Scaling education innovations for impact in low- and middle-income countries during COVID

Reflections on key themes

December 2021
Brad Olsen

Center for Universal Education at BROOKINGS

Brad Olsen is a senior fellow at the Center for Universal Education at Brookings.

Acknowledgements
First and foremost, the Center for Universal Education Research on Scaling the Impact of Innovations in Education (ROSIE) team wishes to express its deep gratitude to the ROSIE cohort of 15 Knowledge and Innovation Exchange global and regional grantees for their participation in the ROSIE workshops, video calls, and information-gathering efforts that informed this brief. We are thankful to be learning alongside them and grateful to be part of this global education community.

The author would like to thank Jenny Perlman Robinson and Larry Cooley for their helpful comments on an earlier draft of this brief. Additionally, the author relied on the expertise of colleagues including Patrick Hannahan, Molly Curtiss Wyss, Tracy Olson, Sara Coffey, Serhiy Kovalchuk, Gustavo Arcia, and Maya Elliott for their insights and support along the way. He would also like to thank Katherine Portnoy for her editing support.

This project is supported by the Global Partnership for Education Knowledge and Innovation Exchange (KIX), a joint partnership between the Global Partnership for Education (GPE) and the International Development Research Centre (IDRC). The views expressed herein do not necessarily represent those of GPE, IDRC, or their Boards of Directors.

1. Introduction

Interest in scaling promising innovations to effect systemic change in education around the world has grown over the last decade. Scaling has become fashionable because the modern landscape of educational improvement is littered with short-term projects that temporarily succeeded only to later dissipate, isolated pursuits that never crossed into broad adoption, or specialized policy programs that floundered. Moving beyond 20th-century technical-rational implementation and acknowledging the mixed history of global development in low-and middle-income countries, newer iterations of scaling have sought to collaboratively embed promising education ideas and technologies into whole systems. Increased recognition of the interconnectedness of culture, governments, global development architecture, and the learning sciences has reframed education scaling as a holistic process of mutual adaptation and collective transformation. *Lasting impact* has replaced size or scope as the goal. As a result, this past decade of scaling and research has offered hope and possibility—even as it has also underscored the sometimes maddening complexity of this work.

> Scaling is "the diffusion, dissemination and implementation of innovative and effective public … interventions." (Östlin, P. as quoted in World Health Organization, 2016).

> "The term 'scaling' represents a range of approaches—from deliberate replication to organic diffusion to integration into national systems—that expand and deepen impact leading to lasting improvements in people's lives." (Perlman Robinson, Curtiss, & Hannahan, 2020).

And yet, as challenging as scaling is under ordinary 21st-century circumstances, it has become downright arduous over the last two years due to the global COVID-19 pandemic.

Reckoning with COVID-19

The work of scaling education innovations (up, out, down, and into deep and lasting impact) has always required nimble attention to the unpredictability of implementation. Much has been written about the need for adaptive mindsets, planning for scale at the beginning, enlisting allies and champions, and embedding continuous improvement loops into the whole process (Al-Ubaydli, List, & Suskind, 2019; Gargani & McLean, 2019; Perlman Robinson, Curtiss, & Hannahan, 2020).

Yet COVID-19 has brought all that into the starkest of relief. Not only have the last 21 months been devastating across the planet, but to say that COVID-19 has placed unprecedented stress on the work of scaling education innovations is a laughable

understatement. And yet the work must continue. Practitioners, policymakers, researchers, and donors have persevered, motivated by an urgent need to "build back better;" address learning loss and the emotional tumult suffered by countless children and adults; and continue improving education quality, access, and equity. Adaptability proved to be the rule. Scaling and scaling research went on, just differently.

This first annual brief reflects on scaling insights from different scaling teams across many low- and middle-income countries to jointly learn and share best practices related to scaling in education. Effective scaling is not just about designing and delivering promising innovations for use but also embedding them in thoughtful, mutifaceted ways to ensure that they grow, deepen, and have lasting impact. This brief discusses how several teams went about this work during the difficult last year.

Reading camp in Zambrano community, Municipality of Tipitapa (Managua, Nicaragua). Photographer credit: Silvia E. Ampie.

What is ROSIE?

In 2020, the Center for Universal Education (CUE) at the Brookings Institution joined the Global Partnership for Education's (GPE) Knowledge and Innovation Exchange (KIX), a joint partnership between the Global Partnership for Education and the International Development Research Centre (IDRC), to facilitate a cross-national, multiteam, design-based research and professional support initiative called Research on Scaling the Impact of Innovations in Education (ROSIE). The intention of ROSIE is to bring together researchers and practitioners to study the process of scaling education initiatives.

In early 2021, after several KIX scaling teams from the larger population of KIX global grantees applied, six teams were selected to join ROSIE.[1]

"Scaling teams" or "scalers" are the terms used in this brief to refer to those specialists who plan, implement, and adapt an education innovation into broader use. Scalers might be educators, policy implementation personnel, project managers, or researchers. ROSIE takes the position that scaling requires not only the work of the educators, project personnel, and initiative leadership but also researchers who document scaling and feed findings back into the process of advancing the scaling of the innovation. For this reason, ROSIE collaboration teams are composed of both practitioners and researchers.

This first cohort of ROSIE scaling teams worked alongside the CUE team to think about, study, and deepen the impact of their work. In September 2021, after another round of applications, a second cohort of scaling teams was selected to join—this time nine teams from the KIX regional grantees. In total, these 15 ROSIE collaboration teams currently work in 29 countries. Additionally, the CUE team is conducting complementary qualitative research on how governments engage in the work of identifying, supporting, and adopting education innovations to scale.

During the last year, the CUE ROSIE team collected information from the initial six collaboration teams as well as hosted several capacity-strengthening activities, online meetings, and team calls, which recently included the second cohort, too.

[1] GPE KIX provided generous grants at global and regional levels to almost three dozen multi-country projects, implemented by southern organizations, working to scale proven approaches in six areas: early childhood education, learning assessment, gender equity, education data systems, teaching and learning, and equity and inclusion. Calls for proposals were issued in 2020 and, after a series of competitive processes, 34 projects were awarded. IDRC oversees and supports the grantees.

2. Who are the ROSIE collaborators?

ROSIE Cohort 1

Foundation for Information Technology Education and Development (FITED), SUMMA, Worldreader.
Project: Adapting and scaling teacher professional development approaches in Ghana, Honduras, and Uzbekistan.
Countries of focus: Ghana, Honduras, Uzbekistan.
Research question: How and to what extent can the TPD@Scale approach be used for in-service teacher training in these three countries to improve all teachers' access to quality professional development?
Project summary: The TPD@Scale project will apply ICT to enable more equitable access to and participation in quality teacher learning experiences otherwise impossible through conventional means. The project's main objectives are to develop a framework and guidelines for adapting, implementing, evaluating, and continuously improving upon proven TPD@Scale models; to build the capacity of ministries of education and relevant stakeholders at all levels to design, develop, implement, evaluate, and continuously improve TPD@Scale; and to promote evidence-informed changes in policy and practice toward improved access to quality teacher professional development using the TPD@Scale approach.

ABRACADABRA lesson at Burhaniya Primary School (Mombasa county, Kenya). Photographer credit: Clifford Ghaa.

The People Action Learning (PAL) Network, Pratham, Australian Council for Educational Research.
Project: Common-scale assessment of early and foundational math learning across the Global South.
Countries of focus: Kenya, Mozambique, Nigeria, Tanzania, Uganda, Mali, Senegal, Nicaragua, Bangladesh, Nepal, Pakistan.
Research question: What are the in-country and cross-country similarities and differences in numeracy competencies?
Project summary: This project seeks to scale a digitally adaptive common-scale math assessment tool, Citizen Led Assessment of Numeracy (CLAN), tailored for assessing, reporting, and providing community- and school-relevant data that parents and communities can easily understand. CLAN was implemented in one rural district in 13 countries in 2019, and KIX will support the expansion of the tool from one to three districts in 11 countries in Africa and Asia. The project will also expand CLAN to include foundational math skills to produce community-understandable but internationally comparable data on early math skills.

UNICEF Office of Research - Innocenti.
Project: Data Must Speak (DMS) about Positive Deviant Approaches to Learning.
Countries of focus: Ethiopia, Zambia, Burkina Faso, Madagascar, Niger, Togo, Lao PDR, Nepal.
Research Question: What are the data-related factors that impede and enable the implementation of DMS?
Project summary: This project will adapt and scale a UNICEF-led proven innovation on data use in the education sector, DMS, and aims to generate knowledge and improved practices on using increasingly available education data to expand access and elevate school-level performance. The research incorporates the concept of positive deviance, will use a mixed-methods approach, and will be simultaneously implemented in eight countries across Africa and Asia that have identified the need for better data management as a critical element of their Education Sector Plans.

World Vision, Ontario Institute for Studies in Education, The School of Education and Leadership of the University of Ghana, Foro Social de la Deuda Externa y Desarrollo de Honduras (FODESH).
Project: Improving Literacy for Children Through the Support of Community Networks.
Countries of focus: Ghana, Honduras, Nicaragua.
Research question: How can community actors and networks (both formal and informal)—with distinct and contextualized social issues—be strengthened to create their own adaptive systems to support children's literacy at scale, focusing on the implementation of the Unlock Literacy program and its impact on literacy outcomes?
Project summary: The Unlock Literacy Learning Network consortium works with teachers, community leaders, volunteers, and administrators to adapt Unlock Literacy approaches within local learning systems. Through research, the consortium explores how community-based actors work together, adapt, and interact with the formal

education sector to implement and support community literacy activities (including reading camps) to improve girls' and boys' reading fluency within distinct contexts in Ghana, Honduras, and Nicaragua. This project aims to provide evidence on improving collaborative stakeholder networks that advance quality, sustainable, and effective gender-responsive and inclusive education programming for early grade students (grades 1-3) to improve children's literacy levels within vulnerable populations.

Pratham, Abdul Latif Jameel Poverty Action Lab.
Project: Teaching at the Right Level (TaRL): Learning how to improve mentoring and monitoring support to teachers at scale in African government systems.
Countries of Focus: Côte d'Ivoire, Nigeria, Zambia.
Research question: How can TaRL mentoring, training, and monitoring models be made more cost-effective for government systems to run at scale?
Project summary: The TaRL Africa team is currently working with the government in Côte d'Ivoire, Nigeria, and Zambia to implement the TaRL approach. This project leverages current TaRL work to promote sustainable and effective government ownership of the TaRL approach. The project is piloting new innovations to the TaRL mentoring and monitoring approaches, rigorously testing the best innovations at scale in government systems.

Concordia University, Wilfrid Laurier University, Aga Khan Academies Unit of AKDN, World Vision Canada.
Project: Using technology to improve literacy in the Global South.
Countries of focus: Bangladesh, Kenya, Rwanda.
Research question: What are the impacts of the innovations ABRACADABRA and READS, including associated professional development methods and support, on students' reading and writing? Do these effects generalize across learning contexts, teacher characteristics, and student characteristics?
Project summary: This project will use literacy software tailored for the Global South to improve children's learning outcomes in low-income countries to increase student learning by enhancing teaching practices through education technologies for professional development. The project will scale two education software innovations, ABRACADABRA and READS, which will be implemented through professional development and follow-up support for teachers in face-to-face, blended, and fully online formats. The project will involve field studies in urban, rural, and remote communities, and ongoing evaluation of the project and its scaling strategies will feed into incremental enhancements to the tools and techniques to increase the likelihood of success.

ROSIE Cohort 2

Foundation Karanta, Forum for African Women Educationalists (FAWE), and Réseau Ouest et Centre Africain de Recherche en Education (ROCARE).
Project: A new model of bridging classes to improve the learning of out-of-school children and youth in the six member countries of the Karanta Foundation in West Africa.
Countries of focus: Burkina Faso, Côte d'Ivoire, Guinea, Mali, Niger, Senegal.

Research question: To what extent does the innovation proposed here provide solutions to the common policy challenges of offering new opportunities to children and young people who are out of primary and early secondary education?
Project summary: This project aims to improve options to integrate out-of-school young people in West Africa back into school and offer better educational opportunities to those who will not return. The project is based on proven education practices and innovations that serve as bridges integrating out-of-school children and youth back into the formal education system and will identify and test alternative options to support literacy and basic education for those unlikely to return to formal school. The project will generate a new model that offers bilingual bridging options for those out of school, examine the approaches and implementation of these alternative educational options, and propose a pathway for scaling up the model in six countries.

Ibrahim Badamasi Babangida University, Laipai (IBBUL) and Tata Institute of Social Sciences (TISS).
Project: Connected learning for teacher capacity building in science, technology, engineering, and mathematics (CL4STEM).
Countries of focus: Bhutan, Nigeria, Tanzania.
Research question: To pilot the Connected Learning Initiative (CLIx) platform developed by the Tata Institute for capacity building for science, technology, engineering, and mathematics (STEM) teachers.
Project summary: This project addresses the global undersupply of quality STEM teachers by adapting and testing CLIx, an open education resource platform developed in India that aims to support a community of practice via mobile devices for middle and secondary STEM teachers' professional development. The project takes a participatory approach to scaling the innovation and will involve two major studies incorporating both quantitative and qualitative research methods—an innovation diffusion study to generate knowledge on the processes and factors that support the adaptation of the innovation for new contexts and the conditions to support scaling in these contexts, and CLIx impact studies on learning outcomes attained by teachers and students. From this project, a suite of open education resources will be curated and adapted for suitability to local contexts and needs, new communities of practice will be created on ICT platforms, and new knowledge on adapting teacher training approaches will be shared and integrated into teacher education institutions.

Society for the Advancement of Education (SAHE).
Project: Data use for school improvement - opportunities, challenges, and scalable solutions.
Countries of focus: Laos, Nepal, Pakistan.
Research question: How can the School Improvement Framework (SIF) be adapted, enhanced, and scaled in these countries?
Project summary: This project aims to generate knowledge to optimize the use of data produced by schools to improve their management and results, and inform how other education system levels can support improvement at the school level. Indicators in key domains present information on student participation and personal development,

teachers and teaching, leadership and school support, and school environment. Combined into a composite index, the data allow schools to assess themselves and to be categorized by level of need for improvement. The project combines qualitative and quantitative approaches in action research design, and expected outputs include a contextualized path to scaling up the innovation in Laos, Nepal, and Pakistan.

Ceibal Foundation.
Project: Digital Adaptations for Effective and Inclusive Distance Learning in Rural Communities in Honduras and Nicaragua.
Countries of focus: Honduras and Nicaragua.
Research question: What is the best strategy to adapt, implement, and scale up the use of tech for distance and blended learning in rural communities in Honduras and Nicaragua?
Project summary: This project seeks to strengthen education systems to enhance equity and inclusion in rural communities in Honduras and Nicaragua through distance and blended learning models using various available technologies and appropriate pedagogical frameworks. The project will define and test proven uses of technology—including digital platforms and educational television—and associated learning strategies in culturally diverse rural contexts, and establish conditions and pathways for scalability and replicability. Expected outputs of the project include public policy guidelines, pedagogical frameworks, technical standards, and resources for professional teacher training.

Associates for Change (AfC), Ghana, and the Centre for the Study of the Economies of Africa (CSEA), Nigeria.
Project: Increasing access to quality education for rural and marginalized children in West Africa: A comparative study of accelerated education programs and girls' focused education models in Ghana, Nigeria, and Sierra Leone.
Countries of focus: Nigeria, Ghana, Sierra Leone.
Research question: How can government capacity be built to adopt and scale up effective accelerated education innovations into policy to reduce the number of out-of-school children?

Project summary: This project aims to generate lessons to enhance the scalability of Accelerated Education Programs (AEP) in Ghana, Nigeria, and Sierra Leone and will conduct an analysis of four ongoing innovations in these countries (School for Life Complementary Basic Education Project, Strategic Approaches to Girls Education, Addressing Education in Northeast Nigeria, and Purposeful-Girls Circles project in Sierra Leone) and their effectiveness at reaching large populations of out-of-school children. Intended outcomes of the project include a strong evidence base on the effectiveness of AEP and girls' focused education programming across rural poor and emergency contexts.

The Campaign for Female Education (CAMFED).
Project: Scaling a youth-led social support and mentorship program to improve quality of education for marginalized girls in Tanzania, Zambia, and Zimbabwe.

Countries of focus: Tanzania, Zambia, Zimbabwe.
Research question: How can governments adopt and scale core elements of a youth-led social support and mentorship program in these three countries?
Project summary: This project will examine how the governments of Tanzania, Zambia, and Zimbabwe can adopt and sustainably scale core elements of the evidence-based, youth-led social support and mentorship program, Learner Guide. The Learner Guide programs focuses on improving girls' access to and retention in secondary education and equipping them with a broad set of life skills necessary to transition to productive, fulfilling livelihoods. The project will examine the program's effectiveness under government co-implementation and its impact on marginalized girls in Tanzania and investigate how this approach could be transferred to Zambia and Zimbabwe to integrate the intervention into their government structures.

Dar es Salaam University College of Education (DUCE), Kibabii University (KIBU), and University of Zambia (UNZA).
Project: Strengthening in-service teacher mentorship and support.
Countries of focus: Tanzania, Kenya, Zambia.
Research question: What are the existing and promising mentorship and support approaches for secondary school teachers, and how can they be scaled in these three countries?
Project summary: This project will adapt and scale up the School-based In-service Teacher Training (SITT) teacher mentorship and support model, which involves training experienced teachers and college tutors to mentor other secondary school teachers through peer learning exchange, model lessons, and team teaching. SITT has been successful at primary-school levels and will be contextualized and adapted to secondary schools in Tanzania, Kenya, and Zambia—three countries with demonstrated commitment to continuous teacher professional development that lack comprehensive programs incorporating the mentorship and support approach. The project's intended outcome is strengthening government efforts to implement well-functioning school-based in-service teacher training programs that improve the quality of teaching, empower students, and enhance the quality of basic education.

State University of Haiti.
Project: Strengthening teachers and school principals' capacity for scaling innovation from the bottom up in the education system in the Caribbean.
Countries of focus: St. Lucia and Haiti.
Research question: To what extent do training and capacity building for social innovation help principals and teachers be agents of change in the education system?
Project summary: This project seeks to enhance the capacity of local actors in Haiti and St Lucia's education system to identify and understand concrete educational challenges, devise and test solutions, and share results with peers and decisionmakers. The project aims to meet three goals: addressing social needs, improving key stakeholders' capacities, and using scarce resources efficiently. This project combines qualitative and quantitative methods with participatory components and will test proven methodologies focused on training key actors to introduce innovations from the bottom up, inform

ongoing national policy reforms in St. Lucia and Haiti, and focus on conditions for effective scalability of innovations.

The Inclusive Home-based Early Learning Project (IHELP).
Project: The Inclusive Home-based Early Learning Project: Increasing Access to Quality and Equitable Early Child Care and Education.
Countries of focus: Uganda, Kenya, Zimbabwe.
Research question: How can effective early childhood care and education (ECCE) models be adopted and scaled to increase access and improve school readiness in vulnerable communities?
Project summary: This project seeks to adapt and scale up key elements of three early learning models (home-based, center-based, and play-based) to address the gap in government support faced by family and community engagement ECCE programs in many African countries. The project will integrate different elements of these three models to create the IHELP to generate lessons about how parents and teachers can support learning in a home and classroom environment enriched with sensory experiences to improve access and learning outcomes for children. The project's intended outcome is increased community- to national-level action to provide access to quality ECCE for boys and girls—including those with disabilities—in Uganda, Kenya, and Zimbabwe.

Positive Deviant School Survey in a Laotian school in the Xiengkhuang province, Lao PDR, 8 JAN 2021. Photo credit: © UNICEF LAOS/2021/SSANOUBANE.

3. Emerging themes from ROSIE's design-based research

Five common learning questions were developed by the CUE team and the first cohort of collaborators together.

Common learning questions

1. Alliances and champions: How do partners, alliances, and community networks contribute to the scaling process?
2. Teachers, school leaders, and other educators: How can teachers, school leaders, and other educators take an active role in designing, delivering, and sustaining an innovation at scale?
3. Technology: How can technology, broadly defined, be used to support scaling, while balancing considerations of equity, quality, and sustainability?
4. Long-term financing: How does financing the innovation evolve into long-term, sustainable financing at scale?
5. Purposes, processes, and sensemaking related to educational change: What are innovators/implementers/researchers' expectations about how scaling happens—and how have these expectations both informed and been changed by the KIX scaling/research work?

Working from the common learning questions, the CUE team developed a set of qualitative instruments for collaborators to use to gather existing information and generate focused reflections on their current scaling and research work, giving them the chance to choose a single common learning question and gather information accordingly. Collaboration teams submitted the information to the CUE team, which then coded it and discussed emerging findings and lessons during online calls with each team.

This brief reports only on the first round of information gathering and therefore only captures initial experiences of the first cohort of ROSIE collaborators. As a result, these reflections are partial and tentative. Because the study design includes subsequent rounds of information-gathering and collaborative learning over the remaining two years, findings will likely deepen and change over time—particularly with the addition of the second cohort. Given both the tentative nature of these findings and ethical considerations, this brief does not attribute names of researchers, collaboration teams, or even countries.

1. COVID-19 set in motion some favorable scaling changes and knock-on effects

While the costs and challenges of the COVID-19 pandemic remain enormous, some positive adaptations emerged. Because in many countries the government closed schools (or, even if they did not, significant numbers of families kept children at home), many scalers adapted their school-based scaling initiatives. Sometimes this meant printing hard copies of online learning materials and supporting teachers to make weekly home visits to deliver learning bundles and work with students and siblings. This not only kept the projects running when no one could access computers in schools, but fortuitously encouraged teachers and families to get to know each other, teachers to see students in their home environment, and school-family engagement to strengthen. Other times this meant that, in lieu of schools as locations of collective learning, the community centers, churches, and sometimes even homes became places where children congregated to learn. The willingness of these locations to allow teachers and other educators to use them for teaching became a welcome addition to community involvement. A typical scaling goal is to increase local ownership of an initiative and, the pandemic advanced this goal in several ROSIE initiatives. Additionally, because many initiative leaders mandated grouping students in community locations in very small numbers to minimize transmission of the virus, small learning groups were serendipitously created and teachers could experiment with more active instruction.

These unpredicted changes often carry value. As a result, scaling and research teams might try to more systematically test, monitor, document, and learn from these natural and spontaneous experiments in order to advance the principles of their innovations (see CUE's adaptations tracking tool). In many ways, it is the aggregate of adaptations that becomes the scaling journey.

Because of disruptions in education schedules and online learning, some collaborators found that participating educators experimented with new pedagogies and found their own "aha!" moments around learning, literacy, and the power of student-centered instruction within the initiatives being scaled. Without access to the digital learning platforms, sometimes teachers turned their focus away from the machines and back onto student learning. *This underscores that ed tech should always be in service of meaningful learning—not a replacement for it—and should be understood as a tool that*

opens learning up rather than narrowing it (for example, see Save our Futures white paper).

Similarly, it was impossible for teachers in many countries to continue their online professional development courses when they could not enter schools to access computers. Scaling teams whose initiatives include teacher professional development (TPD) knew that not all participating teachers had personal digital devices, so some ROSIE projects encouraged groups of teachers to share one person's phone or tablet for the online courses. The small teacher groups would meet in a central village, sometimes outside under a tree for additional air safety, and engage in the online coursework together. As a result, teacher collegiality was strengthened, and teacher learning became collaborative—always a goal for teacher development specialists. *When education routines are disrupted, committed and knowledgeable educators will often seek out new solutions, frequently finding innovative pedagogies in the process. This should be anticipated and productively exploited by education scaling teams.*

ROSIE researchers reported benefits of information and communications technology (ICT) for coordinating their own work and connecting with local researchers across whole countries. Shifting meetings and work onto ICT reduced collaboration costs, facilitated multilanguage conversation with greater ease, and offered access to ready-made recordings and transcriptions. *Moving inter- and intra-national work online offers new uses of 21st-century technology that can catalyze transformation in areas like team communications, local research and community project support; and meetings, governance structures, and policymaking dynamics, respectively.*

These and other direct adaptations that collaborator-led initiatives made in the face of COVID-19 disruptions set in motion additional second- and third-order changes (known as "knock-on effects") and, as a recent CUE blog reported, whole systems were altered. Researchers will benefit from study designs flexible enough to capture not only direct effects of adaptations but also the indirect, sometimes subtle, subsequent ones. *Not all knock-on effects can be harnessed and not all of them are beneficial, but alert researchers can capture them and their possibilities so that scalers can consider how to amplify the positive implications and mitigate the negative ones.*

A teacher demonstrates a math activity to the whole class during a Catch Up (TaRL) session in Zambia. Photographer credit: TaRL Africa.

2. Increased reliance on technology includes some capacity concerns

Though a known issue before the pandemic, during COVID-19 it became even more pronounced that many regions—especially rural areas—have insufficient internet access. A 2020 UNICEF report found that two-thirds of the world's children (1.3 billion children aged 3-17) have no internet connectivity at home (*UN News, 2020a*). When schools shut due to COVID-19, there was often no way for these children to learn remotely. As a result, 463 million students (1 in 3 children globally) are missing out on remote education (*UN News, 2020b*).

A significant contributor to this digital divide is the cost of home internet. Therefore, some scaling teams negotiated bundle deals with service providers to offer internet to whole communities at reduced rates. Other times, teams had to adjust their tech offerings—making asynchronous materials available for download and later use or developing radio or print solutions so schoolteachers or community volunteers could continue the projects' work.

Some ROSIE collaborators shared that teachers in some initiatives were so focused on the logistics of using the hardware and software that they neglected the actual learning and teaching the platforms were designed to facilitate. In other cases, the opposite emerged: teachers neglecting the machines altogether to focus on student learning. *Both circumstances reinforce the need for scalers and researchers to build sufficient training and equipping of local personnel into their initial planning to understand and maintain the hardware needed for tech-learning innovations.*

With the increased popularity of digital technology as an education solution, there are other considerations (Ganamian, Vegas, & Hess, 2020). In some instances, more experienced head teachers or teacher leaders—who might be years older than new teachers and less likely to be "digital natives" comfortable with new technology—struggled with the skills needed for online instruction or participating in online TPD. As a result, there was concern that head teachers may have difficulty leading their faculty into the future of teaching and learning. *This highlights the need for consideration on how best to support whole faculties to share their own collective mixes of digital expertise, pedagogical experience, and new instructional practices as new technologies are introduced at scale.*

A second consideration is that a few teams worried that the embrace of ed tech might currently be exciting for local educators and national governments because it is new but, over time, educators and governments will become less enamored of ed-tech solutions. While governments may appreciate the cutting-edge symbolism and political expediency of technology, there are concerns that they will not support the costs and hardware maintenance longer term. And there are worries that, when the novelty of ed tech wears off for local educators, motivation for the additional learning it requires will fade.

And finally, the global movement toward a reliance on digital technology—pushed exponentially forward by the pandemic—is often underwritten by for-profit companies that collect personal information in exchange for use or sacrifice privacy for efficiency. *As a result of these and other deeper implications, the move to increased reliance on ed tech should be an object of critical study even as it is simultaneously a mark of progress.*

3. COVID-19 highlighted that "allies and champions" are not only donors, governments, and development partners but also volunteers, community groups, and families

Enlisting support and buy-in from allies and champions has become axiomatic in scaling. The logic holds that an innovation stands a better chance of being adopted and supported by a jurisdiction or government if there is broad support among a diverse array of influential stakeholders, and that one good way to build that support is to bring in key individuals and groups whose assistance will reap benefits. Often, the allies and champions are those with material or symbolic capital in a location: high-level government personnel, leaders of community organizations or teacher associations, or external agencies with funding or influence. That was certainly accepted as true here, and most ROSIE collaboration teams are thoughtfully pursuing partnerships with allies. While important, it is also clear from collaborators that this is not always easy. A few collaborators lamented the absence of pre-existing communication structures that scaling teams could use to access appropriate government ministers and other national-level policymakers. *It would be good for governments to establish semi-permanent, readily available pipelines so that education scaling leaders and ministry officials can establish and maintain communication.*

ROSIE collaborators reported a trade-off in their collaborations: Government officials with the authority to influence decisions are not always the ones with the proactive mindset or skills and, conversely, those who are motivated and skilled in effecting productive change are not always the ones with the authority. *It is important to attend to this paradox and work with the right personnel or, even better, make efforts to work with* both *outward-facing appointees and inward-facing civil servants.* This point underscores the importance of mid-level technocrats: a tier of government officials who are typically knowledgeable about the innovations, stay in their positions longer, and focus on reform particulars. A recent CUE team blog discussed the need for innovators and government decisionmakers to work together.

The PAL Network is developing a tablet-based adaptive assessment of early learning in language & literacy and numeracy. Photographer credit: Paul Abok.

However, a massive disruption like COVID-19 also teaches that power is diffuse and variable. It is not only those in high-level government positions or donor agencies who matter. Three important groups emerged that should not be overlooked:

1.) *Local volunteers* who operate after-school programs, find locations for children's learning when the schools close, or coordinate the initiatives or research when national or international personnel cannot.

2.) *Community groups* such as the church or local associations that stepped up to offer space, recruit and vet volunteers, and support children.

3.) *Families* who understood that public schools are not always the sole providers of their children's education and thus supported the initiatives and encouraged other families to support them, too.

These three stakeholder groups became essential to the advancement of several initiatives that ROSIE collaborators are working to scale. This often-unheralded reliance on community volunteers and committed families should not go unrecognized, especially by governments. *Leveraging these three populations carries the opportunity to reach more participants and potentially sustain local engagement in ways that last beyond changes in political leadership.* Yet, as discussed next, there are challenges around sustaining high-quality community support.

Because COVID-19 constrained formal and informal economies in many countries and imposed financial hardships on people, it was not uncommon for community volunteers to terminate their work on initiatives in search of paid jobs. When community volunteers exit the projects for which they are working, they not only take their efforts and talents with them but their training and project knowledge, too. *It is recommended that initiatives, nongovernmental organizations, and governments go out of their way to recognize, reward, and show appreciation for these unpaid, fundamental parts of education systems* (Winthrop et al, 2021).

4. Building trust with partners is time-consuming but essential

Several ROSIE collaborators emphasized the value of trust. Engaging government support and building partnerships with allies, champions, and local stakeholders are essential to scaling an education innovation, and there is no shortcut to building productive relationships. Learning to view implementation complexities through the eyes of others, knowing when to be patient and when to push, and understanding what kinds of evidence people need to feel comfortable with an innovation are necessary components of healthy partnerships. And trust appears to be the glue that holds it all together.

Some governments have high rates of turnover among officials, so establishing long-standing personal relationships can be difficult. Yet, when a trusting relationship is present, scalers can intuit when to press their government partners to adopt an initiative or when to pause. When a ministry leadership is relatively secure, there may be less pressure on mid-level officials, which can be a moment to press for change. Conversely, when the ministry leadership feels threatened or insecure, the pressure on middle management is high and risk-aversion, defense of the status quo, and pressure for centralized decisionmaking increases. *Knowing when to press and when to wait is key.* One collaboration team pointed out that to get a good read on their partners in government, one has to physically be in the same room with government officials. Unless you are reading the body language, annoyance on the part of the government official (meaning it is not time to push) cannot always be distinguished from tiredness (which does not preclude applying a gentle nudge). This has been a casualty of COVID-19: When you cannot meet people in person, you cannot easily discern between the different emotional states of your government partners.

Likewise, trust is a key ingredient in building alliances with parents and other caregivers. Tschannen-Moran (2014) found that trust between teachers, principals, parents, and students accounted for 78 percent of the variance in achievement on standardized reading and math assessments. As Winthrop, et al (2021) pointed out, teachers' trust in students and parents is one of the two strongest contributors to this variance. *Families need to believe that the innovation has the best interests of their children in mind, and scaling implementers need to view families as a fundamental pillar in the education of children.* Without mutual trust, support will collapse—and trust cannot be feigned.

5. Teachers matter—and all teachers are not alike

Michael Fullan (1991) once wrote that, "Educational change depends on what teachers think and do. It's as simple and as complex as that." Building pedagogical capacity among teachers and authentically including them in the planning and scaling of an innovation are often central to scaling. Especially during times of change or uncertainty in education, teachers must be supported to remain motivated and creative. ROSIE collaborators reported on teachers who, when they realized that the electricity would likely fail in the afternoons, retooled their curricula to present the online learning in the morning. Collaborators reported on teachers who downloaded and printed learning

materials at the beginning of the week to use as hard copies days later when the internet inevitably collapsed or teachers who had to develop their own teaching materials out of household items.

It is difficult to encourage pedagogical commitment and creativity in teachers who feel controlled, diminished, or overworked (Olsen & Sexton, 2009). *As a result, scalers should do all they can to include teachers in the design, adaptation, and dissemination of initiatives. Because teachers are reluctant to undertake sustained additional work or learning when it becomes overly burdensome, education systems leaders should find ways to compensate teachers for extra work, offer advanced education credits, or provide release time for professional development.*

Some ROSIE collaborators found that teachers became fatigued when asked to teach in new ways or use online platforms without sufficient training. Other collaboration teams reported difficulties with teacher migration: When a teacher left for another school, the training moved with them (this became even more worrisome when the departing teacher was trained to teach the innovation to other teachers). Teachers had difficulty traveling from their home community to nearby professional development sessions—and were therefore unlikely to attend TPD without a travel allowance. One collaboration team reported that program mentors conducted teacher observations with teachers who lived closer to them more frequently than those who lived farther away. And, finally, many collaborators shared that teachers in some countries had difficulty accessing the online portals and TPD courses when the sign-in required email addresses. Sometimes it is the simple details that hamper a complex effort. *Learning from other scaling teams and collaboratively reflecting on past experiences with the small but essential details of program implementation can help scalers to anticipate and address logistical barriers.*

For those innovations that include public schools, the system level of teachers, teacher support, and teaching conditions is central to scaling. Teachers mediating the innovations (intentionally or automatically) according to their own pedagogical purposes or understandings of student learning will likely alter, improve, or subvert the innovations as they are translated into practice in classrooms. While it may not be feasible to account for every teacher's unique profile, it is good to identify whole-faculty strengths and knowledge gaps in particular schools, locations, or populations around things such as experience level, educational philosophy, and instructional habits. *If strong policy and financial commitments from government to support quality teacher development are met with an equally strong learning commitment from teachers and school leadership, there is increased chance of effective, high-quality local ownership of the initiative in classrooms.*

And, finally, a note about studying the effects of TPD. Decades of research on efforts to change teacher practices have revealed that attendance at TPD or mere use of the materials provided does not mean that teachers were actually changed by the TPD experience (Anderson & Olsen, 2006). Researchers interested in studying whether a TPD approach improves instructional practice may wish to go beyond collecting self-reported teacher survey data and teacher attendance rates. While those might be a good starting point, collecting and analyzing data on *if* and *how* teachers' practices and professional

beliefs change (and remain changed over time), what their teaching and learning look like months after the professional development finishes, and exactly which teacher development interventions lead to what kind of student learning outcomes are even better practices. Admittedly, this is more difficult and costlier, especially when studying TPD at scale or across geographical distance, but if TPD is going to fundamentally improve teaching, this is likely necessary.

4. ROSIE next steps

In the two years ahead, ROSIE's collaborative empirical work will produce broader, deeper, and more detailed insights. Additionally, as mentioned previously, ROSIE's complementary research is exploring how national education decisionmakers approach scaling—including how they identify innovations to scale, how innovations can be integrated into and sustained within existing government systems, and what public sector decisionmakers see as enablers and barriers to scaling education innovations (see Olsen, Hannahan, and Arcia, 2021 and Olsen and Arcia, 2021).

Importantly, the work of building a professional learning community among ROSIE collaborators and the larger KIX and other global scaling networks will continue, too. Scaling education innovations in low-and middle-income countries is difficult and sometimes isolating. ROSIE hopes not only to continue gathering, studying, and exchanging what is learned, but also share best practices and support others' scaling journeys both inside and outside the KIX ROSIE community. Creating a neutral, supportive space where researchers and scalers join together across contexts and initiatives to pause, reflect, and consider what they are learning by doing and how to adjust their work accordingly is rare but, ROSIE believes, worthwhile if efforts to improve education globally are to advance.

ABRACADABRA lesson at Inspirations Primary School (Mombasa county, Kenya). Photographer credit: Clifford Ghaa.

5. References

Al-Ubaydli, O., List, J, and Suskind, D. (2019). The science of using science: Towards an understanding of the threats to scaling experiments. (NBER Working Paper No. 25848). National Bureau of Economic Research. https://www.nber.org/papers/w25848

Anderson, L. and Olsen, B. (2006). Investigating teachers' perspectives on and experiences in early career professional development. *Journal of Teacher Education*, *57*(4). 359-377.

Fullan, M. (1991.) *The New Meaning of Educational Change*. New York: Teachers College Press.

Ganimian, A., Vegas, E., & Hess, F. (2020). Realizing the Promise: How can education technology improve learning for all? The Brookings Institution. https://www.brookings.edu/wp-content/uploads/2020/08/edtech_playbook_full_v2.pdf

Gargani, J. and McLean, R. (2019). *Scaling Impact: Innovation for the Public Good*. New York: Routledge.

Olsen, B., & Arcia, G. (2021, May 11). When pilot studies aren't enough: Using data to promote innovations at scale. Education plus Development. https://www.brookings.edu/blog/education-plus-development/2021/05/11/when-pilot-studies-arent-enough-using-data-to-promote-innovations-at-scale/

Olsen, B., Hannahan, P., & Arcia, G. (2021, April 21). How do government decisionmakers identify and adopt innovations for scale? Education plus Development. https://www.brookings.edu/blog/education-plus-development/2021/04/21/how-do-government-decisionmakers-identify-and-adopt-innovations-for-scale/

Olsen, B. and Sexton, D. (2009). Threat rigidity, school reform, and how teachers view their work inside current education policy contexts. *American Educational Research Journal, 46*(1). 9-44.

Perlman Robinson, J., Curtiss, M. & Hannahan, P. (2020.) *Millions Learning Annual Reflection Brief*. Washington, DC: Brookings Institution.

Sykes, G. (1999). Introduction: Teaching as learning profession. In L. Darling-Hammond & G.

Sykes (Eds.), Teaching as the learning profession (pp. xv-xxi). San Francisco: Jossey-Bass.

Tschannen-Moran, M. (2014). The interconnectivity of trust in schools, In D. Van Maele, P. B.

Forsyth, & M. Van Houtte, (Eds), *Trust and school life: The influence of trust on learning, teaching, leading, and bridging*, Springer Publisher, 57 - 81.

United Nations. (2020a). *A "digital canyon:" 1.3 billion school-aged children can't log on to internet at home*. https://news.un.org/en/story/2020/12/1078872

United Nations. (2020b). *Globally, 1 in 3 children missed out on remote learning when COVID-19 shuttered schools*. https://news.un.org/en/story/2020/08/1071112

Winthrop, R., Barton, A., Ershadi, M., & Ziegler, L. (2021). Collaborating to Transform and Improve Education Systems: A playbook for family-school engagement. The Brookings Institution. World Health Organization. (2016). *Scaling up projects and initiatives for better health: From concepts to practice.* Copenhagan, Denmark: World Health Organization.

.