



DIGITAL UNICEF

Harnessing the power of technology and digital innovation for children

UNICEF

Technology for Development Report
INFORMATION COMMUNICATION AND TECHNOLOGY DIVISION

unicef 
for every child

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ABBREVIATIONS

AI	Artificial intelligence
COVID-19	Coronavirus disease 2019
CRVS	Civil registration and vital statistics
DHIS2	District Health Information Software 2
GIL	Generation of Innovation Leaders
ICTD	Information and Communication Technology Division (UNICEF)
IoT	Internet of Good Things
ODK	Open Data Kit
R3D	Real-time data-driven dashboard
SDG	Sustainable Development Goal
SMS	Short message service
T4D	Technology for Development
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WASH	Water, sanitation and hygiene
WHO	World Health Organization



FOREWORD

This past year has been unprecedented in many ways. The coronavirus disease 2019 (COVID-19) pandemic necessitated that we rethink so much about the way we work at UNICEF – not only to adapt to a remote workplace, but to deliver programmes more efficiently and effectively to populations in need in the context of the global shutdown.

For UNICEF's Information and Communication Technology Division (ICTD), these changes became urgent at a time when we were already rethinking how we work. ICTD has been at the forefront of an organization-wide digital transformation designed to build on the exponential growth in digital activities and leverage technology in new ways to achieve results for children.

Since its establishment in 2017, the Technology for Development (T4D) function within ICTD, has been dedicated to strengthening health, education, child protection and other systems to utilize digital technologies more effectively. That means building national enabling environments for digital transformation; scaling up digital platforms; strengthening coordination across platforms and among partners; and enhancing the viability and maturity of digital public goods across the world.

Over the past year, ICTD intensified its collaborations across UNICEF and with partners to rapidly develop and expand programme-centred technologies to meet the circumstances and needs of the day. We were instrumental

to the organization's risk communication and community engagement effort, which leveraged digital technologies to reach communities with the information they needed to protect themselves against COVID-19. We adapted UNICEF's health and education programmes using real-time information technology and digital education solutions. And we were quick to scale our existing technologies for child protection case management, cash transfers and other systems to ensure that our government partners could continue to reach children in need, despite the global shutdown.

UNICEF has learned from this experience that by transforming ICTD from a back-office help desk function to one that permeates every aspect of its work, we are able to deliver results for children faster and at scale. The achievements described in this report reflect that ICTD has become instrumental to how we do business at UNICEF; that our partners in digital technology are propelling this work in all areas; and that digital innovations and solutions are fundamental to improving children's lives across the world.

As we move towards a new Strategic Plan – in which fostering UNICEF's digital maturity will be paramount – this report, which is the companion document to the ICTD Annual Report, 'Digital UNICEF 2020', provides an opportunity reflect on the remarkable achievements of 2020, and the incredible potential of UNICEF's digital future.



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PART 1: EXECUTIVE SUMMARY

In recent years, UNICEF's information and communication technology support to digital programming initiatives has grown exponentially, shifting from internal management approaches to solutions that drive programme effectiveness across the globe. With the emergence of the COVID-19 pandemic in early 2020, UNICEF has accelerated its transformation into a digital organization – from the upscaling of digital teleworking practices to the use of innovative technologies in its programmes, finance and operations.

The pandemic has also brought on a shift in how our national partners deliver services – from in-person support to distance and remote delivery – which has made digital development integral to how UNICEF works in the field. The rapid acceleration and scale-up of digital programming and the strategic integration of information and communication technologies in national programmes has allowed UNICEF to help partners close the gaps to meet children's needs in complex environments, in line with existing national digital ecosystems and solutions.

UNICEF ICTD transforms and builds partnerships with stakeholders to successfully implement UNICEF programmes globally through the use of innovative, technology-enabled solutions to achieve better results for children. Technology for Development – a core programme-facing function supported by ICTD – supports UNICEF to scale digital programmes, digital innovations and mature digital solutions and accelerate results for children across the organization.

To date, more than 1,400 T4D and innovation initiatives have been registered in INVENT, UNICEF's global digital hub for T4D and innovation. The INVENT platform is both an inventory of initiatives and a portfolio tool that allows promising ideas across UNICEF to benefit from greater visibility. It is helping to focus the organization's resources and investment on the specific programme problems for which innovation is an effective change strategy. It serves as a structured and systematic process to identify, validate, select and invest in solutions that are proven to move the needle forward and generate progress on critical issues affecting children.

In 2020, UNICEF accelerated its transformation into a modern, digital organization. As part of this strategic shift, UNICEF approved a new Digital Centre of Excellence based in Nairobi to serve as a dedicated, field-facing global structure anchored in ICTD. Among other areas, the Digital Centre of Excellence will support COVID-19 vaccine delivery and risk communication and community engagement through the UNICEF-World Health Organization (WHO) COVID-19 Digital Health Centre of Excellence, which will provide thought leadership, surge capacity and technical assistance to governments on digital health programmes, in collaboration with development partners.

Across the organization, and in the context of COVID-19, UNICEF's digital interventions continued to expand in 2020 and drive programme effectiveness across the globe. As part of its response to the pandemic, UNICEF reached 3 billion people through risk communication and community engagement initiatives – many of which employed digital solutions – to help communities halt the transmission of COVID-19 and mitigate its socioeconomic impacts. UNICEF deployed chatbots, short message service (SMS), interactive voice response and other technologies through multiple channels, including U-Report, RapidPro, Infolines, HealthBuddy, VIAMO Services and Commcare, to reach affected communities with life-saving information.

The rapid expansion of digital programming over the last year is also evidenced by the acceleration and uptake of digital real-time information solutions employed by countries at scale – a metric that ICTD tracks each year. In 2020, 113 countries (72 per cent) used real-time information technology at scale, exceeding UNICEF's target of 60 per cent by 2020. This work was carried out across all Strategic Plan goal areas. Forty-three per cent of country offices reported using RapidPro – a global digital public good used to power messaging programmes – for real-time information, and 43 per cent of countries also reported using platforms such as Kobo, Open Data Kit (ODK), Ona, Commcare and District Health Information Software 2 (DHIS2), among others. More than 40 per cent of countries reported using U-Report, powered by RapidPro, for youth/citizen engagement at scale.

113
countries
used real-time
information
in 2020

UNICEF also worked with national authorities and implementing partners to adapt service delivery systems to cope with the socioeconomic impacts of the COVID-19 pandemic, limit service interruptions and secure equitable access. This effort has raised the profile and value of digital health – for delivering life-saving services in the short term and strengthening national systems, capacities and infrastructures over the long term. With information and communication technology support, countries are leapfrogging into the digital realm where the pandemic has accelerated interest and action; further digitizing health systems where this process was already underway; and mapping existing digital health solutions with the potential to support vaccine rollout.

For example, in Malawi, UNICEF worked with the Ministry of Health and partners such as Good Citizen and Baobab Health Trust to facilitate safe, remote communication between health workers and those in quarantine and isolation. The COVID-19 quarantine management solution is a scalable, SMS-based digital platform powered by RapidPro that allows the Ministry of Health to correspond with those in quarantine, perform real-time tracking of symptoms, and keep everyone safe in line with infection prevention and control measures. The solution's interoperability with other components of Malawi's electronic disease surveillance system makes information available instantly to authorized users and facilitates straightforward data aggregation. As of July, 500 health care providers had been registered and nearly 3,900 people had benefited from the programme.

UNICEF is also actively engaged in the Access to COVID-19 Tools Accelerator as the official coordinator of the COVAX Facility, a global initiative that brings together governments and manufacturers to ensure that COVID-19 vaccines reach those in greatest need. To prepare countries for this historic vaccine rollout, ICTD and UNICEF Health are participating in the COVAX Innovation Working Group and the COVID-19 Vaccination Delivery Innovation Team. The Team is tasked with accelerating the deployment of readily available technical solutions that address coverage, supply chain and safety problems resulting from COVID-19 vaccine introduction. Its aim: to ensure that countries in need are able to deploy innovative approaches to reaching their populations with vaccines, at scale.

UNICEF has led international efforts to bring virtual and other forms of remote learning to children across the world. This has involved collaborating with partners to provide online and distance learning to millions of out-of-school children, and helping children return to school via remote means using information and communication technologies. UNICEF is also supporting school connectivity, education technology strategies, and needs assessment, planning and deployment. With the launch of the Reimagine Education initiative, UNICEF is seeking to connect every child and young person with world-class digital solutions that offer personalized learning.

UNICEF also took steps in 2020 to close the learning gap in the context of COVID-19. In partnership with Microsoft, UNICEF expanded the Learning Passport, a global digital learning platform to help children and youth affected by COVID-19 continue their education at home. By the end of the year, Learning Passport had been deployed in more than a dozen countries. For example, in Timor-Leste, Learning Passport is giving some 400,000 students online access to their national school curriculum.

UNICEF is also using technology and digital innovation to strengthen child protection information management systems – including civil registration and vital statistics systems, monitoring and reporting on violations against children, and case management. This work is not only

generating reliable and timely data on child protection, but also connecting children with the protection services they need. In December, UNICEF, in partnership with Microsoft, launched Primero X, a newly designed and highly scalable progressive web application that can meet the demands of the social welfare sector – in the context of COVID-19 and beyond.

2.8 million households received cash assistance in Yemen

In Cambodia, UNICEF supported the Ministry of Social Affairs, Veterans and Youth Rehabilitation to launch Primero during the COVID-19 pandemic. The platform was adapted to act as a secure bridge between government case workers and existing service providers, enabling disparate systems to “talk to each other.” Today, children can benefit from safe and secure referrals between government and local non-governmental organizations, faster response times and more organizational accountability. In the context of COVID-19, this interoperability has meant better coordination and fewer children falling through the cracks. Between April and November 2020, 150 Cambodian case workers became active Primero users and 5,500 children were reached.

UNICEF also used digital technologies to vastly expand its cash transfer programmes in 2020 to reach families impacted by the socioeconomic effects of COVID-19. During the year, UNICEF implemented technology-enabled cash transfer solutions in 30 country offices. In Yemen alone, UNICEF reached 2.8 million households – including 8.4 million children – using digital and other technology solutions.

In Jordan, UNICEF supported the Government to expand the existing cash transfer programme to 200,000 daily wage workers who had lost their income due to the COVID-19 response; and adapt the programme to adhere to infection prevention and control measures. Using RapidPro, UNICEF helped the Government reach new recipients quickly, remotely, and safely via mobile wallets, at no cost to beneficiaries. The results exceeded expectations. In the first five days of implementation, the number of targeted daily workers with an active mobile wallet increased from 18,000 to 80,000. After two weeks, 188,000 workers had an active mobile wallet and had received cash transfers.

UNICEF is increasingly working to identify technological solutions and innovations that address challenges and create new opportunities for UNICEF programming. This can include real-time monitoring and predictive analysis, digital identity, artificial intelligence (AI)/deep learning, and digital innovations. Innovations in real-time data collection and visualization, complemented by big-data analytics

and AI, provide safe, rapid and comprehensive alternative approaches to in-person assessments.

For example, in Indonesia, where the COVID-19 pandemic is threatening to undermine recent development gains, UNICEF supported the Government's COVID-19 response through a range of cutting-edge data platforms and partnerships, including monitoring dashboards that empower community members to monitor and report public adherence to COVID-19 safety protocols; school connectivity data, which yield insights into the distribution of digital opportunities among Indonesian students; and COVID-19 immunization dashboards, which leverage existing datasets and real-time monitoring to enable beneficiary registration, feedback and coverage analyses.

The achievements for children described above and throughout this report were made possible by the thousands of people across UNICEF and its partner organizations who have contributed to and supported the application of T4D. Looking ahead towards UNICEF's next Strategic Plan, the organization will capitalize on the momentum of 2020 and set the stage for a reimagined UNICEF: one that is agile, digital and modernized, and where the innovative use of technology cuts across its work. UNICEF's new digital strategy will focus on further expanding digital interventions in health, education, social and child protection, environment and water, sanitation and hygiene (WASH) to strengthen government systems, advance progress towards the Sustainable Development Goals (SDGs), and accelerate the delivery of results for children.





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PART 2: ABOUT TECHNOLOGY FOR DEVELOPMENT

UNICEF recognizes the vital role of information and communication technology in enabling innovation and digital programming. ICTD transforms and builds partnerships with stakeholders to successfully implement UNICEF programmes globally through the use of innovative, technology-enabled solutions to achieve better results for children. T4D – a core programme function supported by ICTD – provides advisory, implementation and quality assurance services to programmes on the use of technology and digital innovation in UNICEF-supported programming.

Within UNICEF's Innovation for Results cone, ICTD is situated alongside the Office of Innovation, the Supply Division, the Office of Global Insight and Policy and the Office of Research. The T4D function works in close collaboration with multisectoral programme and planning teams and national partners in support of national goals and sectoral priorities, the UNICEF Strategic Plan 2018–2021 and the SDGs.

ICTD recognizes that innovative solutions – including digital solutions – are useful only when they add value, accelerate service delivery, and expand reach and results for children; and scale is reached when the innovation, digital programming approach or solution is owned and led by a national government. While ICTD staff provide advice and guidance to national partners on the use of digital innovation and frontier technologies, the vast majority of UNICEF's digital programming work – and UNICEF's digital initiatives – involves the use and deployment of proven, mature digital solutions and digital public goods designed to strengthen national systems, in line with national needs and capacities.

Digital transformation enables UNICEF to increasingly enable, deliver and mainstream digital programming, services and innovations by augmenting new staff functions and capacities, integrating software/hardware (e.g., software as service and cloud computing), enabling automation and increasing agility, while transforming national programmes.

T4D enables and is enabled by UNICEF's digital transformation. As the use of technology becomes integrated across UNICEF programmes, the organization will need to ensure that these efforts strengthen national systems, result in tangible benefits to children, can be sustained without donor funds, and prioritize data security and child safeguarding. This often requires engaging on national policy and regulatory reform; collaborating with ministries of information and communication technology, eGovernment and communications authorities; providing technical guidance to ministries of health, education, etc. on their digital systems architecture, infrastructure, data management and information exchanges; providing technical assistance on digitally-enabled programmes, including readiness assessments, business requirements, platform assessments, investment cases, deployment and scaling and end-user testing; and building strategic partnerships and consortia, including with the private sector.

Box: UNICEF's Digital Transformation: Unpacking how ICTD supports UNICEF programmes

We take scalable innovations and technology solutions and deliver them, directly impacting the lives of millions of children around the globe, each year.

We enable technology and digital innovation in the field at scale, through our strong collaboration with programme teams, in-country technical advice, support to national partners, and engagement with United Nations agencies and other partners on technology and digital public goods. We serve as a unique resource, facilitator and a connector across programmes, planning and operations.

We help identify the most promising technologies and digital innovations for application across the globe, and support UNICEF programmes to adopt, adapt and scale up the approaches that are most useful, and to quickly identify those that are not.

We institutionalize and mainstream technologies and digital innovations that show promise, in support of national goals and priorities, UNICEF's Strategic Plan and the SDGs.

We support country deployment and testing of frontier technologies to make sure that solutions are designed and implemented with the best chance for scale and national ownership.

We help country offices develop and promote innovation and information and communication technology strategies that align with national governments' long-term development needs through dedicated strategic planning.

And we continuously build UNICEF and programme partners' capacities for T4D and innovation governance digital public goods.

ICTD: What we do

For UNICEF, technology, innovation and digital programming are the collective responsibility of the entire organization. To this end, UNICEF has reimagined its culture of information and communication technology as a digital programming and transformation function that promotes innovative behaviours across the organization and leverages digital approaches to accelerate results for children.

For ICTD, that means serving as a **resource, facilitator and connector** that supports innovation across the organization, rather than on behalf of it. It means strengthening capacities for T4D and innovation among UNICEF staff and national partners; and providing country offices with the guidance they need to implement T4D and digital programmes based on evidence, good practices and experience.

Key to this process is providing technical assistance to T4D and innovation work across country and regional offices to enhance efficiencies, effectiveness, alignment, coherence and governance. That means working in close **collaboration with UNICEF programme and planning functions** – including through technical expertise, advisory services and programme guidance – to design and support evidence-based programme-facing T4D and innovative initiatives.

In countries, ICTD staff work with programme and planning teams across UNICEF to **strengthen national systems** and deploy new digital approaches to programming. We help scale up well-established and proven products and innovative approaches and tools, including digital public goods. That includes supporting knowledge management, learning and the exchange of experiences; and enabling South-South and North-South dialogue, research and reports on challenges and best practices.

Partnerships are essential to everything we do. Our partnerships with the public, private and academic sectors drive UNICEF programming enabled by T4D and innovation. We also leverage the comparative advantages, experiences and resources of other United Nations agencies, donors and partners through joint planning, coordination, programming and experience sharing of T4D and digital initiatives to achieve results for children.

1,400
T4D and innovation
initiatives documented
in INVENT

INVENT: Powering innovation and technology for development for children

Innovation and T4D boost and bolster the impact of UNICEF's work to ensure that every child survives and thrives. As we strive to respond, support recovery and help communities build back better from the unprecedented COVID-19 pandemic, innovation and T4D hold the promise of life-changing breakthroughs.

To meet our global aims, UNICEF is launching bold, exciting new initiatives to tap into and channel our collective creative energy and invest in proven, scalable solutions. INVENT is UNICEF's global digital hub for T4D and innovation. It expands on a process born in the field – an inventory of T4D and innovation initiatives developed by T4D and innovation focal points at the regional and country office levels over the past three years.

INVENT is both an inventory of initiatives and a portfolio tool that allows promising ideas across UNICEF to benefit from greater visibility and alignment with resources to bring them to scale. The platform serves as a shared global resource for innovation and T4D initiatives. Through a structured process guided by regional T4D managers, UNICEF country offices add their innovation and T4D initiatives of all types – data, digital, frugal, innovative finance, physical product and programming innovations – to a searchable global inventory.

The portal also serves to better focus the organization's resources and investment on the specific programme problems for which innovation is an effective change strategy. The approach is a structured and systematic process to identify, validate, select and invest in solutions that are proven to move the needle forward and generate progress on critical issues affecting children.

To date, more than 1,400 T4D and innovation initiatives have been included in the inventory.

The Business Relationship Management and Technology Playbook

In the Roadmap for Digital Cooperation launched in 2020, United Nations Secretary-General António Guterres cited the need to achieve universal connectivity and promote digital public goods to foster a sustainable and inclusive recovery from the COVID-19 pandemic. Digital capacity building is central to this initiative. The World Bank estimates that up to 87 per cent of large public sector information and communication technology projects fail due to lack of regulations, guidelines, management, context and skills.

Having documented over 1,400 T4D and innovation initiatives across over 125 countries globally, ICTD is focused on developing standard processes for implementing T4D projects in the field. This means establishing strategic, scalable, and sustainable approaches to guiding and streamlining digital transformation across the organization's programmes.

In 2020, the UNICEF East Asia and the Pacific information and communication technology team began developing a global Business Relationship Management and Technology Playbook, a standard framework for helping programme teams integrate T4D and digital innovations that embody the Principles of Digital Development into programme design, implementation and monitoring and evaluation. It will be used to ensure that technology is leveraged at every step in a way that is context-appropriate and sustainable.

Box: Spotlight on the Business Relationship Management and Technology Playbook

Technology can be used as a tool to increase local capacity, transparency, stakeholder engagement and reach for UNICEF projects. Having a standard process for T4D field implementation at the project level will span the project lifecycle phases while embodying the Principles for Digital Development. This will help UNICEF build and sustain the capacity to operate, maintain, support, adapt and improve the technology over the project's lifecycle.

The following three factors are critical to programmatic success:

1. The area of intervention;
2. The degree of engagement with the state institutions, contextual factors such as local capacity and the buy-in from all stakeholders;
3. Programmatic design and management.

An agile, incremental approach to designing, developing, testing and refining a T4D solution goes a long way towards producing platforms that meet the needs of the users and are, therefore, embraced by them.

ICTD Digital Centre of Excellence

ICTD is leading UNICEF's digital transformation through its support for digitally-enabled programmes, digital public goods, digital partnerships, frontier technology and digital innovation. Given the focus on digital transformation under UNICEF's new 2022-2025 Strategic Plan, ICTD is revising its structures and the capacities of its staff to be more fit for purpose.

In 2020, UNICEF approved a new Digital Centre of Excellence based in Nairobi as part of the organization's strategic shift towards using digital programming and innovation to tackle programme and humanitarian challenges. The Digital Centre of Excellence will address current gaps in delivering the digital transformation of UNICEF programmes, through a dedicated, field-facing global structure.

This field hub will work closely with regional partners to manage the demand for and deliver digital technology and innovations that support UNICEF's mandate. Among other areas, the Digital Centre of Excellence will lead and support COVID-19 vaccine delivery and risk communication and community engagement using digital channels. It will focus on increasing the effectiveness of routine immunization programmes, strengthening the organization's preparedness for future health crises and ensuring that its country-level investments in digital approaches and solutions are strategic, effective and excellent value for money.

The Digital Centre of Excellence will support the following four strategic pillars:

- **Global digital public goods:** UNICEF will support governments and partners to advance digital public goods (e.g., DHIS2, RapidPro, OpenCRVS) through funding or community engagement.
- **Global in-house digital solutions:** UNICEF will manage and support in-house digital solutions, such as Primero, humanitarian cash transfers, Magic Box and Learning Passport.
- **Digital innovation and frontier technologies:** UNICEF will identify digital innovations and technologies, such as AI, blockchain, drones, and others, for field implementation and scale up.
- **Digital partnerships with expertise in the technology sector:** UNICEF will engage companies, donors and supporters as thought partners and investors in philanthropy and digital programming.

COVID-19 Digital Health Centre of Excellence

The delivery of the COVID-19 vaccine will be an unprecedented effort. Logistic management information systems and capacities will be severely stressed in their abilities to plan, distribute, administer and monitor these vaccination campaigns. Robust and ready-to-scale digital health solutions are needed to efficiently and equitably deploy COVID-19 vaccines under tight timelines, worldwide.

UNICEF and WHO will establish and co-lead a COVID-19 Digital Health Centre of Excellence to provide thought leadership, surge capacity and technical assistance to governments and the United Nations on COVAX delivery. UNICEF digital health teams will lead the day-to-day implementation of the Digital Health Centre of Excellence with the support of participating organizations, including the Bill and Melinda Gates Foundation; the GAVI Alliance, the German Development Agency (GIZ) and the United States Agency for International Development (USAID).

The Digital Health Centre of Excellence will respond to country support requests for the preparation and deployment of cost-effective digital technologies for planning, tracking, monitoring and communicating on equitable COVID-19 vaccine deployment. The centre will take a health system strengthening lens, through readiness assessments, business requirements, platform analysis, data analysis and partnership mapping. ICTD has been instrumental to the development of the COVID-19 Digital Health Centre of Excellence architecture, which will align with and be supported by the Digital Centre of Excellence.

Digital real-time information solutions

The rapid expansion of digital programming over the last year is also evidenced by the acceleration and uptake of digital real-time information solutions employed by countries at scale – a metric that ICTD tracks each year. In 2020, 113 countries (72 per cent) used real-time information technology at scale, exceeding UNICEF's target of 60 per cent by 2020. This work was carried out across all Strategic Plan goal areas. Forty-three per cent of countries reported using RapidPro to power real-time information, and 43 per cent of countries also reported using platforms such as Kobo, Ona, ODK, Commcare and DHIS2, among others. More than 40 per cent of countries reported using U-Report, powered by RapidPro, for youth/citizen engagement at scale.

Key COVID-19 vaccine delivery results

- Sustainable and scalable deployment of digital health solutions that support equitable COVID-19 vaccine distribution
- Target populations for the vaccine will be better identified; gaps in population, coverage and access uncovered; and vaccine delivery optimized using digitally-enabled microplanning
- Equitable vaccination coverage improved through increased use of data and evidence
- Digital health investments for COVAX designed to support other COVID-19 products, and to strengthen health systems in the long term.



PART 3: ACHIEVEMENTS

Since its establishment in 2017, ICTD has worked across headquarters divisions and country and regional offices to deliver results for children, in line with the Strategic Plan 2018–2021. The seven T4D managers deployed at the regional level have supported ICTD to scale innovations and digital solutions and accelerate results for children across the organization. This section expands on the achievements highlighted in the ICTD Annual Report 'Digital UNICEF 2020', describing the results of these efforts in 2020 and the organization's response to COVID-19, under UNICEF's Strategic Plan Goal Areas and across key cross-cutting areas of work.

The response to COVID-19

The COVID-19 pandemic has upended the lives of children and their families across the globe. Children have been severely affected by the unprecedented socioeconomic impacts of the pandemic, which include disruptions to health, nutrition and education services; rising rates of violence against children; lack of access to vital WASH resources; and the erosion of hard-won advances in global development.

With its dual humanitarian and development child rights mandate and substantial presence at the field, country and regional levels, UNICEF has been well positioned to address the scale of needs related to the pandemic globally. Information and communication technologies have been integral to this effort – across key pillars of the UNICEF response to COVID-19 – including risk communication and community engagement; supporting the continuity vital services, particularly through digital health and education initiatives; and the rollout of COVID-19 vaccines.

UNICEF risk communication and community engagement efforts have focused on reaching communities with the information they need to protect themselves from COVID-19, promote community ownership and leadership of the response and help halt the spread of the disease and its consequences for individuals and communities. Digital solutions have been central to this effort. UNICEF has deployed chatbots, SMS, interactive voice response and other technologies through multiple channels, such as U-Report, RapidPro, Infolines, HealthBuddy, VIAMO Services and Commcare, among others. These engagements are promoting facts over fear, bringing reliable guidance to communities, and providing frontline responders with the information and resources they need. This work is described in depth in the following section.

To mitigate the socioeconomic impacts of the pandemic, and ensure the continuity of basic services, UNICEF is working with national authorities and implementing partners to adapt service delivery systems to cope with the new reality, limit interruptions and secure equitable access. This effort has raised the profile and value of digital health – for delivering life-saving services in the short term and strengthening national systems, capacities and infrastructures over the long term. With UNICEF support,

countries are leapfrogging into the digital realm where the pandemic has accelerated interest and action; further digitizing health systems where this process was already underway; and mapping existing digital health solutions with the potential to support vaccine rollout.

UNICEF has also led international efforts to bring virtual and other forms of remote learning to children across the world. This has involved innovating with partners to provide online and distance learning to millions of out-of-school children, and helping children return to school via remote means using information and communication technologies. UNICEF is also supporting school connectivity, education technology strategies, and needs assessment, planning and deployment. With the launch of the Reimagine Education initiative, UNICEF is seeking to connect every child and young person with world-class digital solutions that offer personalized learning.

The contributions of information and communication technologies to UNICEF's programmatic response to COVID-19 – which cut across the Strategic Plan Goal Areas, covering interventions in health, nutrition, WASH, education, child protection and community engagement – are described in depth throughout the report.

UNICEF is actively engaged in the Access to COVID-19 Tools Accelerator, a global collaboration to accelerate the development and production of – and equal access to – COVID-19 tests, treatments and vaccines. UNICEF is also the official coordinator of the COVAX Facility, a global initiative that brings together governments and manufacturers to ensure that COVID-19 vaccines reach those in greatest need.

To prepare countries for this historic vaccine rollout, UNICEF ICTD is participating in the COVAX Innovation Working Group and the COVID-19 Vaccination Delivery Innovation Team. The Team is tasked with accelerating the deployment of readily available technical innovations that address coverage, supply chain and safety problems resulting from COVID-19 vaccine introduction. Its aim: to ensure that countries in need are able to deploy innovative approaches to reaching their populations with vaccines, at scale.

Digital risk communication and community engagement

The behaviours of individuals, families and communities, and their adherence to public health and social guidelines on preventing new infections, are key to slowing the spread of the virus.

In 2020, digital messaging emerged as a powerful tool in UNICEF and partners' responses to COVID-19. The pandemic required governments and UNICEF country office teams across the world to find new, scalable ways to share life-saving information with communities; deliver stimulus and social benefit programmes; educate

health workers on emerging good practice for protecting themselves and their patients; and collect data to inform policy responses, monitor health services and understand public perceptions.

In 2020, ICTD supported UNICEF to reach 3 billion people through risk communication and community engagement initiatives designed to halt the transmission of COVID-19 and mitigate its socioeconomic impacts. These efforts reached communities with the information they needed to protect themselves from COVID-19, promote community ownership and leadership of the response and help halt the spread of the disease and its consequences for individuals and communities.

RapidPro, a global digital public good used by more than 78 country offices to power messaging programmes, was a critical enabler of these services. In 2020, UNICEF-supported, RapidPro-enabled digital messaging programmes delivered more than 752 million messages on COVID-19. This represented a 60 per cent increase in message volume compared with 2019 – the largest such increase since UNICEF began deploying RapidPro programmes in 2014.¹ In the four months following the declaration of the global pandemic, more than 60 country offices launched RapidPro-enabled COVID-19 messaging programmes.

752
million messages
delivered via RapidPro globally

The UNICEF COVID-19 Information Chatbot was developed to support country office risk communication and community engagement activities. Equipped with UNICEF-approved guidance on COVID-19, the chatbot could be deployed by country offices or partner governments within existing digital messaging programmes or as a standalone programme. To date, the chatbot has been customized and deployed in 53 countries, reaching more than 6 million users in the first four months. For example, in countries such as Zimbabwe, UNICEF supported the Government to deploy the chatbot as an official COVID-19 hotline.

UNICEF also continued to pursue strategic partnerships with social media platforms and technology providers. In the early stages of the pandemic, UNICEF secured a short-term Facebook Messenger COVID-19 policy exemption for RapidPro-supported messaging programmes. This exemption expanded the reach of messaging programmes on the Facebook Messenger platform and more than 25 million responses were enabled by the exemption in 2020 which helped to inform and improve UNICEF and partner interventions.

Europe and Central Asia: Using digital technology to dispel misinformation about COVID-19

As COVID-19 continues to spread worldwide, and misinformation and conspiracy theories proliferate, access to relevant and reliable information about the pandemic is vital. To disseminate the facts about the virus and promote protective behaviours, in April 2020, the UNICEF Europe and Central Asia Regional Office and the WHO Regional Office for Europe, co-launched HealthBuddy, a web-based chatbot that uses AI to answer the public's questions about COVID-19.

In October 2020, the chatbot went beyond the web environment and became available as a mobile application. HealthBuddy+ was then launched with new features, including a poll system and a rumour reporting tool. These additional features, which are available through the mobile application, offer users the opportunity to engage in polls on critical aspects of the pandemic and fact check rumours with UNICEF and WHO experts.

The chatbot content, which is available on both the web and mobile app and is presented in an easy-to-understand manner, draws from up-to-date, scientific and evidence-based information about COVID-19. It is reviewed and continuously updated to ensure that it delivers the latest evidence and the most relevant topics and is aligned with the organizations' pandemic response efforts.

HealthBuddy+ is also available to national authorities and public health institutions for tailored use in countries. To date, more than 300,000 users have accessed the chatbot on the web and mobile channels. More than 2,000 rumours have been reported and more than 800,000 interactions have been recorded.

HealthBuddy currently supports 20 languages. Future releases will include support for other languages and deployment in countries without U-Report in Europe and Central Asia.

300,000
users of HealthBuddy+
chatbot in Europe
and Central Asia

Iraq: Leveraging U-Report for COVID-19 risk communication and community engagement

Since the launch of U-Report Iraq in May 2019, the platform has engaged Iraqi youth, including refugees, on issues that impact their lives. In 2020, U-Report was quickly identified

¹ In 2019, UNICEF used RapidPro to deliver more than 487 million messages, a 20 per cent increase from 2018.



as an effective tool for disseminating prevention and protection messages on COVID-19 among young people and their communities.

In 80,000 interactions, 33,000 people gained life-saving information on COVID-19 symptoms, transmission, prevention and infection rates through the COVID-19 Information Chatbot, which can be accessed on Facebook Messenger and Viber. By working with partners to leverage the COVID-19 chatbot as a public good, it was further disseminated to 7 million subscribers on Korek Telecom, 6.5 million on Zain Telecom, and 3.5 million on Asiacell Telecom in June 2020. The chatbot was also disseminated through civil society partners such as Mine Action Group and Voices of People.

In addition, a U-Report survey was developed and answered by 1,500 young people to help the education cluster understand the impact of school closures. The survey explored how school closures have impacted young people's educational progress, mental health and access to school-based services, as well as their hopes for the future, plans for getting back to learning and feelings about the reopening of schools and learning spaces.

UNICEF designed a U-Report myth-busters quiz to assess users' understanding and awareness of the impacts of gender-based violence and violence against children during the COVID-19 pandemic; clarify misconceptions; and raise awareness about how to report violence. Over 43,000 U-Reporters received referral channels for reporting violence and nearly 5,700 young people opted to receive further information.

U-Report also supported UNICEF's health and nutrition programmes in Iraq to conduct rapid assessments of COVID-19 community risk perception. Over 700 young people shared their insights. The data collected have been used to strengthen the COVID-19 response.

43,000
U-Reporters in Iraq received
referrals for reporting on
gender-based violence

Côte d'Ivoire: Addressing COVID-19 misinformation through U-Report

Before the first case of COVID-19 was recorded in Côte d'Ivoire in March 2020, UNICEF, the Ministry of Health and WHO had collaborated on the establishment of a coronavirus information centre/bot as part of the COVID-19 national taskforce. The goal: to combat the rapid spread of misinformation and false rumours about COVID-19.

The bot was designed to complement existing awareness campaigns launched on television and radio by providing accurate, verified COVID-19 information to the general public via SMS, Facebook and WhatsApp. To increase the campaign's reach, UNICEF leveraged its partnerships with mobile network operators, including MTN, Orange and MOOV, to promote usage of the bot among their subscribers. MTN Côte d'Ivoire sent 14 million messages, Orange Côte d'Ivoire sent 10 million messages and MOOV Côte d'Ivoire sent 8 million messages.

As of March 2021, the coronavirus information centre hosted by RapidPro has been consulted more than 3.1 million times by over 1.6 million people who received information on protecting themselves from COVID-19. UNICEF has continued to keep the bot up to date to reflect new developments, and recently integrated a COVAX module with information about COVID-19 vaccination.

1.6 million
people received information
protecting themselves from
COVID-19 in Côte d'Ivoire

Strengthening digital infrastructure for messaging programmes

Despite the size and diversity of UNICEF's globe-spanning digital messaging portfolio, the organization lacks a standard suite of data analysis tools for identifying trends in messaging behaviours. Programme teams seeking to derive insights on the impact of digital messaging often develop new and/or ad-hoc dashboards and analysis solutions from scratch.

As the RapidPro ecosystem has matured, UNICEF has sought to create better infrastructure to enable country offices and government partners to innovate more quickly to design, develop, deliver and monitor programmes at scale. A critical component of this effort has been strengthening analysis and data visualization within the RapidPro ecosystem with the establishment of real-time data-driven dashboards (R3D).

R3D is a data ingestion, warehousing and visualization solution that helps UNICEF programme teams access the data collected via RapidPro-enabled programmes and monitor and extrapolate insights from that data. Several R3D dashboard templates have been developed in collaboration with UNICEF country offices that automatically update with fresh data and can be easily replicated.

In 2020, UNICEF designed re-usable dashboards for RapidPro administrators, regional country offices, U-Report programme teams, and risk communication and community engagement monitoring. By the end of the year, 20 UNICEF country office programmes had been invited to join the expanding, iterative co-creation process.





Malaysia: Engaging adolescents through risk communication and community engagement

The COVID-19 pandemic struck Malaysia in January 2020. By 2021, the country had recorded more than 138,000 cases and 555 deaths.

UNICEF quickly mobilized its risk communication and community engagement response incorporating a range of tactics, including mental health and psychosocial support information disseminated through social media; adolescent-friendly digital assets (e.g. video, song, dance); youth engagement; celebrity influencers to amplify key messages; and U-Report surveys to listen to young people's concerns.

For example, @KitaConnect (We Connect) was created to offer a virtual social space for youth to address their mental health and psychosocial support needs. Using RapidPro technology, UNICEF created a dedicated online space on Telegram where young users get regular updates on COVID-19 and mental health and psychosocial support-related information in an adolescent-friendly way. @KitaConnect also provides a participatory environment through activities and challenges. By the end of 2020, @KitaConnect had successfully engaged more than 500,000 young people through over 23 online sessions, 237 messages, 13 polls, 134 social media posts and five challenges.

500,000
young people engaged
through @KitaConnect
in Malaysia

UNICEF will transition @KitaConnect from an emergency response channel to a core online engagement programme under UNICEF's youth and adolescent portfolio to rapidly communicate and identify the needs of young people in Malaysia, and provide them with the resources, opportunities and skills they need to maximize their psychosocial well-being, support their transition to employment and meaningfully participate in decisions that affect their lives.

Internet of Good Things

The COVID-19 pandemic has challenged UNICEF to explore new ways of reaching the last digital mile. Communities that were previously difficult to reach have become even more inaccessible as previous models of outreach, including community events, are no longer available. To address this challenge, UNICEF country offices have leveraged the Internet of Good Things (IoGT) to deliver programmes remotely.

IoGT is a global digital good offering a web-based content management system that enables access to content without data charges via partnerships with mobile network operators and Free Basics by Facebook. As a website, IoGT can be customized to meet the needs of country offices and their programmes and support third-party content from like-minded implementing partners or ministries. IoGT reaches the last digital mile with low-end phone optimization, local language support, accessible design with low-literacy users in mind, and low bandwidth requirements.

In 2020, IoGT supported the delivery of frontline worker training materials, job aids and key risk communication and community engagement efforts. The platform scaled from 18 to 29 countries and grew its annual reach by more than 200 per cent with over 25 million site visits. IoGT has been integrated into UNICEF's digital programming at all levels.

In 2021, UNICEF country offices will upgrade their IoGT sites to version 2.0. This new version releases IoGT as a progressive web application aimed at rapidly scaling up content across sites, improving the user experience on smart devices, and providing offline access. New features will include a quiz module and the capacity for monitoring user performance across multiple surveys and quizzes.

Zimbabwe: Bringing vital information on COVID-19 to vulnerable communities

COVID-19 has had far-reaching impacts on women and children in Zimbabwe. Adolescents and children are vulnerable to many of the pandemic's secondary effects, such as malnutrition, child marriage, physical, sexual and gender-based violence and reduced access to health care.

Among the many challenges that COVID-19 presents is the ability to disseminate information while maintaining physical distance. While Zimbabwe has high mobile phone penetration of over 90 per cent, access to the internet is a challenge for many due to the prohibitive cost of data.

To address inequalities in access to data and bridge the digital divide, UNICEF and Econet Wireless launched IoGT in June with a free virtual concert via Facebook Live, simulcast on a national radio station. The launch aimed to create awareness of and drive traffic to IoGT through virtual interactions with music performers and talks by popular artists.

Content distribution on IoGT will be localized and cover Zimbabwe's three main languages. Popular sections include COVID-19 information, advice for students about COVID-19, career advice, and All In, a special section for adolescents.

Following the launch event in June, the number of subscribers skyrocketed – from 195 when the pandemic was declared to 130,000.



United Republic of Tanzania: Training frontline workers during COVID-19

In remote communities in the United Republic of Tanzania, reaching frontline workers with online trainings on how to care for and support COVID-19 patients is exceptionally difficult: experience with technology is lacking, access to smart phones is rare and mobile networks are limited.

UNICEF Tanzania is meeting these challenges with loGT. Through loGT, frontline workers are able to access module-based curricula, watch videos, complete surveys, participate in polls, share comments, and exchange ideas with Ministry of Health and Social Welfare staff (who are trained moderators).

The Ministry selected loGT for national scale due to its:

- **Accessibility:** loGT can be accessed on basic phones, eliminating the burden of hardware procurement, distribution and maintenance.

- **Language support:** loGT can host content in multiple local languages.
- **Ease of use:** loGT's user interface is designed with first-time internet users in mind.
- **Scalability:** loGT can be deployed free of data charges and the Ministry can have moderating and editing permissions.

Following the United Republic of Tanzania's success, loGT is being brought to scale in the Pacific region, and other countries are exploring how loGT can support student learning where affordable data or smart phones are not readily available.



Interactive voice response

UNICEF has established a long-term agreement with VIAMO mobile and interactive voice response services to provide individuals, communities, key influencers/ opinion leaders and frontline workers with information on preventing and responding to COVID-19.

VIAMO has developed global digital outreach platforms and interactive voice response technology that is embedded with mobile network operators and can be quickly leveraged to deliver remote digital engagement at a large scale to respond to COVID-19. VIAMO services are able to reach anyone with a cell phone anywhere in the world – making their tool a potentially powerful channel for social science research and risk communication and community engagement – particularly for low literacy populations.

In 2020, UNICEF engaged VIAMO to provide digital technology services such as mobile surveys, behaviour change communication campaigns, and remote training of frontline workers. Between June and December 2020, VIAMO supported 21 countries to undertake 27 different initiatives related to COVID-19, reaching 9 million people through mobile messaging. ‘

Examples of this work are described below.

Mobile surveys

Traditional door-to-door surveys in remote areas of the world can be time-consuming, expensive and complex endeavours; and face-to-face data collection during the COVID-19 pandemic has been rendered impossible. Using interactive voice response and in partnership with mobile network operators, VIAMO engaged more than 135,000 people through mobile surveys in Afghanistan, Angola, Burkina Faso, Ethiopia, Indonesia, Kenya, Madagascar, Malawi, Mozambique, Nepal, Pakistan, Rwanda, South Africa, Uganda and Zimbabwe. In Eastern and Southern Africa, UNICEF is using the survey feedback to help governments create more targeted policies and programmes in response to COVID-19.

135,000
people engaged through
mobile surveys globally

Targeted mass messaging

In Pakistan, VIAMO worked with UNICEF to reach people in 60 districts with information about the COVID-19 outbreak. The outreach and behaviour change campaign was conducted using a multi-channel targeted mass messaging approach that employed proven call-back strategies to ensure significant reach. The campaign reached people in remote areas (e.g., borderland districts and tribal areas) and urban slums with high disease risk. More than 2 million SMS were delivered to populations with smartphones in target areas and 6.5 million people were engaged through robocalls. Millions of vulnerable people in Pakistan are now better equipped with the information they need to protect themselves, their families and their communities.

Health volunteer and worker training

VIAMO supported UNICEF’s response to COVID-19 in Nepal through two remote training curricula for female community health volunteers and health workers via interactive voice response. Content was delivered via five-minute voice recordings in four modules for volunteers and seven modules for health workers. A pre-test and post-test were sent via automated phone survey to demonstrate improvements in knowledge, attitudes and practices. More than 10,000 volunteers and 3,400 health workers were ultimately trained.



GOAL AREA 1: EVERY CHILD SURVIVES AND THRIVES

While millions of children have a significantly better chance of survival today than in 1990, children continue to die from preventable causes on an enormous scale. Between 1990 and 2018, 291 million children under age 15 died of causes that could have been prevented.² And in 2020, COVID-19-related disruptions to health, nutrition and livelihoods risk undermining global progress on child health.

UNICEF Goal Area 1 works across four interconnected sectors – health, nutrition, HIV and AIDS and early childhood development – so that each child has the best possible chance to survive early childhood, be nourished and stimulated as they grow, and benefit from the diets, services and practices they need to thrive through adolescence and adulthood. At the core of Goal Area 1 is a strategy aimed at strengthening health, food and social protection systems as platforms for achieving child survival, growth and development outcomes that contribute to SDGs 2, 3, 4 and 5.

By harnessing the power of information and communication technologies for programmes such as vaccine management, disease tracking and treatment for malnutrition, UNICEF can support countries to ensure that every child survives and thrives. As an integral part of its work under Goal Area 1, and its response to the COVID-19 pandemic, UNICEF is bringing together multi-sectoral teams to use technology, digital innovation and human-centred design to strengthen national health systems and health enabling environments and leverage health and nutrition data to improve the lives of billions of children.

The Pacific: Building the confidence and skills of frontline health workers responding to COVID-19

Frontline health workers play a crucial role in delivering promotive, preventive, curative and rehabilitative primary health care services. To do this work well, they need the most up-to-date health knowledge and skills.

The Pacific is home to nearly 5,900 qualified nurses and midwives providing health services to 2.5 million people living on more than 660 islands. The majority of frontline health workers are in remote rural areas and outer islands where both phone and internet connectivity can be limited.

Since the COVID-19 pandemic, a plethora of new guidance for prevention, treatment, care and adaption of routine services has been released. One of the greatest challenges is providing frontline health workers with knowledge, skills, confidence and guidance to manage COVID-19 infections and continue to deliver quality essential health services to the most remote and vulnerable populations.

To address this challenge, UNICEF, in conjunction with the Joint Incident Management Team Training Pillar, the Pacific Community, the Pacific Island News Association and the Pacific Heads of Nursing, launched Health Care on Air Pacific, a distance education programme for health workers. This initiative uses radio and other communication platforms to motivate the primary health care workforce and provide quality instruction on delivering services during COVID-19 that is comparable to face-to-face formats. The programme aims to equip 60 per cent of frontline health workers in the Pacific with the knowledge, skills and confidence they need to protect themselves and deliver the best quality of services during the COVID-19 pandemic.

Participating health workers will have the opportunity to ask questions, share learning needs and receive episode summaries – via a two-way communication system powered by RapidPro. Recordings and scripts of the episodes are available on a dedicated password-protected page on IoGT. Launched in July 2020, with support from UNICEF, the governments of the United States, New Zealand and Japan have been airing the episodes over the last six months.

Uganda: Improving access to and delivery of health services using eHealth

In a world of rapidly changing digital technologies, eHealth is helping governments deliver quality services to populations at scale.

In Uganda, UNICEF is working with IntraHealth International and GoodCitizen to support the Ministry of Health to deploy a groundbreaking technology that will seamlessly integrate two community health information systems – the RapidPro-based FamilyConnect and the Integrated Human Resources Information System-based community health worker registry.

Despite being intrinsically interrelated, these two community health information systems had been operating separately, causing unnecessary delays in data transfer and processing. These delays were impacting the efficiency and effectiveness of service delivery, particularly to women and children in rural areas.

The groundbreaking innovation – the mHero Connector – makes it possible to automatically synchronize and verify data from these systems. The technology also allows for instant information sharing via SMS between the Ministry of Health and community health workers, which has improved coordination and health care delivery at the community level, and will offer a vital resource in future health emergencies.

² United Nations Children's Fund, 'Global Annual Results Report 2019 – Goal Area 1: Every child survives and thrives', UNICEF, New York, 2020.

Eastern and Southern Africa: Supporting human resources for health

In Eastern and Southern Africa, UNICEF has partnered with IntraHealth International, a global health non-profit that works in over 100 countries to improve the performance of health workers and strengthen the systems in which they work so that everyone everywhere has the health care they need to survive.

Through a new long-term agreement, UNICEF will engage IntraHealth's open-source software development resources to update health workforce registries built through past human resource for health initiatives. An example is the Integrated Human Resource Information System developed by IntraHealth in 2005 to help countries track and manage their health workforce data. In the context of COVID-19, UNICEF will update the software and strengthen country capacities to track and manage their health workforce data.



West and Central Africa: Equipping community health workers with accurate information about COVID-19

In West and Central Africa, national health systems continue to grapple with the challenges of keeping frontline health workers informed as the COVID-19 response evolves, and continuing essential services during the pandemic. Since traditional in-person education is not always feasible in the context of COVID-19, digital health solutions have become essential to reaching frontline health workers with the information they need.

To address this, UNICEF adapted the open-source COVID-19 Digital Classroom curricula developed with WHO and Johns Hopkins University to the West and Central Africa context to make relevant content digitally available for dissemination across several platforms. Today, countries in the region have access to a nine-module course on topics such as COVID-19 basics, prevention, protection, mental health, contact tracing, home-based care, community-based surveillance, risk communication and community engagement, continuing primary health care and vaccination.

In September 2020, UNICEF tested the curricula with 30 community health workers and 10 supervisors over a five-day period in Liberia. All community health workers received a smartphone and accessed the modules on COVID-19, prevention and protection and mental health and wellness using one of three digital platforms: an SMS Chatbot, Moodle (an open-source learning platform) and IoT.

The SMS Chatbot emerged as the preferred digital platform, with Moodle as a close second. The participants were able to learn quickly and start using the SMS Chatbot platform immediately, while basic training was necessary for Moodle and IoT. Since neither the SMS Chatbot nor Moodle require continuous connectivity, these platforms will be essential to expanding the curricula to low-bandwidth or offline settings.

Following the success of the Liberia pilot, the COVID-19 Digital Classroom content is being adapted for additional messaging platforms, and further contextualized to the West and Central Africa region. To date, the curricula has been rolled out in Chad, the Democratic Republic of the Congo and Togo, where more than 800 community health workers have been trained.

Burkina Faso: Leveraging digital health for COVID-19 surveillance and response

When the COVID-19 pandemic struck Burkina Faso, the country was already grappling with a serious humanitarian crisis characterized by insecurity and population displacements. By August 2020, the country had registered 1,153 cases of COVID-19 and 54 deaths.

In response to COVID-19 and related movement restrictions, UNICEF adapted the existing national digital health initiative to support COVID-19 epidemic surveillance needs. Using the innovative digital health COVID-19 platform, UNICEF supported contact tracing, detection of suspected cases, and searches for undeclared contact cases. Community members and community health workers can also use the platform to access digital information on COVID-19 symptoms, virtually notify suspected cases, and initiate targeted responses via SMS, voice server and telephone in four local languages.

As of September 2020, over 400 health workers from 575 health facilities in six regions of Burkina Faso are now using the COVID-19 triage to monitor patients within their locality and are providing additional support to community health workers for community follow-up. In the same period, nearly 60,000 people had been followed with nearly 200 alerts of probable COVID-19 cases reported.

60,000
people received COVID-19
follow up in Burkina Faso

As a next step, UNICEF Burkina Faso is finalizing the local installation of RapidPro. Some 19,000 community health workers have been trained to conduct community-based monitoring of COVID-19 using the platform. UNICEF will also continue to advocate with partners and the Government to invest additional resources in scaling up the solution to flatten the curve.

Tunisia: Strengthening national immunization systems

Timely vaccination is vital to protecting children and other vulnerable groups from life-threatening illness, maintaining national immunity levels and preventing outbreaks of infectious diseases.

UNICEF is supporting the Tunisian Ministry of Health to strengthen their Health Information Systems and vaccination efforts using technology. TUNeVACC is a mobile application that health workers can use to register and schedule vaccinations, and monitor the vaccination and growth details of Tunisian children. Its features include an electronic vaccination card; real-time dashboards and reports that providers can use to make informed adjustments to services; and automated SMS to help families schedule vaccinations and access service locations. The system has been launched in two pilot districts – Sousse and Kasserine – and is currently being scaled to the remaining 22 regions.



Malawi: Enabling health service delivery through quarantine management

In Malawi, UNICEF and partners are exploring solutions for mitigating the impact of the pandemic and ensuring the well-being of children, women and vulnerable populations.

In 2017, the Ministry of Health established an electronic disease surveillance and response solution with UNICEF support. In 2019, the solution – which incorporates District Health Information Software, electronic medical records systems, lab information management systems and other digital health components – was scaled to 11 districts.

When the COVID-19 pandemic struck, the Government and partners – including UNICEF, Good Citizen and Baobab Health Trust – sought to adapt the solution to the COVID-19 response, and in so doing, develop a comprehensive COVID-19 solution for Malawi. Part of the effort was to facilitate remote communication between health care workers and those in quarantine and isolation.

The resulting technology – the COVID-19 quarantine management solution – is a scalable, SMS-based digital platform using RapidPro that allows the Ministry of Health to correspond and interact with those in quarantine or isolation and perform real-time tracking of symptoms while adhering to infection prevention and control measures. People with symptoms are able to self-register, allowing the health workforce to monitor and manage cases remotely. Its interoperability with other components of Malawi's electronic disease surveillance system makes information available instantly to authorized users and

facilitates straightforward data aggregation. As of the end of December 2020, 500 health care providers have been registered to use the system and over 7,500 community members have used the application and received COVID-19 prevention information.

Ukraine: Technology-driven monitoring for better decision making

When the COVID-19 pandemic struck in Ukraine, the Ministry of Health and the Public Health Center turned to UNICEF for support on monitoring the epidemiological situation.

In close consultation with WHO, the CDC and the Academia of Science Ukraine, UNICEF collected and stored data on COVID-19 using Google Big Query, and created online dashboards visualizing the epidemiological situation using Power Bi and ArcGis software. The data visualization dashboards provided daily and monthly data on the number of COVID-19 cases, recoveries and deaths with disaggregation by geographic location, sex and age (Power Bi) and health workforce and non-health workforce populations (ArcGis).

Using these systems and the data they generated, the Government was able to make timely and evidence-based decisions on quarantine measures that allowed the country to avoid a full lockdown, prevent the further deterioration of the economy and help children continue to access basic services.

UNICEF and the GAVI Alliance launch good practices and lessons learned report on real-time monitoring of supplementary immunization activities

Supplementary immunization activities and mass immunization campaigns are effective strategies for delivering vaccination to children who have otherwise been missed by routine services. Real-time monitoring – activities that employ digital technologies to accelerate the sharing, analysis and use of data to improve campaign quality – can enhance the quality of supplementary immunization activities and campaigns by helping implementers review progress against targets; identify issues and gaps; track supplies, human resources and vaccine sessions; and make prompt decisions about corrective actions.

With the roll out of the COVID-19 vaccine, the use of real-time monitoring to support immunization activities is more important than ever. In 2020, UNICEF and GAVI Alliance launched a global report, 'The Use of Digital Technologies for Real-Time Monitoring of Supplementary Immunization Activities; Good Practices and Lessons Learned' that compiles good practices and lessons learned from countries implementing real-time monitoring for immunization campaigns. Data and information were collected from various sources, including interviews with UNICEF and WHO regional and country office staff; a field mission to Pakistan; consultations with key partners; and a literature review. Four countries with robust experience implementing real-time monitoring technologies for immunization campaigns – Indonesia, Pakistan, Uganda and Zambia – were included as case studies. Nearly 70 good practices and lessons learned were documented.

Senegal: Rapidly detecting COVID-19 cases using mInfoSanté

Deployed during the Ebola outbreak in West Africa in 2014 and 2015, mInfoSanté has been used to provide epidemiological surveillance services to health workers. It is primarily an SMS-based communication system linking the Ministry of Health and health providers to improve the coordination and monitoring of health services and emergency interventions.

With the emergence of COVID-19, the tool's utility was extended to support the general public in the rapid detection of suspected cases. The digital system works by generating a suspected case signal that is validated and dispatched to the district medical chief who initiates an investigation. Using existing media channels such as Telegram, WhatsApp and SMS, it facilitates the comprehensive capture and prompt handling of all COVID-19 signals coming from the community. The initiative is currently present in 14 medical regions and 78 health districts and employs more than 1,500 health professionals.

The initiative has proven extremely valuable. It has served as a single, integrated response for early warning and detection, rather than two distinct systems. By using an established tool with strong government ownership that the health workforce has already been trained to use, the application to the COVID-19 situation was effective. The initiative also leveraged existing partnerships – including with WHO, USAID and Measure Evaluation – that contributed to its adaptation. The platform has strengthened local coordination, saved time on communication, facilitated awareness raising, and enabled contact tracing.

Democratic Republic of the Congo: Providing life-saving information through COVID-19 service centres

In the Democratic Republic of the Congo, UNICEF has worked with the Ministry of Health, the National Communication Commission and mobile network operators to establish service centres to improve communication on COVID-19. The service centres include a toll-free national call centre and a national SMS centre.

With a capacity of 50 agents, the call centre is a key component of the COVID-19 response infrastructure. It was designed using a single-point-of-contact model to seamlessly provide COVID-19-related information and medical assistance to the public across the country. Three toll-free numbers supported by four mobile network operators are routed to the call centre for a seamless communication experience. An interactive voice response disseminates COVID-19-related messages during call waiting or after working hours. The SMS centres provide verified information on COVID-19 through trained specialists and an automated bot.

The call centre receives 12,600 calls/day, of which 6 per cent (or 600) are alerts. This is a significant number of signals, making the call centre a critical public health system. It has also been vital to stopping the spread of rumours within the public. In 2021, UNICEF will scale this initiative and widen its reach.

12,600
callers per day received
COVID-19 information
in the Democratic Republic
of the Congo

Egypt: Deploying RapidPro for the COVID-19 response

In Egypt, UNICEF has invested in building the technical capacities of national partners to maintain and operate RapidPro. The platform is hosted locally in two government-run data centres, and national partners are highly skilled in managing communication flows. This approach has proven sustainable and effective.

When the COVID-19 pandemic struck, Egypt was able to immediately deploy RapidPro for six months to facilitate two-way communication with health workers and people in contact with COVID-19 patients. The communication was designed to encourage social distancing and ease pressure on government call centres with features such as case reporting and psychosocial support. The country's ability to deploy the system rapidly in response to the pandemic is a testament to its ownership of the platform.

As of the end of December 2020, 79 per cent of social workers had been reached and trained; and more than 250,000 families had been reached via RapidPro communications.

Indonesia: Assessing the impacts of COVID-19 on routine immunization

In Indonesia, UNICEF supported the Ministry of Health to conduct a rapid assessment to better understand the effects of COVID-19 on immunization services. The aim of this exercise was to identify gaps, understand health worker perceptions of the situation, prepare for the resumption of immunization activities and tailor interventions to reach vulnerable communities.

Between 20 and 29 April 2020, more than half of the country's health centres participated in the online survey. The survey found that in nearly 84 per cent of reporting health facilities, immunization services were severely disrupted due to the pandemic and physical distancing measures. As an immediate response, the Ministry of Health developed a guideline on the safe delivery of immunization during the pandemic.



Report

Spotlight on Digital Public Goods: District Health Information Software 2

Digital public goods are digital software tools that can be adapted to different countries and contexts and used to address key development and humanitarian challenges. Mature digital public good software is free, open-source, interoperable, supported by a strong community and funded by multiple sources. Digital public goods have been deployed at significant scale, used across multiple countries over an extended period and demonstrated effectiveness.

ICTD works to identify and strategically shape investments and opportunities for digital public goods in ways that strengthen national systems and improve service delivery. A great example is how the Division supports open-source health information management services such as DHIS2, which helps health professionals save lives by monitoring patient status, improving disease surveillance and pinpointing outbreaks.

DHIS2 is currently in use in more than 100 countries worldwide and the application can be used free of charge. Platforms such as RapidPro, ODK and OpenLMIS – all which have high interoperability with health information systems – have allowed this access to spread across the globe.

In 2020, a DHIS2 investor meeting called for greater integration or interoperability between DHIS2 and other digital solutions, such as RapidPro. While countries are creating bespoke integrations of DHIS2 and RapidPro, these are fragile, difficult to maintain, and not transferable to other country contexts. RapidPro, which is used in a growing number of countries (80+) for two-way communication and data reporting, is increasingly being adopted by ministries of health as the generic mobile communications engine. In some countries, there is now a hard requirement that existing RapidPro health programmes are integrated into DHIS2.

ICTD and Digital Health teams are working with the University of Oslo to develop the technical approach for a “connector” between RapidPro and DHIS2 to facilitate interoperability and deployments to support health systems strengthening.

Ona: Strengthening digital solutions through data

At the global level, UNICEF is using Ona’s professional services to develop and maintain digital solutions. This has included strengthening health management information systems, community health information systems and civil registration and vital statistics; and scaling up the Open Smart Register Platform as part of UNICEF’s Digital Health Strategy. These solutions are being enhanced using Ona’s data management software as service, which enables the collection, analysis, mapping, reporting on and visualization of data.

Ona Data is currently at scale (excluding free accounts and trials) in Afghanistan, Bangladesh, Burundi, Cambodia, Ethiopia, Mozambique, Myanmar, India, Indonesia, the Pacific, Philippines, Somalia, South Sudan, Viet Nam and Zimbabwe, as well as the Regional Office for Southern Asia. Pilots and test accounts are also in place across the organization, including in Botswana, Madagascar, the

United Republic of Tanzania and the Eastern and Southern Africa and East Asia and the Pacific Regional Offices. In addition, similar tools built on the same technology standard, such as Kobo ToolBox or ODK Collect, are widely diffused across UNICEF and used by virtually every country office, as well as partners and other United Nations agencies.

In the Philippines, for example, following a polio outbreak, UNICEF, WHO and the Department of Health used Ona/ODK to support the Philippines Synchronized Polio Vaccination Campaign with mobile, online and offline data collection. ODK was used to perform readiness assessments and monitor immunization progress and stocks, and the information was routed to the Ona platform, where it was analysed and visualized in real time. The ease of implementation and the reliability of the data were crucial to the success of the vaccine programme.

Serbia: Using digital technology to support early childhood development

In Serbia, parents of young children often lack access to timely and reliable information and knowledge on child development and how to stimulate children through daily activities. Serbia's existing early childhood development resources – the Halo Beba phone counselling centre and website – have been overloaded by rising demand for support.

UNICEF and partners, including the City Institute for Public Health, Buteout, the Lego Foundation and others, created the new interactive parenting application, Halo Beba – Vaš saputnik u roditeljstvu (Halo Beba-Your Parenting Companion), to complement these existing tools, meet the increasing demand for high quality, individualized support and expand access to child development services across the country. In December 2020, the mobile application was released on the Google Play Store for Android devices with more than 470 articles, including videos on key developmental milestones that are also available

offline. The application offers an interactive, individualized journey through parenthood, with options for monitoring development and growth, and reminders for health check-ups, vaccination days and developmental risks. It is currently available in Serbian and English.

518,600
people received early
childhood development
support in Serbia

Just two months after the launch, the application had been downloaded more than 5,000 times, and over 518,000 people had been reached with information about the Halo Beba app through social media. The Halo Beba app has been used as a foundation to develop a regional parenting application, Parent Buddy, which, once optimized, will be launched in nine countries in the region.

Spotlight on Mental Health: Protecting children and mothers during the global pandemic in Tunisia

COVID-19 is impacting families in a range of ways, including by leaving vulnerable members of society, including children, women and persons with disabilities, struggling in isolation. In the Middle East and North Africa, governments and civil society organizations have noted an increase in reports of domestic violence. In Jordan, reports of domestic violence increased 33 per cent during the first month of lockdown; and in Tunisia, nearly 6,700 cases of violence were reported between March and May.³

In response to rising cases of gender-based violence, UNICEF partnered with the Ministry of Women, Children, Families and Seniors and the private sector to establish Green Line 1809, a helpline designed to alleviate the psychological load and tension experienced by families in confinement during the COVID-19 pandemic. Green Line is managed by a group of 17 qualified psychologists and one child psychiatrist and is live seven days a week, from 8 a.m. until midnight. It includes a back-end component that hosts and tracks incoming calls and collects data and generates reports in real time.

³ Organisation for Economic Co-operation and Development, 'COVID-19 Crisis in the MENA Region: Impact on gender equality and policy responses', OECD, 10 June 2020.



GOAL AREA 2: EVERY CHILD LEARNS

More children and adolescents are enrolled in school today than ever before. Yet for so many of these students, schooling does not lead to learning.

Even before the COVID-19 pandemic, 53 per cent of children in low- and middle-income countries were unable to read and understand a simple story by the end of primary school.⁴ With the onset of the COVID-19 pandemic, the world has seen the largest disruption to education in history: A projected 24 million children will drop out of school due to COVID-19-related school closures, exacerbating pre-existing disparities and reversing decades of progress.⁵

UNICEF's Goal Area 2 is about the firm belief that every child has the right to an education and quality learning opportunities from early childhood to adolescence. Innovation is vital to realizing these rights, strengthening education systems, and ensuring that schooling translates into strong learning outcomes. Across its education programmes, and in the response to COVID-19, UNICEF is leveraging technology and digital innovation to keep students learning, wherever they are.

Reimagine Education

The world is facing a learning crisis. Millions of children and young people are not developing the skills they need to break out of poverty. The growth of technology and the broad range of actors providing online learning means that learning opportunities can be delivered anywhere, at any time. But more than half of the world's children and young people are on the wrong side of the digital divide, limiting access to the same opportunities as their connected peers. The World Bank estimates a loss of US\$10 trillion in earnings over the lifetime of this generation of children and young people if urgent action is not taken to address the learning crisis.⁶

This is the impetus behind Reimagine Education – a global initiative launched by UNICEF in 2020. A modern education should build and accredit basic skills – reading, writing and math – as well as skills in problem solving, creativity and critical thinking, which young people need for work, to start a business and to engage productively in their community. The availability and potential of technology means that digital learning should be a part of a basic basket of essential services for every child and young person. This means connecting every child and young person – some 3.5 billion by 2030 – to world-class digital solutions that offer personalized learning to leapfrog to a brighter future.

3.5 billion

children connected by 2030

As part of the Reimagine Education initiative, UNICEF is calling for:

- The most vulnerable children and young people to be prioritized in getting connected and gaining access to quality digital learning;
- Digital learning to be relevant to each individual child and young person, including their level of education and language, and is accessible for children with disabilities;
- Education funding to be protected and for the needs of the most vulnerable children and young people to be prioritized; and
- Decision-makers to maximize innovation, impetus and investment through cross-community collaborations involving governments, businesses, community groups, industry pioneers and more.

Reimagine Education will drive change in five key areas that together will unlock opportunity, choice and learning for every child and young person:

1. World-class digital learning solutions
2. Connectivity
3. Devices
4. Affordable content and data
5. Young people's engagement

⁴ World Bank, 'Ending Learning Poverty: What Will It Take?', World Bank, Washington, D.C., 2019.

⁵ Henrietta Fore, UNICEF Executive Director, remarks at a press conference on new updated guidance on school-related public health measures in the context of COVID-19 (as prepared), New York, 15 September 2020.

⁶ United Nations Children's Fund, 'Reimagine Education', UNICEF, <www.unicef.org/reimagine/education>, accessed 12 April 2020.

Reimagine Education: Enabling access to devices

Access to connectivity will be meaningful for the most marginalized children and young people only if they have access to devices, especially smartphones, tablets, laptops and desktop computers which would allow them to learn anywhere and anytime.

To Reimagine Education through enabling access to Devices, ICTD is working with programme, procurement and partnership teams and national partners to:

- Define the programmatic functional requirements and use cases – beginning with an assessment of country needs and the national EdTech landscape;
- Establish agreed to minimum information technology standards and specifications for digital learning devices, including accessibility and universal design for the diversity of learners;
- Consider the Device Life Cycle, including disposal of digital learning devices during the planning phase;
- Define the most appropriate strategies to access low cost devices with government partners including sustainable financing mechanisms and public-private partnerships for sourcing, including procurement;
- Identify procurement options and select sourcing strategies and conduct procurement activities;
- Create incentives for lower cost, more “fit-for-purpose” devices made available within local commercial markets. This could include waiving or reducing value-added tax, creating government incentives for the private sector and households wishing to purchase devices, etc.;
- Ensure mechanisms are in place to provide feedback to programme and information and communication technology teams whether the device/EdTech component is meeting stated objectives.

Enabling connectivity through Giga

Some 3.7 billion people in the world do not have access to the Internet. This lack of connectivity can mean exclusion, lack of access to information, fewer resources to learn and grow, and limited opportunities for children and youth to fulfil their potential.

Closing the digital divide requires global cooperation, leadership and innovation – both in terms of financing and technology. Giga, launched by UNICEF’s Office of

Innovation in 2019, is a global initiative to connect every school to the internet and every young person to information, opportunity and choice. Giga also serves as a platform for creating the infrastructure necessary to provide digital connectivity to an entire country, for every community and for every citizen. It uses schools not only to identify demand for connectivity, but also as an analogy for learning and connecting where the community can come together and support its next generation.

Giga activities supported by ICTD at regional and country levels:

- Engaging with governments, including offices of prime ministers/cabinets, line ministries, information and communication technology authorities and communications commissions;
- Aligning Giga workplans with national development strategies and country workplans;
- Aligning Giga components – such as school mapping – with national systems – such as national school registries;
- Engaging with development partners, including the International Telecommunications Union, the World Bank, the United Nations Development Programme (UNDP) and the United Nations Educational, Scientific and Cultural Organization (UNESCO);
- Engaging with private sector partners, including internet service providers and mobile network operators;
- Conducting readiness assessments;
- Developing investment and scale up plans;
- Creating device strategies, including for procurement.

Kosovo: Expanding digital learning for pre-primary education

In Kosovo, the onset of the COVID-19 pandemic forced educational institutions to close and move online, which posed significant challenges for students.⁷ However, UNICEF's strong engagement in the COVID-19 response, and efforts to adapt its programming, have created new opportunities for children, even during these unprecedented times.

UNICEF, the Ministry of Education and Science, Save the Children and local non-governmental organizations collaborated on the development of a digital distance learning platform for children aged 0 to 6 years, their parents and educators. The platform engages parents and children with daily early childhood development activities and a range of resources with benefits that will extend beyond the pandemic period. These include instructional videos on child development; play and learning activities that promote parental engagement in children's health and development; and thematic activities, including content that engages fathers.

The platform has not only provided children with the opportunity to continue their pre-school educations, it has also expanded educational opportunities for those children who had not been enrolled in pre-school before COVID-19. To date, the platform has reached 220,000 unique users, and recorded 2.7 million visits.

Since its launch, UNICEF and partners have promoted and strengthened the platform with the distribution of 5,000 early childhood development kits with learning materials for vulnerable children, and skills building resources on early childhood development and using the digital platform for 1,500 educators, including over 400 educators trained on inclusive early learning. To reach children with limited access to digital tools, platform activities were also transmitted daily on national television. To further communicate the need to invest in children and engage parents in childcare and development, UNICEF organized the social media campaign "WhileAtHome" which reached more than 170,000 people.

2.7 million

visits to the digital distance learning platform in Kosovo

Looking beyond young children, as schools began to reopen in September, UNICEF also supported the Government to develop a case registry and reporting module to track COVID-19 infections by school. The module provides real-time data on detected and suspected cases of COVID-19 at the individual, classroom and school levels, and informs educational leaders on how to apply the relevant measures and learning modalities for specific schools to avoid school closures.

⁷ All references to Kosovo in this report should be understood to be in the context of United Nations Security Council resolution 1244 (1999).



Timor-Leste: Calling for connectivity for students and teachers

In October, more than 300 educators, pupils, development partners and government representatives came together to delve into the future of digital learning in Timor-Leste.

The conference, 'Reimagine Education: ICT & Innovation in Timor-Leste', focused on the use of information and communication technologies and innovation in education and promoting collaboration between partners. The conference was organized by the Ministry of Education, Youth and Sports and UNICEF.

Participants called for increased investments by the Government and partners in digital education solutions for teachers and students, as well as the inclusion of information and communication technologies in the national curriculum for children of all ages. A major theme of the talks was that the introduction of critical thinking and design disciplines in the national curriculum, in conjunction with increased internet connectivity in all schools, would accelerate progress towards ensuring every child in Timor-Leste receives the education they need and deserve.

The COVID-19 emergency acted as a catalyst for information and communication technology in education in Timor-Leste. School closures and other restrictions compelled both the Government and its partners to innovate quickly to ensure children had opportunities for continued learning. In only a matter of weeks, a series of distance learning programmes that would normally have taken several months to be conceived, developed and implemented, were quickly rolled out. Among them, "School Goes Home" is described below.

UNICEF will continue to support the Ministry of Education, Youth and Sports with innovative ideas to ensure that every child in Timor-Leste can realize their right to a quality education.

Timor-Leste: Continuing education through remote learning

When COVID-19-related school closures disrupted the learning of 400,000 students in Timor-Leste, the Ministry of Education, Youth and Sports called on UNICEF to help find a way to keep students learning.

Setting up distance learning to support all children, especially those in remote areas, was a challenge due to limited access to technology. Internet in Timor-Leste is predominantly available in urban areas; and while almost all families in Timor-Leste have a mobile phone, less than half have a television and only a quarter of people have access to radio.

In March 2020, the Ministry of Education, Youth and Sports and UNICEF, with support from the Global Partnership for Education, launched School Goes Home, a distance learning platform and the driving force behind the effort

to reimagine education in response to the COVID-19 pandemic.

Encompassing television and radio programmes, electronic books, the Learning Passport platform and printed books for children who are not digitally connected, School Goes Home was designed to reach all children in Timor-Leste with access to educational resources no matter their circumstances. The online part of the programme – Learning Passport – gives children remote access to their national school curriculum with child-friendly textbooks, storybooks, songs, videos and interactive quizzes. UNICEF launched an app version of the platform to allow students to download books and resources in advance whenever they are in range of WiFi so they can continue to study at home, even if their community does not have regular access to the internet. Soon the platform will also offer skills training for adolescents.

To address cost issues and mobile data usage, UNICEF partnered with a local telecoms company with the aim of giving 600,000 mobile phone users free access to the learning materials. Parents and caregivers can also sign up for SMS text messages with advice and tips on how to support their children's learning at home.

This initiative has made continued learning and education possible for Timorese children not only in response to COVID-19, but during recovery and beyond. It is expected to pave the way for more accessible education systems for remote communities for years to come.

Eastern and Southern Africa and West and Central Africa: Maximizing the potential of EdTech

There is a growing global consensus that 21st century learning should look different from 19th century learning. For the vast majority of students, however, it does not.

International academic, policy and provider organizations are in the process of rethinking learning outcomes and learning environments, and some are even engaged in a fundamental review of the very purpose of education in a more digitally enabled, complex and fast changing world.

In Eastern and Southern Africa and West and Central Africa, UNICEF is working with the Aga Khan Foundation to develop a digital, human-centred learning toolkit to strengthen the global vision for digital learning for every child. The toolkit was designed to enable national governments, subnational governments and schools to follow a human-centred design process to create impactful EdTech solutions.

The process has four steps and eight tools. The broad approach is to:

- Step 1: Understand the challenges and opportunities
- Step 2: Assess context leading to a scorecard
- Step 3: Develop and test approaches
- Step 4: Make a proposal for action



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UNICEF and Aga Khan Foundation are currently testing, refining and transforming the digital learning toolkit into a dynamic online public good.

China: Helping teachers adapt to online teaching

In 2020, UNICEF supported China's Innovative Teaching and Learning Programme to build the capacities and facilitate the professional development of rural teachers and improve children's learning and development in poor counties. The programme establishes a dynamic and effective teacher support mechanism and provides trainings and resources based on global and national best practices and models. During the year, 3,300 rural teachers and teacher educators were trained on online teaching methodologies and information and communication technology skills. The training has helped the education system build back better following the COVID-19 outbreak and explore and practice an effective model for distance learning.

Uganda: Improving learning in hard-to-reach locations with Kolibri

While access to secondary education has improved in Uganda in recent years, educational standards remain low, partly due to inadequate teaching space and materials and a shortage

of teachers. Boys and girls are both affected, but girls fall considerably further behind in achievement in secondary education, particularly in science, technology, engineering and mathematics. Girls are also vulnerable to dropping out of school due to early marriage, early pregnancy and violence.

In emergency settings in Uganda, both boys and girls are out of school in large numbers. In the eight refugee-hosting districts, 57 per cent of children are out of school.

UNICEF has partnered with the Government of Uganda to roll out Kolibri, a free and open-source digital technology platform that allows in and out-of-school students to learn at their own pace, while providing teachers and mentors with educational resources. The platform is hosted by the Uganda National IT Authority free of charge and is offered as a core service within the eGovernment portal.

With Kolibri, students and teachers in government schools can access content on mathematics, science, technology, arts, humanities and life skills through text, video, interactive simulations and games. The platform, which is available both online and offline for resource-constrained communities, also contains videos in sign language, ebooks for children with low vision and audio books for children with disabilities.

Pilot testing of Kolibri has demonstrated that continued investment in educational technology and digital learning materials in schools is a powerful approach. Teachers, students and out-of-school learners report that the platform adds value to the overall learning environment. Kolibri also makes computer labs more attractive by offering engaging and interesting learning opportunities; and motivates teachers to expand access to the labs, giving more students opportunities to build basic technology skills.

With the emergence of COVID-19 in Uganda, in March 2020, all learning institutions in the country closed, leaving over 15 million students out of school. The Kolibri e-Library became part of the national effort to keep children learning, serving as an alternative learning platform for thousands of children who accessed devices and connectivity. The National Curriculum Development Center uploaded the e-Library with additional content for primary education, online safety and COVID-19 awareness. UNICEF collaborated with the National Curriculum Development Center, the National IT Authority and Telco to ensure that the platform was freely accessible to the public.

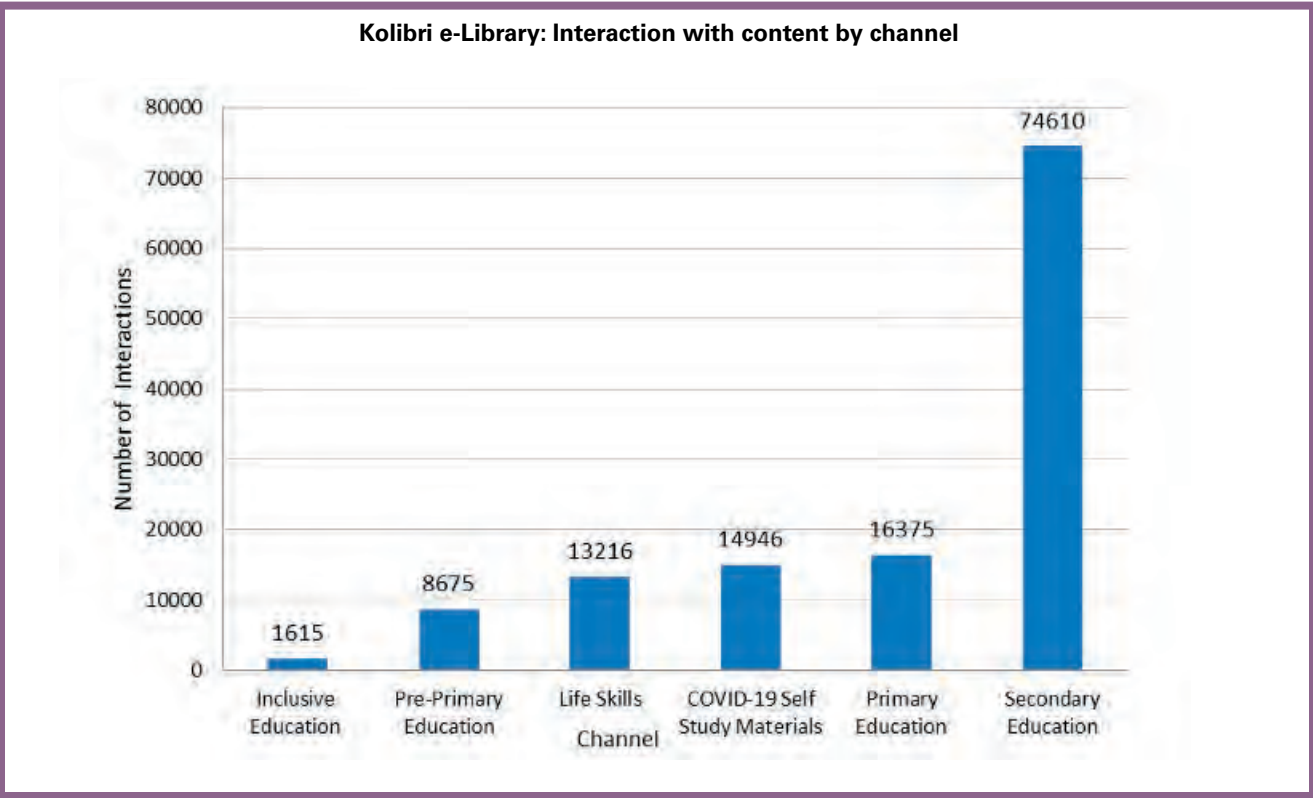
As of February 2021, there have been over 150,000 interactions with content on the Kolibri e-Library, compared with 2,100 before COVID-19; and 4,200 new registered users compared with 120 one year earlier. Usage statistics reveal a high demand for learning content, which the platform has been able to meet.

Ecuador: Supporting the safe reopening of schools using evidence

Ecuador closed its schools in March 2020 as COVID-19 began to spread across country. As of early 2021, only 872 of the country’s 16,000 schools had reopened. Most children are learning online, through WhatsApp, on television or using radio. Families are facing a heavy burden: children are struggling with lower learning outcomes, mental health challenges, poor nutrition and heightened risk of violence; and parents, particularly mothers, are devoting more time to their children’s schooling, at the cost of their livelihoods. Differences in access to connectivity, digital resources, and experiences of stress, among other factors, are widening the educational disparities that already persist across the country.

UNICEF is working with researchers from the Universidad de Cuenca to develop two statistical models that they hope will provide evidence for the safe reopening of schools: the Susceptible-Exposed-Infectious-Recovered and Agent-Based models – both of which are designed to better assess and inform feasible options and scenarios.

The first model has been implemented at the national and subnational levels to explore the effects of changes in human mobility and other non-pharmaceutical interventions on the number of COVID-19 cases and deaths. The model uses a contact matrix between age groups to assess the effect of increasing (or decreasing) the contact levels of school-age children.



The second model was developed to explore the effects of school reopening. This model reproduces the physical and social interactions related to the spread of COVID-19 on a small community with a single-classroom school and a bigger community with multiple classrooms using different human mobility levels. The heterogeneity of the territories and schools in the country necessitate the development of additional models to gain a broader picture of school reopening on the spread of the virus.

Europe and Central Asia: Giving every child a voice with augmentative and alternative communication technology

In Europe and Central Asia, UNICEF is working with partners to pilot technology that helps children with complex communication challenges.

Developed by UNICEF Venture Fund graduate Cireha, Cboard is an open-source, offline-compatible and freely available augmentative and alternative communication application designed to facilitate access for children in low- and high-tech settings. It helps children by promoting interaction, developing language, addressing speech impairments and encouraging successful participation in learning and social activities. It is available in over 30 languages and accesses the global symbols database of over 20,000 symbols.

Since November 2019, UNICEF has piloted Cboard in Croatia, Montenegro and Serbia, where 12,000 young children need augmentative and alternative communication solutions. To date, the initiative has benefited 1,500 children and 780 professionals who have been trained to

support children and parents to use assistive technology as part of a routine intervention, where the communicator is integrated into the child's environment at home and in pre-school.

An analysis of data collected from 125 children who participated in the Cboard pilot indicated improved competencies in children, with remarkable achievements at all levels: competency (ability to do well on the important things); self-esteem (how does a user feel about and like him or herself as a person); and adaptability (ability to come with change and make basic tasks manageable).

Parents and education professionals report positive responses from their children and that Cboard has been effectively integrated into their daily lives. The pilot has continued during the pandemic, with distance support provided to parents. The application is being continuously improved with additional features in response to user feedback.

Albania: Transforming public libraries into technological hubs for children and young people

In Albania, UNICEF's experiences with children's online safety have shown that online risks and opportunities are best addressed by investing in innovative solutions.

UNICEF created BiblioTech – physical spaces for digital learning and development for children, young people and adults in Albania – to enhance crucial 21st century skills and build knowledge about online protection and security. The goal of BiblioTech is to prepare children and adolescents to be safe and empowered in an increasingly



The new Cboard benefits and advantages

- ✓ AAC downloadable to any Android device or used as web application
- ✓ Accesses the Global symbols database of over 20,000 symbols
- ✓ Text-to-speech and customizable set of symbols adaptable to any language
- ✓ Available in over 30 languages
- ✓ Open-source
- ✓ Offline-compatible
- ✓ Freely available AAC application
- ✓ In low-tech settings, the pictographic symbol sets can be exported and printed for use as paper-based resources.

digital world, shifting the paradigm from safety to rights-based approaches. The spaces offer thematic information sessions, workshops and technology-enabled activities on digital literacy, safety online, information technology and start-ups.

Since 2019, UNICEF and partners have blended BiblioTech technological hubs into four public libraries, providing 200 children and young people and 2,300 adults with technological access, while promoting information and communication technology literacy and equipping beneficiaries with vital software and hardware tools. Mobile BiblioTechs in five suburban areas have reached 100 vulnerable and marginalized children in their own communities.

Brazil: Understanding school failure

The culture of school failure in Brazil affects millions of students, and the COVID-19 pandemic has deepened educational inequality across the country. The Successful School Pathway strategy is a web-based initiative confronting this challenge. The website analyses national, state, municipal and school enrolment indicators taken from the school census to provide a comprehensive diagnosis of age-grade distortions and offer recommendations for the development of educational policies that promote access, permanence and learning for these students. Data are disaggregated by gender, race and location to highlight the role of inequality in learning gaps.

Brazil: Bringing children back to school

More than 2.8 million children and adolescents are out of school in Brazil.⁸ Children aged 4 to 5 and 15 to 17 are disproportionately impacted, as are girls and boys living in poverty; children who lack access to health, social welfare and protection services; black and indigenous children; children with disabilities; and children in conflict with the law.

Since 2010, UNICEF has been working with the Government and local partners to combat school exclusion. As part of this effort, an education data portal was developed in 2014; and in 2019, UNICEF launched the Active Search for Out of School Children and Adolescents project. The project combines a social methodology with a free technological platform to give local authorities the data and tools they need to identify out-of-school children, understand the reasons behind the phenomenon, and ensure a data-driven pathway to re-enrolment.

In 2020, 161,000 children were identified as being out of school, and more than 62,000 children were re-enrolled in school, up from 17,000 children re-enrolled in 2019. The acceleration of results reflects the widespread adoption of the platform, its efficiency and the deployment of new functions that have improved case management and the user experience.

South Asia: Strengthening the use of learning assessments

There is growing international consensus that assessments can help improve learning outcomes. The UNICEF Regional Office for South Asia is developing the web-based All Children Learn Assessment Platform to strengthen government capacities to assess and measure learning and use assessment data to improve student learning. The platform was developed with an advisory group that includes the UNESCO Institute for Statistics, the World Bank, the International Education Association, the Australian Council for Educational Research, the Organisation of Economic Co-operation and Development and others.

The Platform is a global digital public good based entirely on open-source libraries, notably WordPress, among others. It provides best practice guidance and curated resources on 25 assessment topics at different levels to meet the needs of government practitioners, teachers and other stakeholders. The platform also provides practical tools and resources to facilitate and improve various assessment processes, and a forum for building a community around learning assessment in South Asia.

To date, UNICEF and partners have developed extensive guidance and tools for assessment system strengthening and teacher training. In 2020, UNICEF prepared the Platform for launch and tested its guidance and tools in countries including Afghanistan, Bhutan and Pakistan to support implementation, analysis and dissemination. UNICEF expects the platform will ultimately be used in all countries in South Asia.

India: Providing career guidance for students in government schools

In 2020, UNICEF partnered with one of India's largest online career guidance companies, idreamcareers.com, to help government students in Grades 9 through 12 gain access to valuable career, college and scholarship information.

Idreamcareers.com offers information to students on more than 550 various career paths, over 21,000 domestic and international colleges, more than 1,100 entrance exams, and valuable scholarship advice from 15 countries. While these services are typically provided through paid access to the platform, idreamcareers.com and UNICEF have worked together to freely offer this information to students in government schools that would not typically have been able to access it.

So far, 10 states have launched their own customized platforms, reaching more than 20 million government school students in 82,000 schools. The Lakshya Career Portal, specifically for students who are currently out of school, has also been launched.

⁸ Government of Brazil, National Survey by Household Sample, 2015.



GOAL AREA 3: EVERY CHILD IS
PROTECTED FROM VIOLENCE

Over the past three decades, the world has witnessed progress for children on many fronts – with rises in birth registration and declines in female genital mutilation and child marriage. Still, every year, an estimated 1 billion children experience some form of emotional, physical or sexual violence.⁹ In 2020, COVID-19 quarantine and restriction measures increased the risk factors that drive the regularity, intensity and frequency of violence against children and women.

UNICEF's Goal Area 3 aims to ensure that every girl and boy is protected from violence, exploitation and abuse. That includes building systems across development, peacebuilding and humanitarian contexts to prevent and respond to violence against children and harmful practices.

Technology for Development has a vital role to play in this work. UNICEF is using technology and digital innovation to strengthen child protection information management systems – including civil registration and vital statistics systems, monitoring and reporting on violations against children and case management. This work is not only generating reliable and timely data on child protection, it is also connecting children with the protection services they need.

Eastern and Southern Africa: Documenting innovative approaches to civil registration and vital statistics

Across Eastern and Southern Africa and other regions around the globe, countries are applying both technological and non-technological innovations to improve civil registration and vital statistics systems. In 2020, UNICEF launched 'Review of Civil Registration and Vital Statistics Innovations in Eastern and Southern Africa Region: Digitization, processes, and strategies – synthesis report', which documents the innovative approaches and tools that countries have deployed; identifies where common tools could be built; and assesses how these systems can be replicated in other countries.

In line with recommendations from comprehensive assessments of national civil registration and vital statistics (CRVS) systems in Ethiopia, Mozambique, Namibia, South Sudan, the United Republic of Tanzania, Uganda and Zambia, reform policies have been developed focusing on two key policy directions: 1) increasing the number of registration points through decentralization; and 2) improving registration processes and registration records management through digitization.

The review finds that digitization is not only seen as a way to improve CRVS processes; it has also been recognized as a way of enabling CRVS systems to share anonymized identity data with other social sector stakeholders to improve access, facilitate new services, create new efficiencies and lower operational costs.

United Republic of Tanzania: Simplifying birth registration for millions of children

In 2013, UNICEF and the Government of Tanzania, with funding from the Government of Canada, launched a simplified birth registration programme. By August 2020, the country had registered 5 million children – giving each of these children an official identity within the nation's records and access to vital social services.

The simplified system makes birth registration more accessible to the community. Previously, registration could only take place at the district headquarter town. Now, parents can register and receive birth certificates from designated health facilities and community ward executive offices. All fees are waived and the first copy of the birth certificate is given free of charge.

With support from Tigo, the new system also integrates innovative mobile data collection technology: birth registration data is uploaded and sent to a central database in real time.

5 million
children registered at birth
in the United Republic
of Tanzania

The new system has helped raise the overall certification rate in target regions by more than 80 per cent, up from 10 per cent in 2012. Data also suggest that parents have saved nearly US\$8 million thanks to the fee waiver. The new system – which is being cited as one of the best examples of human-centred CRVS design in the region – will be replicated across the United Republic of Tanzania in the coming years.

South Asia: Improving access to vital data about children

UNICEF programmes – particularly those supporting and advocating for child rights – rely on easy access to relevant data and information. In years past, the UNICEF Regional Office for South Asia published the annual South Asia Data Pocketbook, a printed resource providing key country level indicators on population, poverty, inequality, health and nutrition, education, child protection and the emergency situation.

The Pocketbook was distributed in hard copy every year, with any updates included in the subsequent edition. However, the costs of its production and distribution, and its narrow reach as a print publication, limited its usefulness to partners.

To address these challenges, in 2020, UNICEF developed

⁹Hillis, Susan, et al., 'Global Prevalence of Past-Peer Violence Against Children: A systematic review and minimum estimates', *Pediatrics*, vol. 137, no. 3, 2016.

Spotlight on Digital Public Goods: Bringing Primero X to the social service sector

A reported 1.8 billion people live in places where violence prevention and response services have been disrupted due to COVID-19. In this context, digital technologies have become vital to continuing social services and identifying new cases of people at risk.

Primero is a robust, secure and fit-for-purpose digital solution for the social welfare sector. It was developed by and for the inter-agency partners and frontline workers that use it. Globally, nearly 3,000 case workers and case managers use the app to support service delivery for over 100,000 children. It is a proven digital information management system for case management that increases the capacity of frontline workers by reducing administrative burdens and supporting better quality case work. And as a digital public good, Primero is accessible to all.

In December 2020, UNICEF, in partnership with Microsoft, launched Primero X, a newly designed and highly scalable progressive web application. Optimized to be delivered as a software and as a service, Primero X is a digital public good for partners, governments and civil society actors that can meet the demands of the social welfare sector – in the context of COVID-19 and beyond. Working with Microsoft, UNICEF has been able to scale Primero more efficiently, spending less time setting up the infrastructure, and more time facilitating its deployment to reach more children.

Primero is currently used in Bangladesh, Burkina Faso, Cambodia, Central African Republic, Colombia, Democratic Republic of Congo, India, Indonesia, Iraq, Jordan, Kenya, Kyrgyzstan, Lebanon, Libya, Mali, Myanmar, Nigeria, the Philippines, Sierra Leone, Somaliland, Somalia, South Sudan, Sudan, United Republic of Tanzania, Tajikistan, Uganda and Yemen

and released a mobile application, the UNICEF SAR Data Pocketbook. The app was developed in collaboration with a local developer working on a pro-bono basis and initially released on the Android platform. It not only provides access to regional and country level indicators, but also includes interactive comparative charts, allowing the user to compare indicator data between selected countries. The app is fully self-contained, with the indicator data embedded in it, so that it can be used offline.

With the introduction of the app, UNICEF has not only reduced production time, it has also made the data more widely accessible. The Pocketbook can be downloaded by anyone who is looking for indicators on the situation of children in South Asia.

Cambodia: Continuing vital services using Primero

In April 2020, UNICEF supported the Cambodian Ministry of Social Affairs, Veterans and Youth Rehabilitation to launch Primero amidst the COVID-19 pandemic.

This Primero rollout was unique. The platform was adapted to act as a secure bridge between government case workers and existing service providers – enabling disparate systems to “talk to each other”. Today, children can benefit from safe and secure referrals between government and local non-governmental organizations, faster response times and more organizational accountability. In the context of COVID-19 – which forced many frontline case workers

to conduct their work remotely – this interoperability has meant better coordination and fewer children falling through the cracks.

As of November 2020, 150 Cambodian case workers have been trained on Primero and are now active users. While the platform will be used to manage all kinds of child protection cases, the initial focus will be to assess children living in residential care institutions, to ensure that no child is lost on the long road to reintegration. To date, Primero has benefited 5,500 children in Cambodia.

Albania: Creating a child-friendly justice system

UNICEF has partnered with the Albania Ministry of Justice to develop an online system – the Integrated Criminal Justice for Children’s Data System – for tracking children’s legal processes throughout the law enforcement and justice chain. Its goal is to unify and digitize data collection to provide a clearer picture of the justice situation for decision makers and foster improvements in policies on justice for children.

The new system allows for the collection and processing of data, as well as real-time follow up. It also points out where children have been denied access to services or where procedural guarantees have not been observed, enabling authorities to provide quick solutions. Already, 3,000 people have benefited from the system’s implementation.



GOAL AREA 4: EVERY CHILD LIVES IN
A SAFE CLEAN ENVIRONMENT

While the world has made tremendous gains in access to water and sanitation, these gains are uneven and under threat. An unprecedented number of people are living in situations of crisis and conflict caused in part by the impacts of climate change on food production, economies and society. People in extremely fragile countries are eight times less likely to have basic water services than average, and four times less likely to have basic sanitation.¹⁰

UNICEF works to safeguard the rights of all children to a safe and clean environment both in times of stability and in crisis. Under Goal Area 4, UNICEF focuses on protecting access to a safe and sufficient water supply, improving access to sanitation, reducing disaster risk, protecting children in urban settings and fostering environmental sustainability.

Across these areas of work, T4D and digital innovation play an important role. UNICEF uses its capacity, field presence and global reach to support national system strengthening in WASH using digital technologies, at scale.

Bangladesh: Supporting positive handwashing practices

In Bangladesh, UNICEF has developed EasyWash, a device that monitors handwashing in real time using sensors and the Internet of Things and generates data that authorities can use to facilitate positive handwashing practices at their institutions.

48 schools piloted EasyWash handwashing monitoring in Bangladesh

In 2018, EasyWash won the monitoring and evaluation category of the handwashing innovation challenge launched by the UNICEF Regional Office for South Asia. In the years following, the Regional Office and UNICEF Bangladesh have sought investor support to develop the design into a product that could be pilot tested in schools. The latest iteration includes behaviour change cues and more detailed monitoring criteria. In November 2020, UNICEF Bangladesh secured official governmental approval to pilot the device in 48 schools.

Sudan: Tracking sanitation interventions using real-time technology

In collaboration with the Ministry of Health, UNICEF Sudan successfully integrated RapidPro into a community-led

total sanitation intervention for the elimination of open defecation. The introduction of RapidPro enabled real-time updating and reporting on the programme to track progress.

The SMS-based system enables community leaders to provide monthly reports on the number of triggered, declared, verified and certified toilets and the functionality of the toilets via texts delivered directly to Ministry of Health representatives. In addition to supporting the system's implementation, UNICEF also trained community leaders and government representatives from the Ministry of Health on the use of the system and the reporting mechanism.

The system has facilitated user-friendly tracking of the number of communities that have become open defecation free, the date of triggering, the date of certification, the number of latrines constructed in each community, and the locations of latrines. It has also improved the tracking of latrine functionality, with options for reporting toilet collapse and communicating the need for repair more quickly than in the past. As of December 2020, 61 open defecation free communities had been triggered.

Zimbabwe: Setting new standards for mobile innovation in rural WASH

In rural Zimbabwe, the Government, UNICEF and partners are working to improve equitable access to safe drinking water, sanitation and hygiene services.

Towards this end, the Government has invested in the Rural WASH Information Management system to improve data reliability, equity analysis and the use of technology in emergency preparedness and response. However, the system has struggled with several challenges, including lack of consistent communication between key informants and enumerators and the absence of two-way engagement with communities.

To address these shortcomings, UNICEF supported the Government to develop a mobile-to-web monitoring system that captures and stores WASH information in real time, using RapidPro. The Rural WASH Information Management System provides quick access to current data on rural WASH infrastructure; and the SMS interface enables communities to report changes in the infrastructure functionality by text messages delivered directly to government representatives, allowing for quick responses to problems as they arise. With the improved functionality of water points, women and girls no longer have to travel long distances to fetch water at alternative sites and have more time available to attend to their education, economic activities and family obligations.

¹⁰ United Nations Children's Fund, 'Water Under Fire Volume 1: Emergencies, development and peace in fragile and conflict-affected contexts', UNICEF, August 2019.

1.8 million

children benefited from real-time community feedback in Zimbabwe

The innovation has been lauded for improving response times and addressing service delivery constraints at water collection points. In 2020, the project was celebrated with the induction of the Government of Zimbabwe and UNICEF as members of the Million Lives Club, an initiative that celebrates innovators and social entrepreneurs who are scaling up impact and improving the lives of those living on less than US\$5 per day. Since the project's inception, 1.8 million children have been reached via community real-time feedback on WASH service functionality and delivery through the use of mobile open-source technology.

Myanmar: Mapping water shortages in the context of COVID-19

In the midst of the COVID-19 pandemic, it is vital that people have adequate water – not only access to a supply of clean drinking water, but also sufficient water flow to enable proper handwashing with soap.

For people in the camps in Rakhine State, Myanmar, accessing water is difficult. The rainwater harvesting ponds that serve as the primary source of safe water have limited capacity, and due to demand pressures, have nearly dried up. Groundwater sources are difficult to access, due to the geology of the area. UNICEF currently provides water by boat and supports remote pumping annually as part of the humanitarian response in locations where more sustainable infrastructure cannot be implemented.

In April 2020, UNICEF staff updated an existing application showing the real-time presence of surface water and the potential humanitarian burden of water shortages in the context of COVID-19. The main partners of this initiative include: Solidarities International, the Office of United States Foreign Disaster Assistance, the Government of Japan and the United Nations Office for the Coordination of Humanitarian Affairs Central Emergency Response Fund.

The solution helped to graphically illustrate to partners the extent to which water shortages and drying ponds would be more severe in 2020 than in 2019. It underscored the urgency of establishing alternative water sources and securing additional transportation supplies. The results generated by the data analysis highlighted the need for technology-enabled, longer-term solutions in humanitarian situations to support more sustainable infrastructure.

Indonesia: Monitoring hygiene in real time

Despite increased attention on hand hygiene in public places in the context of the COVID-19 pandemic, monitoring of hand hygiene practices remains a challenge in Indonesia and globally. Most hygiene behaviour monitoring systems use either self-reporting or observation of a proxy indicator such as presence of handwashing stations – both of which generate limited insight into the actual hygiene practices of populations.

In Indonesia, UNICEF is supporting a real-time hygiene behaviour change monitoring system to collect data across the country and learn about behaviour so that key decision-makers have the information they need to take immediate actions. The monitoring system, coupled with a data visualization dashboard and a behavioural science-based hygiene training module is both scalable and reliable. In 2020, the system tracked the hygiene behaviours of 1 million people via RapidPro and WhatsApp in public places such as markets, schools, religious places and public transportation stations.

South-East Asia: Improving menstrual health and hygiene management for women and girls

Girls have important questions about their health, and every day more and more girls are searching for answers online. When the information they are looking for relates to menstruation, there's a clear need for a trustworthy digital solution that helps inform and empower its users.

Enter Oky, the first period tracking app co-created with girls, for girls.

Oky provides girls with information about their periods in fun, creative and positive ways, delivered straight into their hands through their mobile phones. Available as an Android app, Oky's features include individualized cycle trackers and calendars, tips and menstruation information. Oky also has more unconventional features that are girl-centred and engaging — through Oky's gamified design, girls can personalize the app, select and unlock their own avatars and play menstrual health quizzes.

Oky was designed with and for girls to keep their needs front and centre. Through extensive user-centred design, co-creation sessions and remote and in-person user testing, UNICEF worked with girls in Indonesia and Mongolia — two of the most diverse countries in the region — to gather deep insights into the wants and needs of adolescent girls and their online and offline lives. This process — which included user feedback and input at every development and design stage — informed everything from the technical specifications and features, to the app's look and feel.

As a multi-country initiative, Oky shows the value of a well-connected and supported innovation pipeline that builds the foundations for scaling. And as an open-source solution that can be deployed to help millions of young people and their communities, Oky is a prime example of how a digital public goods ecosystem — with technologies and services equitably accessible to everyone — can greatly improve, and potentially even save, countless lives.

The first iteration of Oky went live on the Google Playstore in December 2019, as a soft launch for testing and feedback in the pilot markets of Indonesia and Mongolia. In 2020, UNICEF formally launched the updated version: <https://okyapp.info/about.html>.

China: Measuring air quality using technology

UNICEF has partnered with the China CDC to conduct indoor air quality monitoring in 15 low-income villages that use solid fuels (coal, wood and straw) for cooking and heating. Using air quality monitors produced by Beijing Zhongqing Technologies, air quality data are automatically uploaded to an online platform. To date, UNICEF has installed 424 of these devices in 212 households and is generating real-time data on air quality every five minutes. Results indicate that air quality is very poor in most households, particularly during cooking and heating. The next step will be to add a warning function to trigger actions by household members when air quality deteriorates.

Mongolia: Using citizen data to understand the impacts of air pollution

In Mongolia, some 1,500 children under the age of 5 were hospitalized due to pneumonia in 2019 – largely due to air pollution. The parents of these children, who are disproportionately from marginalized and vulnerable areas, missed work and lost vital income while caring for their children.

The fight against air pollution across Asia, including Mongolia, is one of the most pressing challenges in a generation. The impacts of air pollution on daily life extend beyond health to the social and economic well-being of the entire family.

The Haze-Gazer platform, launched in 2020, offers a public space to observe and report on the multi-dimensional aspects of air pollution. Developed by People in Need, with support from UNICEF and UNDP, it builds on the collective engagement of individuals to generate insight into the multifaceted impacts and different dimensions of air pollution on the citizens of Ulaanbaatar city. It monitors the collective impacts of air pollution on human health and safety, the socioeconomic situation in communities, and the public perception of air quality interventions.

The web-based tool:

- Collects and consolidates air pollution data in Ulaanbaatar city through digital smart devices based on active citizen participation;
- Provides valuable data to researchers, journalists and policy makers;
- Encourages citizens to take action to reduce air pollution impacts, as part of their civic duty, by sharing their life experiences and stories on the platform; and
- Informs decision-makers on the multidimensional impacts of air pollution on citizens, particularly women and children, and integrates data with secondary sources.



GOAL AREA 5: EVERY CHILD HAS AN
EQUITABLE CHANCE IN LIFE

Political, environmental and economic realities continued to test the world's commitment to respecting, protecting and fulfilling the rights of children in 2020. With the onset of the COVID-19 pandemic, the number of children living in multidimensional poverty soared to approximately 1.2 billion. This is a 15 per cent increase in the number of children living in deprivation in low- and middle-income countries, or an additional 150 million children since the pandemic began.¹⁰

Building on the principle of leaving no one behind, UNICEF's Goal Area 5 focuses on tackling key dimensions of inequity and discrimination that prevent the realization of children's rights, while contributing to the SDGs. UNICEF works to reduce child poverty by influencing fiscal policies and social protection mechanisms; address discrimination on the basis of gender, age and disability; increase the participation, voice and agency of children, adolescents and young people in civic life; and amplify child rights in human rights mechanisms.

Jordan: Helping the population cope with the impacts of COVID-19

At the beginning of 2020, Jordan was hosting more than 650,000 Syrian refugees. In the spring, the outbreak of COVID-19 threatened not only the fragile livelihoods of these refugees, but the well-being of every person in Jordan.

The Government implemented a strict nationwide lockdown in response to the COVID-19 crisis. While the restrictive containment measures controlled the pandemic, they put those who depend on daily jobs at risk of falling into deep poverty. To prevent this, the Government decided to provide emergency cash to 200,000 Jordanian daily wage workers who had lost their income due to the COVID-19 response.

Through its Hajati cash transfer programme for vulnerable households, including Syrian refugees, UNICEF Jordan has built up extensive experience with RapidPro. RapidPro can be used for two-way SMS and digital communication (e.g. WhatsApp, Viber, Messenger) to raise awareness, collect data and monitor programme implementation. It is also effective in contexts with good cell-phone coverage, but limited use of smart phones. Forthcoming research by UNICEF Innocenti finds that communication through RapidPro is highly trusted in Jordan and recipients appreciate the opportunity to communicate directly with UNICEF.

In the context of COVID-19 restrictions, the delivery of cash assistance needed to be adapted to adhere to infection prevention and control measures. Using RapidPro, UNICEF supported the Government to reach 200,000 new recipients of emergency cash quickly, remotely and safely via mobile wallets, at no cost to beneficiaries. RapidPro

text messages confirmed the identities of target recipients and whether they had an active mobile wallet. When needed, UNICEF provided instructions on how to open a new mobile wallet without physically visiting a service provider. In a constant exchange of data with the Central Bank of Jordan and mobile money companies, UNICEF monitored the rate at which mobile wallets were opened and addressed issues as they arose.

200,000 workers received emergency cash in Jordan

The results exceeded expectations. In the first five days of implementation, the number of targeted daily workers with an active mobile wallet increased from 18,000 to 80,000. After two weeks, 188,000 workers had an active mobile wallet and had received cash transfers.

Jordan's COVID-19 emergency cash response exemplifies how humanitarian and development work can reinforce and support each other. For the most efficient and timely emergency response, it is key to have flexible systems – such as RapidPro – already in place.

Yemen: Strengthening social protection systems

As the Yemen crisis continued to impact the lives of children and their families in 2020, UNICEF expanded its cash initiatives under the Yemen Emergency Cash Transfer Project to support the most vulnerable groups and maintain access to basic social services.

Yemen's Project Management Unit developed additional modules for UNICEF's Management Information System in Yemen that are tailored to the specificities of each project. These modules have helped UNICEF secure beneficiary data, from verification of identity and eligibility, to payments and grievances.

In collaboration with the Education team, the Project Management Unit also launched two new projects in 2020 – both of which use teacher payments to keep schools functioning. The Rural Females Teachers project provides remunerations to women teachers serving schools in remote locations to encourage girls' attendance in 16 governorates. Two payment cycles were successfully completed in May and November, reaching over 2,200 teachers with retroactive monthly remunerations of US\$145.

Hanan, a beneficiary of the Rural Female Teachers project describes the impact of the remuneration provided by the project: *"The cash incentive has had a significant impact on improving my income and motivated me to continue*

¹⁰ United Nations Children's Fund, '150 million additional children plunged into poverty due to COVID19, UNICEF, Save the Children Say', UNICEF, New York, 16 September 2020.



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teaching my students... It alleviated the suffering of my family and helped to provide for some of their needs, in addition to providing the transportation fare to school, buying chalk, some other school supplies."

The Temporary Teachers Incentives project targeted schools receiving large numbers of displaced children. The volunteer teachers who stepped in to support these schools received monthly incentives of 30,000 YER. These incentives were designed to ensure that all children – including displaced and host community children – have the opportunity to learn. Two payment cycles in April and August reached 479 teachers.

In collaboration with the Social Policy team, the Project Management Unit also launched the cash component of the Integrated Model of Social and Economic Assistance and Empowerment project. This project links benefits, social services and other social and economic interventions to improve outcomes for the poorest and most vulnerable, strengthen their resilience to shocks and stresses, and enhance collaboration within and between sectors. The project aims to reach people living in informal settlements (slums), which are primarily inhabited by Muhamasheen (the 'untouchables'), an outcast minority community, who are often limited to menial jobs in Yemen's major cities. In November, the first payment cycle reached nearly 5,500 Muhamasheen households.

Cambodia: Reaching vulnerable families with cash assistance

The economic fallout of the COVID-19 pandemic is pushing many Cambodians into poverty. The impact of the crisis has been immediate, with many families unable to meet their basic needs, including for food, water, medicine and access to health care and education.

To mitigate these impacts, UNICEF supported the Government to launch a national COVID-19 Cash Transfer Programme to reach over 650,000 households (2.5 million poor Cambodians) with much needed assistance.

650,000
households received
cash transfers
in Cambodia

The programme has used technology and innovation to build on the existing and now expanded system. UNICEF deployed a mobile device management system to enhance the security performance of more than 1,700 tablets distributed to community workers in the field. To date, the system has registered 150,000 women and young children and more than 2.5 million Cambodians included in the

COVID-19 cash transfer programme. More than US\$7.8 million has been received by pregnant women and young children, and over US\$160 million has been received by families affected by COVID-19.

Plurinational State of Bolivia: Reaching vulnerable populations with humanitarian cash transfers

The COVID-19 emergency has had a devastating impact on vulnerable people in the Plurinational State of Bolivia, whose livelihoods have been severely impacted by quarantine restrictions.

In response, UNICEF has embarked on a humanitarian cash transfer programme that leverages information and communication technology in payment processing and monitoring. Beneficiaries receive an automatic SMS generated by the bank with a money order code. UNICEF communicates the payment to beneficiaries through a text message containing the amount of the benefit and a second access code for the ATM.

Once the collection is recorded, UNICEF communicates directly with the beneficiary to ask if the payment was received in the correct amount and to verify the bank report. This extra step has been instrumental to mitigating risks by reducing the likelihood of discrepancies and fraud.

Eastern Caribbean: Engaging youth in climate action

The Eastern Caribbean region is among the most vulnerable in the world to the impacts of climate change, and children are overwhelmingly impacted. Yet despite their heightened risks, children are often overlooked in key regional and national climate strategies, which neglect their particular vulnerabilities, as well as their right to be heard.

Gamification for Climate Action is an online game promoting youth engagement in real world climate action. It will be the first climate change game that fully integrates gaming technology with awareness raising and real world, impact-driven climate action.

The initiative's aim is to unlock the potential of children and young people as critical agents of change. Gamers use avatars to navigate a virtual world impacted by climate change and complete tasks to save the virtual pet they have adopted. A geographic information system action engine collects and prompts various events that users can participate in, as well as the climate action they can undertake.

In 2020, UNICEF and UNDP partnered with Serious Games Interactive to kick off the game's development, and the Caribbean Youth Environment Network to develop the game play narrative based on its extensive understanding



and knowledge of community-level environmental realities in Barbados. UNICEF has also engaged relevant line ministries and local businesses in the effort, with plans to launch the game in 2021.

South Asia: Engaging youth through U-Report

In 2020, UNICEF launched five regional polls through the U-Report South Asia regional platform. These polls covered a range of topics, including youth perspectives on: COVID-19; climate change and education; healthy diets and physical living; access to youth-friendly sexual reproductive health services; and access to sexual reproductive health information, knowledge and understanding. The polls are available in English and 10 local languages.

The responses provided crucial information on issues affecting adolescents and young people in the region. For example, during COVID-19 lockdowns, one in five respondents experienced lack of access to health care facilities and 44 per cent of young men struggled with unemployment. In addition, more than half of respondents reported never having learned about sexual and reproductive health in school; and only 19 per cent had ever visited a sexual reproductive health clinic. In response to this poll, UNICEF engaged with young people across the region and built a dialogue about these important topics.

Overall, more than 100,000 adolescents and young people participated in the polls. As a next step, UNICEF will implement a poll on COVID-19 vaccines to understand the perspectives of adolescents and young people on vaccination, their misconceptions, and vaccine accessibility and rumours. The COVID-19 vaccine chatbot will provide context-appropriate vaccine information.

Lebanon: Equipping youth with 21st century skills to thrive and succeed

The demand for skills such as analytical thinking, innovation, active learning, and creativity continues to grow, as does the demand for technological competency. In Lebanon, these skills are not currently within reach for marginalized youth.

The Generation of Innovation Leaders (GIL) is a UNICEF programme designed to address this gap, increase employment among youth in Lebanon and improve their access to the knowledge economy. In partnership with local stakeholders, GIL has established a network of 13 youth spaces called Innovation Labs. These facilities are hubs for Lebanese and non-Lebanese youth to discover latent skills and new opportunities, and network with like-minded individuals to develop their digital and entrepreneurial skills.

In the context of COVID-19 restrictions, GIL partners swiftly shifted their service delivery modality to e-learning via Zoom, Webex and WhatsApp. As soon as the lockdown

took effect in mid-March, GIL partners began putting together online programmes to continue the delivery of activities. From digitizing the curriculum to holding online mentorship events, GIL was able to reach some 3,900 youth through remote learning opportunities. The use of e-learning has helped the programme reach youth from extremely marginalized communities that could not previously attend the face-to-face trainings. Enrolled youth – including refugee youth – received internet data bundles to accommodate the lack of internet infrastructure in the country.

To strengthen coordination between GIL partners and facilitate monitoring and evaluation of the programme, GIL graduates are developing a GIL mobile app. The app will enable UNICEF to track the performance of 13 labs and analyse the needs of each area. It will also support GIL lab managers to monitor enrolment and keep youth abreast of new courses and activities available in their areas. The GIL app will be launched in May 2021.

Guatemala: reaching young people with vital information

In 2020, more than 38,000 adolescents and young people were reached through U-Report in Guatemala on a range of topics, including the COVID-19 pandemic, the emergency response to hurricanes Iota and Eta and climate change and gender equity. This significant reach has led UNICEF to position the tool as a key outreach mechanism for youth organizations, national and international non-governmental organizations and government institutions.

For example, during the year, the U-Report COVID-19 chatbot reached more than 5,000 young people in three months with messages on debunking COVID-19 myths and how to protect their families from the pandemic. The U-Report Chatbot for the emergency responses to hurricanes Iota and Eta reached 1,800 adolescents and young people in affected areas with information on how to seek help and stay safe.

38,000
reached through U-Report
in Guatemala

UNICEF is also working with the Government of Guatemala to deploy the first U-Report helpline – U-Partner – which will serve as a counselling tool for adolescents with support from psychosocial experts. The helpline is currently under development and will be formally launched in 2021.

Ecuador: Engaging youth through U-Report

In 2020, UNICEF and partners, including Tandari ChildFund, Plan International, TECHO and Scout, used U-Report to engage adolescents in Ecuador on the COVID-19 crisis and strengthen their participation in the decisions that affect their lives. U-Report Ecuador was used to disseminate information on COVID-19 prevention, mental health care and the presidential elections, and gain insight into the impact of UNICEF WASH services, including through two-way communication and user feedback. In addition, UNICEF and partners, including the International

Organization for Migration, the United Nations High Commissioner for Refugees, Fudela and RET International, launched U-Report Uniendo Voces to provide information about the rights and services available to adolescents and young migrants and refugees across the country. WhatsApp channels were added to both platforms – U-Report Ecuador and U-Report Uniendo Voces – to broaden their reach. In 2020, UNICEF reached over 5.3 million young people in Ecuador through U-Report, up from over 1.5 million in June 2019.

Partnering with mobile network operators

Mobile technology offers tremendous opportunities for the African continent to accelerate economies, educational outcomes and health systems, and mitigate the impacts of crises. At the same time, wider and more easily available access to the internet and associated technologies also poses significant risks to children's rights – both offline and online.

Across Eastern and Southern Africa, UNICEF is exploring opportunities for its country offices to engage with mobile network operators. In 2020, in the context of the COVID-19 pandemic, UNICEF convened a Mobile Network Operator Technical Working Group with divisions across the organization to spearhead engagements with 10 major mobile network operators to establish global partnerships. The result has been a concerted effort at the country, regional and global levels to achieve the greatest return on investment in partnership with mobile network operators for children across the region.

As part of this effort, in May, UNICEF announced a new partnership with Airtel Africa, a leading provider of telecommunications and mobile money services with a presence in 14 countries in Africa. The partnership aims to reach children with remote learning and enable their families to access mobile cash assistance. The goal is to use mobile technology to reach 133 million school-aged children currently affected by school closures in 13 countries in sub-Saharan Africa.

In addition to Airtel Africa, UNICEF has signed agreements with Millicom, Safaricom, Vodafone and Zain, among others, and is finalizing agreements with Liquid, MTN, Orange, Ooredoo and Telefonica/Profuturo, while working closely with the Global System for Mobile Communications Association, an industry organization that represents the interests of mobile network operators worldwide. Together these agreements will span 94 countries and 1.8 billion subscribers, including millions of children and young people.



CROSSCUTTING

Big data for strategic insights and decision-making

Eastern and Southern Africa: Building intelligent community health systems

Children in sub-Saharan Africa still die unnecessarily from infectious diseases such as malaria, diarrhoea, pneumonia and malnutrition – all of which can be prevented and managed at the household or community levels through basic interventions.

Despite growing evidence and global consensus on the added value of integrated service delivery at the community level, countries poised to reap the greatest gains from scaling up community health programmes currently only have ad hoc, sub-scale programmes. In many cases, these community-based health systems lack access to data for decision making, budgeting, planning, monitoring and supervision processes. The proliferation of multiple, non-integrated digital health platforms linked to community health information systems only compounds this situation, introducing inefficiencies in an already complex and dynamic system.

The Rockefeller Foundation-UNICEF Intelligent Community Health Systems partnership aims to strengthen and institutionalize community health systems for integrated service delivery and enhance the visualization and use of community data. Countries are supported to explore the feasibility of scaling and sustaining digital health

solutions to resolve community health system bottlenecks, improve access to community-based data and enhance interoperability.

The UNICEF Eastern and Southern Africa Regional Office serves as a 'learning hub', providing specialized technical support to countries in the region. This support is both short and long term: catalytic investments can support transformative improvements in institutionalizing community health and community health information systems in the region, while facilitating cross-country exchange and learning.

For example, the Regional Office is engaging the providers of the three of the most widely used community health information system platforms in Africa – Medic Mobile's Community Health Toolkit, Ona's Open Smart Register Platform and Dimagi's CommCare – to jointly explore how to improve the use of community health data. By the end of the year, the three organizations were collaborating to define the specifications for the tool, and create a broad governance structure to further future multi-organization collaboration.

The improved access to and use of community-based data through harmonized, integrated and digitally enabled community health information systems will help stakeholders including service providers, managers and policymakers, make informed decisions that accelerate progress and tackle challenges to improving access to and demand for essential services.



Indonesia: Using big data to inform critical decision making

Innovations in real-time data collection and visualization, complemented by big-data analytics and AI, provide safe, rapid and comprehensive alternative approaches to in-person assessments. In Indonesia, where the COVID-19 pandemic is threatening to undermine recent development gains, understanding the direct and indirect effects of the pandemic on child well-being using big data will be essential to developing a comprehensive response.

UNICEF is supporting the Government of Indonesia's COVID-19 response through a range of cutting-edge data platforms and partnerships, including:

- **Hospital capacity dashboards** monitor the capacities of every hospital in Indonesia in real time and give the Government the information it needs to respond rapidly when more beds and personal protective equipment are needed.
- **3M Monitoring dashboards** empower community members to monitor and report public adherence to mask usage, handwashing with soap and physical distancing via WhatsApp.
- **Mobility Insights dashboards** use big data to understand how many people are adhering to stay-at-home orders, with options for disaggregating by poverty level.
- **Poverty analyses** mix big data on information such as roof material and housing density with AI to predict poverty in Indonesia in the wake of the COVID-19 crisis.
- **School connectivity data** yield insights into the distribution of digital opportunity among Indonesian students – information that is vital to the Government's decision-making on reopening schools.
- **Demand generation analyses** explore how public health messages and attitudes create bottlenecks to behaviour change – information that will help UNICEF and the Government refine their key messages in future health campaigns.
- **COVID-19 immunization dashboards** leverage existing datasets and real-time monitoring to enable beneficiary registration, daily feedback to vaccinators, second dose reminders and coverage visualizations through an online dashboard.
- **Nutrition Chatbots** provide digital counselling using RapidPro and WhatsApp to support health workers and caregivers of children with severe wasting with vital resources on child nutrition.

Frontier technology

India: Using technology to design safer and more inclusive cities

In India's cities, young people, particularly young women, struggle to access education and employment due to limited access to infrastructure, services and transportation, as well as social and cultural norms about their place in society. In 2018, 13.5 per cent of girls left school due to lack of transportation and public toilets and concerns for their safety.

The Safetipin application brings a gender lens to urban infrastructure to enable women and girls to access public spaces more freely. It also shifts the onus of safety from women and girls to urban planners, municipalities and city governance departments to make these institutions more gender inclusive. Safetipin's innovative, pre-emptive, evidence-based and quantitative approach allows authorities to identify gender blind spots such as poor lighting, lack of female toilets and limited pedestrian paths, and encourages structural changes to existing infrastructure to increase women's and girls' use of public safety. Safetipin also facilitates regular monitoring to measure change.

UNICEF has partnered with Safetipin to use technology to capture women's and girls' experiences of cities; map streets, infrastructure and services; and crowdsource data to help city authorities design and plan safer and more inclusive cities. The 2019–2021 pilot project – the Safetipin Nite Tool – which is funded by UNICEF's Office of Innovation and implemented by gender and information and communication technology focal points in Surat City, India – uses a machine learning algorithm to automate the detection of safe and unsafe urban and peri-urban spaces, and leverage that data to influence public policy and infrastructure expenditure for women's safety in public spaces.

Philippines: Exploring fintech innovation for social impact

The Philippines has enjoyed rapid economic growth in recent years; however, the benefits of this growth have not been shared equally, and significant disparities remain. An estimated 10.5 million children live below the poverty line, and an estimated 2.9 million girls and boys aged 5-15 years are out of school. Despite a large and tech-savvy population, many still face stark inequalities, affecting their educations, health outcomes and future opportunities.

UNICEF and ING are piloting a global programme in the Philippines to jointly identify and invest in fintech start-ups that are building solutions with the potential to help disadvantaged youth and families. New digital financial

tools – if designed responsibly and with attention to the specific needs of these users – offer the potential to build economic security, encourage more equitable access to services, and lift financial barriers to opportunities that improve children’s lives.

The ‘Fintech for Impact’ pilot is identifying start-up companies building innovative tools that will serve the financially excluded and hardest-to-reach communities in the country. The aim is to support tools that use open-source technology solutions with the potential have a positive social impact. UNICEF is particularly interested in companies that use fintech in new, groundbreaking ways that are scalable and globally applicable. The partners will jointly search and identify up to six start-ups, award funding of up to US\$100,000 each, and engage them with invaluable technical and business mentorship along with other experts over a 12-month incubation period.

Artificial intelligence and child rights

Recent progress in the development of AI systems, unprecedented amounts of data to train algorithms, and increased computing power are expected to profoundly impact life and work in the 21st century, raising both hopes and concerns for human development.

However, despite growing interest in AI, little attention is paid to how it will affect children and their rights. Most national AI strategies and major ethical guidelines make only cursory mention of children and their specific needs. For country policies, references to children are usually about preparing them as a future AI workforce. But as children increasingly use or are affected by AI systems in everyday situations — from playing with robotic toys that listen, observe and talk, to interacting with voice assistants — it becomes essential to consider both the opportunities and risks that AI systems hold for children.

UNICEF, with the Government of Finland, the IEE Standards Association, the Berkman Klein Centre for Internet & Society, the World Economic Forum, the 5Rights Foundation and other organizations that form part of Generation AI, is leading a two-year project to explore approaches to protecting and upholding child rights in an evolving AI world.

As part of the AI and Children policy project, in 2020, UNICEF hosted a series of workshops around the world to gain regional perspectives on AI systems and children. These conversations helped UNICEF develop a draft policy guidance on how to promote children’s development in AI strategies and practices. The guidance aims to bring a balanced perspective to the policy table with clear, usable principles for implementing AI that supports child rights.

Kazakhstan: Improving efficiencies through smart contracts

Innovation is vital to improving the state of the world’s children. The speed at which global problems – from disease outbreaks, to the global refugee crisis – disrupt the lives of children around the world is only accelerating. UNICEF innovates to stay agile and find solutions to evolving challenges affecting all children.

In this spirit, UNICEF in Kazakhstan is testing whether blockchain technology can provide a transparent way for the public and donors to see how their funds are spent, while increasing internal efficiencies in the process. In 2020, UNICEF developed Digicus, an open-source platform for digitizing cash transfers to implementing partners. Digicus leverages blockchain-based smart contracts to simulate business rules and release funds in a streamlined and transparent way. The prototype was meant to test smart contracts and explore whether this could potentially decrease banking fees for transactions and improve efficiencies in dealing with partners.

The initial prototype involved digitizing a manual process of cash transfers in accordance with the Harmonized Approach to Cash Transfers between UNICEF Kazakhstan and its implementing partners. The platform, which leveraged blockchain, consolidated UNICEF’s agreements with its implementing partners as smart contracts on the blockchain. When a project milestone was achieved, the corresponding funding amount was released to the partner.

Ultimately, the prototype increased the transparency of transferring value between parties; improved the operational efficiency of dealing with implementing partners; shortened the time it took to conduct spot checks; and created a possible channel for releasing payments quickly.

Ukraine: Protecting children from explosive ordnance using virtual reality

Ukraine ranks among the countries in the world most affected by landmines. Since the start of the current conflict in June 2014, nearly 1,100 civilians – including 174 children – have been killed or injured due to mines or explosive remnants of war.

Throughout the conflict, UNICEF has conducted mine risk education activities using a range of approaches, such as face-to-face interaction and digital campaigns. In 2020, UNICEF developed the very first virtual reality programme on explosive ordnance risk education, in partnership with the IT Association of Ukraine. The virtual reality journey – which is tailored to primary and secondary school students and adults – is designed to establish correct behaviours and measure learning, and complements the direct training sessions conducted in schools in conflict-affected regions. The programme will be rolled out in 2021 for 10,000 students.

Malawi: Building skills for data and drone technology

UNICEF is supporting the African Drone and Data Academy to equip Malawian and African youth with globally competitive and critical 21st century skills in data and drone technology. The project also gives youth the opportunities to apply their knowledge to solve development and humanitarian problems – such as vaccine delivery and disease outbreaks – in their own country.

The African Drone and Data Academy focuses on young people, especially those aged 18 to 24 years, in Malawi and the African region. Priority is given to young women (i.e., each student cohort must be 55 per cent female) to address the global gender gap among students and professionals in the areas of science, technology, engineering and mathematics.

Between August 2019 and December 2020, 146 students received and completed training (60 per cent women and 68 per cent Malawians). Eighty-three per cent graduated from the four programmes on drones and data, three of which have been reconfigured and delivered online to accommodate COVID-19. Students learned how to construct and pilot drones and collect and analyse data, and gained entrepreneurship skills.

146
students trained
on data and drone
technology

Within three months of course completion, 90 per cent of graduates from the first cohort were employed in the drone industry and another 21 per cent reported bringing drone competency to their current jobs. Graduates from the inaugural cohort applied their newly acquired 21st century skills as employed drone pilots or data analysts of companies and organizations conducting research on malaria vector control; and delivered medicines and other essential health commodities to remote areas across Malawi.

Given these promising results, UNICEF is exploring transforming the African Drone and Data Academy from a programme to a locally operated and sustainable, revenue-generating entity. In today's pandemic setting, UNICEF needs to reimagine education by further strengthening the programme's blended learning and online curricula, and scaling it to other countries, so that more young people acquire cutting-edge knowledge and digital skills that allow them to participate in the global workforce and prepare them to be successful social entrepreneurs.

Capacity development

Providing remote T4D technical support for the COVID-19 response

T4D programme support for the COVID-19 response has increased substantially as UNICEF and partners move to remote and distance programming using information and communication technologies and digital solutions. In this context, ICTD mobilized its internal resources to support time-bound regional and country responses to COVID-19.

This support has also provided an opportunity for ICTD staff globally to learn more about T4D and gain hands-on experience with T4D initiatives. By exposing more staff to the organization's T4D work, UNICEF was better positioned to respond to COVID-19 and generate results for children in the field.

Overall, in 2020, more than 30 ICTD staff volunteered to support information and communication technology-enabled programming as part of the UNICEF response to COVID-19.

GenderTech Toolkit

Digital technology has become critical to our lives. Online experiences and opportunities are also important for children's and young people's development across a wide range of areas. However, there is a gender digital divide: girls are disadvantaged when it comes to digital adoption, have lower levels of access to and use of digital technology than boys, and often they are not benefiting from digital technology in the same ways as boys.

Digital products and services need to be designed with and for girls to meet their realities. Digital solutions, products and content tend to be designed for a 'default' user and fail to consider, for example, connectivity and data limitations; the devices girls have access to; the digital platforms girls are on; their digital literacy levels; or content girls find relevant and want to see. Despite best intentions, teams often design for a user base that is predominantly male. Girls are left out of co-creation, design, and product testing. As a result, female users are often not able to access these digital products and services, or see no reason to use them, which means that girls engage less with digital solutions. This in turn widens the gender digital divide and puts girls at a further disadvantage.

UNICEF is developing a toolkit with best practices support innovators, designers and implementers of digital products and services benefit girls and young women equally and help close the gender digital divide. The GenderTech Toolkit provides resources for practitioners on how to build digital solutions to girls' digital realities; create digital solutions with girls; and conduct user testing of digital products with girls.



PART 4: PARTNERSHIPS

Private sector

Airtel
ARM
Axa
Credit Agricole Egypt
Dalberg
EcoNet
Dure Technologies
EPAM Systems
The Elma Foundation
Facebook
Fondation Botnar
Johnson & Johnson
JOOX
IKEA Foundation
ING
La Caixa Foundation
Mastercard
Microsoft
MTN
New Legacy Digital
Nokia Foundation
Philips Foundation
Praekelt Foundation
Roche
Ona
Quebic
The Rockefeller Foundation
SAP
Smart Communications
Telenor Group

Telkomsel
TiGO
Uganda Telecom
VIAMO
WhatsApp
Xinhua News Agency
XL Axiata
ZAIN

Development partners

Abertis Foundation
African Development Bank
Aga Khan Foundation
Agence Francaise de Development
AMREF
Bill and Melinda Gates Foundation
Clinton Foundation
BORDA
China CDC
CMS
Communicating with Disaster Affected Communities Network
Department of Foreign Affairs and Trade, Australia Digital Campus
The Digital Impact Alliance
Digital Square
Dimagi
European Civil Protection and Humanitarian Aid Operations
European Union
GAVI Alliance
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

Food and Agriculture Organization

Global Polio Eradication Initiative

Global Fund to Fight AIDS, Tuberculosis and Malaria

Global Financing Facility

Global Partnership to End Violence Against Children

GSMA

Health Development Fund

Health Enabled

International Labor Organization

International Telecommunication Union

IntraHealth

ITU

KOICA

Korea International Cooperation Agency

Last Mile Health

Malaria Consortium Medic Mobile

Ministry of Foreign Affairs and Trade, New Zealand

Ona

Open Institute

Organisation for Economic Co-operation and Development

Paris21

PATH

Plan International

The Rockefeller Foundation

Save the Children

Swedish International Development Agency

UNDP

United Kingdom Department for International Development

United Nations Institute for Training and Research

The United Nations Global Pulse

United Nations Partnership on the Rights of Persons with Disabilities

United Nations Population Fund

United Nations Statistics Division

USAID

WaterAid

WePROTECT Global Alliance

World Bank

World Food Programme

WHO

World Vision International

UNICEF National Committees

Australian National Committee for UNICEF

Japanese National Committee for UNICEF

Norwegian National Committee for UNICEF

Scottish National Committee for UNICEF

Swedish National Committee for UNICEF

Swiss National Committee for UNICEF

U.S. Fund for UNICEF

Academia

African Data and Drone Academy

Cambridge University Press

Far Eastern University

Johns Hopkins University

Makerere University

School of Open Learning and Education, East China Normal University

Solomon Islands National University

University of Dar es Salaam

University of Geneva

University of Indonesia

University of Oslo, Norway

University of the South Pacific

Box: Partnering with the private sector in the Middle East and North Africa

In response to the COVID-19 outbreak, in July 2020 the UNICEF Middle East and North Africa Regional Office hosted a webinar for mobile network operators across the region to discuss how COVID-19 was affecting children and families and how the sector can support the UNICEF response. The webinar was attended by 21 mobile network operators responsible for 225.5 million subscribers across 15 countries in the region.

UNICEF briefed mobile network operators on priority areas of collaboration for national response efforts, including: community awareness and engagement; ensuring children's education continues; scaling actions to keep children safe during confinement (both online and offline); and innovating to scale social protection systems in light of unprecedented demand. Several operators also shared their experiences of supporting COVID-19 response efforts.

Following the webinar, the Regional Office initiated in-depth conversations with ZAIN, Ooredoo and Orange. In July 2020 UNICEF signed a Memorandum of Understanding with ZAIN to protect and realize the rights of children to health, education, child protection and other services. The Memorandum of Understanding will allow Bahrain, Iraq, Jordan, Kuwait, Lebanon, Saudi Arabia, South Sudan and the Sudan to engage with local ZAIN partners in locations where ZAIN is operating and explore areas where they can provide support to children. UNICEF is pursuing similar agreements with Ooredoo and Orange.



PART 5: PRIORITIES AND THE WAY FORWARD

As described in the ICTD Annual Report, 'Digital UNICEF 2020', as well as in this companion document, UNICEF's digital activities have grown exponentially, shifting from internal management support to include more upstream, cross-functional programme effectiveness solutions supported by ICTD. With the onset of COVID-19, this growth process and UNICEF's use of technologies in programmes, finance and operations have accelerated.

The UNICEF Strategic Plan 2022-2025 will capitalize on this momentum and set the stage for a reimagined UNICEF: one that is more technologically agile, digital and modernized and where the use of technology and digital innovation cuts across the organization's work. This reimagined UNICEF will leverage real-time data to drive decisions, maximize impact and accelerate results for children. Perhaps most importantly, UNICEF will expand its digital interventions in health, education, social and child protection, environment and WASH; strengthen government systems to deliver these interventions across sectors; and in so doing, accelerate the delivery of results for children and advance progress towards the SDGs.

In 2021, ICTD will launch the Digital Centre of Excellence, a dedicated field-facing global structure that will lead UNICEF's digital transformation as part of the organization's strategic shift towards using digital programming and innovation to tackle programme and humanitarian challenges. The Digital Centre of Excellence will support governments and partners to advance digital public goods; manage and support in-house digital solutions; identify digital innovations and technologies for field implementation and scale up; and engage companies, donors and supporters as thought partners and investors in philanthropy and digital programming.

The Digital Centre of Excellence will work with thematic hubs, including the UNICEF-WHO COVID-19 Digital Health Centre of Excellence in 2021. The Digital Health Centre of Excellence will include a consortium of development partners supporting countries to prepare and deploy cost-effective digital technologies to plan, track, monitor and communicate for equitable COVID-19 vaccine deployment. The Digital Health Centre of Excellence will use a health system strengthening lens, including readiness assessments, business requirements, platform analysis, data analysis and partnership mapping. ICTD has been instrumental to developing the architecture of the COVID-19 Digital Health Centre of Excellence, which will align with and be supported by the ICTD Digital Center of Excellence.

The INVENT platform will be central to UNICEF's digital transformation. INVENT not only captures the growing number of viable digital technologies and innovations employed in UNICEF programmes; it also serves as a source of ideas both inside and outside of UNICEF. The Business Relationship Management and Technology Playbook – which ICTD began developing in 2020 – will establish a framework that UNICEF staff can use to harness the power of technology and integrate technology into programme design, implementation and monitoring and evaluation. It will be used to ensure that technology is leveraged at every step in a way that is context-appropriate and sustainable.

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