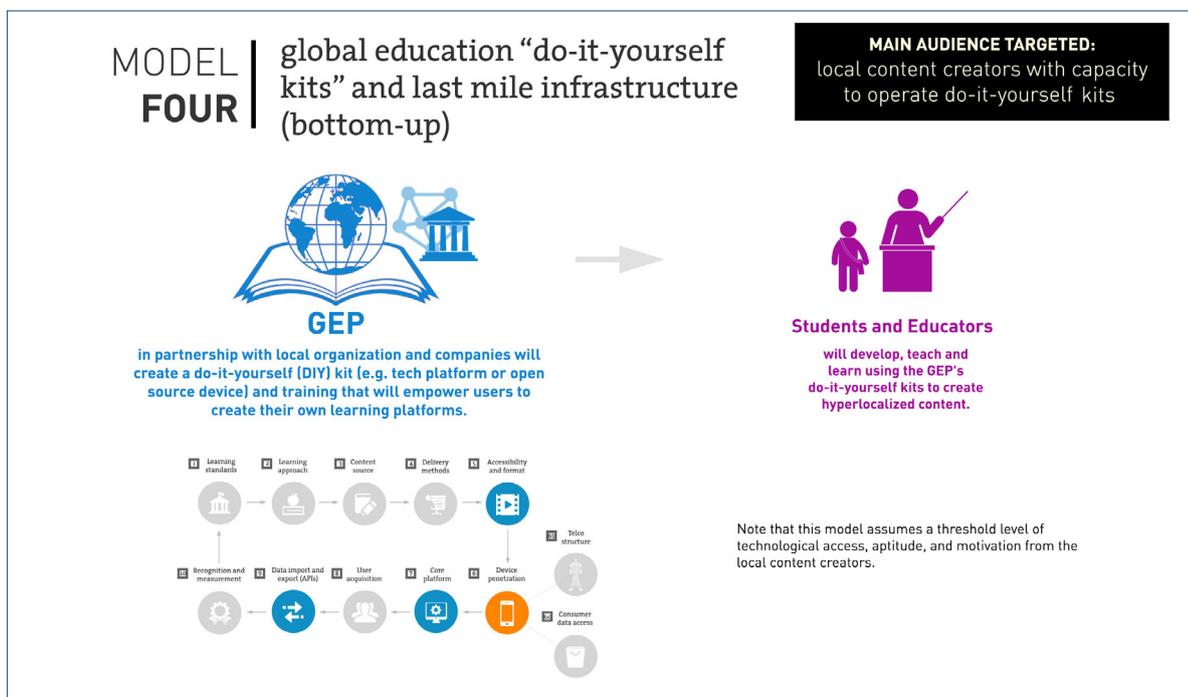
III. THE GLOBAL EDUCATION AND TECHNOLOGY CHAIN: MODELS FOR DELIVERING EDUCATION

RISKS/DISCUSSION:

- This model is the most likely to be effective for individual learners and communities because it is highly sensitive to local requirements. However, it requires expertise across the entire chain of education delivery and interaction and partnership with a large number of stakeholders across vastly different industries.

- The medium- to long-term operational sustainability of this model is contingent upon local ownership, as the responsibility for funding and managing such an integrated education delivery system should ultimately reside with local stakeholders. There is an interim risk of replacing the role of local agencies in developing capacity to deliver education.

Examples of model three include: MILLENIUM@EDU Sustainable Education, Social EDU, Borderless Higher Education for Refugees, Rumie, One Laptop Per Child (see appendix 1).



MODEL 4: Global education “do-it-yourself kits” and last mile infrastructure (bottom-up model):

Goal: This model would provide technologies, course authorship tools, local hub and content creation spaces and necessary training to teachers and students. This model would allow the creation of content and active learning environments at the local level.

Rationale: Providing tools, training and environment for the place-based creation and delivery of educational content will yield more relevant and sustainable outcomes for learning and delivery system.

REQUIRED ELEMENTS:

Content: This model requires that locally relevant content exists and/or can be provided by partner organizations.

Recognition pathways: This model could incentivize local recognition tools and pathways.

Connectivity and devices: This model requires working with local partners to provide connectivity in the hubs. This could support partner organizations with the provision of connectivity more broadly. This model also requires providing technologies required for the creation of content and platforms, and could support partner organizations with the provision of devices for more users.

Organizational Form: This model would require a partnership or consortium of international, regional and local organizations.

Overview: In this model, the GEP would become a catalyst for local organizations, teachers and students to build learning materials or platforms for themselves to match their needs. Rather than define any particular set of standards, learning processes or even curriculum, the GEP would be responsible for providing technology and training—both hardware and software—and support needed for practitioners and students to define those items themselves. As this model depends on a strong level of local participation, local hubs would be launched to support an ongoing culture of educational innovation and entrepreneurship.

In short, the GEP would enable users to build their own learning systems. In order to maintain quality and the ability to measure impact, those receiving the do-it-yourself kits would likely be accountable to some general criteria. For example, a platform must address learning needs that lead to higher education or skills for the workforce.

III. THE GLOBAL EDUCATION AND TECHNOLOGY CHAIN: MODELS FOR DELIVERING EDUCATION

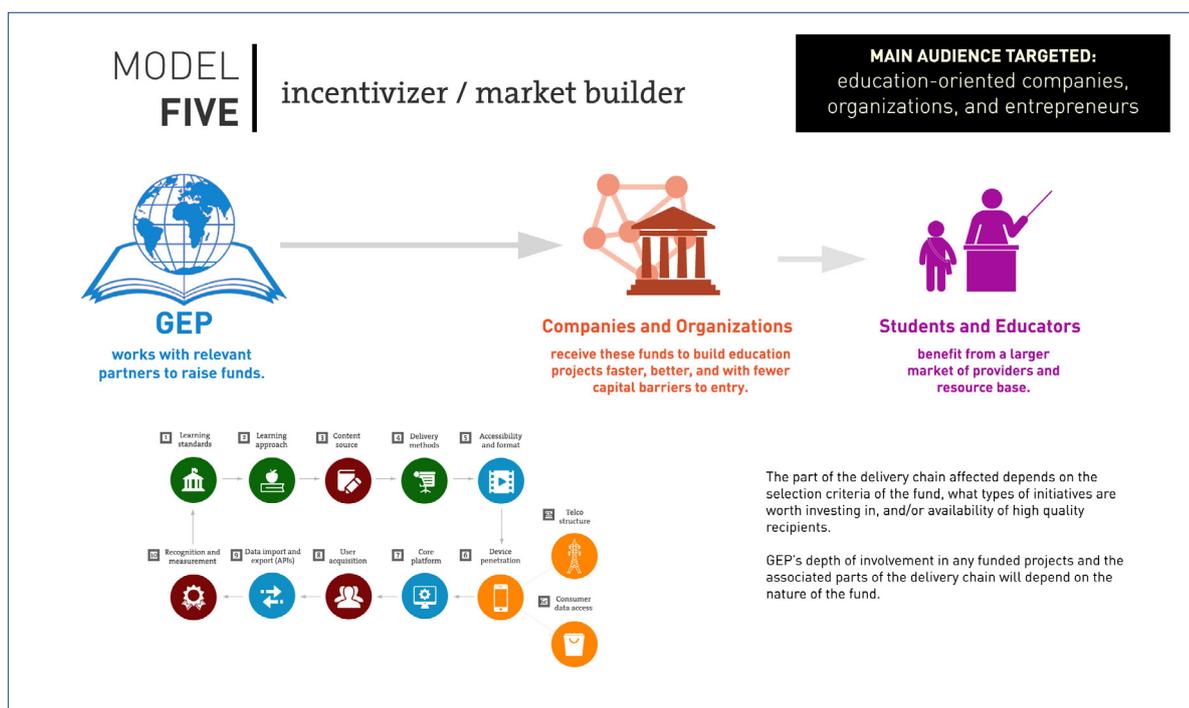
STEPS FOR IMPLEMENTATION:

1. Select participating communities
2. Develop the hardware, training and local hub requirements
3. Deploy the hardware and training, support local hub developments
4. Design and deploy software training
5. Support the uptake or scaling of content and systems developed

RISKS/DISCUSSION:

- This model begins and ends with localization and community buy-in. It is unknown whether enough communities have this capability or perceive the benefits to participation.
- This model has high implementation risk and is harder to predict and effect outcomes.
- This model may develop best by using and modifying existing tools and frameworks in smaller-scale iterations.
- There is a need in this model to engage diverse expertise within communities and build and support communities of practice.

Examples of model four include: Khan Academy Lite—Foundation for Learning Equality, Nueva Empresa, Badiliko Digital Hubs, Rumie (see appendix 1).



MODEL 5: Incentivize/Market builder

Goal: This model would provide capital (e.g., grants, equity, debt) to incentivize innovation for specific regional gaps in the market, such as content creation or delivery mechanism.

Rationale: Funding locally created solutions is a more efficient use of capital than trying to design and manage solutions through an international body.

REQUIRED ELEMENTS:

Content: This model could incentivize content and platform creation.

Recognition pathways: This model could incentivize local recognition pathways and tools.

Connectivity and devices: This model could work with local partners to provide connectivity and devices at the proof of concept stage for successful capital recipient and their users.

Organizational Form: The organizational form and legal structure of this model would depend on the type of capital employed. In most cases, partnerships with local education delivery systems would be required for the scaling and long-term integration of the innovations.

Overview: One option would be a pay-for-performance prize fund (e.g., XPRIZE) that awards grants to teams for innovations that have had a demonstrated impact on elements of the delivery system most needing improvement, for example, teacher training. Other options include a fund or social impact bond.

This model could incentivize both content and delivery to, by and for the most marginalized, including specific underserved geographies, languages or skills.

This model could reward based on student success, so that only applicants or ventures which achieve the highest education outcomes are advanced to higher stages of funding.

STEPS FOR IMPLEMENTATION:

1. Determine focus area for investment
2. Raise funds
3. Develop investment criteria and due diligence process
4. Develop a local marketing, deployment and engagement strategy for the opportunity
5. Invest based on performance; measure and evaluate portfolio success

III. THE GLOBAL EDUCATION AND TECHNOLOGY CHAIN: MODELS FOR DELIVERING EDUCATION

RISKS/DISCUSSION:

- Scalability or transference between locations is dependent on highly local variables.
- Using a competitive prize model or fund solves for problems in the delivery system that are in need of specific (often technical) innovation or improvement. It is less well suited to generating solutions to broader cultural or institutional challenges.
- This model has perhaps the most narrow implementation expertise requirements, as it will operate similar to prize funds and grand challenges.
- In high-need areas where qualified recipients are lacking, there is a risk of solutions being developed without authentic local authorship.
- Unlike the other models, however, capital injections could jump start a sustainable market for education technology in certain communities, which would then allow the GEP to eventually withdraw rather than continually invest resources.

Examples of model five include: UNICEF Education Fund, XPRIZE Foundation, K12 Open Educational Resource Collaborative, Hult Prize Venture Fund (see appendix 1).

IV. CONCLUSION

CONCLUSION

Recognizing the urgent need to address the global skills gap, the five models presented in this paper outline different ways in which learning opportunities and outcomes for youth and teachers can be extended in the most marginalized regions. While there is broad agreement on the value of focusing on these two audiences, a number of key questions will help assess the benefits, disadvantages and opportunities associated with pursuing each model:

- What type of model has the most potential to improve learning opportunities for the most marginalized?
- Where can a complementary initiative add value for the global community? Which model(s) of the GEP initiative could play a “value-adding” role?
- What are the next steps for piloting the models with the most promise?
- What partners would need to be engaged, and in what capacity, to move forward with making an expanded provision of learning opportunities a reality?

The models explored in this paper can inform the next major milestones in the development of technological innovations to advance youth learning. The next set of consultations convened by the Global Business Coalition for Education should focus on identifying specific models to be piloted and the partners needed to move from concept to tangible expansion of educational opportunity.

V. APPENDIX 1: EXAMPLES OF DELIVERY MODELS

APPENDIX 1: EXAMPLES OF DELIVERY MODELS

The following research initiatives are ongoing or can be used to inform future research, and the work and findings are complementary to the work of a potential GEP:

- The [Abdul Latif Jameel Poverty Action Lab \(J-PAL\)](#) utilizes randomized evaluations conducted across a global network of researchers to answer critical policy questions in the fight against poverty.
- The [Millions Learning](#) effort by the Center for Universal Education at the Brookings Institution aims to identify best practices and cases to scale up high-quality education, sometimes referred to as an “access plus learning” agenda.
- The [Result for Development: Center for Education Innovations \(R4D CEI\)](#) works to expand access to high-quality education for poor populations by identifying, analyzing and connecting nonstate innovations in education.
- The [U.K. Department for International Development](#) conducted research and developed a scoping report ²⁴ in October 2013 that analyzed activities utilizing ICTs in educational program delivery.

The following are examples of initiatives that are complementary to the proposed models:

MODEL 1: GLOBAL CERTIFIER/ACCREDITATION/STANDARDS BODY

The [MacArthur Foundation’s Cities of Learning](#) movement aims to give students the ability to earn digital badges for completing work across a diverse set of skill areas and to facilitate the networking and contribution of students involved by establishing a social network. Potential limitations relate to whether pathways for badges are controlled by the student user and open source approaches to privacy. Cities of Learning is relevant to the GEP discussions, especially in the context of partnerships, in support of the development of global recognition pathways between cities and regions and in demonstrating how Model 1 works when there is a large concentration in participation.

[Mozilla Open Badges](#) is an open-source software program that gives credible organizations the opportunity to award badges that verify the skills and achievements of an individual. However, widespread adoption is necessary for the badges to gain credibility, which has not yet occurred. However, the Open Badges have large applications for Model 1 due to the strength and resources of Mozilla in the open source community, and the possibility of creating a unified badging system for the GEP.

The [Learning Metrics Task Force \(LMTF\)](#), co-convened by the Brookings Institution and the UNESCO Institute for Statistics (UIS), works to improve learning outcomes in children by strengthening assessment systems and the utilization of assessment data. Since the LMTF’s work required close consultation and rigorous follow-up with technical groups, it is limited in that it can only focus on a subgroup of countries at the tactical level. Potential applications to the GEP include several initiatives by UIS with key partners that are under way to advance the use of effective assessment systems and improve reliable data and to facilitate understanding of the extent of the global learning crisis and where to focus interventions to improve learning.

²⁴ U.K. Department for International Development Health & Education Advice & Resource Team (HEART). “Helpdesk Report: ICTS and Education.” 8 October 2013. <http://www.heart-resources.org/wp-content/uploads/2013/10/ICTs-and-Education.pdf>

MODEL 2: AGGREGATOR PLATFORM/PORTAL

Open edX is the open source education platform that powers the nonprofit MOOC provider edX.org, allowing edX to provide free courses to over 2.5 million students from the world's leading universities. The platform also powers international MOOC platforms, such as MOOC.org, a partnership between Google and EdX. Limiting factors include the requirement of an Internet connection that supports streaming hours of video content and other downloadable material. The GEP could potentially utilize edX in two main ways: first through the use of the open edX platform as a delivery vehicle for courseware; and the second through the distribution, creation and translation of course content already on the site from members and charter members.

Partnering with some of the world's largest news outlets, [Newsela](http://Newsela.com) rewrites regional and international news content into five different levels of complexity according to common literacy standards. A limitation of Newsela is that it has not yet translated content into different languages, and the content of the site is centered on the US Common Core curriculum. The GEP could aid in facilitating regional relationships between journalists and Newsela to create localized content outside the US and translating to languages other than English.

Teacher Education in Sub-Saharan Africa (TESSA) was initiated in 2005 to create a network of African Universities working alongside the Open University, UK and other international organizations to focus on the education and training needs of teachers in Sub-Saharan Africa. TESSA supports school-based modes of teacher education in which teachers develop their competencies and skills to meet the needs of students in their own classrooms. TESSA demonstrates how open educational resources (OER) can be made available in multiple languages for teacher training in Africa, adapted to suit local context or national curriculum requirements. TESSA is strengthening an African-based network and is conducting a number of research strands useful to GEP, including ICT policy development and practice in teacher training and adaptation and localization of OER for use in different contexts.

MODEL 3: FULL DELIVERY SYSTEM AND LAST MILE INFRASTRUCTURE (TOP-DOWN MODEL)

Millennium@EDU Sustainable Education is a multistakeholder initiative that aims to promote the information and knowledge about world development challenges, through the use of their "Millennium@EDU Solution Pack," including computer device adapted to learning, education and inclusion at an affordable price including content and services. A potential limitation is that it is somewhat limited in content. Millennium@EDU is an example of Model 3 in that the solution pack serves a very similar role as the GEP, and they are an open initiative for collaboration.

Social EDU is a partnership between Facebook (via Internet.org) and edX to build a "social education experience" through a mobile app with Facebook integration in Rwanda. To extend this offering to other areas of the world, Internet.org will work with local providers to waive data charges and extend its free basic services app to include edX content, alongside other applications, for a wider subset of countries in the coming year. While it has not yet been launched, this has the potential to be a useful example of Model 3.

Borderless Higher Education for Refugees is a blended model of online and face-to-face learning and a Bachelor of Arts program for 180 students working as incentive workers in the schools and clinics in the Dadaab refugee camp in Kenya. A limitation of the program is that it is only offered to incentive workers and neighboring communities of the Dadaab refugee camp. This is relevant to the GEP for Model 1 and 3, as it demonstrates how blended learning (online and offline) can work to close the skills gap of those that are most marginalized.

V. APPENDIX 1: EXAMPLES OF DELIVERY MODELS

Rumie works with communities to choose which educational tools are best to meet local needs and subsequently implements the solution by using low-cost tablets and free education content found online. A limitation of Rumie is that it is somewhat access-constrained because of its cost of \$50 per student. It is applicable to Model 3 in that it is a top-down model where governments are providing funding for tablets and deciding what content is appropriate for their region. This approach also drastically improves the scale of this type of intervention.

One Laptop Per Child (OLPC) is a nonprofit organization behind the XO Laptop—low-cost, low-power, durable, and powerful laptops that cost \$200. Potential limitations of OLPC include that government support appears to be a critical barrier to the success of its deployment and teachers would remove the laptops when students were learning faster than they had the capacity to handle. OLPC is an example of how one component of Model 3 could work.

MODEL 4: GLOBAL EDUCATION “DO-IT-YOURSELF KITS” AND LAST MILE INFRASTRUCTURE (BOTTOM-UP MODEL)

Khan Academy Lite—Foundation for Learning Equality (FLE) is open-source software that mimics the online experience of Khan Academy for offline situations. KA Lite requires a client device to watch the videos (and works with cheap android tablets) as well as a server. Partnerships could take the form of GEP aggregating open content (Model 2) for FLE to use and develop for offline contexts. Or, as in Model 4, FLE is an example of how to target and connect communities to create local content bundled with existing content and distribute the devices in regions lacking the Internet.

Nueva Empresa works with local banks to offer self-guided, blended learning courses to bolster and formally accredit skill building of informal sector businesses and entrepreneurs. The program has yet to reach scale, but may provide the GEP with lessons for building capacity through ICT to improve employment outcomes in the informal sector of developing countries.

Launched by a joint partnership between the British Council and Microsoft, the **Badiliko Digital Hubs** could provide lessons to the GEP for how hubs in clusters of schools or at community centers can provide infrastructure, curriculum, and training for educators across Sub-Saharan Africa.

Rumie is also an example of how Model 4 could work as it demonstrates how technology, learning materials and local actors can come together to create a lower-cost, higher-quality learning resource using a bottom-up method.

MODEL 5: INCENTIVIZE/MARKET BUILDER

The [UNICEF Education Fund](#) supports education-focused innovation with three funding streams, designed to test, scale and gather evidence of innovations. A limitation of the fund is that the education-focused funds are limited to internal departments and partners with existing memorandums of understanding. In 2014, UNICEF will launch a separate Innovation Venture Fund to provide seed capital of up to \$50,000 with co-funding from its country offices around the world. These funds are an example of Model 5 as they use capital to incentivize local capacity building and innovations for specific gaps in the market.

The [XPRIZE Foundation](#) set a goal of funding and launching a \$15 million Global Learning XPRIZE in 2014 to transform established beliefs about the timeline, nature, quality and scalability of literacy solutions. The prize will support technological breakthroughs in the toys and tools available for marginalized children to teach themselves and their peers how to read, write and do basic arithmetic. However, the scalability or transferability of solutions across geographies is dependent on highly local variables. Lessons may also be extracted for the GEP from the way in which XPRIZE supplies basic supporting infrastructure during the pilot phase to its awardees.

The objective of the [K12 Open Educational Resource Collaborative](#) is to create comprehensive, high-quality open education resources supporting K-12 math and ELA aligned with the Common Core State Standards at low cost. A limitation of the collaborative is that the involvement of teachers and integration of open education resource content into classrooms is currently constrained by a lack of digital literacy and standards. This process could be studied and adapted to develop open education resource materials for developing country-contexts.

Each year, the [Hult Prize](#) aims to identify and launch the most compelling social business ideas—start-up enterprises that tackle critical issues faced by billions of people. In 2014, the [Hult Prize Venture Fund](#) will be launched to provide revenue-based financing to ventures that deliver vital products and services for early childhood education. A potential limitation is that by restricting applicants to university students and graduates, there is a risk of solutions being developed without local ownership. The Venture Fund is an example of Model 5 as it uses capital to incent local capacity building and innovations for specific gaps in the market.

VI. APPENDIX 2: NON EXHAUSTIVE LIST OF ORGANIZATIONS CONSULTED

APPENDIX 2: NON EXHAUSTIVE LIST OF ORGANIZATIONS CONSULTED

Many individuals representing a variety of UN agencies, companies, nonprofits and multilateral organizations contributed to the development of this paper. We would like to thank the individuals at the following organizations for their contributions:

A World at School—Theirworld	Massachusetts Institute of Technology
Abdul Latif Jameel Poverty Action Lab (@MIT)	MaRS Discovery District—Studio Y
Andronicus Education	Microsoft
Arabella Advisors	Mobilium
Bill & Melinda Gates Foundation— Next Generation Learning Challenges	Mozilla Foundation
BRAC	New Classrooms
Center for Universal Education at the Brookings Institution	Newsela
Calvert Group	NORAD
Center for Education Innovations— Results 4 Development	Nueva Empresa
Coursera	Office of the United Nations Special Envoy for Global Education
Credly	One Laptop Per Child
Crowdmark	Omidyar Network
Degreed	Opportunity Collaboration
Discovery Learning Alliance	Owl Ventures
Dubai Cares	Pearson
Econet Wireless	Population Council
edX	Purpose Capital
Facebook	REOS
Floqq	Rovio
Further by Design	Rumie
Google	Second Muse
Google—Project LOON	Social Impact Lab Foundation—Frontline SMS
GuruApp	Study Hall International Foundation
Harvard Graduate School of Education	The Stevens Initiative
Hult Prize	U.K. Department for International Development
International Rescue Committee	U.S. Agency for International Development
Internet.org	Udemy
John D. and Catherine T. MacArthur Foundation	UN Global Compact
K12 OER Collaborative	UNESCO
Khan Academy	UNICEF
Khan Academy LITE – Foundation for Learning Equality	University of the People
Knewton	University of Toronto
Lumen Learning	Veduca
The Learning Nuggets	World Bank Group
	Waterloo Institute for Social Innovation and Resilience
	XPRIZE



www.gbc-education.org