

THE PROMISING FUTURE OF DIGITAL LEARNING IN KENYA

A REVIEW OF THE DIGITAL LITERACY PROGRAMME
AND BLUEPRINT TO REALISE ITS POTENTIAL





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Foreword

Legend has it that in the tenth century, the Grand Vizier of Persia, Abdul Kassem Ismael, an avid reader, did not want to part with his collection of 117,000 books when he travelled. He therefore carried his entire set of books in a caravan of four hundred camels trained to walk in alphabetical order. A 21st century version of this story would feature young people across the world carrying their entire library and lots of other reading materials in a smartphone or tablet held in the palm of their hand. The question, though, is to what extent does this expanded and easy access to limitless information and knowledge make us more knowledgeable?

While we have always known that technology can aid teaching and learning, the Covid-19 pandemic underscored the untapped potential of digital learning to raise the quality of education, make education more inclusive and help overcome disadvantages of space and geography. This stock-taking report of the digital learning program reveals that Kenya has made major progress in achieving the broad objectives of the program. A strong digital learning ecosystem is in place. The policies to support the program have been established, most of the schools are connected to electricity and some to the internet, most schools have digital devices, and teachers have received some training. Further, pupils and parents are strong champions of the program because they see its value.

But because the goals of the program were not sufficiently focused on the actual learning process, the program has fallen short in improving learning outcomes or helping to close the equity gap. Evidence shows that digital learning is more effective when embedded in a clear pedagogical framework supporting teachers. A key recommendation of the report is to **focus the objectives of the program**

"This stock-taking report of the digital learning program reveals that Kenya has made major progress in achieving the broad objectives of the program."

more sharply on the learning process and shift the key question from 'what can we do with this technology?' to 'how can technology help us achieve the goal of quality education for all'?

Even though the Digital Literacy Programme currently has more thunder than rain in terms of improving learning outcomes, Kenya is ahead of most of her peers in establishing a solid framework to deliver on the promise of digital learning. If the recommendations outlined in this report are implemented, Kenya can bounce back from the Covid-induced learning doldrums to reimagine education and expand opportunity for millions of children and young people, giving them the chance to learn and earn a decent living.

On behalf of the Executive Office of the President, I thank the Ministries of Education and ICT and all our partners, in particular the UK Government, for championing and supporting this study. Thank you to the steering committee for an eye-opening report.

Dr. Ruth Kagia
Deputy Chief of Staff,
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The technical team was lead by Julie Mwabe, PASU, and included Paul Tirimba and Martin Kungania, Ministry of Education; Joshua Opondo, ICT Authority; Michael Musyoki, UK Aid; Kevin Obura, Avanti Communications; Ciku Mbugua, EdTech Hub; Jennifer Otieno, Education Design Unlimited; Steve Ngunyi, IconBeOne; and Isaac Nyangolo, Zeraki.

The team would like to express its sincerest gratitude to the over 3500 stakeholders from 28 school communities that welcomed us and shared their experiences, insights and recommendations. We honour the efforts of the County and Subcounty Directors of Education, the Curriculum Support Officers, Head Teachers, Deputy Head Teachers, Teachers, Parents and Caregivers, and Learners who are impacting teaching and learning every day, and we are grateful for your enthusiastic support and candid feedback.

Numerous consultations were undertaken in preparing the report and blueprint. The team conveys its gratitude to our colleagues from Ministry of ICT, Ministry of Education, ICT Authority, National Centre for ICT Integration and Innovation, CEMASTEIA and Kenya Institute of Special Education. This work has also benefited from inputs provided by the following organisations: Dignitas, EdTech Hub, Usawa Agenda, UNICEF, Kenya Education Network (KENET), Instill Education, M-Lugha, Food4Education, Busara Centre for Behavioural Economics, and RTI.





Executive Summary

In 2012, the Government of Kenya foresaw the power that digital technology could play in transforming teaching and learning to increase access to education, to improve learning outcomes and to better prepare young people for the digital world. The Digital Literacy Programme (DLP) was a flagship initiative launched by President Kenyatta in 2013 where he declared, “The laptops will usher in an era of interactive, student-centred teaching that will free teachers to mentor pupils, and perform their core educational roles.” It has been a monumental undertaking that has required complex multisectoral collaboration, a large investment of public and private resources, and a willingness from the entire education system to shift mindsets and practise.

After internal planning and coordination and a brief pilot with 150 schools, the programme launched at a nationwide level in 2016. In the 6 years since that national launch, the country has experienced significant changes to the digital and education landscapes. Some shifts, such as improvements in digital infrastructure and mobile and internet penetration, have bolstered the DLP’s efforts. Others, such as the global Covid-19 pandemic, shined a spotlight on the gaps that still exist before the country can reap the full benefits of the digital future President Kenyatta had envisioned.

As the country readies itself to enter a new era of leadership, the Government of Kenya wishes to take stock of the Digital Literacy Programme, to celebrate its milestones, and to gain insight into what can be done to accelerate the pace of progress moving forward. The Presidential Policy & Strategic Unit (PASU), Ministry of Information Communications and Technology (MoICT) and Ministry of Education (MoE), with the support of UK Aid through British High Commission Nairobi, brought together a steering committee of public and private sector digital learning leaders to embark on a qualitative research process to gain insight into these areas and to help outline a path forward. The goal of this research was to hear directly from the implementers of the programme and the learners on the ground of how they experience the DLP every day, and what they believe is needed to accelerate the pace of progress.

Qualitative research was conducted with over 3500 stakeholders in 28 public primary school communities in 7 counties. Research focused on grades 1-6 which have been touched by the Digital Literacy Programme since its inception. Researchers hosted interviews and focus group discussions with Sub-county Directors of Education, Curriculum Support Officers, Head teachers, Teachers, Parents and caregivers, and Learners in grades 1-3 and 4-6. Researchers also spoke with key informants from the technology and education sectors to validate findings.

Digital Literacy Programme Milestones

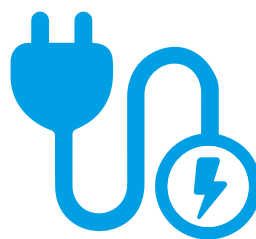
There have been significant efforts from across the technology and education ecosystems to enable digital learning to occur. Initiatives to date have focused on 4 key areas: Policy, Infrastructure, Teacher Capacity and Content.



Policies created and evolved to support ICT integration into teaching and learning, from 2005 to the present



22,891 public primary schools have been installed with 1,170,846 digital devices



22,927 schools have been connected to power



216 schools have been connected to internet



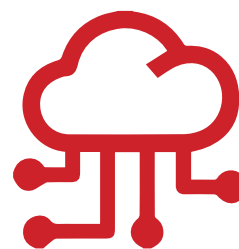
201,811 digital learning and teaching devices assembled locally at JKUAT and Moi University plants.



229,000 teachers have been trained on ICT integration in learning.



93,009 teachers trained on use of ICT and device utilisation



Kenya Education Cloud has interactive digital content for traditional and special needs learners

Data sources: DLP summary reports, Kenya Digital Master Plan, GIGA Project School Connectivity Dashboard

Celebrating DLP Achievements

The research found that when technology is leveraged, the teaching and learning experience is improved. And critically important is that key stakeholders indicated that they are ready to engage with digital learning and help move the work forward. The findings below celebrate important achievements of the Digital Literacy Programme.

Key stakeholders see the value and impact of digital learning.

Sub-county leaders (80%), head teachers (78%), teachers (93%) and parents and caregivers (96%) strongly believe in the promise and impact of digital learning. Learners believe technology helps them learn better (95%) and digital literacy is critical to their future success (100%). Motivation is usually a critical barrier to uptake of digital transformations; this challenge has already been surmounted, clearing the path for success of DLP moving forward.

Teachers are invested in cultivating necessary skills for digital learning.

Teachers (93%) believe that technology saves time and want to utilise it more. One-third of teachers have indicated that they pursued building digital literacy on their own, and many are using their personal devices and financial resources to support digitally-enabled teaching and learning. This is important for the future of DLP because teachers will be champions of digital learning (at school and at home) if provided with the skills, tools and support structures to help them build their capabilities.

Most schools have the necessary power infrastructure for digital learning to occur.

Although sockets may not be available in the classrooms (about 50% have), the majority of schools have access to power and can charge devices somewhere in the school (often in an office, library or lab). Power is core to the ability to use digital devices and this is solidly in place.

Learner engagement with tech is high.

When devices were available in lesson observations, 78% of learners engaged meaningfully in the digitally-enabled learning experience (defined by being on topic and task). Technology is deepening the learning experience, and the impact of this can be further amplified by teaching at the right level.





Device usage by learners is gender balanced.

In 54 lesson observations, 59% of classes had equal use by boys and girls (36% had no tech usage); in groups (where one learner holds the device and others look on), girls and boys lead usage equally (43%). When there is a small variation in gender use, it is in the favour of girls in both individual and group usage. This trend indicates that tech can be a gender equaliser if devices are present, content and tech are gender-responsive, and teachers (and parents, for home-based digital learning) have appropriate guidance.

Some promising tech-enabled learning practices have emerged by innovative educators.

Based on observations where tech was utilised, 26% of teachers were able to use devices to support personalisation. There are islands of success that can be celebrated and learnt from across the country, which can help create models for others to emulate. Public-private partnerships have been shown to amplify government investments.

Understanding the Gaps

While there have been many gains, there is still much work to be done to maximise the investments made in the early years of the Digital Literacy Programme. Programme activities have not been clearly tied to ultimate learning goals, and the long-term learning outcomes have not been measured or reported. Fluid policies and shifts in governance have resulted in policymakers and technical teams working in silos from each other and the private sector. Early capacity building efforts were limited to one-off training and focused on teachers only; other educators in coaching or support roles were not included. Learner data collected during digital learning is not yet being fully utilised to inform content relevance or data-driven instruction and decision-making. And critically, the programme is not reaching everyone equitably.

These gaps have resulted in a lack of consistent implementation of DLP on the ground: many learners said they use the devices one time a year or less. This indicates that while much effort has been put into building the foundation for success, it is not yet translating into the deep integration of technology into teaching and learning that was the purpose of the programme. The key findings below intend to answer the question: Why are the devices not being used consistently?

Barriers to Full Engagement

This research explored the key barriers to implementing the DLP and found that there were barriers to full engagement that exist at both a school level and system level. These contribute to the underutilisation of devices and ultimately the unfulfilled promise of digital learning.

School-level Barriers

These barriers impact the implementation of the DLP at a school and classroom level. The barriers include teacher, school and system leader capacity; lack of access to relevant content; and lack of access to devices and internet.

Many teachers do not yet feel they have the necessary skills to lead digital learning. Initial training was a half to one full day, largely theoretical and focused on only the most basic technical and pedagogical competencies. 89% of teachers requested training – either additional support or to be trained for the first time. All teachers said no follow up had happened after training, and 50% specifically called out the need for ongoing support. Additionally, 55% of the head teachers requested more training and support for their teachers (only 1 head teacher said teachers were well-trained). Others noted the challenge of few teachers being trained and then transferred to other locations. Teachers called for a more comprehensive approach where all teachers (and those educators that are meant to support them) are trained.

Teachers perceive content to be irrelevant or inaccessible. Teachers indicated that the content on devices is still 8-4-4 curriculum aligned and the amount of relevant content is very limited (2-3 pieces of content per level on average, some devices have none). Given this, they feel the content available on devices is mostly not relevant to their lessons. Although interactive Competency-Based Curriculum (CBC) aligned content is available on the Kenya Education Cloud, most teachers are not able to access it due to lack of internet availability at school. There are some examples of private sector engagement to support content creation, but key informants indicated this as a gap for cost-effective collaboration.

Educators in support roles lack the capability to effectively coach teachers in digital teaching. Sub-county Directors of Education, Curriculum Support Officers, and Head Teachers indicated that they did not receive training on how to coach and mentor teachers to effectively teach using the DLP resources. Headteachers (57%) specifically called for more training and ongoing support to effectively coach teachers. Curriculum Support Officers and Sub-county Directors of Education indicated a lack of confidence to support implementation.

Teacher and Head Teacher satisfaction with the Digital Literacy Programme is very low. Using a private sector indicator of customer satisfaction called Net Promoter Score, research showed that teacher satisfaction is at -68 and head teacher satisfaction is -75 (for education, 0 is good). This measure indicates that teachers and school leaders could be active detractors of the programme if their concerns are not addressed and their voices are not more effectively incorporated into the DLP design.

Not all learners have access to devices. Devices were distributed in 2015 based on current enrolment data. Since then learner enrolment numbers have increased, resulting in a mismatch between the number of devices and the number of learners in schools. In classroom observations,

only 7% of classrooms had more than 20 devices. However, 54% of classrooms had more than 45 learners, with 11% of classrooms having more than 90 learners.

Teachers are not yet confident to support special needs learners. Devices were distributed to support special needs learners and training was conducted by KISE for a limited number of teachers. However, most teachers said they still do not yet have the skills to support special needs learners with digital resources. Parents similarly did not feel like the community was yet being served (but highlighted the importance of their inclusion).

There is still an urban/rural divide on device usage. In the 54 lesson observations conducted in this research, 44% of urban school observations had devices in class while only they were present in only 26% of rural school observations. Teachers' ease with devices was also divided: 48% urban and 26% rural were able to use tech with confidence based on researcher observations.

Internet is still largely unavailable. Only 1 of 54 classrooms visited had a wifi connection, meaning 98% were without internet connection. In most cases, teachers use their own device as a hotspot to access online content.

System-level Barriers

These barriers impact the environment in which DLP is being implemented. These barriers include learning time for grades 1-3, the use of data to inform instruction and decision-making, and strategies for sustainability.

Many learners in grades 1-3 are not in school for the full day. Many schools visited in this research are sending grade 1-3 learners home by 12.30pm (instead of 3.30pm, as indicated by the Basic Education Regulations, 2015) and they are not returning for afternoon hours. Over a year, this leads to a loss of learning time equivalent to 540 hours or 13.5 weeks — the equivalent of an entire term of the school year. Over the three years of grades 1-3, this is equivalent to an entire year of learning time lost.

Learner data is not being used to drive teaching and learning. DLP learner data lives locally on teacher laptops but many teachers (48%) feel ill-equipped to use data to inform teaching and learning. All teacher focus groups requested more training on the use of digital data to inform teaching and learning. No data is being aggregated to national level to determine utilisation or learner outcomes.

School-based sustainability for digital infrastructure is in jeopardy. Connectivity and maintenance can be costly and sometimes prohibitive for many schools. Most school leaders indicated that they rely on the county for support but there can be challenges with wait times for visits and devices to be repaired. School leaders indicated that parent contributions are the main strategy for electricity, maintenance and possibly wifi; many cited no long-term strategy.

“The barriers include teacher, school and system leader capacity; lack of access to relevant content; and lack of access to devices and internet.”

Recommendations

Insights from the study and guidance from key informants informed the following set of recommendations that can help unlock barriers for the DLP.

Update the goals of the DLP and sharpen the focus on teaching and learning. Currently the DLP goals are focused on tasks around integration, equipping schools, capacity building, and the development of content and devices. While these are critical activities, they are currently disconnected from the purpose of ensuring all learners have access to a quality learning experience that empowers them for the future. Amend the goals of the DLP to focus on: 1) creating an enabling environment for digital learning to occur, including building the digital literacy of all educators; 2) ensuring universal access to education, 3) improving learning outcomes, and 4) empowering learners with digital literacy skills.

Strengthen the overall coordination of the next phase of the DLP through an inter-agency, inter-ministerial structure under the Ministry of Education. Given the high focus on learning in the DLP goals, shift the governance structure to have ultimate responsibility lie with the Ministry of Education. Leverage incoming bilateral and multilateral funding to support the growth of DLP, and the collaboration across ministries, semi-autonomous government agencies, private sector and civil society. Use interoperable data systems to support monitoring and evaluation.

Within this inter-sectoral framework, strengthen collaboration with private sector providers as well as consumers. Public-private sector collaboration around digital infrastructure, teacher training and content development have all shown

promise. Create adaptable systems and approaches that can be responsive to a rapidly evolving tech environment.

Through stronger coordination of DLP, enable development of holistic learning products rather than individual components. Remove silos between device and content development (hardware and software), and enable a feedback loop using data to inform the evolution of the device and content as one product.

Create a new set of metrics for evaluating the impact of DLP goals and activities. Current DLP metrics measure work done but not the impact of that work. Create actionable metrics and open data that provide insight into the effectiveness of interventions and inform the direction of the programme moving forward.

Limit areas of focus and take a differentiated approach. A recent analysis of implemented ICT in education policies in Kenya¹ shows that many well-intentioned and well-designed initiatives go unfunded or underfunded. Available resources are spread too thin, resulting in limited impact on teaching and learning. Scale back number of commitments in a given time period to ensure quality implementation and measurable impact. Use a targeted approach to maximise investments for those who need it most.

Prioritise sustainability for digital infrastructure investments. Before continuing large-scale investments in devices and connectivity for learning, run experiments on sustainability models that allow schools to meaningfully support long-term engagement. In the short-term, focus on low-speed

¹Manyasa, E. (2021) Assessing the Impact of ICT Integration Policy on the Equitable Access to Quality Education in African Contexts: The Case of Kenya. Paper commissioned as part of the GEM Report Fellowship Programme in 2021.

connectivity for local servers for content updates and reporting on usage only, and improve access and cost-effectiveness of maintenance for devices, power and connectivity. Create flexible policies and systems that allow for public and private sectors to each play a role.

Expand and deepen teacher and educator capacity building efforts. Building upon evolved training models designed by TSC and CEMASTEAM, broaden teacher capacity building efforts to have higher numbers of pre-service and in-service

teachers trained. Provide in-depth ICT in education competency² that touches on policy understanding, curriculum & assessment, pedagogy, application of digital skills, organisation & administration, teacher professional learning, and basic ICT competencies as needed.² Expand the prevalence of school-based communities of practice for peer support, and train school and system leaders so they can coach and mentor teachers on DLP implementation. Shorten refresher training cycles to ensure teachers and educators remain up-to-date on technology advancements.





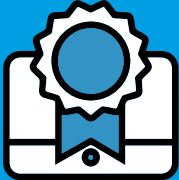

²UNESCO ICT Competency Framework for Teachers (2018). Retrieved from: <https://unesdoc.unesco.org/ark:/48223/pf0000265721>



The Digital Literacy Programme Blueprint: 2022-2032

To support the implementation of the next phase of the DLP and address the gaps identified in this study, the report is accompanied by a Digital Literacy Programme Blueprint. The DLP Blueprint will help develop a path forward to optimise the investments already made in the DLP, and to realise the full potential of digital learning. This blueprint provides clarity on how activities tie to goals, outlines sequential progression of activities based on evidence and learnings, and defines a more clear division of labour aligned to organisational strengths. The blueprint allows for clear external communication of Kenya's priorities and serves as a foundation for government and partners to collectively design detailed implementation plans.

Non-state actors and donors can map support to specific goals, workstreams and activities within to support the government's objectives.

Goal	Definition	Workstreams
 <p>1. Create an enabling environment for digital learning</p>	<p>Build the foundation for digital learning to occur</p>	<ul style="list-style-type: none"> a. Power b. Internet c. Hardware/Devices d. Innovative solutions for maintenance and sustainability e. Comprehensive digital literacy for all educators f. Interoperable data systems for monitoring device utilisation & educator digital competence
 <p>2. Ensure universal access to education</p>	<p>Leveraging tech to promote inclusion</p>	<ul style="list-style-type: none"> a. ICT to increase school attendance and participation, with a priority focus on digital solutions to support school feeding b. ICT for special needs identification and support c. ICT to support gender inclusion d. Digitally-enabled distance learning strategies to reach out-of-school learners e. Safe online, filtering and access for learners
 <p>3. Improve learning outcomes</p>	<p>Transform the way learning happens, enabled by tech</p>	<ul style="list-style-type: none"> a. Pre- and in-service training on ICT integration in CBC for teachers and other educators b. Learning products (software & content) to support teaching at the right level, with a specific focus on foundational literacy and numeracy c. Interoperable data systems and processes for data-driven decision-making at a classroom and system level d. Training on data-driven instruction for educators e. Access to high quality, affordable content (including special needs education content) for all learners, with a focus on foundational literacy and numeracy
 <p>4. Empower learners with digital literacy skills</p>	<p>Learners cultivate skills to thrive in a digital society</p>	<ul style="list-style-type: none"> a. Localised model of the components of digital literacy for Kenyan learners b. Relevant, inclusive content for building digital literacy skills for learners at all levels c. Training of educators to cultivate digital literacy in learners d. Intentional, hands-on cultivation of digital literacy skills

Introduction

The use of technology in education is not a new idea. With the advent of each new technology, educators have been able to create greater access and quality of learning. Textbooks, one of our earliest learning technologies, opened new windows into a world outside educators' and learners' immediate surroundings and scaled access to information in ways that were previously unimaginable. About 100 years ago, in the 1920s, the radio birthed "schools of the air", creating greater access and quality by enhancing the traditional classroom experience and expanding live educational experiences outside school walls, into homes and communities. In the 1950s, television made its debut and further expanded the idea of "distance learning" by creating new types of synchronous and asynchronous educational experiences that were available to learners and families alike.

With all of these technological tools at our fingertips, why do we need more technology for learning? **What can digital learning technologies give us that these previous analog technologies cannot?**

A key difference between analog and digital learning is the ability to use technology to **capture and use data to inform teaching and learning.** With our textbooks, radios and televisions, we cannot gather the same depth of information on how a learner is engaging with content or whether they are understanding the messages being shared because of the one-way dissemination of information. With digital learning, there is a data feedback loop that can gather numerous data points on how learners consume content and at what pace, if they are building an understanding of the material, and whether they are able to apply their new skills and competencies.

This data can unlock numerous benefits that can transform teaching and learning. Information on how learners engage with content can be leveraged to help content creators understand what is working and which pieces of content are

unclear or not resonating with learners. Content creators can then redesign content to ensure that it is delivering its intended outcomes and is reaching all learners. This feedback loop generates insights for designers to create more **relevant, engaging and inclusive learning experiences.**

The data also enables teachers to personalise learning based on ability, prior knowledge and personal relevance. Digital tools can support teaching at the right level and moving at the right pace to strengthen foundational skills and ensure mastery of new concepts for each learner. Digital tools can arm teachers with the information they need to best support all learners, including those with special needs. They can build learners' confidence through interactive learning experiences that provide them with feedback in real time and help them course correct to improve learning outcomes.

Well-designed digital learning programmes also have the potential to level the playing field and help close the equity gap by leapfrogging the constraints of distance and unsupportive learning environments. Digital learning tools, combined with a supportive pedagogical approach, have the power to enable **self-directed learning.** Digital tools can support the cultivation of 21st century skills like creativity and critical thinking as they explore the world around them and visit virtual places that were previously beyond their reach. Digital tools can empower learners with insights into their own strengths and how they can continue to grow. Additionally, digital platforms that allow them to access content from any device enables learners to take their learning outside the four walls of the classroom – building the opportunity for learning anytime, anywhere.

The benefits of digital learning don't end with the completion of school. Today's learners are preparing for a constantly evolving digital world and digitally-enabled jobs that don't yet exist. Young Kenyans will need to use technology to upskill throughout their lives and compete in a

Digital learning tools, combined with a supportive pedagogical approach, have the power to enable self-directed learning.

global workforce. With **digital literacy skills**, Kenya's future leaders are able to thrive in a digital society. Beyond mastering the functional use of devices, they will be able to cultivate 21st century skills that are needed by employers. They will be able to discern the validity of information found online and keep themselves and their loved ones safe from cybercrimes and bullying. Digital literacy will also allow our young people to fully engage as empowered citizens in the digital society envisioned by President Kenyatta and codified in the Kenya National Digital Master Plan³ (2022-2032).

Digital technologies alone are not a silver bullet to improve learning, just as none of their analog predecessors were. But when these digital means are combined with evidence-based pedagogical interventions, digital learning can help create a more equitable, relevant and inclusive learning environment, despite gender, socioeconomic level and diversity of needs. Digital technologies in the hands of confident, motivated learners and classroom, school and system leaders can ensure that Kenya's education system is increasing access, improving learning outcomes and preparing Kenyan children to thrive in a digital society.

³ Ministry of ICT, Innovation and Youth Affairs (2022). The Kenya National Digital Master Plan 2022-2032.



History and Progress of the Digital Literacy Programme in Kenya

The Digital Literacy Programme (DLP) was introduced in 2013 by the Government of Kenya, through the Ministry of Education, with the aim of integrating technology into teaching and learning and equipping learners with 21st century literacy skills. Upon conception, the objectives of DLP were to:

- I. Entrench ICT in the teaching and learning process and management of education in primary schools
- II. Equip public primary schools with appropriate ICT infrastructure to support teaching and learning processes
- III. To develop capacity of education managers, primary school teachers and other stakeholders to enable them to use the wide range of ICT tools in the teaching-learning process and management of schools
- IV. To facilitate the development and accreditation of appropriate digital content that will enhance acquisition of 21st century skills
- V. To develop local assembly industries

A complex undertaking of this magnitude requires massive coordination to bring its promise to fruition. Even in its early stages, the government embraced a collaborative approach, engaging multiple public and private sector leaders in the process. To foster greater interagency collaboration for the DLP, a new approach that leveraged strengths of various stakeholders was adopted in 2015. Through a cabinet memo, key ministries were mandated with implementing the DLP:

- Provide policy guidelines for the project (Ministry of Education)
- Develop digital interactive content (Kenya Institute of Content Development)

- Build the capacity of teachers (Teacher Service Commission)
- Electrify schools (Kenya Power and Rural Electrification and Renewable Energy Corporation)
Set up local assembly plants (Ministry of Industrialisation)
- Provide learning devices to schools (ICT Authority)

The Kenya Primary School Heads Association (KEPSHA) was engaged to support the coordination among school managers, and the Kenya Institute for Special Education (KISE) and the Kenya Society for the Blind were engaged to address the concerns of the SNE schools. In addition, the ICT Authority was tasked with coordinating the DLP implementation. The ambitious, multi-stakeholder DLP journey began with a considered approach to optimise deployment of resources, to manage stakeholders and ultimately to achieve programme success.

The DLP implementation began with a pilot project with 150 schools in 2015. The purpose of this pilot was to test the initial design and resources and inform a process for scale to all public schools across the country. Digital content was developed based on the 8-4-4 curriculum (the precursor to the current CBC system) and preloaded to 11,000 devices, which were then distributed to 3 public primary schools in the 47 counties, as well as 9 special schools. Devices included:

- Digital Content Server and Wireless Routers that are preloaded with the teacher training curricula on ICT integration, teachers training manual on ICT and a resource kit for teachers
- Teacher Digital Device: a laptop preloaded with the teacher training curricula on ICT integration



- **Learner Digital Device:** a tablet with preloaded content which includes interactive digital content
- **Braille embosser,** which is designed for visually impaired learners
- **Projector** that assists the teacher in the delivery of a lesson

Pilot programme teachers were also trained on ICT integration into teaching and learning. The hybrid teacher training course,⁴ designed through a collaboration among UNESCO, Ministry of Education, Science and Technology (MOEST), Teachers Service Commission (TSC), Centre for Mathematics, Science and Technology Education in Africa (CEMASTEA), Kenya Institute of Curriculum Development (KICD), and Airtel Kenya, was designed to mirror the UNESCO's ICT Competency Framework for Teachers. The course began with a 3-day face-to-face workshop at CEMASTE A and was designed to continue online for 4 months post-workshop.

After the completion of the pilot programme, the nation-wide rollout of the programme began in 2016. The DLP design took a three-phase approach:

- **Phase I:** Grades 1-3 (2016 - 2020)
- **Phase II:** Grades 4-6 (2019 - 2023)
- **Phase III:** Grades 7-12 (2023 - 2029)

Phase I implementation focused on providing digital devices that had preinstalled digital content for lower primary, grades 1-3. The devices were distributed based on class 1 enrolment numbers in 2015, and schools were provided with enough devices for every grade 1-3 learner. In addition to

touch-screen enabled tablets, schools were also provided with devices with assistive features for special needs learners, as well as laptops for teachers with access to a learning management system and digital dashboard that would capture data from the learner devices. Devices were also deployed with wireless routers through which teachers could access locally-cached content. At the early stages, a limited amount of content for grades 1 and 2 was designed. The focus of Phase I with grades 1-3 was "learning to use", defined as exposing learners to friendly technology to encourage early adoption.

In Phase II (2019-2023), implementation has been extended to upper primary, grades 4 to 6. The focus of Phase II with grades 4-6 is "using to learn", defined as exposing learners to technological tools for learning to enhance creativity and innovation. Phase III (2023-2029) is currently designed to provide the digital environment to support learners in "using to produce".

This phase will enable mentorship of ideas and production and enhance creativity and critical thinking. This phase would require the addition of a new set of advanced technology tools that can support design and prototyping of products.

Non-State Support for the Digital Literacy Programme

Since its inception, Kenya has enjoyed a collaborative approach in delivery of equitable and inclusive learning. The Government has over the years secured support and partnership from different partners from the development agencies as well as the private sector to provide promising learning outcomes for young people in the world

⁴ UNESCO. ICT integration in education in Kenya: Roll-out of the Digital Literacy Programme. Retrieved from: <https://en.unesco.org/news/ict-integration-education-kenya-roll-out-digital-literacy-programme>

of work. For instance, in 2018 Kenya was one of the countries selected as a front runner to champion Generation Unlimited. Generation Unlimited (GenU) was established in 2018 as a global multi-sector partnership to meet the urgent need for expanded education, training and employment opportunities for young people, ages 10-24 on an unprecedented scale. Up to the present date, the DLP has received generous support from donors and private sector partners who have enhanced government efforts and funding.

Covid-19's Impact on the Digital Literacy Programme

The COVID-19 pandemic exposed major weaknesses in the education sector globally, yet it also revealed many opportunities for improvement and growth. The DLP in its current design is not a remote or hybrid learning approach. The DLP integrates ICT in teaching and learning for the effective implementation of CBC in a physical school setting. Therefore it is not yet inclusive of out of school learners, nor is it designed to withstand extended school closures. Data collected through a rapid survey conducted by KICD⁵, the annual Uwezo citizen-led assessment in 2020⁶, and a previous report by PASU focusing on the impact of the Covid-19 pandemic on adolescents⁷, demonstrates that very few Kenyan children and youth were able to access digital learning resources during the pandemic. When learning was interrupted for over 18 million children in Kenya, the Government reached out and welcomed partnerships and investment to scale up actions that would enable learners to acquire the urgently needed 21st century competencies and subsequently reduce digital divide. However, policies guiding digitally-enabled blended learning, including home learning, are still lacking and gaps still exist that may be supported by private sector partnerships and donor support.

Rapid Scan: Digital Learning Policy Context

The DLP phased implementation plan was built upon a foundation of policies to support the integration of technology into Kenya's teaching and learning ecosystem. Major educational reforms have taken place since 2005, with a number of education and technology policies and frameworks developed outlining principles and long-term goals to guide planning and implementation in various ministries and government agencies.

The Kenya Vision 2030 and National ICT Master Plan 2014-2017 were developed with the vision of making Kenya a regional leader in the global digital economy and a hub for ICT activity. These plans highlight the necessity for policymakers to collaborate to effectively integrate ICT into education at all levels. The National Education Sector Strategic Plan (NESSP) 2018-2022 provides for integration of ICT in education, training and research for the use of digital tools to improve management, teaching and learning at all levels. The National Curriculum Policy, 2018, encourages the utilisation of technology to enhance innovation in the implementation of the Competency-Based Curriculum (CBC). On the technology side, the National ICT Policy, 2019, the Digital Economy Blueprint, 2019, and the Digital Master Plan, 2022, emphasise the need for all Kenyans to cultivate digital skills and values that promote the vision of an inclusive and empowered digital society.

These reforms take place within the context of a number of national and international commitments, including the 2030 Agenda for Sustainable Development, the African Union Agenda 2063, and the Kenya Vision 2030. More information on the policies that inform the use of ICT in education to support quality, relevance and equity are available in the annex.

⁵Kenya Institute of Curriculum Development (2020). Rapid Survey on Education Innovations in Kenya 2020.

⁶Usawa Agenda (2020). Are Our Children Learning? The Status of Remote-learning among School-going Children in Kenya during the Covid-19 Crisis.

⁷Population Council (2021). Promises to Keep: Impact of Covid-19 on Adolescents in Kenya.

Purpose of the Study

The DLP is one of the most important programmes by the Jubilee administration with potential to catalyse major transformation in the education sector. It is also a pacesetter in the Africa region. To understand this seminal journey, this report takes stock of what has been done, celebrates what is working, and leverages evidence from these findings and others to suggest a way to fully realise the potential of digital learning. To add a new lens to the existing tome of research, this study aimed to collect insights from key DLP implementers of and learners from a sub-county to classroom level. The expectation is that this analysis will provide the incoming administration and its partners across the global and local digital learning ecosystem with a baseline to chart a path forward that leverages learnings from these early experiences.

To complement the information provided by previous reports and localised research on the DLP, researchers hosted conversations with system, school, and classroom leaders, and with learners and caregivers, to understand:

- What has been their experience of the DLP?
- How often are they engaging with DLP?
- What are some of the challenges with implementing DLP?
- What do they believe can help make DLP more successful in the future?

Research questions were designed through a collaborative effort by the steering group, colleagues from representative agencies, and key education and technology advisors. Interviews, focus groups discussions and lesson observations provided insights into the enablers and barriers to the effective use of digital technologies to inform teaching and learning. Researchers spoke with a diversity of stakeholders to ensure a variety of perspectives from those closest to the DLP implementation were included:

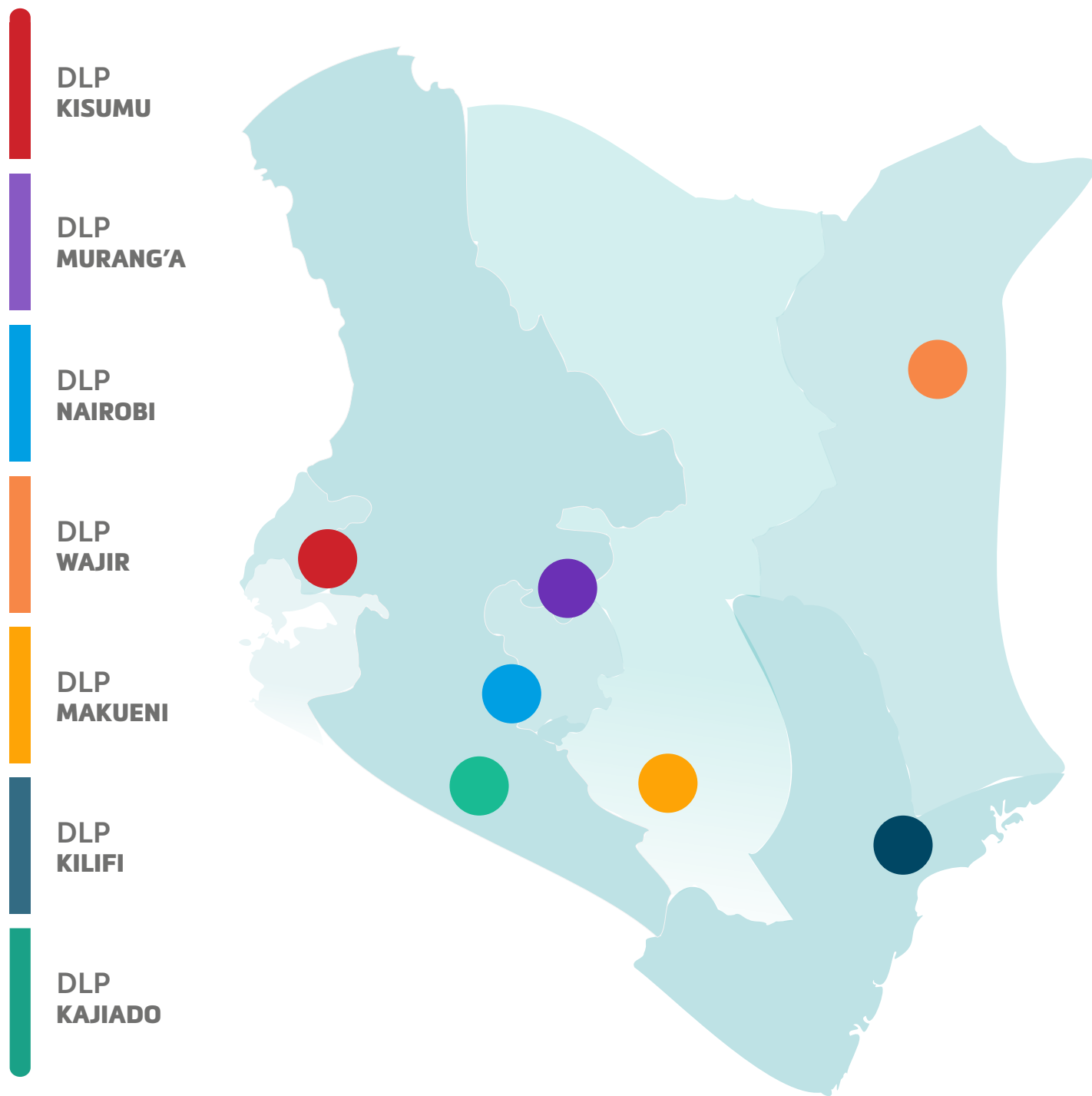
- Learners
- Teachers
- Head Teachers
- Parents and Caregivers
- Curriculum Support Officers
- Sub-county Directors of Education



Methodology

Data Collection

The study took a qualitative approach to data collection. Data was collected from seven counties across Kenya:



Counties were selected by the steering group with a lens to include geographical representation from across Kenya's diverse regions. Public primary schools that participated in the study were selected by the Ministry of Education. To ensure representative diversity, 4 primary schools were selected from each county, including 2 urban schools and 2 rural schools.

Field research teams, with support from the Ministry of Education, contacted County Directors of Education for awareness of the study. Additionally, Sub-county Directors of Education and Curriculum Support Officers of selected schools were invited to in-depth interviews to share their insights and perspectives on the programme. Head teachers were contacted to directly participate in in-depth interviews, as well as to mobilise key stakeholders for focus group discussions: teachers in grades 1-6, parents and caregivers of learners in grades 1-6, and two groups of learners per school (grades 1-3 and grades 4-6).

Research teams also conducted two structured observations of lessons in each school, which either happened in classrooms or computer labs when available. Research teams were also opportunistic and took advantage of opportunities to speak with Board of Management members and Sub-county ICT officers when available (even though this was not a target audience for the study). **In total, research teams spoke with over 750 key stakeholders across the country about their experiences and perspectives on the Digital Literacy Programme, and observed 54 teachers and 2710 learners in lesson observation.**



Stakeholder	Method	Instances	Total Participants
Sub-county Directors of Education & Curriculum Support Officers	In-depth Structured Interview	33	33
Head Teachers	In-depth Structured Interview	28	28
Teachers	Focus Group Discussion	28	177
Students	Focus Group Discussion	57	380
Parents and Caregivers	Focus Group Discussion	27	144
Sub-county ICT and Board of Management representatives	In-depth Structured Interview	2	2
Total			764

Data was collected in English and Kiswahili. For learners and parents and caregivers, data collection tools were also created in local dialects (Dholuo, Kamba, Kikuyu, Maa and Somali) to ensure ease of full participation. Qualitative data collection was done via an offline-enabled mobile application and was complemented by audio recordings (when consented) for reference as data was cleaned. All data was translated into English before submission by field teams and review by data analysts. Field teams also provided additional feedback and stories through weekly debrief meetings. Semi-structured key informant interviews were also hosted with public and private sector partners who were a part of the DLP planning and implementation and/or have relevant expertise on the key findings. Data from all conversations was coded and themed to form the basis for insights and recommendations.

Secondary Research

Secondary research was conducted in parallel to the primary data collection. Researchers conducted a rapid scan to understand the education and ICT policies to support universal access and participation; quality and relevance, and governance; and sustainability, governance and accountability. Lastly the scan focused on the policy guidelines that specifically focus on technology-enabled learning. Researchers also conducted an analysis of global and local best practices on improving access, quality and relevance, as well as technology-enabled teaching and learning. Insights from this process were used to inform the data collection efforts (e.g. tool creation, etc) as well as the development of the recommendations and blueprint.

Limitations

The study has several limitations. Based on time and financial constraints, the sample size was limited to the above-mentioned numbers and locations. With additional resources, the study could have also engaged ICT Champion Teachers, Quality Assurance Officers, and more sub-county ICT officers to get additional perspectives on DLP implementation. The timing of the data collection also caused minor difficulties. The qualitative data collection began in the first week of the new term, when classroom, school and system leaders are time constrained as they welcome learners back to the classroom. There were also disruptions to planned conversations, which caused challenges for school's participation but ultimately did not prohibit data collection. Floods in Wajir County caused delays in school visits, which had to be rescheduled. Additionally, because many of the schools were sending grades 1-3 learners home at 12.30pm, all focus groups and observations for these grades were adjusted to occur before learners left school and original visit schedules were reorganised. Additional field researchers were engaged to accommodate early leaving times and schedule changes, and to enable timely completion of data collection.

Validation of Findings

To validate the findings from the research, two key approaches were taken. First, initial insights from the research were shared with a number of others who have worked as a part of the public sector implementation of the DLP such as teacher trainers, KISE and CEMASTEVA and non-state partners who have supported the DLP implementation (e.g. former staff from Microsoft and ImpactEd, current team members from UNICEF, KENET and RTI/Tusome) to ensure these findings were consistent with their experiences. Second, findings were cross-referenced with other localised evaluations of the DLP (particularly those done at a county level⁸) to determine whether the findings from the research were consistent with existing literature. Input from these sources served to ensure the findings are representative of the broader context of the DLP across the country.

⁸ See the bibliography for listing of local studies of the DLP.

Findings

The key insights from the research process are summarised in the sections below. They highlight the achievements of the Digital Literacy Programme to date, the gaps that exist on the ground, and the barriers that are inhibiting the full engagement of stakeholders in the DLP.

Celebrating DLP Achievements

Based on the information collected in school communities, there are a number of factors that are supporting the successful implementation of DLP. These include highly supportive stakeholders, foundational digital infrastructure, and promising behaviours and impacts of digital tools on teaching and learning.

DLP implementers and learners strongly believe in the promise and impact of digital learning.

Researchers asked participants both about their beliefs about how digital could transform teaching and learning, as well as their actual experiences using or observing digital technologies being used to enhance learning. Overwhelming, the response from stakeholders was positive.

80% of **sub-county leaders** said they had seen the transformative power of digital in action, and believe that it is the right path forward. Sub-county Directors of Education and Curriculum Support Officers shared that when they observe lessons that include digital learning, there is an improvement in learner experience (44%), an increase in teacher performance and motivation (9%), and improved learning outcomes (6%). “Teachers will be able to bring the whole world into the classroom and illustrate or demonstrate different realities and lessons. This will make teaching easier, and learners will also have access to more information,” a system leader envisioned. They believe that the experience for both teachers and learners will be improved. “Teachers would be able to deliver lessons more efficiently and learning would be more engaging,” one leader told us. Education system leaders shared that they believe that digital technology would promote reduced workloads, greater convenience, and easier access to quality education resources for the teachers they support. Leaders shared that digital can also help address existing gaps like teacher shortages by promoting more self-directed learning or enabling remote learning opportunities. They also believe that the benefits of digitally-enabled teaching and learning will extend to their own work. One leader shared, “Digital learning would allow me to receive data in real time. This includes reports and videos, both positive and negative, which would aid in efficient decision making.”

School leaders echoed the enthusiasm for digital learning. One school leader told researchers, “Tech is everything, we are not running away from it, we must embrace it and use it. We would like all the classrooms to be digital classes.” Like system leaders, school leaders also believe that using technology will improve the teaching and learning experience. “A digitally enabled school makes teachers motivated and makes their work easier. And for learners, their understanding is enhanced.” These sentiments were echoed across schools and counties. 57% of head teachers said improved learning was the greatest promise of digital learning, and another 31% said that the promise lies in making work easier.

“Teachers would be able to deliver lessons more efficiently and learning would be more engaging,” one leader told us.

Despite the reason, head teachers were supportive of digital learning. One head teacher told us, “When everything will be put in place, it is the way to go. It will simplify teaching.”

Not only did school leaders believe in the promise because of what they have heard – they have seen the impact of digital learning themselves. 78% of head teachers said they have observed a positive impact when technology is used for teaching and learning. One school leader shared a memorable moment, “Teachers arrange with the learners to come to the ICT room for lessons and so they are always prepared for that lesson. There was a topic on digestion, the learners were able to see how the process goes until the food is eliminated from the body. That was very exciting for the learners.” They believe that learners’ interest is sparked by the enhanced teaching methodology, and they believe that teachers’ motivation is increased as well. “Before the introduction of digital learning, teachers had no interest in it. Now there’s also an appreciation for learning using technology,” one school leader commented.

At the core of the learning process is teachers, parents and learners. For these three groups, the support for digital learning was overwhelmingly positive. 93% of **teachers** strongly believe in the promise and impact of digital learning. When effective training, resources and support systems are in place, teachers believe that technology-enabled learning enhances curiosity, learning and retention. One teacher shared her experience in using technology to support literacy instruction, “The learners really enjoyed. It piqued interest more and the reading culture improved as well as the spelling. They were able to recall better, and retention is better. They are more eager and curious to learn.” Some teachers also find the technology a useful aid for supporting their delivery of learning experiences. “I used tech to show different plants and to learn some sounds. It was very positive as it helped me focus on what’s important,” one teacher said. Teachers also believe that digital tools can help them better assess and support learners with data-driven instruction. As one teacher told us when asked about how greater use of digital technology would change their experience with teaching and learning, “It would enable us to assess if facilitation was effective and whether learning outcomes were met. Especially for large classes. We can assess, guide and monitor learners in real time and even remotely.”

Parents were equally supportive of the use of technology in the classroom, with 96% saying they support digital learning. While some had concerns about their ability to keep their children safe online at home, they believe strongly that schools will ensure they are safe and on task when using digital tools. “When you are not close by [at home] the children can use it to access what’s not right for them. In school they have the time to use, and it’s measured time. The teacher also supervises.” Parents also see technology as a resource to lighten their own load. One group of parents shared, “DLP can complement CBC to allow parents to support and follow up on their education. It would also reduce the burden of carrying too many books.” Parents and caregivers believe that digital literacy is important to learners’ futures. “It’s good. In the life we are living now, everything has gone digital. If the child does not start being digital as of now, they will have challenges in the future.” Parents believe that DLP, when fully realised, can “prepare students to be part of the global village” and “move both parents and students from analog to digital.”

“DLP can complement CBC to allow parents to support and follow up on their education. It would also reduce the burden of carrying too many books.”

Even **learners** themselves believe technology helps them learn better (95%) and digital literacy is critical to their future success (100%). One group of learners told us, “Things are becoming digital. Technology can be used to help people. It is good to know how to use technology because we’ll need it when we are older.” According to learners, digital technology also has the power to drive a more autonomous and self-driven learning experience. “You can learn new things on your own, even without the teacher present,” one learner told us.

With digital tools, learners believe they are able to gain insights into their own strengths and how they can continue to grow. Even at a young age, learners crave this insight into their own skills and abilities, and the tools that can help them improve. A group of grade 4-6 learners told us, “Digital devices will help us learn our talents when we’re still young. We’d like to have more at school, we want to use them all the time.” Learners indicated that the experience of learning using digital devices makes their learning experience more engaging. “Technology gives you the morale to continue learning even for long hours without getting bored,” said a group of learners.



Importance for the Future of DLP:

This comprehensive stakeholder support is massively important for the future of the Digital Literacy Programme. Motivation is usually a critical barrier to digital uptake and key informants indicated that it was indeed a challenge in the early days of DLP. However, this challenge has now largely been surmounted, clearing the path for the future success for DLP.

Teachers are actively investing in realising digital learning in their classrooms. Teacher motivation has already translated into action in many cases. Although the teachers may not always be using the specific DLP resources to support digital learning, they have shown their commitment to the integration of technology into teaching and learning by building their own skills and leveraging their own resources.

During observations and in conversations with head teachers and teachers, we heard and saw that many teachers are using their personal digital devices (e.g. smartphones) and their own financial resources (e.g. data bundles) to support digital learning in their classroom. Teachers told us they use their personal devices anywhere in the range from once a month to daily. Teachers shared that sometimes the head teacher is able to give them data bundles to support access to online content, but often they use their own.

Their motivation to act comes both from the system requirements as well as their own belief in the power of digital learning. Some teachers indicated that they were driven by the requirements of CBC, and that is what drove the frequency with which technology was employed in their classrooms. Others shared that they were driven by the benefits to them as teachers: “It can save time, which can help the teacher to have more time with the slower learners; all the subjects are easier to teach when using technology.” In fact, 93% of teachers indicated that they believed that digital learning saves time. Their caveat was that the devices needed to be functioning and the content needed to be sufficient and properly downloaded to the devices, otherwise the time to implement could be prohibitive. Additionally, teachers believe that their own digital skills can be an enabler to digital learning, and a third of teachers indicated that they have pursued the development of digital literacy skills outside of the DLP.

Importance for the Future of DLP:

This self-driven investment of time, energy and resources by teachers bodes well for the future of the DLP. In other research⁹, Kenyan teachers have shared that they believe their role in fostering digital learning includes serving as champions and role models of digital learning. If provided with the necessary skills, resources and support structures, teachers will have the power to fully embrace this role and serve as champions of digital learning, both in schools and at home.



⁹ IREX (2022). Technology Enabled Learning in Kenya: Kwa Ground Insights on Building Resilient Distance Learning Ecosystems.

Most schools have the necessary access to power to support digital learning. A core element of the digital infrastructure is access to power. Without power, the devices cannot be charged and therefore cannot be utilised to support teaching and learning. In lesson observations, researchers were asked to track a number of items related to the digital infrastructure for teaching and learning:

- What types of devices are present in the classroom?
- How many devices are present and accessible to learners?
- How many devices are functional?
- How many devices are loaded with content?
- Are devices accessible by students?
- Are they being used during class?
- Is there power available in the classroom?
- Is wifi available in the classroom?

The goal was to understand how the enabling environment was supporting the use of technology in teaching and learning. One of the findings was that about 50% of the classrooms had access to power in that specific room. When researchers explored access to power more deeply with teachers and head teachers, they learnt that although there may not be sockets in the classroom, most schools have access to power and there is a central place where devices can be stored and charged. Although in some cases, infrastructure failures (including solar panels that had fallen into disrepair or weather conditions that impacted access) caused longer term disruptions, the majority of schools were successfully accessing power – either through the grid or solar – and able to charge devices consistently.

Importance for the Future of DLP:

Power is core to the digital infrastructure required to use digital devices to support teaching and learning. This is solidly in place and can continue to expand beyond school-based access to classroom-based access to reduce barriers to implementation.

Learner engagement with tech is high. Beyond the belief in digital learning and access to devices, learners also need to have the ability to deeply engage in the learning process. One of the concerns of teachers and parents alike is that learners will get distracted, navigate to inappropriate or unproductive content and lose learning time and focus. However, researchers found that engagement in learning is high when digital technologies are utilised to enhance the learning experience.

Researchers were guided to observe whether learners were on topic and task when using digital devices to support learning. One of the promising elements seen in lesson observations was a high engagement of learners when using digital devices and content. When devices are available, 78% of learners are engaging meaningfully in the learning experience and only 2% struggled to connect the tech-enabled learning experience to intended learning outcomes.

In focus groups, learners recalled their experiences of engaging in digital learning. A learner shared how technology can help bring the learning experience to life for them, “It gives a look and feel. When the teacher explains about the Sahara desert, you get to Google and see how it looks like.” They also shared their enjoyment of the experience and how they feel empowered. “We can learn interesting facts about cultures of different people and education. It is more fun to use tablets for reading instead

of textbooks," one group of learners said. Learners see the digital learning experience as one in which they can engage with exciting content, but also one in which they can strengthen their ability to learn. "You'll learn more things and enjoy as you play and learn. You get the achievement of knowing how to use digital devices."

Importance for the Future of DLP:

Tech is deepening the learning experience, which can be amplified by teaching at the right level.

Device usage by learners is gender balanced. One of the key priorities outlined in the policies and practices of education in Kenya is to ensure that learners have equal access to high quality learning experiences, regardless of their gender. To explore the relationship between gender and technology use, researchers sought to answer:

- Does the teacher engage more boys than girls with technology?
- Are there more boys or girls using devices individually?
- When students are in groups, is it a boy or girl who holds the device?

In the 54 lesson observations conducted across grades 1-6, 59% of classes had equal use by boys and girls. Where slight gender imbalance was seen, 4% girls used the devices more and in 2% of cases boys used more. In the other 35% of lesson observations, there was no usage by learners.

In exploring the question of who (boy or girl) is holding the device, research aims to understand the deep engagement and gender dynamics around tech usage. Oftentimes boys will be the ones holding a device and girls will be looking over their shoulders. They may not have an opportunity to engage directly with the device, and therefore their ability to build digital skills and confidence is limited. In these lesson observations, researchers observed that there was equal usage by girls and boys when in groups. In 43% of cases, researchers indicated that boys and girls held and used the devices equally to lead the work of their groups. In 33% of cases, there was no technology being used in the classroom, in 13% of cases girls were holding the devices more frequently, and in 11% of cases boys were directing the group.

Although many of the teachers were supporting gender equality in their classrooms, there is still an opportunity to support them – and parents – to address unconscious bias around girls' use of technology. Head teachers indicated that the responsibility for equal gender engagement lies with the teachers, and therefore they can be supported to be more intentional about this and have an opportunity to leverage device usage data to inform their practice.

Importance for the Future of DLP:

Digital learning can be a gender equaliser if devices are present, content and technology are gender-responsive and teachers (and parents) have appropriate guidance.

Some promising tech-enabled learning practices have emerged by innovative educators.

Innovation is already happening in classrooms, and there is an opportunity to learn from these pioneers to provide localised, relatable examples of excellence to other teachers across the country. One teacher recalled the experience of using technology to expand the boundaries of the classroom by using technology to bring her learners on a virtual field trip to Japan to learn about fishing. Other teachers have used technology to support self-directed learning experiences where learners could access online resources to do research.

Based on observations where tech was utilised, 26% of teachers were able to use devices to support personalisation. The technology was not always at the centre of the personalisation, but sometimes used to introduce topics which were then followed by offline personalised activities. (33% urban, 19% rural). This may not yet be resulting in the types of gains that a more intentional teaching at the right level (TARL) approach might have, and therefore teachers would need additional tech-enabled pedagogical skills to support gains in this next level of competence. Additionally, there are still gaps between urban and rural schools when it comes to these emerging practices: Of the 26% of teachers who were observed using technology to support personalisation, about double the amount of teachers were urban as compared to rural.

Importance for the Future of DLP:

There are islands of success that can be celebrated and learnt from. Public-private partnerships can amplify government investments in teacher capacity building and move more teachers forward in competence to lead evidence-driven, transformative learning experiences.



Key Takeaways: Celebrating DLP Achievements



When tech is leveraged, the teaching and learning experience is improved. Personal stories from research participants demonstrated their belief in the power of digital to enhance the teaching and learning experience. Learning engagement is high, and teachers believe the teaching experience is also improved.



Educators, learners and communities are ready to engage and help move the work forward. While there may be outliers, most stakeholders overwhelmingly indicated that the future they want for their children includes safe, relevant digital learning that will help prepare them for the world ahead, and their willingness to contribute to realising this vision. They understand that they will need to undertake commitments to make this future a reality, and they are willing to do so.



Promising practices by innovative educators are emerging organically, and these can be mainstreamed to improve the impact of the DLP. More collection of stories and insights on innovative practices and information on device utilisation can inform how to strengthen DLP capacity building and sustainability efforts.



Understanding the Gaps

Significant investments have been made to implement the DLP at a nationwide scale, and there is much that can be celebrated and learnt from for the future of digital learning in Kenya. As with all new initiatives, there are also opportunities to improve. This study also sought to gather insights from system, school and classroom leaders and learners to better understand where the gaps are and where the programme needs to course correct.

The input from all stakeholders was they strongly believe in the power and impact of digital learning. If leaders are confident and satisfied with the product – both the technology and the content – and the proper enabling environment is in place, devices are likely to be in frequent use. Utilisation of the devices therefore is one of the key indicators of how technology is being used to transform teaching and learning. Researchers asked learners to share with them how often they use the devices to learn: many said they use the devices one time a year or less.

Many learners shared that the day before research teams appeared was the first time they had seen the devices being used. “We have devices at school, but we are not allowed to use them,” one group of learners told researchers. Some shared that they hadn’t engaged with the devices at all, or there had been large gaps in usage. One researcher noted that in a focus group with learners, one learner shared that the last time they used the devices for learning was in grade 1 (they are now in grade 5), and another one was in grade 3 (and are now in grade 6). This message was consistent across levels and geographies. Devices remained stored safely away in locked cabinets but were not being utilised in lessons. With such little usage, the promise of using technology to increase access, to improve learning outcomes or to empower learners with digital skills is not yet being realised.

In some cases, learners shared that the devices were more accessible to them, and the frequency of use was higher. 11% of learners said they use the devices once per term and 12% said once per week. 16% of learners said they use technology for learning more than once per week. Additional research sought to understand: Why are so many devices remaining unused? What accounts for the difference between those who are using and those who are not? What can be done to maximise the investment made and reach the intended outcomes of the Digital Literacy Programme? The following section provides insight into the barriers inhibiting greater utilisation of technology for transformative teaching and learning.

“If leaders are confident and satisfied with the product – both the technology and the content – and the proper enabling environment is in place, devices are likely to be in frequent use.”

Barriers to Engagement

The research explored the key barriers to implementing the DLP and found that there were barriers to full engagement at both a system level and a school level. These barriers inhibit leaders of learning and learners from engaging fully with the DLP, and for the programme to reach its full potential of transforming teaching and learning.

School-level Barriers

Research found that there are a number of barriers that exist at a school level. These barriers are inhibiting the programme's success and causing the resources to be underutilised. The barriers focus on teacher and coach capability, irrelevant and lacking content, access to devices, and lack of internet.

Many teachers do not yet feel they have the necessary skills to lead digital learning.

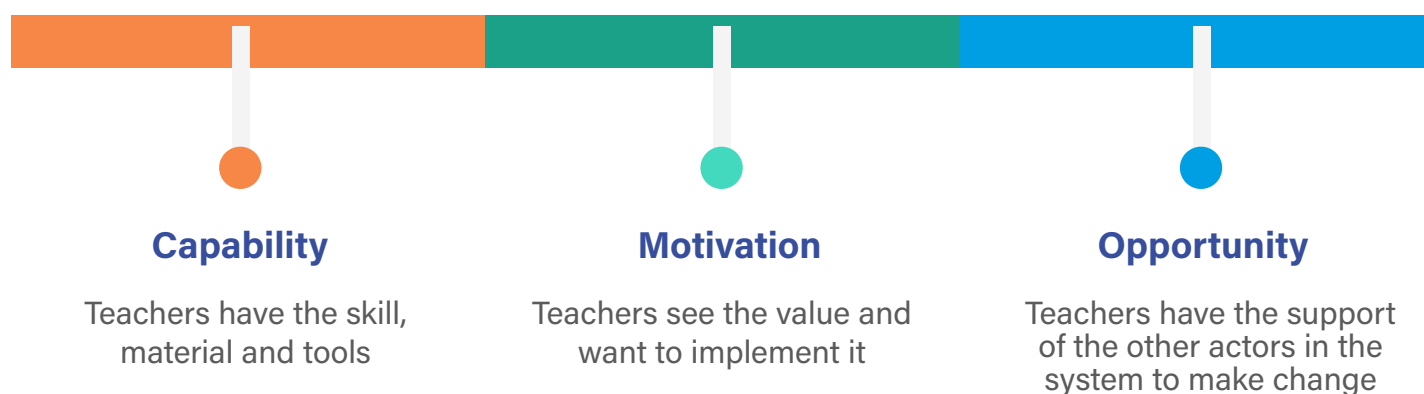
Education is a complex system, and the health of that system – the extent to which it functions effectively – depends on the actions of those within the system. In our education systems there are actors contributing to the health of the system at multiple levels: those charting the paths at the policy level; those working to bring those policies to life at the regional, community, home, school

and classroom levels; those bolstering the system with investments and private solutions; and those whose data and insights help us to navigate the way forward. Each of these actors must work in concert to support the most critical stakeholders in the system: teachers, learners and caregivers.

The teacher is at the centre of it all. The teacher shapes the way young people learn in the classroom. They shape the way parents engage and reinforce learning at home. They provide a trusted voice in schools and communities. When supported by a healthy system, our teachers can truly transform how learning happens.

Digital transformation requires teachers to go through their own transformation. They must go through a behaviour change process that takes time and is not always easy. The work of the system actors is to support teachers through this change and give them everything they need to be successful. The COM-B model of behaviour change¹⁰, created by Professor Michie and her behavioural science colleagues at University College London in 2011, outlines that individuals need the capability, opportunity and motivation to effectively embrace change.

COM-B MODEL OF BEHAVIOUR CHANGE



¹⁰The Behaviour Change Wheel (BCW) and COM-B model were developed by Susan Michie, Maartje M van Stralen, and Robert West from 19 frameworks of behaviour change identified in a systematic literature review by University College London, Centre for Behaviour Change.



"The teacher shapes the way young people learn in the classroom. They shape the way parents engage and reinforce learning at home. They provide a trusted voice in schools and communities."

Wajir, teacher



In order to engage in digital teaching and learning, teachers must be empowered with the **capabilities, motivation and opportunities**. This means they must have the skills, materials and tools for digital learning. They must see the value of digital learning and they must want to implement it. And they must have the support of the other actors in the system to make the shift to digital learning.

One of the most critical barriers to the uptake of DLP has been the **capability** of teachers to use the DLP resources for teaching and learning. Teachers indicated their hesitancy comes from two areas: 1) their confidence to effectively use the DLP resources and 2) the relevance of the content provided.

“Everything was just dropped here and there hasn’t been any word since,” one teacher told researchers. This was a common sentiment echoed across the schools and regions visited in this study. Teachers – even those who attended training – felt they had not received sufficient support for implementation of DLP. These same teachers, however, are often using their own personal devices and financial resources (e.g. for data bundles) to leverage digital learning resources in their classrooms. In both rural and urban schools alike, the majority of teachers had smartphones and were very comfortable using them. Teachers shared stories of passing their phones around the room so learners could get a glimpse of a video or image that would help bring a lesson to life. Teachers were aware that phones could get damaged or even broken beyond repair, but this was a risk they were willing to take to create a more interesting and impactful learning experience.

Even those who participated in training felt the experience was not practical enough to empower them with the skills they needed. “They should have administered the training with laptops - it was theory based,” a teacher shared. Another suggested that there wasn’t a deep understanding of the teachers’ initial skill levels, “The trainers assume that these teachers know how to use these devices hence cosmetically train; yet they know

nothing about them.” Teacher trainers who were a part of the initial DLP training agreed. They shared that teachers were brought together and learned from a PowerPoint presentation. One trainer said, “Looking back, we now know that teachers can’t learn this way. We should have had them working with the devices during the training.” Teachers also lamented the lack of ongoing support they received around ICT integration. “The training should have been taught over a period of time and not as a crash program. Training that should have been done over a month was done in one day. And we should have received ongoing support.” Additionally teachers wanted to find a way to keep up with the rapidly changing tech environment, “We need to have follow up and refresher courses to ensure teachers are up to date with whatever is new.” They believe that this investment in continuous professional development will translate into transformed practice. Teachers told researchers, “Once training has been done, practice is needed to make sure teachers are able to remember. [With more support] the teacher could do better and learn more to be able to give more to the students.”

Teachers who had been trained were also asked to go back to their schools and train other teachers. With just a surface level understanding of ICT integration, they lacked the confidence to train others and often what was temporarily gained in training was quickly lost without practice or the development of new complementary skills. They shared that they didn’t have anyone to turn to who could help them with technical support issues, or help them problem-solve about how to use tech to more effectively reach their learners.

These sentiments echo the research conducted by others who have explored teachers’ capacity to effectively integrate technology into the teaching and learning process. A survey¹¹ by the Teacher Service Commission (TSC) found that teachers in public schools were facing significant challenges in embedding technology into their teaching practice. 84% indicated that they were having difficulty, and the survey ranked integration of technology into teaching and learning as the top

¹¹ Murithi, Julius & Yoo, Jin. (2021). Teachers’ use of ICT in implementing the competency-based curriculum in Kenyan public primary schools. *Innovation and Education*.

professional skills gap for teachers. Additionally, localised research of ICT integration in teaching and learning in Kiambu¹², Makueni¹³ and Kisii¹⁴ counties found the same: teacher capacity was strongly related to device usage, and one of the most prominent barriers to successful implementation of DLP.



Building the Capability of Teachers: Skills

Many of Kenya's public school teachers are already confidently using digital devices in their personal lives. The challenge comes when applying digital technologies to their classroom practice, and

particularly knowing how and when to use digital tools to support learning with large class sizes. The Ministry of Education, in partnership with a number of private sector organisations, attempted to build the capacity of teachers to engage in the DLP through training sessions. 2-3 teachers from each school were selected to be trained through the DLP, with the intention that these teachers would then return and train others in their schools. The Ministry of Education also trained a number of teachers as ICT champions to train teachers and principals in these schools.

To support education systems to design comprehensive training and ongoing relevant professional development, UNESCO (in consultation with numerous global organisations) created the ICT Competency Framework for Teachers (CFT). The ICT CFT outlines a set of competencies that teachers must possess to be able to effectively integrate ICT into their professional practice so they can facilitate students' learning as related to the core objectives of a curriculum.

The ICT CFT organises the ICT in Education competencies into three levels. Each level is aligned to how teachers typically adopt technology:

- 1. Knowledge Acquisition:** teachers use technology to supplement what they already do in class
- 2. Knowledge Deepening:** teachers begin to exploit the true power of technology and change the way they teach and students learn
- 3. Knowledge Creation:** transformative use of technology for learning is actualised; teachers and students create knowledge and devise innovative strategies to generate new information

¹² Kariuki Mary Wairimu (2012). Factors Influencing The Integration Of ICT In Teaching And Learning In Secondary Schools: A Case Of Kikuyu Constituency, Kenya.

¹³ Wanza, B and Oluoch, O. (2019). Determinants Of Implementation Of The Digital Literacy Program In Makueni County, Kenya. Jomo Kenyatta University of Agriculture and Technology, Kenya.

¹⁴ Morara et al (2020). Ranking challenges facing digital literacy programme in primary schools in Kisii County, Kenya.

These levels of increasing proficiency in using technology to achieve educational goals are mapped across six educational aspects – Understanding ICT in Education Policy; Curriculum and Assessment; Pedagogy; Application of Digital Skills; Organisation and Administration; and Teacher Professional Learning – to create 18 core competencies for teachers.

This most recent version (2018) of the ICT CFT emphasises that teachers, in addition to having the ICT competencies for their own practice, must be able to “use ICT to help students become collaborative, problemsolving, creative learners and innovative and engaged members of society.¹⁵” This aim connects directly with the ability for teachers to use ICT to deliver the 7 core competencies of Kenya’s Competency-based Curriculum (CBC):

- Communication and collaboration
- Critical thinking and problem solving
- Imagination and creativity
- Citizenship
- Learning to learn
- Self efficacy
- Digital literacy

Additionally, the ICT CFT provides guidance on teachers’ use of ICT to support self management in

learning (tied to CBC’s self efficacy and learning to learn), as well as the need for teachers to cultivate their own digital literacy to enable the teaching of digital literacy competencies to learners. Given its alignment to Kenya’s curriculum goals, the ICT CFT therefore is a useful tool for outlining the necessary competencies for teachers to effectively deliver CBC and ultimately improve learner outcomes. A previous version of this framework has already proved useful in Kenya, as it formed the basis for an original training course which ran in early 2016¹⁶.

Since the nationwide rollout of the DLP in 2016, a variety of stakeholders have provided capacity building for Kenyan teachers to engage in DLP. However, many of the training efforts were siloed and did not provide teachers with the full set of competencies needed to embrace and lead digital learning activities in their classrooms. The chart below indicates the training efforts mapped against the UNESCO ICT CFT. Each colour represents a different teacher competency from the ICT CFT, and has three levels moving from light to dark: Knowledge Acquisition, Knowledge Deepening, and Knowledge Creation.



¹⁵ UNESCO (2018). UNESCO ICT Competency Framework for Teachers. Paris, France.

¹⁶ ICT integration in education in Kenya: Roll-out of the Digital Literacy Programme (2016). Retrieved from: <https://www.unesco.org/en/articles/ict-integration-education-kenya-roll-out-digital-literacy-programme>



“We need more and detailed trainings. Yes we had it once, but theory alone is not enough. If all these problems are sorted, we’ll be good.”

Head teacher

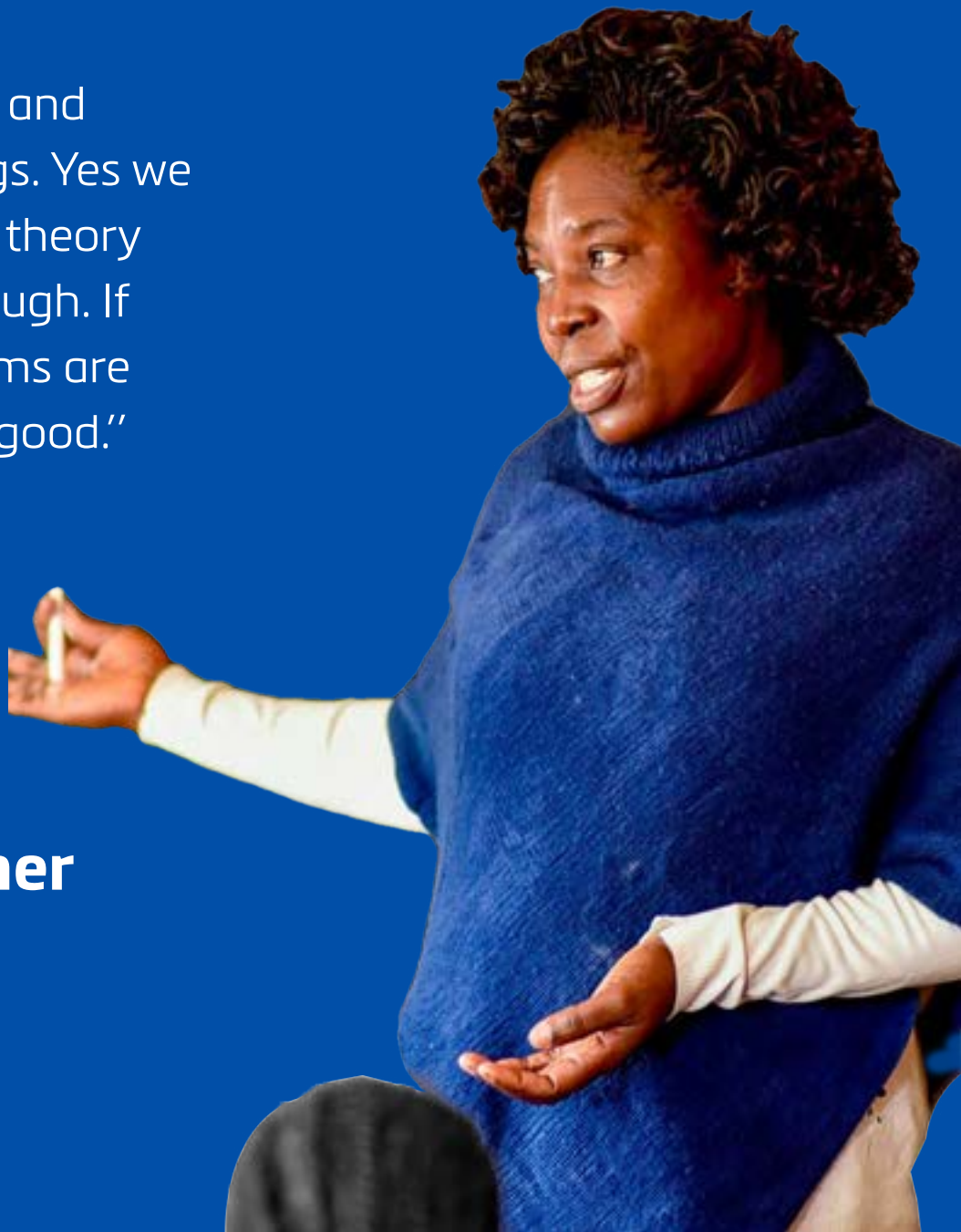


Chart 1: Teacher Training Efforts of DLP Mapped by Teacher ICT Competency¹⁷

Competency	TSC	CEMASTE A	ICTA	KISE	Private Sector
Understanding ICT in Education In-depth Structured Interview					
Policy Understanding	✓			✓	
Policy Application					
Policy Innovation					
Curriculum & Assessment					
Basic Knowledge	✓	✓		✓	✓
Knowledge Application					✓
Knowledge Society Skills					
Pedagogy					
ICT-enhanced training	✓	✓	✓	✓	✓
Complex Problem Solving					
Self-management					
Application of Digital Skills					
Application			✓		✓
Infusion					
Transformation					
Organisation & Administration					
Standard Classroom	✓	✓	✓	✓	✓
Collaborative Groups					
Learning Organisations					
Teacher Professional Learning					
Digital Literacy	✓	✓	✓	✓	✓
Networking					
Teacher as Innovator					

¹⁷ Information gathered based on feedback from training providers, and not a systematic review of training materials.



Basic ICT Competencies is not a core element of the ICT CFT framework. The framework assumes a basic level of technical competence from which teachers are already building. However UNESCO noted in their report that during implementation, many systems added an element to their training and coaching efforts to close a gap for the functional skills required to use digital devices. These additional efforts included basic technical skills as well as the understanding and use of basic tools such as word processing software and efficiency tools.

Similar to research findings in other African nations conducted by UNESCO, the current training efforts for the DLP are only targeting the lowest levels of ICT competencies (the Knowledge Acquisition level). Additionally, to empower teachers to be effective in fully utilising the power of ICT for learning, future capacity building efforts should also address the higher levels of the framework for teachers (Knowledge Deepening and Knowledge Creation levels).

There were also numerous contributions made to teacher training efforts by the private sector and civil society. Companies like Microsoft and Intel contributed training tailored resources for programme implementation as well as teacher professional development. They also hosted training sessions led by their own trainers that onboarded teachers to these resources. Non-governmental and civil society organisations were funded by donors like USAID to support training efforts across the country.

Teacher trainers who were a part of the early DLP trainings in 2016 told researchers that the trainings were conducted to impart a theoretical understanding of technology. PowerPoint presentations were made to large halls of teachers, where they sat listening and taking notes in notebooks. There was no practical application of the information being learnt, and they did not actually have an opportunity to touch any of the devices – for either teachers or learners – during the training sessions. These theoretical learning experiences lasted for half to full day training sessions, after which no assessment of understanding or competence was evaluated.

Capacity building efforts have evolved since programme inception. Training hosted by TSC and CEMASTEIA now utilise competency-based training needs assessments to provide a baseline of skill levels for teachers and school leaders. Customised training is then designed to meet the needs of unique groups of teachers and school leaders. Training sessions have also increased in length to accommodate the need for deeper engagement. Current sessions being hosted by TSC and its partners are 4-5 days, with an intentional continuous follow up process designed to support implementation post-training. Additionally, there are training efforts underway to build the capacity of school leaders and boards of management so they understand the benefits of digital learning and the role they can play in supporting teachers to implement what they've learnt. Teachers are now encouraged to form school-based, peer-led communities of practice, with the support of school leaders.



“We need the correct content for the devices so that we can give it to our pupils.”

Teacher



Sub-county Directors of Education and Curriculum Support Officers indicated that teacher reassignment was also a challenge for the successful implementation of the DLP. One system leader shared, “60% of the teachers were trained but the majority of them left the region due to insecurity. We have now left with very few trained teachers.” Another indicated, “50% were trained and then 30% of the 50% left. We now have only 20% of the trained teachers and they are unevenly distributed in the schools.” Only slightly more than a third (37%) of system leaders indicated that they had more than 50% of their teachers trained. One teacher shared their recommendation, “They should continue with training in all schools for all teachers. There are scenarios where the teachers who were trained have transferred to other schools, this leaves a gap.”

Teachers perceive content to be irrelevant or inaccessible. The second key barrier teachers indicated was that the content found on devices was not useful to their day-to-day teaching efforts. The DLP content was sometimes missing from devices completely. According to a needs assessment report for development of policy on ICT in Education and Training¹⁸ (Ministry of Education, 2018), a survey found that digital content was available in only 64.5% of the institutions. In the majority of cases content was considered to be irrelevant because it was 8-4-4 curriculum aligned instead of being aligned to the new CBC curriculum, and the limited amount of content included was not relevant for all subjects or levels. “I would rate the content a 3 (out of 10). It’s not the correct syllabus, so it’s not relevant,” one teacher shared.

Most teachers opted to find their own content online instead of using the pre-loaded DLP content. However, because of lack of internet access, teachers are not able to use the DLP devices to access cloud-based content, including the CBC-aligned content created by the Kenya Institute of Curriculum Development (KICD) in the Kenya Education Cloud. Instead, teachers are using their own devices and access open educational resources like those that can be found on YouTube

and other similar platforms. In reference to finding content that supports CBC instruction, a group of teachers said, “We don’t use tablets; we rely on our phones.”

Educators in support roles lack the capability to effectively coach teachers in digital teaching. Sub-county Directors of Education, Curriculum Support Officers and Head Teachers all indicated that their role should be to support teachers’ implementation of the DLP. However, many felt ill-equipped to do so. “We’re not able to support since we also lack capacity,” one system leader indicated. 57% of head teachers said that they also need training and coaching to be able to ensure effective implementation of the DLP at a school level. One head teacher told us, “The capacity for DLP should be built for all, even the parents and the Board of Management.” These system leaders believe that they can only provide the support teachers and learners need when they have the requisite skills themselves.

To understand the depth of challenges faced by both coaches and teachers, researchers used a private sector measure of customer satisfaction called Net Promoter Score. This score uses a very simple formula to determine the experience of a user and to promote future engagement with a product or service. Net Promoter score is a widely used market research metric that typically takes the form of a single survey question, asking respondents to rate the likelihood that they would recommend a company, product, or a service to a friend or colleague. For this research, teachers and head teachers were asked to rate their likelihood of recommending DLP to another teacher or head teacher, on a scale of 1-10. For different industries, the measure of “good” lies at different points. In education, 0 is considered to be a mark of a satisfied customer. Using the Net Promoter Score formula, researchers found that teacher satisfaction is at -68 and head teacher satisfaction is -75. This indicates that the level of satisfaction with the DLP is quite low and that unless changes are made to implementation, then teachers and head teachers could begin to actively discourage the use of the DLP resources.

¹⁸Needs assessment referenced in the Ministry of Education's draft policy on ICT in Education and Training 2021.

Not all learners have access to devices. High class sizes, differentiated learning needs and geographical differences all had an impact on whether learners were able to access digital learning. Since the original device distribution, there has been an increase in the number of learners enrolled in public schools. While more learners in school is a positive trend, this did lead to a disconnect between the number of devices and learners. In lesson observations, researchers found that only 7% of classrooms had more than 20 devices. In 9% of observations there were 10-20 devices available, 20% had 1-10 devices, and in 63% of the observations no devices were available. Even when the devices are present, the device to learner ratio is high given the number of learners in the classroom. 45 learners per classroom is the recommended maximum under CBC. However, in reality many primary classes have more than 45 learners. In this research, 54% of classes had more than 45 learners, and 11% of the classes had more than 90 learners per class.

Researchers also found that special needs learners are still being left behind. Teachers said they do not yet have the tools and skills to support SNE with digital learning, although they requested for more support on the same. Parents similarly did

and participation. For the DLP to live up to these expectations, a better understanding of the specific gaps faced by these communities will need to be developed, and targeted interventions to better support them can be co-designed with teachers and members of these communities.

Internet is still largely unavailable. Connectivity is a key piece of the digital infrastructure required to fully leverage digital tools for teaching and learning, as well as to capture and share the powerful data captured through technology-enabled experiences. Of the 54 lesson observations conducted, only 1 of the classrooms had access to wifi. This means that 98% of the classes do not yet have access to the connectivity that would allow them to access a broader range of digital content, like that in the Kenya Education Cloud, and to continuous professional development experiences that can increase the digital literacy of educators.

There are a number of efforts underway to address this gap, including those by the Ministry of ICT, Giga and the SchoolNet Programme. In an article published by Kenya News Agency, CS Joe Mucheru said, "We are aware of the challenges the programme has faced among them lack of internet access to schools to enable content delivery, inadequate training of teachers and high cost of electricity in schools. The government has put up plans to address each of these challenges including reduction of power tariffs for schools and provision of adequate funds for the programme." Private sector partners like Huawei are being engaged to test new ways of building sustainable digital infrastructure that can serve as an effective enabler of the DLP. School connectivity features as a key performance indicator in the Digital Master Plan (2022) and the government aims to have all schools connected by 2025.

"54% of classes had more than 45 learners, and 11% of the classes had more than 90 learners per class."

not feel like the community was yet being served (but highlighted the importance of their inclusion). Additionally, there is still an urban/rural divide on device usage. 44% of urban school observations had devices in class while only they were present in only 26% of rural classes. teachers' ease with devices was also divided: 48% urban, 26% rural were able to use tech with confidence.

Equity in education is a key priority for Kenya, as outlined in the policies for universal access



"With our lower grade students leaving school at 12:30 pm daily, they hardly spend enough time on the gadgets, leave alone a lesson is only 35 minutes, there is not enough time"

Teacher



System-level Barriers

Research uncovered several system-level barriers that are also inhibiting the implementation of the DLP. While these barriers are not all DLP-specific, they have an impact on the ability of the programme to be successful.

Many learners in grades 1-3 are not in school for the full day. The Basic Education Regulations of 2015, Part VIII, number 84, indicate that the official school operating hours for public and private institutions are Monday through Friday 8.00 a.m. to 3.30 p.m. for class hours. However, many of the public primary schools participating in this study sent grades 1-3 learners home for lunch at 12.30pm and did not require them to return afterwards. The actual school learning schedule posted in schools indicates that the learning day ends for these learners at 12.30pm and there is no additional class instruction scheduled for the afternoon. This means that learners are missing 3 hours of official class hours each day for 5 days a week, for a total of 15 hours per week. Over a year, this leads to a loss of learning time of 540 hours or 13.5 weeks — **the equivalent of an entire term of the school year.** Because this is happening for grades 1-3, this means that over the three-year period, learners have lost an entire year of class time by the end of grade 3. When compared against reading competency levels for grade 3 learners, this paints a grim picture for the future of these learners. Their ability to compete against local and international peers is being diminished due to lack of learning time and opportunities. Schools cited a number of reasons for this challenge: lack of resources for school feeding, not wanting to send small children on too many trips back and forth to schools due to dangerous conditions (ie. extreme weather, possible animal attacks), and distance. This may be a contributing factor to the low learning outcomes for grade 3 learners¹⁹: In 2019, 49.2% of grade 3 learners were not yet meeting expectations for Reading Comprehension and Language Structures, and 53.2% were not meeting expectations for Writing. Although this is not a challenge for the DLP alone, it does inhibit the ability for teachers and learners to engage with the DLP resources due to time constraints.

Learner data is not being used to drive teaching and learning. Although learner data is being captured, it lives locally on teacher laptops. However, many teachers (48%) feel ill-equipped to use data to inform teaching and learning. When asked about their confidence to use data to inform teaching and learning, teachers cited that they felt confident using analog data to help them better serve learners, but all teachers requested more training on the use of digital data to inform teaching practice. Additionally, because data systems are not in place to aggregate data to a national level, there is no clear picture of utilisation of the devices, the capacity of teachers and learners, or the impact the programme has on improving learner outcomes. A group of teachers shared, “Yes, we would need more training because we have different levels of students and the special ones have different special needs. Also these learners are from different backgrounds and the number is quite large as well to understand each and every.” Another teacher showed her motivation for using data to inform teaching, “I feel like I need more help in this. It would definitely enhance the way I teach in class and how we improve our mean grade as a school.”

School-based sustainability for digital infrastructure is in jeopardy. Researchers asked school leaders to share their plans for sustainability of digital learning at their schools. In addition to the capitation provided by the government to support digital infrastructure, some school leaders had come up with strategies to support the digital learning in their schools. However, most indicated that they did not have a clear path to supporting their schools. Many were already asking parents to contribute to the payments for electricity and did not anticipate their ability to pay additional funds to support maintenance and internet. “The only long-term solution we have is to talk to the parents to maintain the devices and infrastructure,” said one school leader. Another said this strategy wasn’t an option, “[We have] no long-term strategy since parents understand that education is free thus they are not supposed to contribute anything.” Others suggested they could look for support from donors or non-governmental organisations. They requested more support to figure out how they could make digital learning sustainable for their schools. 76% of school leaders see a role for the private sector to play in supporting financial sustainability, particularly as it relates to digital infrastructure.

¹⁹ The Kenya National Examinations Council (2020). Report On The 2019 Monitoring Of Learners’ Progress Grade 3



Key Considerations for the Future of the DLP

- 1. There is not yet clear alignment about the ultimate goals of the DLP.** The original vision set out in the Digital Literacy Programme documentation was actually a set of activities and tasks – not goals. Policies and implementation plans outlined the functional tasks to integrate digital into teaching and learning through actions like “entrench ICT in the teaching and learning process” and “equip public primary schools with appropriate ICT infrastructure”. However, they did not make clear WHY this was important, or how it tied to Kenya’s overall intentions to improve teaching and learning. In conversations with numerous stakeholders from classroom to national level, there are many different expectations for what the programme will ultimately accomplish and they are not yet clearly and concisely communicated.
- 2. Policymakers and technical teams are working in silos, and the private sector is not yet significantly leveraged for all areas of the DLP.** Shifts in governance structures and policy fluidity²⁰ have resulted in gaps in collaboration across ministries and other state actors at the national level. And while there are resources that can be leveraged to support DLP implementation at a county and sub-county level, they are often not well connected to the schools. Collaboration between the public and private sector has shown to contribute highly to the success of the DLP, in cases like Giga, iMlango and ImpactED, but as of yet has been limited in scope.
- 3. More investment is needed in educator capacity building.** An analysis of financial spend of the DLP²¹ found that there was an outsized investment in technology over capacity building. Limited follow up has occurred (and only in the most recent training efforts), leading to loss of capability, motivation and opportunity to implement DLP effectively by many educators.
- 4. The unique power of digital learning – particularly as it relates to content relevance and data-driven instruction and decision-making – is not yet being fully optimised.** Most technology-enabled learning is not yet a transformed teaching and learning practice. Much of it is instead a supplement to traditional teaching practices or a simple digitisation of offline learning resources.
- 5. The programme is not reaching everyone equitably.** There are still urban-rural divides when it comes to device usage, teacher confidence with technology, and access to digital infrastructure. Particularly as it relates to special needs education, the programme has not yet successfully empowered teachers to use technology to support special needs learners, nor has it engendered hope and trust from parents and caregivers to include their children.

²⁰ Manyasa, E. (2021) Assessing the Impact of ICT Integration Policy on the Equitable Access to Quality Education in African Contexts: The Case of Kenya. Paper commissioned as part of the GEM Report Fellowship Programme in 2021.

²¹ Manyasa, E. (2021) Assessing the Impact of ICT Integration Policy on the Equitable Access to Quality Education in African Contexts: The Case of Kenya. Paper commissioned as part of the GEM Report Fellowship Programme in 2021.



Recommendations

The following provide a set of recommendations to address the barriers to implementation and engagement with the DLP outlined in the previous section. The following section provides a blueprint for the future of the DLP, which is built with these recommendations in mind.

Update the goals of the DLP and sharpen the focus on teaching and learning. Initial documentation of the DLP programme focused on activities and tasks that would realise digital learning in Kenya. However, these activities were not clearly connected to the broader goals of education in Kenya, and it was not communicated how these activities were expected to contribute to improvements in the education sector.

Digital transformation has been on the minds of many private and public sector leaders for over 40 years. There has been a library of evidence generated by groups like Harvard Business Review on how to make digital transformations across a variety of sectors. The DLP is a digital transformation effort that can benefit from the lessons learnt in these 40 years of implementation across the globe. In a recent (2022) Harvard Business Review case study, a company shared their experience about how to make transformation work. They shared that they needed to “shift the key question from ‘what can we do with this technology?’ to ‘how can technology help us achieve this goal?’ and unlock a cascade of changes.” The DLP similarly needs to begin with the goals for the broader education system and how technology can help to achieve these goals. With this in mind, the goals of the DLP can be revised to:

GOAL	DEFINITION
1. Create an enabling environment for digital learning	Build the foundation for digital learning to occur
2. Ensure universal access to education	Leveraging tech to promote inclusion
3. Improve learning outcomes	Transform the way learning happens, enabled by tech
4. Empower learners with digital literacy skills	Learners cultivate skills to thrive in a digital society

These goals are in line with documents and strategies already produced by the Kenyan government, including the Global Partnership for Education Kenya Compact and the Digital Master Plan.

Strengthen the overall coordination of the next phase of the DLP through an inter-agency,

inter-ministerial structure under the Ministry of Education. Given the high focus on learning in the DLP goals, shift the governance structure to have ultimate responsibility lie with the Ministry of Education. The initial DLP was led by MoE but there was a shift in the governance structure mid-implementation. The DLP currently is coordinated by ICT Authority and is deeply

"shift the key question from ‘what can we do with this technology?’ to ‘how can technology help us achieve this goal?’ and unlock a cascade of changes."

Harvard Business Review (2022)

integrated into the digital infrastructure plans laid out in the Digital Master Plan by the Ministry of ICT. However, there are no digital infrastructure key performance indicators dedicated to the DLP within this document, nor are there any indicators to measure the learning outcomes of the programme. This risks putting the emphasis of the program on the technology rather than the education process. As the programme is largely designed to address goals around learning, the governance structure should be shifted to more effectively leverage the strengths of the key drivers. MoICT and ICTA should have a clearly defined lead role around the goal of creating an enabling environment for digital learning to occur, but ultimate coordination and responsibility should lie with the Ministry of Education. This would also allow the Ministry of Education to leverage already committed incoming bilateral and multilateral funding to support the growth of the DLP.

Within this inter-sectoral framework, strengthen collaboration with private sector providers as well as consumers. Public-private sector collaboration around digital infrastructure, teacher training and content development have all shown promise. However, collaboration processes are often costly and time consuming. This leads to a disconnect between innovation seen in the private sector that is informed by agile experimentation and development. By creating more space and flexibility for collaboration with non-state actors, the strengths and resources from across the ecosystem can be more effectively leveraged.

Through stronger coordination of DLP, enable development of holistic learning products rather than individual components. Currently devices are designed and built under the leadership of the Ministry of ICT with support from ICT Authority and implementing partners. Content is designed under the Ministry of Education, with leadership from KICD and in some cases in collaboration with the private edtech sector. However, these design processes

are disconnected from each other, and the result is that the product elements do not speak to one another. To date, there has not been full testing of the Kenya Education Cloud resources on the DLP devices so there is not yet full clarity on if the content will be the right weight to match the recommended internet speeds of 10 mbps once the digital infrastructure has been put in place. Future efforts should use an iterative product design process to ensure that technology and content are designed to work as a cohesive system, so teachers and learners have access to relevant content on their existing devices. Design interactions should leverage device and software usage data to inform the evolution of the device and content as one product.

Create a new set of metrics for evaluating the impact of DLP goals and activities. Current DLP metrics measure work done but not the impact of that work. Many of the metrics consistently reported around the DLP indicate the scale of the solution thus far: how many devices have been manufactured and distributed, how many teachers have participated in training, and how many schools have been connected to power and internet. These are all important indicators of the progress made in the implementation of the DLP. They demonstrate the significant investments into ensuring that the programme is operational. However these metrics alone do not yet paint a full picture of the impact of the programme, nor do they provide guidance on how to improve the programme moving forward. Revision of metrics and open data would provide insight into the effectiveness of interventions and inform the direction of the programme moving forward.

Metrics for the DLP should include more measures of digital competence by teachers and learners; pedagogical behaviour change by educators and teachers; utilisation of devices over time; teacher, educator, parent and learner satisfaction with the DLP; and measures of equity that provide insight into the programme's reach for girls, special needs learners and rural communities.

Limit areas of focus and take a differentiated approach.

A recent analysis of implemented ICT in education policies in Kenya²² shows that many well-intentioned and well-designed initiatives go unfunded or underfunded. To date available resources have been spread too thin, resulting in limited impact. For example, investment in teacher capacity building efforts had to be balanced with large investments in digital infrastructure, leading to an approach where few teachers per school received training. This distribution of funding across too many initiatives was echoed by key informants, and recommendations were made to limit the scope of the engagement in the short term to allow for a deeper focus on quality, scalability and sustainability. Initiatives must be prioritised based on the return on investment: how much will the intended investment contribute to the overall DLP goals if it is successful? Global and local evidence can help to inform this prioritisation, and a larger number of initiatives can be designed to be addressed over a longer period of time.

Prioritise sustainability for digital infrastructure investments.

Government capitation for ICT in education is intended to support the ongoing maintenance of digital infrastructure for the DLP. However, with board of management approval, school leaders do have the authority to reallocate those funds. The same is true on the other side: If school leaders are able to find efficiencies – perhaps even through the use of technology for school management processes – then they can reallocate this funding towards the DLP. During a discussion with the UK Aid’s Digital Access Programme participants on sustainable models for school connectivity²³ panellists suggested that capacity building for school leaders would help them to identify areas where budgets could be optimised and funds could be reused for digital infrastructure. To ensure investments in digital infrastructure do not go to waste, there needs to be a more intentional testing process to clearly define what models work and in what contexts. Combined with efforts to reduce costs

and to allow for more flexible access (such as “right to repair” policies) for maintenance, return on investments will be much greater.

Expand and deepen teacher and educator capacity building efforts.

Building upon evolved training models designed by TSC and CEMASTEIA, broaden teacher capacity building efforts to have higher numbers of pre-service and in-service teachers trained. With teacher transfers and other staffing changes, consistent implementation has been a challenge. Key informants indicated that this would be their greatest priority for the future of the DLP: to increase the number of teachers trained on the DLP, which would ultimately support the more effective rollout of CBC. This training must then be supported by continuous professional development efforts including coaching and mentorship. CEMASTEIA and other non-state capacity building leaders like Dignitas have seen great success in the Kenyan context by empowering local communities of practice at the school or zonal level. These self-directed learning groups can help provide forums for problem-solving and co-creation. Additionally, complementary online platforms like Whatsapp have become low-cost, digital spaces that can facilitate anytime, anywhere collaboration. Frequency of refresher courses can also be increased to keep pace with technological innovations: one key informant suggested that formal training should be done every 2-3 years to ensure teachers are equipped with the competencies and digital fluency to most effectively leverage digital tools for teaching and learning.

There are additional adult learning best practices that can be employed to continue to strengthen the already well-designed, evidence-driven training efforts being led by TSC and CEMASTEIA. The chart below outlines a few specific opportunities for addressing some of the DLP barriers and leveraging successful implementation efforts for future capacity building.

²² Manyasa, E. (2021) Assessing the Impact of ICT Integration Policy on the Equitable Access to Quality Education in African Contexts: The Case of Kenya. Paper commissioned as part of the GEM Report Fellowship Programme in 2021.

²³ ITU-UK Kenya Digital Access Programme Partners’ Open Day on ‘Partnering for Effective Connectivity and Broader Digital Inclusion, 3rd May 2022.

Best Practise in Adult Learning	Application to DLP Training Efforts
Experiential and problem-centred learning experiences	Provide trainees with practical opportunities to practise using DLP devices and accessing KEC content during training; allow teachers to design implementation for realistic scenarios including using technology to support learning in large class sizes (45-100 learners)
Assessment of Teacher Understanding and Competency	Assess knowledge and application of concepts assessed during and after training; integrate effective use of technology (based on ICT CFT) into TPAD lesson observations
Time for application of new skills and knowledge	Work with headteachers and deputy headteachers to create time in the teachers' schedules to practise, learn new skills or support one another when challenged; this may include school-based communities of practise and peer-observations
Capacity building of coaches for ongoing support	Provide comprehensive training and coaching to County Directors of Education, Sub-county Directors of Education, Curriculum Support Officers, Head and Deputy Head Teachers; give clear guidance to each stakeholder on their roles in supporting teachers to implement DLP
Leveraging existing experience	Leverage success stories captured to inform future training and coaching efforts; build case studies of impactful DLP implementation to be used in pre and in-service training efforts

Coordinate around a Digital Literacy Programme Blueprint. Develop a path forward to optimise the investments already made in the DLP, and to realise the full potential of digital learning. The blueprint will help provide clarity on how activities tie to goals, outline sequential progression of activities based on evidence and learnings, and

define a more clear division of labour aligned to organisational strengths. It will also allow for clear external communication of Kenya's priorities; non-state actors and international donors can map support to specific workstream and activities.



Digital Literacy Programme Blueprint

Based on these learnings and input from key informants, the multi-sectoral steering group developed a recommended path forward to optimise the investments already made in DLP, and to realise the full potential of digital learning. The steps below outline ways of working to develop a clearly articulated plan for the next phase of the DLP. This initial blueprint would serve as a foundation for key stakeholders to collectively design detailed implementation plans.

- 01** **Develop unique workstreams for the 4 goals of DLP.** Move away from policy, teacher capacity, content and infrastructure as standalone workstreams, and integrate these activities into the goal-oriented workstreams as relevant. Include a focus on data systems and evidence generation.
- 02** **Within workstreams, prioritise the most critical interventions** based on sequencing, cost-effectiveness and impact, and build a phased approach to implementation. Use the newest global and local evidence on technology-enabled learning generated since DLP inception to inform these decisions.
- 03** **Co-design evidence-based interventions** – building upon existing DLP assets – for each prioritised intervention with state partners, relevant industry experts and key implementation stakeholders (including learners, parents, teachers, head and deputy head teachers, Boards of Management, Curriculum Support Officers and Sub-county and County Education and ICT Leaders, where relevant).
- 04** **Identify actionable metrics and open data** that give clear insight into performance and can inform decision-making by measuring relative to an end goal (e.g. utilisation of devices as opposed to the number distributed). In addition to technical components, include human-oriented metrics such as stakeholder behaviour change and self-efficacy, skill competency and user satisfaction.
- 05** **Realign** with other state actors working on the same workstream through post-design consultation. Ensure interventions are mutually exclusive and collectively exhaustive to address the full scope of the workstream.
- 06** **Communicate widely** the new direction for DLP, the experiments that will be run and why. Leverage existing school structures as well as mass media to share information.
- 07** **Start small.** Run small-scale pilots, in partnership with the private sector and research community, to generate insights and evidence around each workstream, with a lens to scalability and sustainability. Ensure data is captured on inclusion and equity. Iterate initiative designs based on learnings and feasibility at scale.
- 08** **Use evidence generated** in pilots to evolve the design of scalable, cost-effective initiatives. Work to iteratively scale up these evidence-based initiatives. Share learnings broadly as scale up happens.
- 09** **Reprioritise remaining initiatives** with new context, learnings and resources, and continue to use iterative prioritisation, co-design, testing and scale up to make phased improvements.



Digital Literacy Programme Blueprint: 2022-2032

The Digital Literacy Programme (DLP) Blueprint is designed to address the gaps identified by the preceding study by PASU, Ministry of Education and Ministry of ICT, with support of the UK Government, and to support the implementation of the next phase of the DLP. The DLP Blueprint will help develop a path forward to optimise the investments already made in the DLP, and to realise the full potential of digital learning. This blueprint provides clarity on how activities tie to goals, outlines sequential progression of activities based on evidence and learnings, and defines a more clear division of labour aligned to organisational strengths. The blueprint allows for clear external communication of Kenya's priorities and serves as a foundation for government and partners to collectively design detailed implementation plans. Non-state actors and donors can map support to specific goals, workstreams and activities within to support the government's objectives.



The blueprint below provides three levels of information. At the 1st level, workstreams are connected to the 4 goals of DLP. In level 2, an example of prioritisation at a goal level is outlined. This provides recommendations on how initiatives should be sequenced over a 10 year period to ensure quality implementation, responsible use of resources, and long-term sustainability. In level 3, an example of what an initiative level workplan might look like is provided. The blueprint that follows does not intend to go to this level of detail, and assumes that the lead organisation for an initiative would work collaboratively with state and non-state actors to create their own implementation plan.



LEVEL 1

Goal	Definition	Workstreams	Possible Actors
 <p>1. Create an enabling environment for digital learning¹</p>	Build the foundation for digital learning to occur	a. Power	MoICT, Kenya Power, REREC
		b. Internet	MoICT, ICTA, MoE, Giga, NI3C, Private Sector, KENET, CA
		c. Hardware/Devices	MoICT, ICTA, NT, MoE, Private Sector
		d. Innovative solutions for maintenance and sustainability	MoICT, MoE, NI3C, Private Sector
		e. Comprehensive digital literacy for all educators ²	MoE, KICD, TSC, ICTA, Civil Society
		f. Interoperable data systems for monitoring device utilisation & educator digital competence	MoICT, ICTA, MoE
 <p>2. Ensure universal access to education</p>	Leveraging tech to promote inclusion	a. ICT to increase school attendance and participation, with a priority focus on digital solutions to support school feeding	MoE, MoICT, MoH, ICTA, Communities
		b. ICT for special needs identification / support	Teachers, MoE, KISE, KICD, TSC, ICTA, NCPWDs, NI3C, Private Sector, Civil Society
		c. ICT to support gender inclusion	MoG,
		d. Digital systems for distance learning to reach OOS learners	ICTA, MoE, TSC KICD, NI3C, Teachers, Parents
		e. Safe online, filtering and access for learners	MoICT, ICTA, TSC, CA, UNICEF

LEVEL 1

Goal	Definition	Workstreams	Possible Actors
 <p>3. Improve learning outcomes</p>	Transform the way learning happens, enabled by tech	a. Pre- and in-service training on ICT integration in CBC for teachers and other educators	Teachers, MoE, ICTA, CEMASTEА, TSC, KICD, Civil Society, Parents
		b. Learning products (devices and content) to support teaching at the right level	Teachers, NI3C, TSC, KICD, MoE, ICTA,
		c. Interoperable data systems and processes for data-driven decision-making at a classroom and system level ³	MoICT, MoE, ICTA, TSC, KICD
		d. Training on data-driven instruction for educators	Teachers, KICD, TSC, KNBS, KNEC, MoE, ICTA, Private Sector
		e. Access to high quality, affordable content (including SNE content) for all learner	KICD, TSC, Parents and Learners, Private Sector
 <p>4. Empower learners with digital literacy skills</p>	Learners cultivate skills to thrive in a digital society	a. Localised model of the components of digital literacy for Kenyan learners	KICD, ICTA, TSC, MoE, Schools
		b. Relevant, inclusive content for building digital literacy skills at all levels	KICD, CEMASTEА
		c. Training of educators to cultivate digital literacy in learners	TSC, CEMASTEА, private sector, civil society
		d. Intentional hands-on cultivation of digital literacy skills	Parents, KICD, ICTA, MoE, TSC, Schools

²Educators refers to County and Subcounty Directors of Education (CDEs/SCDEs), Curriculum Support Officers (CSOs), Quality Assurance Support Officers (QASOs), Headteachers and Deputy Headteachers (HT/DHT), Teachers

³Kenya Global Partnership for Education Compact Priority Area²⁴



LEVEL 2

1. CREATE AN ENABLING ENVIRONMENT FOR DIGITAL LEARNING

	High Priority (1-2 yrs)	Medium Priority (3-5 yrs)	Low Priority (6-10 yrs)
A1	<p>Ensure power is accessible at a school level</p> <p>Reduced tariffs for school power connection</p>	<p>Ensure power is accessible at a classroom level</p>	<p>Work with private sector to ensure power is available at every learners' home</p>
B1	<p>Continue broadband (10mbps) connectivity installation and maintenance efforts and gather data to inform scale-up</p>	<p>Ensure internet is accessible at school level for all schools</p>	<p>Ensure internet access is accessible at a classroom level for all schools</p> <p>Consider policy shift to 20 mbps, based on research on speeds for effective digital learning**</p>
B2	<p>Test sustainability models for connectivity (including bundling with power and commercialization of connectivity); communicate verified models</p>	<p>Financial planning support (tools, training and helpline) for Headteachers and Boards of Management for Internet connectivity and ICT sustainability</p>	<p>Connectivity asset financing for schools and homes</p>
C1	<p>Secure 3-G enabled digital devices for all educators* (1:1 ratio)</p>	<p>Ensure internet access is accessible at a classroom level for all schools</p>	<p>Ensure internet access is accessible at a classroom level for all schools</p>

²⁴ Republic Of Kenya Ministry Of Education State Department For Early Learning And Basic Education (2021). Kenya Global Partnership for Education (GPE) Compact.

LEVEL 2

1. CREATE AN ENABLING ENVIRONMENT FOR DIGITAL LEARNING

	High Priority (1-2 yrs)	Medium Priority (3-5 yrs)	Low Priority (6-10 yrs)
C2	<p>Pilots and evidence generation to improve device maintenance systems, in partnership with private sector</p> <p>Develop a local "right to repair" policy and supporting systems</p>	Scale up of new maintenance systems	Hardware asset financing for schools and homes
D	Experiments in innovative solutions for maintenance and sustainability (e.g. problem vs spec orientation, economies of scale – reduced cost for more schools)	Policies to support innovative solutions for maintenance and sustainability	Digital devices for learners at home
E	Localise/iterate ICT competency framework for educators	Scale up of new maintenance systems	Hardware asset financing for schools and homes
F	Data aggregation and dashboard for monthly monitoring of educator device usage; capacity building for all system actors	Real-time monitoring of device usage for teachers and learners, maintenance requests, connectivity and speed (integrated dashboard)	Real-time monitoring of device usage, maintenance requests, connectivity and speed, learner/device ratio

*Educators refers to County and Subcounty Directors of Education (CDEs/SCDEs), Curriculum Support Officers (CSOs), Quality Assurance Support Officers (QASOs), Headteachers and Deputy Headteachers (HT/DHT), Teachers

**Research from Giga²⁵ (multiple global south countries, suggests 20mpbs target for learning activities) and MegaEdu²⁶ (Brasil, suggests 1mpbs per learner to enable learning through watching videos, conducting research, sending emails, and downloading files)

²⁵ Giga (2021). Meaningful school connectivity: An assessment of sustainable business models.

²⁶ MegaEdu (2022). Retrieved from: <https://www.megaedu.org.br/en>

2. ENSURE ACCESS TO QUALITY EDUCATION FOR ALL

	High Priority (1-2 yrs)	Medium Priority (3-5 yrs)	Low Priority (6-10 yrs)
A1	<p>Change policy to keep learners in grades 1-3 in school for full school day (8am-3.30pm)</p> <p>Design and test (tech-enabled) school feeding in primary schools</p>	Mandate (tech-enabled) school feeding in all pre-primary and primary schools	Mandate (tech-enabled) school feeding in all pre-primary, primary and secondary schools
A2	Co-create and test tech-enabled product to train and coach recent university graduates to serve as contract teachers in under-resourced schools	Scale tech-enabled product to train and coach recent university graduates to serve as contract teachers in under-resourced schools	Employ recent university graduates as contract teachers in under-resourced schools
D1	<p>Gather evidence review to further categorise out of school learners</p> <p>Co-design tech-enabled interventions with both parents and teachers</p>	Scale differentiated, tech-enabled solutions to reach out of school learners; Design pathways back into school from remote learning	Leverage insights to provide flexible learning environments that allow vulnerable learners to move seamlessly between schools and home as needed
B1	Co-design and test tech product to support life skills for girls	Scale tech product to support life skills for girls	Scale tech product to support life skills for girls and boys
B2	Co-design and test tech product to support identification of special needs by educators	<p>Scale tech for special needs identification by educators</p> <p>Co-create and test tech product to support identification of special needs by parents</p>	Scale tech for special needs identification by parents

2. ENSURE ACCESS TO QUALITY EDUCATION FOR ALL

	High Priority (1-2 yrs)	Medium Priority (3-5 yrs)	Low Priority (6-10 yrs)
C1	Ensure tracking of school attendance and teacher/ learner ratio in NEMIS by 100% of primary schools	Ensure tracking of school attendance and teacher/ learner ratio in NEMIS by 100% of pre-primary, primary and secondary	Ensure tracking of school attendance in NEMIS
C2	Building upon existing evidence/efforts*, co-design and test tech-based interventions with teachers to reach out of school learners and to foster greater parental engagement in schools (and other evidence-based preventive measures)	Scale tech-based distance learning initiatives; Integrate data into school-based systems Co-design and test flexible hybrid or distance learning and assessment product for secondary level and refugees	Scale flexible hybrid or distance learning and assessment product for secondary level and refugees

*Coordinate with initiatives like Operation Come to School led by GoK, UNICEF and NACONEK²⁷



²⁷ Education Above All (2022). Retrieved from: <https://educatechild.org/our-partners-projects/projects/operation-come-to-school-kenya>

3. IMPROVE LEARNING OUTCOMES

	High Priority (1-2 yrs)	Medium Priority (3-5 yrs)	Low Priority (6-10 yrs)
A1	<p>Co-design and test tech-enabled 2-layered continuous professional development (CPD) process for ICT integration into CBC training with 1) coaches* and 2) teachers</p> <p>Celebrate stories of outstanding teacher-led digital learning</p>	<p>Iterate and scale new CPD process for educators in TPAD</p> <p>Co-design and test tech-enabled support to parents and caregivers for learning at home</p>	<p>Scale tech-enabled support to parents and caregivers for learning at home</p> <p>Celebrate stories of outstanding caregiver-led digital learning</p>
A2	<p>Needs assessment of learning designers to use data to inform content iterations</p> <p>Design and pilot training for learning designers on using data for content relevance</p>	<p>Scale up training efforts and embed in onboarding for learning designers</p>	<p>Build capacity of teachers to also serve as learning designers</p>
B1	<p>Co-design and test personalised learning product** (content + tech) for literacy skills development (grades 1-3)</p>	<p>Scale product for literacy skills for grades 1-3</p> <p>Co-design and test personalised learning for literacy skills development (grades 4-12); numeracy for grades 1-3</p>	<p>Scale personalised literacy skills for grades 4-12</p> <p>Co-design and test personalised numeracy learning product for grades 4-8</p> <p>Co-design, test, iterate and scale personalised learning for other CBC subjects</p>

* Coaches refers to County and Subcounty Directors of Education (CDEs/SCDEs), Curriculum Support Officers (CSOs), Quality Assurance Support Officers (QASOs), Headteachers and Deputy Headteachers (HT/DHT)

** Incorporate Universal Design for Learning (UDL) to ensure inclusivity

3. IMPROVE LEARNING OUTCOMES

	High Priority (1-2 yrs)	Medium Priority (3-5 yrs)	Low Priority (6-10 yrs)
C1	National data aggregation and dashboard for monthly monitoring of learner data	Real-time data aggregation and dashboard for monitoring of learner data; data reviews embedded in policy reviews	New initiatives designed based on data insights
C2	Co-design and test process of content upgrades using learner data; capacity building for stakeholders	Use national data for rapid iteration of content (once per term) Co-design and test supplementary tech-enabled learning in local languages	Iterate and scale supplemental tech-enabled learning in local languages
D1	CPD for grades 1-3 educators on data-driven literacy instruction; systems to track learner data Inclusion of data-driven instruction in pre-service curriculum	CPD for grades 4-12 educators on data-driven literacy instruction; systems to track learner data	CPD for educators on data-driven instruction

4. EMPOWER LEARNERS WITH DIGITAL LITERACY SKILLS

	High Priority (1-2 yrs)	Medium Priority (3-5 yrs)	Low Priority (6-10 yrs)
A1	Develop a localised definition of digital literacy	Evolve model with shifts in digital environment (e.g. web3)	Evolve model with shifts in digital environment
A2	Co-create digital literacy competency matrices for learners	Track learner competency for digital literacy; use data to fill capacity and content gaps	Track learner data in relation to digital engagement in workforce and society
B1	Co-design and test age-appropriate digital literacy content and assessments	Iterate and scale age-appropriate digital literacy content	Rapid iteration of content using learner data
B2	Co-design and test capacity building of parents and caregivers on digital literacy	Iterate and scale capacity building of parents and caregivers on digital literacy	Embed parent and caregiver digital literacy into other e-government services



Example of an implementation plan

Goal 1. B: BUILD DIGITAL LITERACY FOR ALL EDUCATORS

LEAD ORGANISATION: TSC

VALUE PROP	PHASE 1	PHASE 2	PHASE 3	OUTCOMES	METRICS	PARTNERS	FUNDING SOURCE
All levels of the system have the skills, tools and materials they need to support teachers in cultivating digital literacy	Co-design and test practical CPD* for coaches** Design tools for knowledge based assessments and competency based observations	Evaluate teacher workforce based on competency framework using	Embed digital literacy into broader teacher competency framework	Evidence based approach to building skills	Educator feedback	MoE, TSC, KICD, ICTA, Coaches, KEMI, KICD	
Coaches are able to integrate digital literacy support into their ongoing support functions	Co-design and test practical teacher CPD* for pre-service and in-service Co-design ongoing informal pedagogical and technical support, enabled by ICTs	Deliver scaled-up, ICT-enabled targeted support – training and coaching – based on competency levels for all educators (pre & in-service)	Use data to inform evolution of CPD approach & content	Increase digital literacy Improved digital confidence of teachers	Measure of competence based on framework Self-efficacy measures	Teachers, specifically ICT Champions, TSC, TTCs, Private sector & Civil Societ	

* Incorporate Universal Design for Learning (UDL) to ensure inclusivity

** Coaches refers to County and Subcounty Directors of Education (CDEs/SCDEs), Curriculum Support Officers (CSOs), Quality Assurance Support Officers (QASOs), Headteachers and Deputy Headteachers (HT/DHT)

Conclusion

In the case of Kenya's flagship digital learning initiative, the Digital Literacy Programme, the promise of digital learning has not yet been fully realised. The progress of the DLP exemplifies the African proverb, "Thunder is not yet rain." Although progress has been made in building the enabling environment for digital learning to occur, it is not yet translating into a consistent, transformed practice of teaching and learning. This is not to discredit the incredible efforts of so many who have participated in this work to date. There has been a tremendous amount of thoughtful planning and passionate implementation by system, community and school leaders. Instead it is to honour the progress made towards the country's shared vision and help catalyse additional progress moving forward.

To effectively realise the promise of digital learning in Kenya, future endeavours must build upon the learnings from initiatives run to date. It is crucial they leverage the increase in global and local evidence of what works in technology-enabled learning since the programme's inception. Through this iterative, evidence-driven approach, the DLP will be able to create a transformed, coordinated approach that will leverage digital technologies to ensure greater access, improved learning outcomes and global digital competitiveness for all Kenyan children.

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Annex

Rapid Scan: Policies to Support DLP

Analysts conducted a rapid scan of policies that guide the implementation of digital learning in Kenya. The education policies outlined here that support DLP represent a collection of laws, rules, frameworks and guidelines governing the operation of the basic education system and the integration of ICT within.

Universal access and participation

A core objective of DLP is to promote universal access to ICT tools, which in turn ensures enhanced learning opportunities for all learners. This requires curricular reforms in line with the provisions of the Constitution 2010, aspirations of Kenya Vision 2030, the East African Community protocol, International Standards, and the needs of the Kenyan society. This objective anchors on and supports the regional East African Community (EAC) treaty which emphasises cooperation and integrated investments especially in education and research.

The Government of Kenya has designed policies to support access, through the principle of Diversity and Inclusion embedded in the CBC. The Basic Education Curriculum Framework (BECF) has provided Competency-Based Curriculum and Assessment guidelines for Learners with Special Educational Needs, and further guides on the integration of Pertinent and Contemporary Issues (PCIs) in teaching and learning. The Education and Training Sector Gender Policy was reviewed in 2015 inline with the Constitution of Kenya, 2010, to ensure more support is given towards gender equality and inclusion of women, minorities and persons with disabilities.

The Government of Kenya is similarly committed to guiding, nurturing, counselling, moulding and mentoring learners. The Mentorship Policy

for Early Learning and Basic Education (2019) therefore ensures that children at risk of dropping out are supported through guidance and counselling. This policy further details digitising and uploading Information, Education and Communication (IEC) materials in MoE and KICD website for easy access by learning institutions and parents.

Quality and Relevance

Enabling the development and accreditation of appropriate digital content to enhance the acquisition of 21st century skills is another key objective of the DLP. DLP's digital content development is led by the Ministry of Education (MoE) and under the Directorate of Quality Assurance and Standards. The directorate is responsible for establishing, maintaining and improving standards in basic education institutions. The MoE works with Kenya National Examination Council (KNEC) in facilitating national assessment and awards, and with the Kenya Institute for Curriculum Development (KICD) on national curriculum design, development and evaluation. The Education Standards and Quality Assurance Council Bill (2013) indicates the formation of an independent body, Education Standards and Quality Assurance Council, whose primary role would be a central system for accreditation and quality assurance in basic education.

The Teacher Service Commission (TSC) Act of 2012 requires the Commission to enhance professionalism and quality standards by enhancing efficiency and effectiveness in Teacher Management activities. To address issues of quality and relevance in education, a sufficient and qualified teaching force for digitally-enabled public education institutions is required.

Parental empowerment and engagement is a key factor in CBC implementation, blended learning and home learning. Evidence²⁸ shows that learner outcomes increase when parents

²⁸ Brookings Center For Universal Education (2021). Collaborating To Transform And Improve Education Systems: A Playbook For Family-School Engagement.

are more engaged in learning and decision-making in schools. In CBC, parents have a shared responsibility with schools to provide a conducive and enabling learning environment that motivates learners to fulfil their potential. The Basic Education Act No. 14 of 2013 outlines the role of parents in ensuring that the child attends regularly as a learner at a school for the purposes of the child's physical, mental, intellectual and social development. The Guidelines on Parental Empowerment and Engagement 2019, developed by KICD, provides guidelines on strategies that learning institutions can adopt to empower and engage parents so that they can effectively and consistently contribute to the learning outcomes of their children at all levels of basic education.

Sustainability, Governance and Accountability

Integrating sustainable and affordable digital programmes in the Kenyan education systems is a crucial objective of the DLP. The 2006 National ICT policy, which was revised in 2019, and its supporting National ICT in Education and Training Policy Framework, set out objectives pertaining to scaling up of ICT in education, including through; promoting the development of digital learning resources; facilitating public-private partnerships to mobilise resources in order to support digital learning; promoting the development of an integrated digital learning curriculum to support ICT in education; and facilitating sharing of digital learning resources between institutions; and harmonising ICT integration programs between national and devolved levels of the education system. Sustainability and affordability of the education sector has also been addressed through the National Curriculum Policy which emphasises on the efficient education systems to reduce wastage at all levels. Efficiency to reduce wastage is linked to the progression rates of learners, relevance

and flexibility of the curriculum, capacity building of curriculum implementers, harmonisation of curriculum in tandem with regional and global trends, supervision of curriculum delivery and development of foundational skills. Furthermore, through the partnership with JKUAT and Moi University²⁹, which facilitates and encourages local manufacturing of ICT devices, the objective of sustainability and affordability is addressed.

Additionally, to ensure excellence in governance and accountability in the education sector, ICT has been used as a tool to develop innovative online data platforms, which are; The Teacher Management Information System (TMIS), The National Education Management Information System (NEMIS) and the Financial Management Information System (FMIS)³⁰.



²⁹ The Rivatex Digital Assembly at Moi University has the capacity to produce 1,250 devices daily, which contributes to serving over 23,000 primary schools across Kenya.

³⁰ NEMIS, TMIS and FMIS were funded in 2018 through education sector programme implementation grants sourced from Global Partnership for Education (GPE).

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