

Raising Learning Outcomes:  
**the opportunities and challenges  
of ICT for learning**



## **Appendix 3**

# UNICEF Eastern and Southern Africa Region and West and Central Region country snapshots



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A child learns with the help of a computer tablet provided by UNICEF at a school in Baigai, northern Cameroon, Tuesday 31 October 2017



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Emmanuel using a computer at the Osu Children's Home in Accra, Ghana in 5 May 2015. The home receives children who require residential care from state organs such as the police, social welfare and the courts, and at the time of this photograph, according to the director, was home to approximately 160 residents ranging in age from babies to young adults.

# Burkina Faso

## BACKGROUND

Burkina Faso is a stable, low-income country with a population of approximately 20.1 million, and one of the lowest literacy levels in the world.

There is an emphasis in Burkina Faso on integrating ICT into the education system to broaden access for students and teachers. ICT for learning is seen to be a solution to low quality teaching, narrow curriculum and a digital divide amongst children and young people. It is also seen as an opportunity to support new pedagogy and advance digital/tech skills.

The government have four focus areas when it comes to ICT for learning:

1. Provide access to ICT for teachers and education administrators;
2. Improve/increase the literacy of teachers on digital devices used in teaching;
3. Develop properties that enhance the quality of teaching and learning (although there is no agreed impact on teaching and learning);
4. Create the possibility for teachers and students to bring their own devices (e.g. computers, laptops, phones).

UNICEF Burkina Faso are developing scenarios in which they can support the government on:

1. Access to computers and internet for teacher training and learning data purposes;
2. Use of computer and Internet during class to improve communication with students (video, projectors, printers, etc.).
3. Students using ICT for self-learning;
4. Bring Your Own Devices.



## UNICEF EXPERIENCE

UNICEF Burkina Faso report low levels of ICT for learning integration in the country. They recognise that creative capacity exists within the education sector, but innovations are hard to promote without the support of Government.

Interest in, and attention to, ICT for learning is increasing. In collaboration with an inter-ministerial committee, UNICEF Burkina Faso contributed to the elaboration of the National Strategy for Information and Communication Technologies in Education based on different ICT options proposed by a field research.

UNICEF Burkina Faso are keen to develop, integrate and roll out a strategy at scale, however any attempted strategies have proven too weak to meet the demand. Universities and private schools are the main users of ICT for learning.



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▲ High school student using technology in class, in the town of Odienné in the North West of Côte d'Ivoire.

## OPPORTUNITIES AND CHALLENGES

UNICEF Burkina Faso recognise that ICT plays increasingly important role in the access to knowledge and especially in the sharing of experience in real-time. Technology has also been important as it has enabled access to knowledge on HIV and other diseases. Success is linked to the accessibility of technology in the countryside, for instance technology that supports distance learning for those who wish to attend University.

Programme design remains a challenge due to weak infrastructure, low maintenance capacity and insufficient means to acquire the devices. The lack of integration of the project into a national strategy is detrimental for sustainability. There are issues for schools in terms of access to power in rural areas, security risks, a lack of content providers, a lack of innovation and a resistance to change.

# Cameroon

## BACKGROUND

Cameroon is a lower middle-income country, with a population of approximately 23.4 million. The current focus of the education sector is improving basic numeracy and literacy skills for all children (school age) irrespective of where and what situation they are found in.

The government is focusing its efforts on improving the demand for education in communities and improving coaching for teachers in rural areas, and there is appetite for exploring how ICT for learning can raise the quality of teaching.

An ICT strategy and curriculum exists in Cameroon, however, there is a gap in how ICT can be used as a tool to facilitate learning. Things are moving very slowly, and there isn't a concrete operational guide for implementing ICT for learning. Cameroon has seen a few ICT for learning initiatives that have focused on providing laptops to school (UNESCO, African Development Bank). While there is some goodwill on the part of the Government, as manifested in the ICT strategy and the creation of the Inspectorate of Computer Science in the Ministry of Basic Education (2005) to promote the mainstreaming and integration of innovative technologies in teaching and learning. Despite these laudable efforts, there are some challenges that need to be addressed in order to realize the full benefits of ICT as a tool to facilitate learning. These include the following:

Funding for sustainability and for scale;

- Upfront costs;
- Connectivity;
- Teachers' inability to teach using ICTs;
- Inadequate technical support;
- Difficulties in teaching of abstract concepts across the curriculum;
- Security.



## UNICEF EXPERIENCE

UNICEF Cameroon report that the use of technology in education is still quite rudimentary in Cameroon. They have found that the Cameroon government is happy to have the possibility of implementing ICT in schools but the main resistance comes from teachers and communities.

Cameroonian schools face connectivity challenges, and there has been an effort to deliver connectivity to them as well as in refugee camps.

UNICEF Cameroon recognizes the need for more demonstrative and scalable pilots, and are ambitious on how they can evolve pedagogical practice in line with new technology. They also identify teacher training in ICT for learning as a challenge, referencing how few programmes go beyond technical training. They want to help assess where difficulties are in using technology as pedagogical tools, and identify what support is most relevant.



Twelve-year-old Waibai Buka (second left) shows her family the computer tablet provided by UNICEF for school, at the family's home Baigai, northern Cameroon, Wednesday 1 November 2017.

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## OPPORTUNITIES AND CHALLENGES

UNICEF Cameroon sees ICT for learning as an opportunity for children and young people to be exposed to the tools of the 21st century, and to gain skills such as collaboration, critical thinking, creativity, communication, but also researching skills that can help them to cover their curriculum well. They also see technological resources as a tool in improving the quality of teaching in Cameroon.

UNICEF Cameroon recognize barriers in infrastructure – most schools don't have electricity – and the need to make ICT for learning part of school in a context where the provision of technological products is low due to a lack of investment. They are also cognisant of resistance to technology at teacher and community levels. Often, teachers see digital tools as an additional burden, and communities can see them as a privilege/luxury.

### Mini Case Study: Connect My School

In Cameroon, access to quality education – including Internet access – is challenging. The majority of the displaced children live in remote areas and don't benefit

from the same quality of learning as those living in urban centres – especially digital learning. If they do have access to education, these children may learn about the Internet, but not use it. As a result, the digital divide widens, and at-risk children have even fewer chances to succeed.

By connecting remote schools and students to technology, one new initiative has begun to bridge the divide, starting with those who need it most in northern Cameroon. 'Connect My School' is an EU-funded UNICEF initiative aimed at providing digital education tools to children from the Far North region of Cameroon, for the first time ever.

UNICEF Cameroon piloted the initiative with Ringo – a service provider – in 5 schools, providing materials and equipment/tablets, working with regional education authorities and inspectorates at the local level, as well as the Ministry of Communication. The first objective was to connect schools, with a broader ambition of resetting the curriculum, teaching and learning. They are now looking at how to integrate the use of tablets into lessons as a pedagogical tool, and want to explore resetting learning plans so that they can be enhanced by tablets.

# Central Africa Republic

## BACKGROUND

The Central African Republic is a low-income, conflict- and emergency-prone country, and is among the ten poorest countries in the world with the lowest GDP per capita at purchasing power parity in the world as of 2017. As of 2015, according to the Human Development Index (HDI), the country had the lowest level of human development, ranking 188th out of 188 countries. Approximately half of Central African Republic's adult population is illiterate.

In 2016, The Thomson Reuters Foundation reported The Central African Republic to be the worst country in the world for young people, with little or no access to education and healthcare, poor job prospects and low participation levels in politics.

## UNICEF EXPERIENCE

ICT for learning is not in the agenda for learning in The Central African Republic. Providing education to affected children was and remains a priority in the UNICEF Central African Republic (CAR) humanitarian response. A total of 59,114 children received learning materials within the context of programming for education in emergencies. Safe temporary learning spaces (TLS) are set up in Internally Displaced Persons (IDP) sites, to provide access to relevant education opportunities.

UNICEF CAR supported the Ministry of Education to re-establish the education management information system (EMIS), which facilitated the production of the annual statistics yearbook since 2015 for two consecutive years since the outbreak of the crisis, and enabled strategic planning and policy development going forward. Computers, software and furniture were provided to the Ministry of Education, and staff were trained on data collection and analysis. The Ministry received technical assistance to develop tools to assess the progress made on the Education Sector Transition Plan, and



81 education authorities (17 per cent women) and 400 teachers (53 per cent women) received psychosocial training. 411 school directors trained on Edutrac and contributed to collect data of school functioning situation timely. In addition, basic ICT tools such as the e-reader has been adopted in more stable areas to facilitate teachers to prepare their daily educational sheet for quality teaching.

## OPPORTUNITIES AND CHALLENGES

UNICEF CAR is exploring how technology can help to improve the quality of both teachers in school and Community teachers (parents/members of the community with limited levels of education). The school radio will be an area to develop not only to compensate for the gap of trained teachers, poor teaching practices and the limited learning time for schools and the TLSs in CAR, but also to harmonize the teaching program across the country.

Structural challenges facing ICT for learning

Abidjan U-Reporters.

U-Report is a social platform created by UNICEF, available via SMS, Facebook and Twitter where young people express their opinion and be positive agent of change in their communities.



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in CAR is fully recognized. The development of ICT in education is constrained by the long-lasting crisis that resulted in poor teacher training combined with the volatile security context and unreliable electricity coverage. The level of poverty and deprivation also raises the risk that ICT would be traded for basic materials such as food and healthcare. Overcrowded classes will often involve 85-100 children and one teacher. Therefore, basic ICT tools will be introduced in stable areas as well as in TLSs in the IDP sites before progressing towards a more complex system like ICT for learning.

### Mini Case Study: pilot - Readers providing digital libraries for teachers

UNICEF Central African Republic have co-financed the creation of 10 numerical libraries in partnership with the French Development Agency. This involves teachers using tablets/readers to access a digital library of resources to help them prepare for lessons. It gives teachers access to dictionaries, reading materials, curriculum to improve the quality of teaching.

The initial pilot involved only 300 tablets/readers, compared to the 8000 teachers in the country. Teachers reported that they were glad to be rid of books and given access to digital dictionaries. There were complaints that only some teachers have access, and others don't. Inspectors and observers reported that teachers involved in the pilot were performing well, and there is a plan for next year to compare the results of classes using and not using the readers.

The Readers generated excitement, and teachers were engaged especially in response to the opportunity for innovation. The teachers didn't need convincing. UNICEF CAR want to build the governments ownership of the initiative going forward, but are struggling to scale due to a lack of human and financial resources. They have only trained six Ministry of Education staff to repair the Readers in case they break, but if a replacement is needed, it hasn't been given.

# Ghana

## BACKGROUND

Ghana is a lower middle-income country, with a population of approximately 28.3 million and an emerging digital-based mixed economy. The Education Sector is focused on closing the literacy and numeracy skills gap amongst learners, and achieving quality basic education and free secondary education. Approximately 25-49% of schools are actively using education technologies, with most initiatives in a piloting/experimental phase and tend to do good work but only have a small reach (e.g. MGCubed - The Varkey Foundation<sup>3</sup>, Learning Centers - Discovery Learning Alliance<sup>4</sup>). The problems these initiatives tend to respond to are low quality teaching, a narrow curriculum and a digital divide amongst children and young people.

UNICEF Ghana supported the implementation and scale-up of the education system's mobile School Report Card (mSRC) in 20 districts. Evidence of mSRC real-time reporting on school-based indicators influenced the decision to integrate mSRC with the Education Management Information System (EMIS) and other education sector systems.

## UNICEF EXPERIENCE

UNICEF Ghana has not yet agreed the extent to which they can explore technology in the classroom itself (as opposed to within the management of education systems). If the Ghana country office were to explore technology to enhance teaching and learning, it would focus on:

- What they can give the teacher to help them deliver better;
- What they can give the learners to help them practice what they have learned.

The Ministry of Education has played an active role when it comes to ICT for learning with



the initiation of an ICT in Education Policy, aimed at providing better guidance for how to manage different partners and providers. The Policy is aligned with the Education Sector Plan 2018-30 and clearly articulates both policy and provision of infrastructure as key goals in improving ICT in education in Ghana.

## OPPORTUNITIES AND CHALLENGES

There is an expanding market in Ghana for providing different technology-based products, led by NGOs and young entrepreneurs (private-driven). Demand is slowly growing, but more so in the private school sector than in public schools. At the tertiary level, distance learning is well developed, with universities using technology to access their students across the country.



Boys view information at a UNICEF solar-powered Digital Drum computer kiosk at Bosco Youth Centre in the northern district of Gulu.

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There is high mobile phone penetration in Ghana, with most people accessing social media platforms such as Whatsapp, Twitter and Facebook. This is a good opportunity for use of mobile-based applications. Access to these platforms is affected by poor connectivity especially in remote rural parts of the Country.

ICT for learning faces competing priorities within the Ghanaian education sector, and falls behind others because there isn't an established government policy platform. Sustainability is a challenge, with investment scarce beyond initial external funding. UNICEF, in line with its organisational mandate on addressing inequities, works more in remote areas of Ghana, where there is more deprivation. These are also areas where connectivity is poor.

Tech literacy amongst school leaders tends to be low, although younger teachers increasingly have the technical skills and knowledge to adopt new technologies. There is also question as to whether the education sector is open to new methods of delivery.

### Mini Case Study: EduTrac

**EduTrac is a real time data collection system in the education sectors. It uses Short Message Service (SMS) on mobile phones to connect students, teachers and community members with UNICEF and the Ministry of Education, enabling them to report on various subjects: the statistic information of each school such as number of students and exam pass rates, as well as qualitative opinions on education in schools. Also, this technology can be used as an early warning / efficient information collection system in the time of emergency, especially for the schools in the marginalised zones where physical access is very limited.**

**Burkina Faso started piloting the technology in late 2017 with a few schools in the Sahel Region, and is expanding it to all schools in the Region in 2018 to obtain real-time information from schools in the most vulnerable region in the country. It is expected that it will enable UNICEF and its partners to analyse the freshest information from the field and contribute to a rapid and appropriate decision making in the field of education.**

# Guinea

## BACKGROUND

Guinea is a low-income, emergency prone country with a population of approximately 12.4 million. It has one of the lowest literacy rates in the world, with only 41% of adults being literate (52% of males, and 30% females). It was ranked 182 out of 192 countries on the 2015 United Nations Human Development Index.



## UNICEF EXPERIENCE

UNICEF Guinea's strategic vision is to build a social movement for change, targeting more than 200,000 youth to build social platforms that deliver services on child protection, education, health, nutrition and hygiene promotion.

UNICEF Guinea recently worked with the Ministry of Education to run a pilot project to support the national system to collect school data. The initiative obtained real time reliable school data for decision-making on education system management, and for UNICEF to adapt its response and planning for the most vulnerable children.

There are small areas of the country where devices are being used in classrooms, but for the majority, ICT for learning isn't prevalent. UNICEF Guinea report that there is no strategy from the government beyond the collection of data.

## OPPORTUNITIES AND CHALLENGES

UNICEF Guinea recognise the opportunity to influence the policy direction of ICT for learning in the future. There is an ICT Unit within the Ministry of Education that can be pushed to invest in the right capacity and expertise. The private sector is a willing

partner and could be used to share expertise. ICT can be better used in the management of the system, e.g. to improve communication between different layers. It can also be used to improve the quality of teaching, through teacher training and the sharing of resources, such as videos that model high quality practice.

However, there are many logistical challenges to ICT for learning in Guinea. There is a lack of network coverage and reliable power sources for schools. It's more feasible that ICT can play a role at the teacher and principal level, hence the focus on improving the quality of teaching. Maintenance of devices is also a concern, with sustainability of such projects an on going funding challenge. Fundacion Orange and the French Corporation are seen as potential partners for any initiatives involving ICT for learning.



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▲ A girl taking pictures with her mobile phone in the village of Kadiola, in the North West of Côte d'Ivoire.

# Kenya

## BACKGROUND

Kenya is a stable, lower middle-income country, with a population of approximately 46 million, of which 51% are between 0-18 years old. 38.5% of the Kenyan adult population is illiterate, with significant regional disparities – Nairobi has the highest level of literacy at 87.1% compared to the North Eastern Province which has the lowest at 8%.

Kenya has embarked on a large-scale curriculum reform, to better align standards with the Vision 2030 requirements and the country's long-term vision of creating a knowledge-based economy. The new competency-based curriculum includes broader life and 21st century skills, as well as a focus on digital literacy.

In partnership with UNESCO and UNICEF Kenya, fifty policy and curriculum experts from the Ministry of Education and Kenya Institute of Curriculum Development have been trained on international trends in competency based curriculums and their development, including exposure to current teacher support materials to support the national piloting of the new curriculum.

## UNICEF EXPERIENCE

UNICEF Kenya has provided technical support to the Ministry of Education with a principle focus on reforming the national curriculum and supporting the introduction of ICT in education, among others. One key initiative was to improve the education information management system (EMIS). What was previously a costly (\$7million/annum), time-intensive (2-year process) and paper-based endeavour, it is now a cheaper (\$250k/annum), more responsive process, involving technology. Kenya is on the path to reforming EMIS to a more real-time, user friendly technology solution, one that is accurate and



efficient that can better support innovation, policy and evidence based decision making.

## OPPORTUNITIES AND CHALLENGES

There is an opportunity for UNICEF Kenya to capitalise on the introduction of around one million tablets to all primary schools through the Digital Literacy Programme (DLP). With current usage at only 2%, there is scope for teachers to adapt and grow (with support) their use of ICT for learning.

UNICEF Kenya want technology to transform the way teaching and learning is delivered, particularly in rural, hard to reach contexts. UNICEF Kenya is leveraging innovative private partnerships to support the government in reaching some of

these remote areas and provide quality content through Internet and cloud solutions. UNICEF is piloting the development of accessible digital content in form of a "Digital Accessible Textbook"; to enable children with disabilities to participate in an inclusive learning environment. There is a desire for ICT for learning to enable students to be inventors of technology and not just users.

The biggest barriers are capacity and skills gaps. For instance, to make the curriculum accessible to those with disabilities, there's a need to adapt all content into mediums such as sign language, audio output and simplified text. There is a high resource requirement to provide access to all, which can be addressed through forming innovative partnerships with mutual benefits. While there is lots of seed money available in Kenya, political will is critical to sustain in the long-term. Equally important is to get the right content on the platforms.

### Mini Case Study: Kenya's Digital Literacy Programme (DLP)

The DLP programme, initiated by the Government of Kenya in 2013, aims to integrate ICT in education to enhance the quality of teaching and learning in schools. It is being executed through a multi stakeholder approach that involves different ministries, state corporations and international partners, headed by the Kenya ICT Authority

Around one million tablets have been distributed in schools countrywide and are important devices for the delivery of digital content developed by the Kenya Institute of Curriculum Development (KICD). Content is pre-loaded on the devices and there are efforts to provide content through the Kenya Education Cloud in the future. Teachers and learners can access the content for various approved subjects on these devices. There is a need to adopt and develop new content that is aligned with the new competency-based curriculum.

More than 80 per cent of schools have access to these devices, and will help to develop the skills needed to benefit from interacting with technology. The devices are not meant to replace a teacher, but, to complement and make delivery of content more exciting and practical.

Teacher training is an on going and critical component of this programme. They need to appreciate the new paradigm shift in teaching and learning brought about by the emerging technological demands, and be supported to respond to them.

The programme seeks to increase national digital literacy, as teachers and learners use the ICT skills to search for, analyse, integrate, manage and evaluate information.



# Namibia

## BACKGROUND

Namibia is an upper middle-income country, with a population of approximately 2.5 million. While there have been improvements in enrolment rates since the introduction of universal secondary education in 2016, one-in-five children of school-going age is not in school and another 15% are at risk of dropping out. The overarching focus within the education sector is the resolution of legacies of inequality and poor educational infrastructure as a whole.

There is a real appetite for ICT for learning - one of Namibia's 'Vision 2030' objectives is to integrate ICT education and training into the education and training system. UNICEF Namibia sees the role of ICT for learning as enhancing basic skills (numeracy and literacy), as well as digital literacy skills themselves. There is also an appetite for it to offer psychosocial support to address health and safety-related barriers to education. They recognise the opportunity of ICT for learning to support new pedagogy such as personalised learning, and other more expansive ideas of what education is (e.g. learners being active agents of change, rather than passive recipients of prescribed knowledge), as well as supporting the development of digital/tech skills like coding, robotics and social media.

## UNICEF EXPERIENCE

UNICEF Namibia has been heavily involved in efforts to integrate ICT into the education sector across Namibia. They've helped the ministry to digitalise their education management and information system, supported a mapping and scoping exercise in the country and are running a proof-of-concept initiative for an eLearning platform.

They have found the Ministry of Education, Arts and Culture to have partial capacity to spearhead



the implementation of their ICT in education policy. Implementation is fragmented and requires improved coordination. The Ministry often finds itself inundated with requests from various stakeholders (private and civil society) with a varying degree of understanding of what meaningful integration of ICT in education entails and insufficient consideration of sustainability dimensions. This is especially true in terms of financial sustainability.

## OPPORTUNITIES AND CHALLENGES

UNICEF Namibia has the opportunity to help the government to make sense of, and make the case for investing in eLearning and the results it will bring in the long term. They see Private-Public Partnerships as important - without subsidies from

networks and providers, the public investment is too daunting amongst other priorities.

UNICEF Namibia is cautious of the varied quality of ICT for learning initiatives, especially when they aren't effectively guided or supported by government policy. They are wary of how large-scale investments are daunting to governments, and that eLearning initiatives are seen as 'want' rather than a 'need'. Within limited fiscal space, budgets for what is considered essential services in education are prioritised and cost cutting measures does not include ICT due to initial cost factors. There is a growing trend of restricted, non-permissive policies around mobile phones in schools - learners are currently not allowed to bring mobile phones to school as they're seen as a threat to the learning and teaching process, therefore constraining the opportunities of ICT for learning.

### Mini Case Study: Do Like Edu eLearning Platform

Do Like Edu eLearning platform is a joint initiative of UNICEF Namibia CO and the Ministry of Education, Arts and Culture. It's been designed and deployed with a view to improve access to quality open education resources in Namibia. The "proof of concept" T4D solution is being implemented in two successive phases: 1) Development of the "Do Like EDU" eLearning portal to support learner performance in key subject areas (mathematics, English and sciences) and 2) Development of "Talk to EDU" mobile application to provide learners with psycho-social support and career guidance. The objective is to test the deployability of platform in terms of ICT infrastructure, user readiness, and the policy and coordination environment.

The project has been rolled out under a wider intervention called Social Accountability and School Governance (SASG) programme, the objective of which is to improve quality of education through shared responsibility.

Learners will be encouraged by both the school and the community to access these

innovative tools to improve their academic performance and foster overall wellbeing in schools. Both phases will be tested during a pilot phase to ensure that the innovation is useful and does no harm.

### Major learnings from Do Like Edu:

- **Technology is not a silver bullet. No matter how good the technology may be, it has to work within certain environments/realities. Infrastructure donations alone is insufficient - it's intimidating for teachers.**
- **Before deploying the platform, one must carry out consultations with all stakeholders - school management, heads of departments, subject teachers, learners themselves.**
- **The project gained buy-in at the school level by highlighting how the platform offers customised and tailored content, specific to the needs of Namibian learners. That way, teachers and school leaders better recognise how it can meet their curriculum needs and assessment strategies.**
- **The initiative piggybacked on a broader and existing policy initiative that sought to fostered productive linkages between the school and the community.**
- **Continuous support and oversight at a school level is necessary. You can't just dump a bunch of computers and software without initial and on going teacher training. Schools need follow up support to see how they are faring, whether they're happy with the product, and whether the learners are using the technology effectively.**
- **The initiative emerged from an initial mapping and scoping exercise of ICT in education sector, with support from the UNICEF Namibia CO and the Innovation Fund.**

(1) Blog entry on Do Like Edu: <http://unicefstories.org/tag/do-like-edu/>

(2) <http://icta.go.ke/digischool/>

# Rwanda

## BACKGROUND

Rwanda is home to a strong and stable government and a fast-growing economy. It has a population of approximately 11.2 million, of which 40% are 14-35 years old. In education, there continued to be a strong focus on access to quality pre-primary education through the implementation of the country's first national preschool curriculum, design and construction of model facilities, teacher training and a costing study to advocate for increased budget allocations in this area.

UNICEF Rwanda and the Ministry of Education have identified improving learning outcomes and reducing dropout and repetition rates as key priorities for the sector. There is a national agenda for advancing ICT across all sectors, with a push to improve access to ICT in education. The government's focus is on: expanding access to ICT hardware, such as SMART classrooms, developing software to complement the national curriculum, improving the capacity of teachers and education officials to integrate ICT to improve the quality of education and applying ICT platforms to improve education monitoring. Key government partners for these initiatives are KOICA, JICA, UNICEF, UNESCO, MasterCard Foundation and the private sector in Rwanda.

## UNICEF EXPERIENCE

While ICT is not a priority of the UNICEF education programme in Rwanda, UNICEF is supporting the Ministry of Education in a few areas. For example, as part of its work on improving learning for children at risk of dropping out, UNICEF and the Ministry are testing a remedial learning programme that uses tablet-based ICT applications to boost learning in English and mathematics for struggling learners at risk of dropping out (more information provided below). UNICEF is also supporting the Ministry of



Education to improve its monitoring of education priorities using a real-time monitoring system. UNICEF also uses real-time monitoring in its own programme, through an innovative platform to gather data on programme implementation and impact.

## OPPORTUNITIES AND CHALLENGES

Opportunities to advance ICT in Education expanding in Rwanda because of the strong political will in government to make Rwanda a hub for technology in the region. The government's Vision 2050 strategy provides a strong framework for advancing action.

However, many challenges remain. Connectivity and access to reliable electricity are key challenges

that the government is working on with the private sector. Low capacity of teachers and education officials to integrate ICT in teaching and learning processes is also a challenge that government and development partners are tackling how the government and its partners are working hard to address these challenges. Resources for investing in ICT hardware and software are growing; however remain insufficient because of the high cost of ICT materials, the large need for materials and competing priorities in the education sector.

### Mini Case Study: Learning Clubs

As part of its efforts to boost learning for struggling students, particularly girls, UNICEF Rwanda is supporting remedial learning clubs for students at risk of dropping out. The programme used an innovative club-based model, based on a catch-up curriculum, developed in partnership with REB, teacher training on gender-responsive pedagogy, and an ICT platform intended to enhance children's learning through play.

They are now in the process of mapping all open source learning apps onto the grade levels/subjects being targeted to help improve the curriculum. This catalogue of learning apps would have implications and impact beyond the Remedial Clubs, by sharing with teachers in other parts of the education sector.

Part of the mapping is identifying gaps where there isn't an appropriate app to compliment the curriculum. The aspiration is to partner with technology companies to fill these gaps by developing apps to give over to the government.

The initiative is being piloted in an initial 20 schools, with the intention of being scaled up to 250. The government is playing a validating role (both of ICT and curriculum), with Imbutu

(a local NGO) working at the school level to train the teachers in the facilitation of the curriculum.

### Major learnings from Learning Clubs:

- When you change the teaching methodologies through ICT, you need to work with Head teachers and inspectorates as well as teachers.
- The remedial curriculum hopes to improve literacy and numeracy skills (especially for girls), but also enhance self-esteem in girls. The learning apps offer an alternative learning experience for those learners who haven't benefited from traditional classrooms.
- It was important to know where the value was being added. The Remedial Clubs identified the target group of children who are already underperforming, and develop a rationale that the traditional teaching and learning methods weren't effective for them. The learning apps offer different approaches, rather than just rely on replicating what's happening in the classroom.
- Teachers are not necessarily receptive to the fact that their teaching methods aren't always sufficient. It's been critical to work at the school level to sensitise them to the programme, and help them see the value.
- In trying to work with technology companies, there was difficulty in costing a consultancy without a) the expertise to navigate the business aspects (e.g. licences, user fees), and b) a long-term financial commitment from government. Many companies wanted to host the apps on their servers, incurring a fee. This didn't align with UNICEF values of open source, and not-for-profit.

# Sierra Leone

## BACKGROUND

Sierra Leone is a low-income, emergency prone country with a population of approximately 7 million, of which 70% are living in poverty. The country is responding to a series of humanitarian crises: the Ebola virus outbreak; measles outbreak; and floods in the northern districts and the western area, implementing the President's Recovery Priorities.

Despite this crisis-laden picture, ICT for learning plays an important role in both the National Curriculum Framework and Guidelines for Basic Education (2015), and Education Sector Plan 2018-2020, as emphasis is placed on mainstreaming ICT Literacy in Sierra Leone's education system. A step towards this integration has been the development and validation of the ICT syllabus in 2017. The drive for the introduction of ICT for learning has been Sierra Leone's recognition that children are growing up in a world where technological competence and ICT literacy will be imperative for developing the skills needed for future life and work.



## UNICEF EXPERIENCE

UNICEF Sierra Leone is supporting the use of an education management information system (EMIS) and situation room, which increases access to timely and reliable data from 5,487 schools. RapidPro was deployed to collect and share the information on monthly school-level indicators, and to better inform policymaking and programming.

## OPPORTUNITIES AND CHALLENGES

The Ministry of Education, Science and Technology (MEST) expects that including technology and ICT literacy in basic education will empower learners with the foundational competencies needed for a variety of occupations. Furthermore, ICT skills will enable students to apply for more jobs in business, engineering and education, as well as encourage various life skills such as personal development and entrepreneurship.

The Education Sector Plan 2018-2020 proposes that an on going technology strategy will help bridge some of the learning gaps for students in areas struggling to access good quality teaching and learning with more ICT platforms. However, the intention is not to replace the teacher or make them redundant, but rather to augment and provide the teacher with additional tools for teaching and learning.

### Mini Case Study: RapidPro in Sierra Leone

**RapidPro is an open-source platform of applications that can help governments deliver rapid and vital real-time information and connect communities to lifesaving services. Produced by UNICEF's global Innovations Labs in collaboration with Nyuruka, a Rwandan software development firm, and drawing on eight years of experience with SMS-based applications, RapidPro is already**



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▲ Schoolchildren at Binga Primary school take time to familiarise themselves with computers at the school. (Tsvangirayi Mukwazhi/UNICEF)

being used in several countries.

Initially, RapidPro was used in Sierra Leone to engage individuals using phones, and was deployed during the Ebola emergency. Recently, it has been used to review the opening of over 2000 schools based on nine indicators for readiness. UNICEF Sierra Leone worked with the ministry to develop a more systematic use of the technology, by which Community-based monitors would attend local schools to gather data such as student and teacher enrolment, and the physical and WASH state of the school. The data would be collected, processed and analysed by districts to identify any gaps.

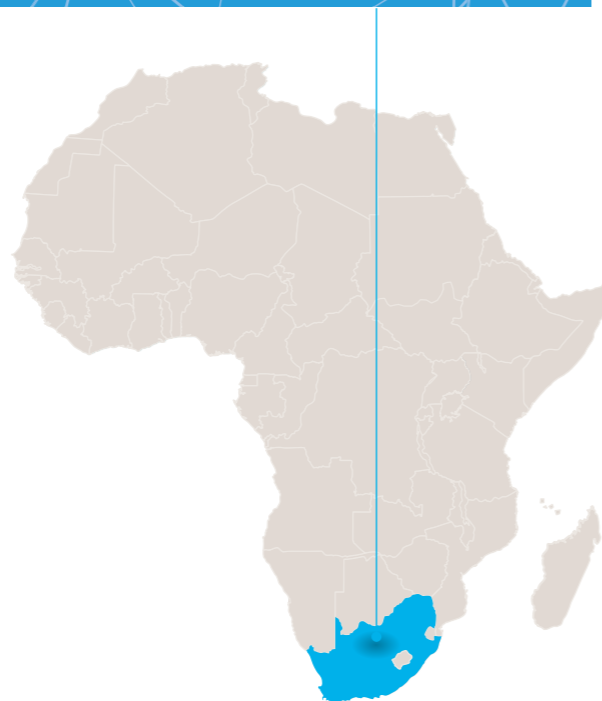
UNICEF Sierra Leone also worked with district officials to adapt the platform by changing the questions to enable them to carry out other rapid assessments. Data is currently captured on nearly 6000 schools per month.

# South Africa

## BACKGROUND

South Africa is an upper middle-income country, with a population of approximately 54.5 million and a net attendance ratio in secondary education of 88%. UNICEF South Africa has three programme pillars: early childhood development; ending violence against children and supporting results for adolescents. UNICEF South Africa and Department for Basic Education (DBE) recognise low learning outcomes, linked to poor quality teaching, inadequate or no access to psycho-social support and accountability of the education system (including teacher time on task) as some of the major issues within the sector. The different affordances of ICT is seen as a lever to offer differentiated and personalised learning to children, and to advance digital and tech skills (coding, robotics, social media), but equally recognises poor maintenance as a risk to investments, as well as inadvertently promoting inequality rather than reducing it.

UNICEF South Africa report a national focus on teacher and school leadership development, and a huge appetite and commitment for the systematic use of ICT in education. The South African government has written the role of ICT in learning into the Education Action Plan to 2019: Towards the Realisation of Schooling 2030 (a roadmap for education). It has been integrated into the policy framework in theory, but the extent to which ICT for learning is used in practice is uneven. This is in part due to South Africa's semi-federal system and the resultant problem of concurrent functions. While some initiatives are developed nationally, provinces are doing the same. Provinces have some autonomy to reject national initiatives, which can result in gaps and/or duplication.



## UNICEF EXPERIENCE

UNICEF South Africa see ICT for learning as a continuum which is constantly evolving, and capable of solving real-world problems in education. UNICEF South Africa recognise that governments need to work more vigorously on partnerships that take certain aspects of e-education forward or target particular disadvantaged areas. For more widespread and sustainable development to occur, government and other stakeholders will need to strengthen the research and monitoring capacity in e-learning, as well as the overarching policy frameworks. Furthermore, investment cases for technology, compared to other interventions and inputs into the system must be developed.

## OPPORTUNITIES AND CHALLENGES

UNICEF South Africa is working to support the government to build the capacity of teachers, but at the same time an appetite needs to exist within the education system. There is a recognition of an opportunity in the listing of competencies teachers should have in relation to digital learning, within a professional framework for digital learning that has been developed as part of the Integrated Strategic Planning Framework for Teacher Education and Development.

UNICEF see an opportunity in private technology providers driving change rather than education systems themselves – there is no sophisticated theory of change. Technology evolution is outpacing education uptake, and providers must distinguish between uptake and engagement. Initiatives need regular updates, but South Africa has a problem with connectivity, which poses a huge challenge and could create inequalities in the system: data costs are high, and the poor cannot afford the high charges. Until these issues are solved, it is not feasible to tell people to be online. Investment cases need to be made clearer, as do the upfront and on going costs of the technology.

### Mini Case Study: Ukufunda Virtual School

The Ukufunda Virtual School (or UVS) is an innovative m-learning service, conceptualised in 2013 and launched in September 2014 by a partnership comprising the South African Department of Basic Education (DBE), UNICEF SA, and the Reach Trust (formerly known as Mxit Reach). It was the DBE's first attempt to develop and mobile-learning portal. The UVS was a portal that uses a social-networking platform (Mxit) to provide access to learning resources and content, counselling and safety services and other value-added services and programmes via mobile technologies. The platform aggregates pre-existing learning and psychosocial applications ('apps'), but also new, bespoke apps

developed specifically for the UVS. The UVS made applications available to users through three views: a learner view, a teacher view, and a parent view.

The UVS was unique because it allowed accessibility and support across 8,000 mobile devices (feature phones and smartphones), and reached remote areas where only 2G connectivity is available, thus incorporating a strong equity focus. It was initially intended to support secondary school learners only, but its focus expanded to include support for teachers and parents.

### Major learnings from UVS:

- Technology moves quickly. The initiative was originally intended for feature phones running on 2G. By the time the initiative launched, most people had switched to smartphones (only 30% of the sample used feature phones). Similarly, during rollout, most users stopped using Mxit in favour of Whatsapp as a communication tool.
- The technology provider drove the initiative, rather than the education system. There was a real need for people on the team who have an extensive understanding of both.
- Lacked a coherent Theory of Change and investment case. The Theory of Change developed should be specific about the target audience and focus of the initiative, ensuring that this is kept tightly defined to increase the prospects of successful implementation.
- BYO-Data and device services exclude vulnerable audiences and widen the inequality gap.

# South Sudan

## BACKGROUND

South Sudan is a country with a fragile context and governance challenges which necessitate adaptive programming. There are approximately 1.76 million internally displaced persons (IDPs) in South Sudan, 2.45 million South Sudanese refugees in neighbouring countries and 5.1 million South Sudanese who are food insecure.

Average literacy rates among the South Sudanese population are very low at 27%, with over 2 million children out-of-school. This figure is the highest in the world, with a disproportionate number of those being girls as a result of rising rates of childhood marriage, unwanted pregnancies, and the on-going conflict that has exacerbated the situation with the serious economic hardships families face. Teachers are often untrained, their status has declined in the last decade, and the government is struggling to pay their salaries which are already exponentially low due to rising inflation in the last two years. The value of education isn't widely accepted, with many South Sudanese prioritising joining armed groups and small-scale agriculture/farming, though insecure environments pose substantial threat to farmers in many parts, forcing the population to abandon their farms.

ICT for learning is somewhere the Government want to get to – the education minister Hon. Deng Deng HocYai wants each child in South Sudan schools to have an iPad and the new curriculum to be digitized – but right now it is not a priority. This is a country in crisis.

## UNICEF EXPERIENCE

UNICEF South Sudan are focused on children, especially girls, and teachers. They are providing access to education in emergencies (risen from 39 to 49% of the 500,000 target) through temporary learning spaces (TLS); teacher training; a parent teachers' association (PTA)/school management committees' (SMC) school development plan; psychosocial support; pedagogy; strengthening capacity of school inspectors, supervisors and education managers; supply of



scholastic materials; and strengthening coordination. Their key interventions focus on mass distribution of assorted education supplies, including textbooks to the improve quality of teaching and learning in schools and access through TLS (more than 240,000 children were reached – 38% of which were girls).

UNICEF, in collaboration with the State Ministry of Education, Gender and Social Welfare, celebrated International Women's Day on 8 March in Pibor, Yambio and Torit. The event is one of the strategies used to sensitize communities and promote girls' education as part of UNICEF South Sudan's wider Back To Learning (BTL) national campaign. In partnership with the Association of Christian Resource Organizations Serving Sudan (ACROSS), the State Ministry of Education, with support from UNICEF, completed a five-day training of 20 (three women) Early Childhood Development (ECD) facilitators in Lakes State. The training has enhanced the capacity of facilitators to effectively manage ECD classes.

(1) <https://www.varkeyfoundation.org/what-we-do/programmes/making-ghanaian-girls-great/>

(2) <https://vimeo.com/117278962>

## OPPORTUNITIES AND CHALLENGES

UNICEF South Sudan see the development of the first South Sudan curriculum as an opportunity. Textbooks are being developed – due in 2019. There is an aspiration to digitalise these textbooks, because of the risk that schools might be burnt down during unrest. Expanding access to learning beyond school through technology is an opportunity, as children and young people often don't go to school because of security risks - looting is a serious risk to schools. However, this comes with the daunting challenge, ranging from lack of basic infrastructure (classrooms to host ICT) to limited or no exposure of teachers to ICT training.

Private and missionary schools fully funded by organisations are more likely to have laptops/desktops in their schools, but there won't be any in public schools, even in town areas. Security fears and budgetary constraints are too high. The priority is keeping teachers in their jobs and keeping the system standing.

UNICEF South Sudan appreciates that ICT for learning has a role to play and are open to learning from similar contexts in the medium term on how ICT is meaningfully introduced into the education system. The country office team are considering how they might test out ICT in very small-scale pilots, including learning through mobile phone initiatives, or kindles for reading, but the humanitarian response to the crisis is the priority for now.

### Mini Case Study: Mobile School Report Card (MSRC)

In 2011 Ghana introduced a paper-based report card policy, that sought to help schools to collect reliable data. In 2014, UNICEF Ghana Country Office began working with the Ghana Education Service on a digital version of this policy called the Mobile School Report Card (MSRC) that was a way of providing real-time data via an android-based app, downloaded from Google Play.

MSRC is currently operating in over 1,500 schools across 20/216 districts in Ghana. The indicators are in two categories: those that render themselves to weekly, and termly data collection. The head teacher inputs data every week, and that data is verified at a circuit/cluster level and at district level. The

data of schools participating can be viewed on an online platform. It can give you school data on teacher and student attendance for that particular week, teacher preparation (did a teacher prepare lesson notes). Data on school amenities i.e. functionalities of their facilities is collected termly.

The data is uploaded to a web-based platform, which displays the data as a dashboard, which can be accessed at circuit, district, regional and national levels. MSRC is a management tool and not for classroom pedagogy, though it tracks teacher preparedness.

### Learnings from MSRC:

- When introducing the programme, key decision makers needed to see the value in the technology. It has to enhance their work. A case for change helped to reduce resistance and resolves any negative attitudes towards the technology. Now that they appreciate the value of the report card, decision makers are willing to pay for the mobile data themselves, rather than asking UNICEF to pay for it. They own it as a solution.
- Compliance was a motivating factor. There is a perception that the headquarters is watching - district director of education can easily go online and see how teachers are performing. They know that this online technology provides transparency/accountability.
- It was also recognised that there was a digital literacy gap that needed bridging. The targets were head teachers, and many didn't have the technical computer skills and knowledge to adopt. During the training, they asked head teachers to come with a teacher who is tech-literate, to help them use the tablets.
- One of the key challenges has been poor Internet connectivity in some regions. Penetration of mobile phones is very high in Ghana, but connectivity in remote areas is poor (which tends to be where UNICEF works). MSRC is in 20/216 districts, reaching over 1,500 schools.

# Uganda

## BACKGROUND

Uganda is a stable, low-income country, with a population of approximately 34.6 million, of which 55% are under 18 years old (2016). UNICEF Uganda are Chair of the Basic Education Working Group, assuming the role of coordinating agency for Global Partnership for Education (GPE)-funded interventions and advocating for a comprehensive reform of the education sector. In response to our survey, low quality teaching was identified as the core problem facing the sector. UNICEF Uganda see ICT for learning as an opportunity to offer personalised learning and access to broader curricula to the children of Uganda, but recognise new forms of child abuse, inequality in digital skills and the poor maintenance of technologies as critical risk factors.

UNICEF Uganda report the focus of the Ugandan Government to be on the enhancement of basic skills (numeracy and literacy), with a growing ambition to improve STEM subjects and skills in preparation for digital economies and competitive job markets. The Ugandan Government have provided some computers to secondary schools, but with no guidance or guidelines for use. There is an emerging appetite amongst universities and colleges to revolutionise education through ICT for learning.

## UNICEF EXPERIENCE

UNICEF Uganda has been working with communities to change perceptions of technology by explaining and contextualising the benefits it could have on both schools and the community. The want is to empower government and communities to take ownership of the technology – they do not want to introduce initiatives that are going to remain UNICEF initiatives.

The office is ensuring that the focus is placed on the environment and infrastructure where the technology can thrive (e.g. teacher and student attitudes, investment in hardware, electricity, access for all students), rather than a pure focus on the technology itself.



## OPPORTUNITIES AND CHALLENGES

UNICEF Uganda sees a number of opportunities in ICT for learning. For instance, there is a growing demand from teachers who want access to specialised training courses, especially since the rise of MOOCs means there are lots of free, open-source content that is available. Furthermore, UNICEF has found health and youth related issues across their sectors, so this could be an avenue for providing the right information to communities through technology.

UNICEF is working with 'Champions' - a network of teachers who are skilled in ICT - to help shift attitudes and practice. They are engaging teacher colleges to prepare the next generation of teachers for technology by showing them what's available. It is believed that technology can be a game changer when it's free, available offline and the user is empowered. It can also be holistic, offering learning for students, teachers and the community.

UNICEF Uganda recognise that partnerships need to be extended to the private sector and

work with these groups to fill infrastructure gaps, however UNICEF are not prepared for this aspect at this time.

UNICEF Uganda do recognise that limited connectivity is a challenge, and software installation relies on the availability of hardware and full hardware functionality e.g. access to video, maintenance, and upkeep. Capacity levels in ICT are fairly low - in some areas they are non-existent - and teaching quality remains a challenge. Furthermore, additional costs such as licensing fees and the lack of contextualised content are obstacles to overcome.

## Mini Case Study: Kolibri

Uganda are piloting a 6-month e-learning initiative in an effort to encourage schools and communities to make use of computers provided by the government in 2013. UNICEF are installing the digital platform 'Kolibri' which contains curriculum aligned e-learning content and programmes that teach basic life skills, as well as providing training to teachers and students on how to use it. The initiative is being rolled out across 30 government-aided schools and public spaces such as youth centres and refugee settlements. The tool has been well received because it is free to use and easy to install - it doesn't require an extensive ICT background. Going forward, UNICEF want to build a foundation for scale over the next 5 years. To do so, they must fully engage government and the MoE to take ownership of the tool. At a district level, they are talking to local government officials to sensitise them about the benefits of e-learning and address their concerns (e.g. inappropriate content).

## Major learnings from Kolibri:

- Within the community, Kolibri has been broadly more accepted in youth spaces, as schools tend to be viewed as formal, cultural institutions.
- Implementation partners have been critical to the success of the pilot. They have extensive experience in working with adolescents in promoting ICT skills. Implementation partners travel to schools, youth centres and refugee

settlements to train users on how to use and integrate Kolibri into learning activities. Similarly, government buy-in is fundamental. Without it, people fail to get excited about it; it loses importance.

- Some work needs to be done on the design to make it more appealing to young people. Most of the content has been reviewed by UNICEF and the government to ensure it is appropriate and aligns with the curriculum. However, not enough content is targeted towards an African context (predominantly US). Young people want to see their local context in the learning content, but the capacity for this is low and expense high.
- Innovation in developing countries must look at solutions that take into account limited connectivity. There needs to be an offline option. Kolibri is designed for low resource communities. It is an open-source, offline platform and runs without Internet (but is also available online).

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