

# Education Digital Equity Initiative

# ACCESS

# TOOLKIT

**GUIDANCE ON DIGITAL EDUCATION  
STRATEGIES FOR TEACHERS AND  
SCHOOL LEADERS.**

Funded by:



Foreign, Commonwealth  
& Development Office

Produced by:





# ABOUT AREAi

Founded in 2014 and registered in Nigeria with the Corporate Affairs Commission (CAC) in 2017, Aid for Rural Education Access Initiative (AREAi) is a non-governmental, for-purpose organization that works with and in under-resourced schools and marginalised communities, providing technical and infrastructural support to scale learning outcomes and drive tangible academic achievement for poor and vulnerable children as well as youth from low-income families. Since inception, AREAi has established itself as one of Nigeria's leading educational organizations with a firm focus on working collaboratively with local stakeholders and governmental organisations to secure equal educational access and high-quality education for low-income primary and secondary students and children in hard-to-reach and rural communities. With thematic focus areas on digital equity, literacy skills development, girls' education and youth-led innovation in education, the organization's different programs have impacted over 16,000 beneficiaries across 23 communities in about 8 states of the country.

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## Disclaimer:

This document is an output material, produced from the analysis of data and information obtained through surveys, interviews and focus group discussions which focused on digital gaps and needs of digitally excluded populations in remote schools and rural communities.

AREAi hereby certifies that all the figures presented and views expressed in this document accurately reflect our statistical findings or analytical views that we believe are reliable and fact-based.

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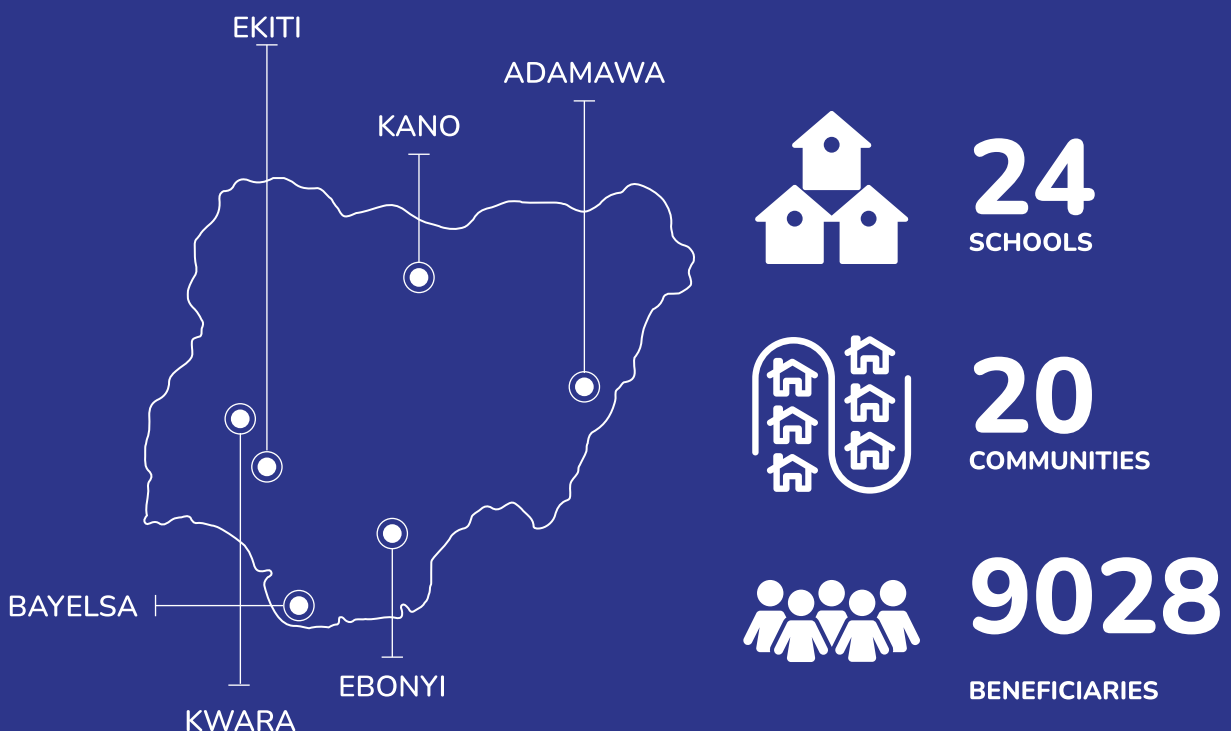


# PROJECT OVERVIEW

The Education Digital Equity Initiative is an information-based project that seeks to address digital exclusion by providing and widely disseminating series of evidence-based, comprehensive education materials that lays out simple steps and ideas for rural schools, remote communities, community-based initiatives and low-income families to adopt in accessing remote learning materials, online education resources options and digital learning opportunities in a post COVID19 pandemic era. The project adopted a multi-stakeholder approach, to drive digital equity through a fact-finding survey and information access strategy, and to create awareness about existing and emerging technologies capable of facilitating the sustainable expansion of basic, affordable digital learning and teaching access for the poor and excluded. The project is funded by the United Kingdom's Foreign, Commonwealth and Development Office under the Prosperity Fund's Digital Access Programme.

## Geographical Focus and Selection Criteria

Lack of access to information and communications technology (ICT) infrastructure or the internet for municipal use or e-learning purposes is relatively low within remote areas with little or zero-internet penetration. This 'digital divide' faced globally does not just signify those who have access to the internet and those who do not, the gap also encompasses a number of other discrepancies, including the quality of digital infrastructure in rural communities, the speed of connectivity in remote areas, and the training and skills required to navigate such technology. Furthermore, in the areas that are connected to the internet, male internet users outnumber their female counterparts in every region of the world. This reality informs our purposive selection of states, communities, schools covered by this project and this is further reflected in the prioritization of different marginalised groups and rural clusters with little or no internet connectivity and with a demonstrated history of digital exclusion.



# Gender and Inclusion

In a bid to ensure inclusive gender representation, we maintained a strict gender balance policy in assembling our project resource team as well as in selecting our beneficiaries in every rural cluster, including students, school administrators, personnel of education authorities and community stakeholders. At the end of the project, we reached a total of 9028 beneficiaries including students, teachers, and education authorities from 24 rural communities. Of this population, 5,070 (56.15%) are female and 3,958 (43.85%) are male.



Female - **56.15%**



Male - **43.85%**

This project successfully reached 9028 beneficiaries, including students, teachers and school administrators from 24 rural Nigerian primary and secondary schools across Nigeria.

Sustainability is of utmost importance for this project, and to ensure this, we have summarized, synthesized and documented significant reflections and findings into 3 resource materials across our various levels of engagement. These information, education and communication (IEC) materials produced as the project outputs have shown the potential to reduce the digital access gap in learning and teaching through crowdsourced information disseminated for timely usage and adoption by all stakeholders in a relatively affordable, available and accessible manner. The materials include:

1. Education Digital Equity Learning Manual : Low-Cost Offline Solutions For Digital Learning (For Students In Rural Schools) - This manual contains contextually relevant low cost offline solutions that can promote delivery of educational content or ensure remote learning access for students in low-income contexts.
2. Education Digital Equity and Access Toolkit: Guidance for Digital Education for teachers and school leaders: This toolkit profiles practical strategies that teachers and school administrators can deploy to facilitate equitable virtual teaching processes and promote digital learning in and out of classrooms and schools.
3. Education Digital Equity Policy guide- Findings and Recommendations for Education stakeholders and Policymakers: This guide, as informed by our findings, contains policy recommendations for education stakeholders and policy makers to address education digital inequity and promote technology access and usage among students and teachers particularly those in rural communities.

# Project Demography (Target Beneficiaries)

STATE/LGA	Community	Primary School	Secondary School
<b>KWARA</b>			
Ilorin South LGA	Danialu	Danialu Primary School, Danialu	Government Day School, Agbabiaka Government Day School, Karumo
Ilorin South LGA	Agbabiaka		
Ilorin East	Akerebiake		
Ilorin West	Alore		
<b>EKITI</b>			
Moba LGA	Otun	SUBEB Nur & Pry School	Moba Grammar School
Ido LGA	Ido	St. Benedict Nur & Pry School	Ekiti Parapo Community Sec. School
<b>EBONYI</b>			
Abakaliki LGA	Amagu Oicha	Amagu Oicha Community Pry School	Nduruku Community Sec. School Premier Sec. School
Abakaliki LGA	Nduruku		
Ezza South LGA	Umunnwagu		
Ezza South LGA	Umunnwagu		
<b>ADAMAWA</b>			
Mayo Belwa LGA	Gengle	Gengle Primary School	Govt. Day Sec. School, Gengle
Fufure LGA	Kabilo	Kabilo Primary School	Govt. Day Sec. School, Kabilo
<b>KANO</b>			
Bichi LGA	Saye	Saye Central Primary School	Badube Senior Sec. School Govt. Senior Girls School Saye
Bichi LGA	Badube		
Bichi LGA	Saye		
Bichi LGA	Tsaure		
<b>BAYELSA</b>			
Yenogoa LGA	Yeneka	Community Pry. School, Yeneka	Gbarianowei Grammar School Ogboin Comprehensive Negudu Agbia
Yenogoa LGA	Obunagha	Community Pry. School, Obunagha	
Yenogoa LGA	Gbarianowei		
Yenogoa LGA	Negudu Agbia		

# Guidance on Use of Toolkit

The Education Digital Equity Access Toolkit: Guidance on Digital Education Strategies for Teachers and School Leaders is designed to help educators and teachers to become inclusive practitioners. It is a practical guide to help promote inclusive education at the school, classroom and individual levels using online and offline digital technologies. The manual provides school leaders and teachers with a collection of tools, platforms, guidelines and platforms that can be used or utilised to bridge digital gaps. It is expected that the examples and resources provided in this manual will spark the ideas of teachers and school leaders to facilitate digital education for students particularly those in rural communities. Also, this manual aims to promote knowledge sharing between teachers and their colleagues in different locations. However, this manual does not tell teachers to apply specific methods, but rather provide specific examples that are explanatory and shows how teachers can apply these examples in their classes and beyond.

This manual can be used by any school, although it was initially published to be used by schools who are direct beneficiaries of the Education Digital Equity Initiative.

# Laying the foundations for Digital Education

## a. Designing effective e-learning strategies

Teachers and students in rural schools across remote communities across Nigeria have faced sweeping, unprecedented changes to teaching and learning because of the (COVID-19) pandemic which mandated school closures. While several teachers in urban environments shifted quickly to distance learning, access to technology and devices for students, teacher competencies in remote instruction and knowledge about digital education strategies prevented several teachers from adapting the delivery of instruction or ensuring educational access for millions of students. This development has prompted the need to build momentum around the need to be able to leverage online and offline digital learning channels to provide flexible and emergency education using technology or not. However, technology enhanced learning leverages technology to maximize learning within an environment of high-quality course design that can offer students the options of time, place, and pace, and emphasizes different learning styles.

**Adopting e-learning or online learning as an alternative mode of educational provision or delivery is dependent on several factors.** Designing and facilitating digital education or e-learning programmes particularly in a pandemic context and beyond should be aligned with sector-wide strategies to respond to the sudden interruption of education. Firstly, e-learning curriculum or delivery planning should be guided by a concern for equity and inclusion and the need to design and deliver distance learning in ways that do not exacerbate existing educational and social inequalities. The planning of more comprehensive distance learning strategies should, however, be guided by both immediate mitigation needs and long-term goals. The effectiveness of distance learning strategies is conditioned by various types of preparedness. These include the technological readiness of national distance learning programmes, the readiness of curricular courses and supporting content, pedagogical and home-based learning support readiness, and readiness for monitoring and assessment. Above all, the digital skills and competence of teachers that would deliver such e-learning programs must align with the objectives of such programs. After curricular courses and delivery technologies are in place, teachers are in the frontline to design and facilitate learning activities, monitor and evaluate students' home-based distance learning processes, adjust their learning management accordingly, and assess students' achievement of learning outcomes. Many institutions tend to deliver e-learning systems without careful assessment of the factors that could affect the system's usability such as appropriateness of the mode of delivery, teachers competence, students readiness, availability of digital tools and infrastructure within the system.

It is noteworthy that designing and delivering e-learning particularly in low resource and low-connectivity areas should therefore align with the following guidelines;

1. E-learning curriculum must be contextually relevant to attend to the educational needs of the learners
2. Choice of technology should be influenced by user's perception of its usability and usefulness
3. Feedback / Assessment mechanism should be integrated into the design of e-learning
4. Delivery should be learner centred and learners should serve as co-creator of knowledge

Generally, E-learning is believed to be the application of information technology such as the internet, mobile and other computer aided systems in the teaching and learning process. But delivering successful e-learning requires different institutional requirements, but in all cases, delivering e-learning must ensure that the system is properly established and maintained. Also, at the heart of an effective e-learning system or digital education that needs to be prioritized is active learning. Active learning covers a number of related learning modes, methods, and movements. It represents a shift from traditional, teacher-centered and lecture-based classes toward more student-centered class activities that feature group activities, pair discussions, hands-on learning activities, and limited use of traditional lectures. In online learning, learners can interact directly with the learning content that they find in multiple formats (e.g., video, audio, document, etc.). Additionally, they can also choose to have their own learning sequenced, directed, and evaluated with the assistance of a teacher. This interaction can take place within a community of inquiry, using a variety of internet-based synchronous and asynchronous activities (video, audio, computer conferencing, chats, or virtual world interaction). These synchronous and asynchronous online environments will promote the development of social and collaborative skills, as well as personal relationships among participants. Online learning can be either an asynchronous or synchronous activity. Synchronous learning is more structured learning strategy, where the courses are scheduled at specific times and in live virtual classroom settings. In this way, students benefit from real time interactions, hence get instant messaging and feedback when needed. (Littlefield, 2018). The students in asynchronous learning cannot get instant feedback and messages. Additionally, the learning content is not provided in live classes, but rather on different learning management systems or forums (Littlefield, 2018). Moreover, Synchronous is designed for online users who collaborate at the same time and Asynchronous is used mainly for content management systems where users access information at different times without real time collaborations.



## 2. Facilitating e-learning through online and offline systems

### a. Offline teaching tools and resources

As witnessed during school closures mandated by the COVID19 pandemic, the absence of network connectivity in remote areas made it difficult for learners to gain access to schools, teachers or learning content. Hence, the provision of offline eLearning, where the content can be set up ahead of time when access to internet connection is available. This offline learning feature became a hit for those who don't have an internet connection at home or while traveling. Also, with reduced dependency on the traditional ways of learning like the face to face or classroom setting, the teaching/teacher's costs get considerably reduced. Also, with offline learning, the process of learning becomes easier as the learners do not have to travel to attend the classes every day and therefore, this aids reduction in dropout rate. Facilitating offline e-learning can be made possible through various approaches that can be dependent on technology or not. With technology, there is a mix of tools, platforms or resource portals and platforms that affords the transmission of information and content delivery from the educator to the learner. Such offline Learning Platforms are elearning platforms designed to deliver educational content to students or educators without connecting to the internet. They fulfill the objectives of availability, facility, and flexibility that promotes e-learning opportunities. Examples of offline teaching platforms include:

- **DigiLearns:** DigiLearns is a low cost offline m-learning solution that leverages USSD/SMS technology to deliver educational content to students via basic feature phones.
- **Home Learning Kit:** A home learning tool-kit is a printed resource designed for parents to ace home-learning needs of their children or help the children to self-study and create knowledge.
- **Rumie:** Leveraging simple fracture technology devices, Rumie technology creates and shares free digital learning content and delivers it to learners in underserved communities with the most to gain.
- **Worldreader:** Worldreader is an inbuilt mobile application that provides access to educational stories to enhance children's literacy skills development. The application function on devices such as Android and ios
- **Mavis Talking Books and Pens:** The Mavis Talking Book consists of a digital pen (Mavis Pen) and a specially printed book (Mavis Book). When the pen touches text or pictures in the book, it reads out the corresponding audio, including interactive games, quizzes, multi-language translations, etc. We have talking books for literacy, numeracy, health and other subjects – English with Phonics, Mathematics, Rhymes, Languages, etc. To obtain a Mavis Talking Book and Pin in Nigeria
- **Ubongo:** Edutainment technology that improves school readiness and learning outcomes for kids, and also promotes social and behavioural change for kids, caregivers and educators.

## b. Online teaching tools, platforms and resources

An online learning platform is an integrated set of interactive online services that provide trainers, learners, and others involved in education with information, tools and resources to support and enhance education delivery and management. These important learning environments are achieved through a learning platform's features and tools that create the level of interaction and engagement students need. There are a number of low-cost tools and platforms that aids offline teaching and this includes;

### i. PLATFORMS AND TOOLS

**1. Zoom:** Zoom is a cloud-based video communications app that allows you to set up virtual video and audio conferencing, webinars, live chats, screen-sharing, and other collaborative capabilities. Zoom can help engage students, faculty, and staff for learning, collaboration, and administration.

**2. Whatsapp:** WhatsApp is an instant messaging application for both low cost and high tech smartphones. It allows users to exchange images, videos, and audio or written messages using their Internet connection. Information and knowledge are easily constructed and shared through WhatsApp instant messaging. Usually, Whatsapp can be deployed for teaching and learning by creating a unique group for the target class, sharing curriculum resources and assessing learners' learning process.

**3. Microsoft Teams:** With softwares like Microsoft Teams, technology has enhanced virtue communication between teachers and students. Microsoft Teams is a hub for team collaboration in Microsoft 365 that integrates the people, content, and tools a team needs to be more engaged. Teachers can leverage Microsoft Team to virtually connect with two or up to 10,000 people from anywhere.

**4. Google Classroom:** Google Classroom is a free web service developed by Google for schools that aims to simplify creating, distributing, and grading assignments. The primary purpose of Google Classroom is to streamline the process of sharing files between teachers and students.

**5. Edmodo:** Edmodo is an educational technology offering a communication, collaboration, and coaching platform to K-12 schools and teachers. Edmodo allows a whole community / class to learn together from anywhere with all-in-one LMS, communication, collaboration, and Zoom video conferencing tools.

## b. Online teaching tools, platforms and resources

**6. Kolibri:** Like other Open Education Resource Portals, Kolibri is an adaptable set of open solutions specially developed to support learning for the population without Internet access. Centered around an offline-first learning platform that runs on a variety of low-cost and legacy devices, the Kolibri Product Ecosystem includes a curricular tool, a library of open educational resources, and a toolkit of resources to support training and implementation in formal, informal, and non-formal learning environments. The Kolibri Learning Platform comes with tools such as a coach dashboard, exam creation, exercises, assignment of content for differentiated instruction, and a recommendation tool that displays useful and relevant next steps based on a learner's history, progress, and goals. Track educational growth for individuals and groups of learners accurately and easily, even in informal educational contexts.

**7. Screencastify:** Screencastify is a Google Chrome extension which is free. It allows over 12 million users to easily record, edit, and share videos. This tool can be used by teachers in a flipped classroom approach in that teachers can provide verbal student feedback, explain assignments, and create full or bite-size lessons using the screencast and voiceover capabilities of the tool. Screencastify provides several training videos for teachers and students for free.

**8. Kahoo:** Kahoot! is a game-based learning platform that can be used by parents and teachers to create games for learning. There is a resource back of games indexed by topic and grade level. They also offer a reading app (Poio by Kahoot) for students in grade K-3 to learn to read at their own pace and a math app (Drag-onbox) for students in grades K-3. The website offers self-paced games (asynchronous) and collaborative games (synchronous).

**9. FlipGrid:** Flipgrid is a social-learning video platform. It allows teachers and parents to create grids for students to record or upload a video. Students can interact with each other in this asynchronous space via their videos and they can comment, like, respond to, or provide feedback to each other. There is the option of connecting with schools around the world. This can be accessed via <https://info.flipgrid.com/>

**10. Nearpod:** Nearpod is an instructional platform that merges formative assessment and dynamic media for collaborative learning experiences. It is designed as a platform for teachers to create interactive online lessons that can be taught in a synchronous or asynchronous space. It integrates smoothly with many LMS including Canvas, Google Classroom, EdPuzzle and Seesaw. It provides teachers with student engagement dashboards for every lesson. It has multiple resources for teachers to create lessons. Students can easily access the lessons created by the teachers and can collaborate with each other in synchronous and asynchronous ways. There is a bank of ready-made lessons other teachers have created.

## b. Online teaching tools, platforms and resources

**11. Moodle:** Moodle is a learning platform designed to provide educators, administrators and learners with a single robust, secure and integrated system to create personalised learning environments. Moodle provides the flexible tool-set to support both blended learning and 100% online courses. Moodle is web-based and so can be accessed from anywhere in the world including areas with low internet penetration. (<https://moodle.org/>)



**12. ClassDojo:** ClassDojo connects teachers with students and parents to build amazing classroom communities. ClassDojo helps teachers and educators to instantly communicate and engage with students whether you're teaching remotely or in-person. It's 100% free, and easy to set up. (<https://www.classdojo.com/>)



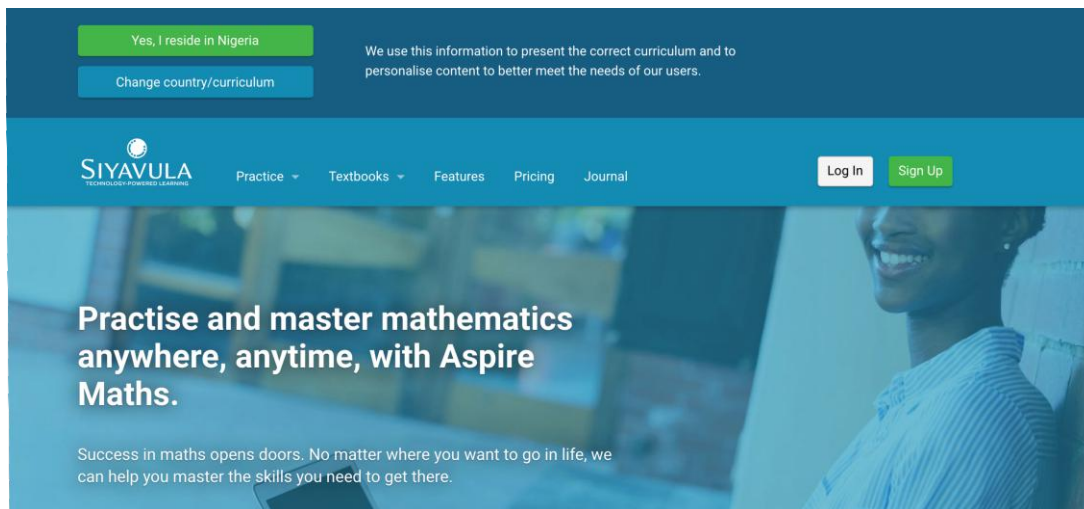


## b. Online teaching tools, platforms and resources

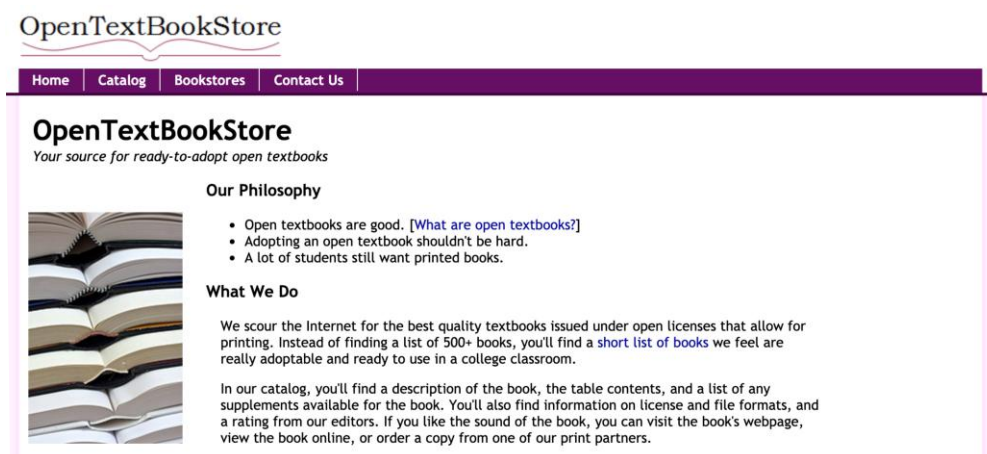
### ii. Open Educational Resources (OER)

A learning and teaching material that are available in printable and downloadable format. It is accessible to the public with no-cost and can be repurposed, as well as adapted to suit any context.

- **Siyavula (Practise Maths & Science - Read Open Textbooks):** A resource to practice and master mathematics anywhere, anytime. It contains downloadable mathematics textbooks to teach Jss1 to Jss3 students in Nigerian secondary schools.



- **Opentextbookstore (<https://www.opentextbookstore.com/>):** A website to download quality textbooks that are free and easily adoptable for use in classrooms. The catalog includes the description, table of content, and information on license. The books can be viewed online or printed by ordering a copy from the print partners.



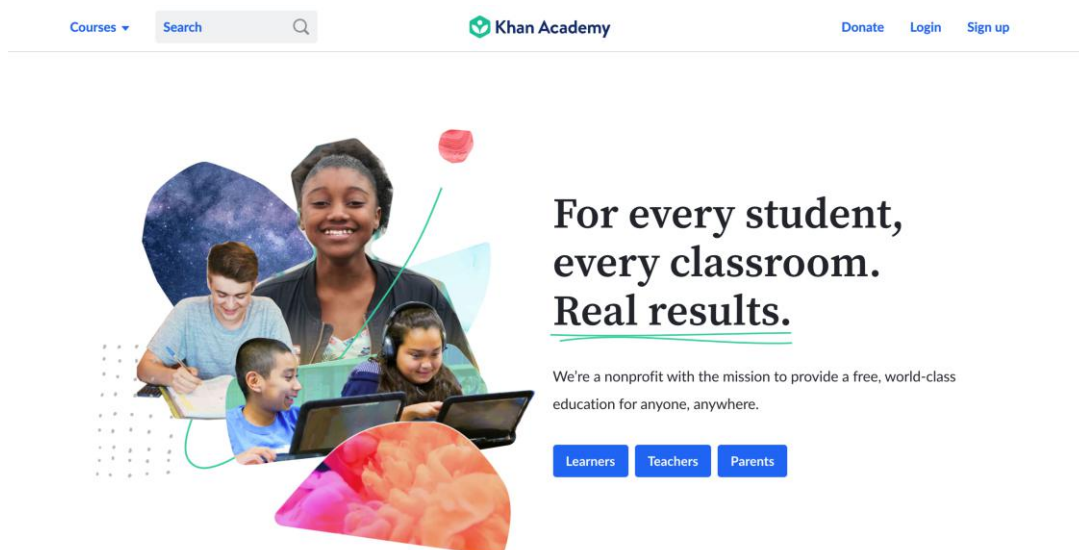
## b. Online teaching tools, platforms and resources

### ii. Open Educational Resources (OER)

- **Curriki (<https://www.curriki.org/>)**: This platform provides tools to create and deliver learning content that are Interactive. It contains a studio that allows instructors to easily transform in person lecture delivery into existing interactive instructional content. Additionally, there is a Gosmart publishing system that makes it easy to publish content to popular learning management systems and other mobile/web-enabled platforms. Lastly, there is a LibraryFree online educational materials that is openly vetted for use, reuse, adaption and sharing. Their learning interactions make use of questions, photos/images, multimedia, informational and Audio materials.



- **Khan Academy (<https://www.khanacademy.org>)**: A non-profit that provides free world class education for students. It helps teachers design curriculum that meet the needs of every student through tailored educational content.

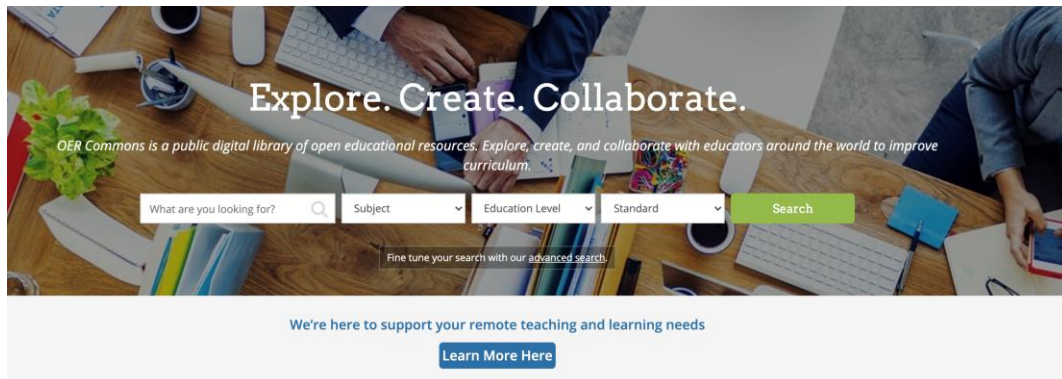




## b. Online teaching tools, platforms and resources

### ii. Open Educational Resources (OER)

- **OER Commons (<https://www.oercommons.org/>):** A public digital library where teachers can explore, create, and collaborate with educators globally to improve existing curriculum.



- **Amazing educational resource (<https://www.amazingeducationalresources.com/>):** A community of educators that share education resources as well as provide support for teachers. It provides a platform to make good suggestions on resources that can be included to the available educational list, an educational events calendar and a feature to add your customized resources. This OER caters for the needs of students from kindergarten to post secondary as well as for Adult Learning.



## b. Online teaching tools, platforms and resources

### ii. Open Educational Resources (OER)

- **Prezi (<https://prezi.com/>):** An open educational resource can be used to create engaging visuals in a few minutes. It can be recorded live or saved to be uploaded later. The video recorded works with already existing apps such as Zoom and Google Meet. One major benefit is that it helps form human connection when you are teaching remotely.

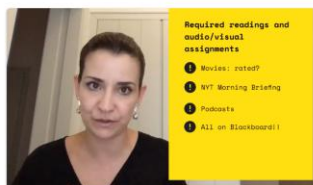


Present over video and keep the human connection when you're working or learning from home

Create inspiring, engaging visuals in minutes, then appear alongside them as you present. Record to share later or go live with your favorite videoconferencing tools.



For Business



For Educators



For Students

## b. Online teaching tools, platforms and resources

### iii. CURRICULUM RESOURCES

#### **Computer Aided Learning (CAL) - [education.brac.net](http://education.brac.net)**

The Computer Aided Learning (CAL) programme of the international development organization BRAC provides ready-made education materials, including digital textbooks and interactive multimedia materials. Materials are tailored for use on multiple devices and can be downloaded for computer or used as mobile and web apps.

#### **Learn English - <https://learnenglish.britishcouncil.org/>**

Learn English is hosted by the British Council and uses high-quality resources to help users improve their English. There are unique, but linked websites for adults, teens, children, and teens. The focus is on learning English (cognitive skills) and best suited for learners wishing to improve their English

#### **Khan Academy - <https://www.khanacademy.org/>**

This website for the short-attention-span generation squeezes every lesson into bite-size segments (roughly 10-minute videos). The math, science, test prep, and other lessons are geared towards the high school and college crowd, but teachers can definitely use the videos provided to illustrate a point in class or as a resource for students that need extra help.

#### **Everfi - <https://everfi.com/>**

Everfi offers free digital courses that are interactive and standards-based. The focus is on real-world learning, with courses offered in financial literacy, STEM, social-emotional learning, health, and wellness

#### **Deaf World around you - <https://deafworldaroundyou.org/Stories>**

Free digital stories in written and sign language in a variety of languages around the world. Enables communities to create content in local and national sign languages and share it in WAY's open content digital library of folktales. The digital libraries are viewable from any web browser and can be remixed by anyone, including children, with simple text and video editing tools

# 3.

## Creating Effective Learning Interaction Through Digital Technology

### a. Provision of adaptive learning environments

The goal of creating adaptive learning environments is to ensure the achievement of basic academic skills and other valued educational outcomes, including students' positive self-perceptions of academic and social competence, sense of responsibility for their own education and the broader community and competencies for coping with the social and academic demands of schooling. To facilitate and achieve this, a teacher would be required to adapt to his/her teaching styles and curriculum content in response to the user's learning needs. This would require skilled and competent teachers that will provide sufficient materials for learners and guide them to gain knowledge and participate in self learning with or without the use of learning aids or advanced technological tools.

While attempting to create an adaptive learning environment particularly for schools in remote and technologically disadvantaged communities, school administrators and teachers should consider the following steps;

1. Assess students' skill set before designing and deploying this strategy
2. Ensure that methodology and pedagogy are inclusive and learner centred, tailored to meet individual learning interests and capabilities.
3. The new environment might be new to the students therefore, school administrators and teachers must encourage and motivate students to participate actively.
4. Measurement and evaluation plan must be designed and periodically administered to track learning progress
5. The system should not be too rigid but rather flexible. There must be allowance for change if needed.

### b. Usage of Learning Management Systems (LMS)

The usage and administration of Learning Management systems is the responsibility of school headmasters and principals and can support teachers with these systems in various capacities. Learning Management Systems (LMS) are software applications used for the administration, documentation, tracking, reporting, automation and delivery of educational content. An LMS delivers and manages all types of content, including video, pictures and text documents. Learning management systems can be used to;

1. Improve the design and delivery of instruction
2. Improve evaluation by providing formative assessment data to teachers.
3. Enable teachers to host numerous learning materials in one centralized location, therefore streamlining workloads and focusing on planning for future lessons while giving access to track student behavior.
4. Provide teachers with a game-based learning platform to increase engagement rate through gamification.

## Creating Effective Learning Interaction Through Digital Technology

Although LMS are adopted at the classroom level, the decision to adopt a particular LMS is the responsibility of school administrators such as school boards and academic departments. To effectively manage the students' learning process using learning management systems, school leaders and teachers must ensure that the following four basic conditions are satisfied:

1. The LMS structure and the “teaching process” are synchronized and easy to navigate.
2. The LMS incorporates automatic services, such as automatic dashboards, which can reduce the teachers and the students' workload.
3. The LMS should be well-designed in order to provide friendly learning and teaching experiences to both students and teachers respectively
4. The generated learning data of both the students and teachers are safe to protect their privacy.

### c. Safeguard the online safety of learners

As learning gradually shifts to an online environment, learners need access to a wide variety of new teaching and learning opportunities. As part of a broad and balanced curriculum to ensure they can use the internet safely under supervision, and then develop the skills and understanding to leverage technology, they need to manage their own independent use of the internet. Although the internet offers numerous advantages that can promote learning outcomes, it is important to note that there are some inherent dangers that may come with the use of open education resources and general use of the internet such as cyber bullying and harassment. However, to keep children safe online, and protect learners' privacy, school administrators and teachers can adopt the following recommendations;

1. Use and recommend the use of age-appropriate websites, apps and online tools for learning.
2. Work in partnership with parents and carers to guide the use of tools and devices at home
3. Collaboratively create code of behaviour and safety principles with their students
4. Provide online safety education for their students
5. Encourage students to speak when they notice any unusual incident and they should work closely with learners when there is a concern.
6. Schools should educate children on basic cybersecurity guidelines to avoid theft of their online identity, hacking of their media accounts, cyberstalking or cyberbullying.

### d. Facilitation using Learner-Centred Teaching approaches

Being a learner-centered teacher isn't always easy because it requires constant and flexible attention to how students learn, how they're doing, and what will help them achieve their learning goals. The following set of recommendations can help teachers to become learner centred in their teaching:



## Creating Effective Learning Interaction Through Digital Technology

**A. Use Questions:** One of the ways to facilitate learner-centered environments is by asking students questions. Whether you're introducing a new module or chapter, finding out what your students are curious about will help you choose and plan activities conducive to learning.

**B. Shift focus:** Instead of focusing on what must be taught, a learner centred environment requires that a teacher focus on what must be learnt. By keeping learners' learning needs in mind, teachers are better suited to facilitate learner centered teaching and processes.

**C. Role Play:** Selecting students to act as co-creators of knowledge is an effective way to promote learner centred teaching. Teachers are encouraged to pair students in groups to solve problems together and be engaged in participatory learning.

**D. Diversity:** Teachers should always think of diversity when planning lesson content and delivery for every student population. Each learner has different learning needs and abilities and it is the responsibility of a teacher to respond and engage with individual students' needs.

**E. Project/ Problem Based Learning:** Practicing project-based learning involves students having to work on longer tasks that results in the creation of an original presentation or product. Problem-based learning on the other hand entails shorter projects that examine a current problem that is achieved through definition, research, and understanding of the causes of the problem. Students collaboratively evaluate solutions to the chosen problem as well as reporting potential solutions and findings. Nonetheless, both of these learning strategies utilize relevant, real-life connections to the outside world, providing students valuable experience with problem solving and critical thinking opportunities.

**F. Collaborative Learning:** It is also possible to leverage the power of collaboration towards enabling active learning, and this can be done by using the buddy system of knowledge sharing. This involves assigning learners to a learning group or buddy. Lately, collaborative learning can also be achieved by peer-to-peer grouping. This type of collaborative learning enables students to show understanding of a topic by recording and uploading videos on certain platforms that are accessible to all other students.

### e. Practice the Use of Blended Learning

Blending learning is an approach that provides students with the opportunity to benefit from both a digital environment and traditional face to face classroom environment. The advantage of blended learning is that students can learn independently at their pace with digital technology and can also enhance their learning through social interactions that happen in the classroom. As teachers, a blended learning model can help you personalize subject matter and promote students' attitude towards self learning. However, the question remains how can teachers and educators get learners to take responsibility for their own learning? By combining best practices and blended learning strategies to work, teachers can formulate and implement effective blended learning approaches to increase learning outcomes for students.



### Best Practices for Blended Learning

**A. Incorporate Blended Learning into Content Development:** The first step to consider when planning to implement blended learning is to start by reviewing current curriculum. You can achieve this by gradually digitizing learning content and mode of delivering instruction.

**B. Encourage Fellow Teachers to Incorporate Blended Learning:** Instead of doing it all alone, encourage other teachers to use this approach. If you are not technically competent, surround yourself with highly technical teachers that can empower you to make your work easy.

**C. Make your Classroom Learner Centred:** At the centre of every teaching and learning process are the receivers which are the students. Migrating from a traditional classroom to a blended learning environment that requires new technology might be difficult for students particularly those that do not have the digital skills to cope with the new environment. So, it is crucial that planning, delivering and evaluation in a blended learning environment is learner centred.

# CONCLUSION

The transition to digital education and e-learning was unexpected and rapid due to the COVID-19 pandemic but it brought about a wider ICT transformation process within educational systems. While there is huge emphasis on the need for the provision of technical digital infrastructure as well as the incorporation of ICT into the school curriculum as adaptive measures, it is indeed needful to point out that building digital competence for teachers is of utmost priority.

Beyond supporting teachers and students to leverage digital tools, teachers must be provided with quality information and also given opportunities to access and use advanced technological tools and digital resources for creative and innovative problem solving within instructional contexts. At a time when digital technologies has become an active part of learning and teaching, the development of teacher competence in ICT-related teaching and learning both in initial teacher education and teacher continuous professional development is a policy and practice priority.

In this access toolkit, the tools, platforms and resources outlined to aid the transition to digital education for teachers in low-resource contexts would no doubt equip them with the knowledge required to initiate steps and address the challenges associated with using ICT in teaching and learning at school. As a follow up step to this support system, we will recommend that Governments need to provide learning opportunities to foster the acquisition of digital competence as part of continuous professional development plans for teachers and in training for future teachers.

As relevant teachers' digital competences are required for effective use of ICT, including online teaching and online assessment, we encourage educators across all levels to develop their own professional digital competence using the information provided in this toolkit and beyond. This would enable them to function maximally in virtual environments.

# APPENDIX

# FACT SHEET

## Project Findings - Students

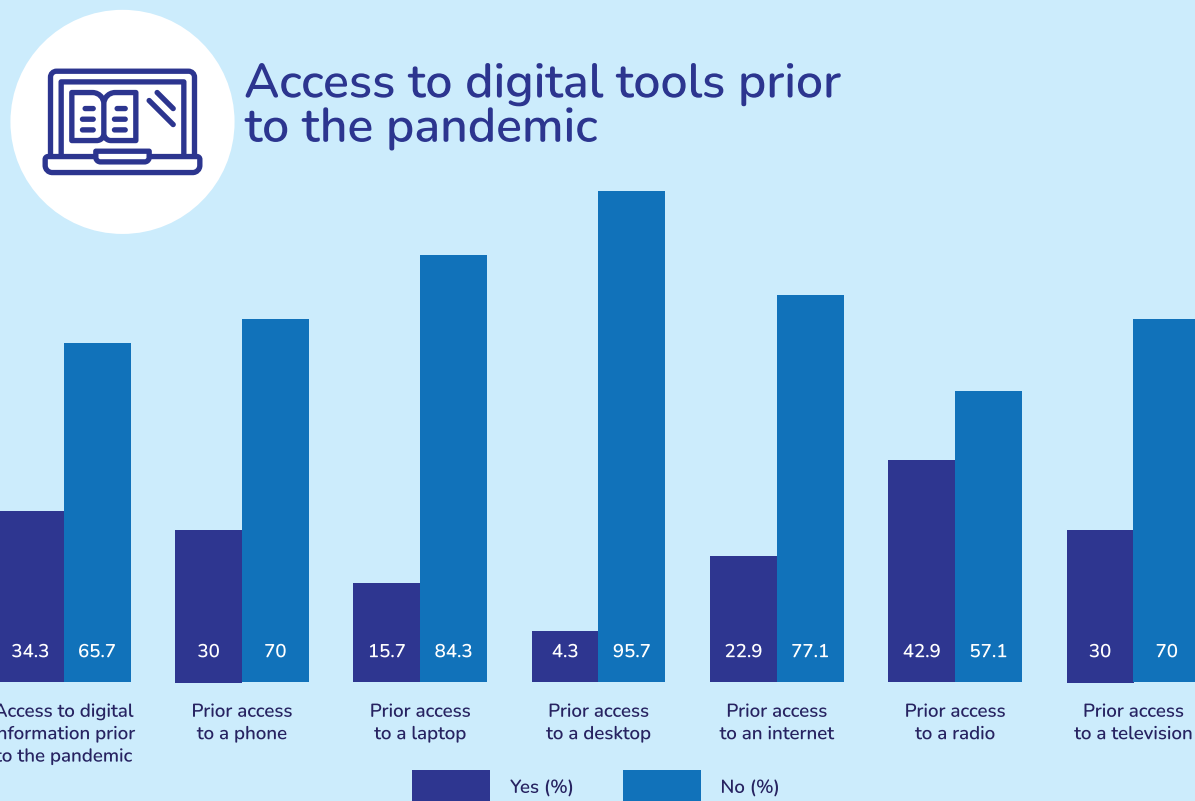


Figure 1.1: Access to digital learning tools prior to the pandemic (Secondary school students)

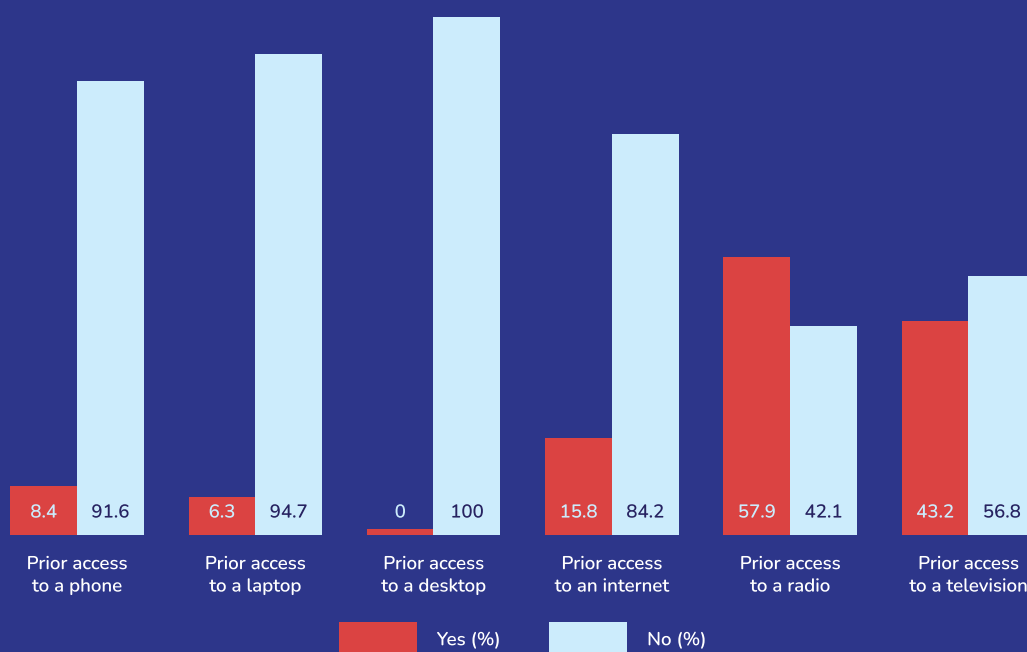


Figure 1.2: Access to digital learning tools prior to the pandemic (Primary school students)



## Awareness and Adoption of Radio Programme provided by the Government

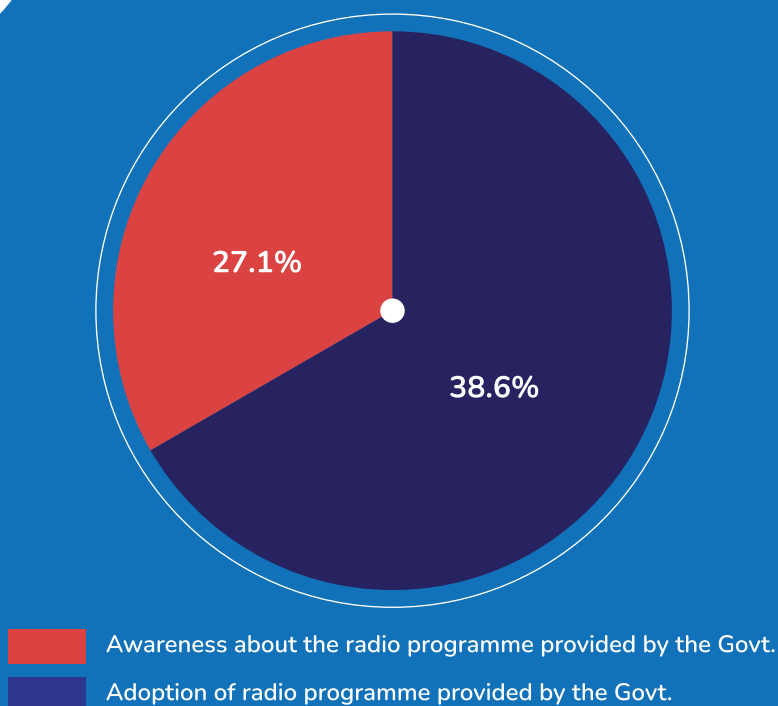


Figure 1.3: Awareness and adoption of Radio programme provided by the Government (Secondary school students)

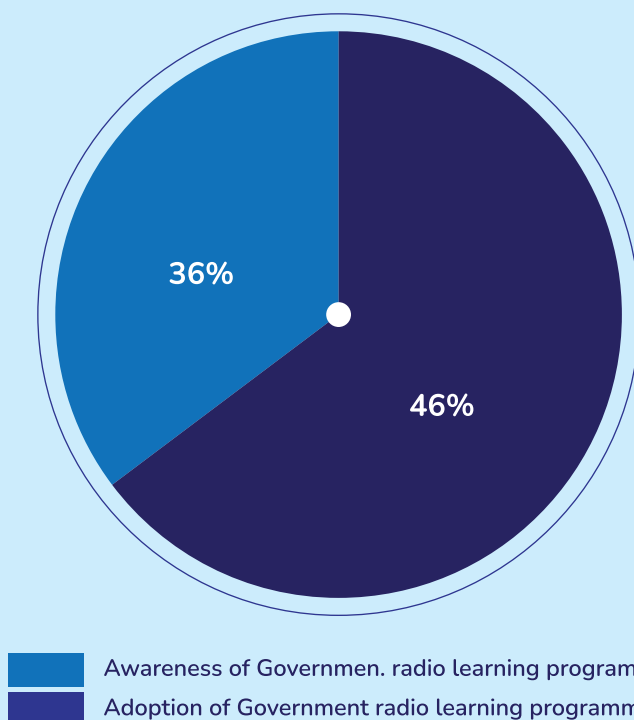


Figure 1.4: Awareness and adoption of Radio programme provided by the Government (Primary school students)



## Reasons why Students could not participate in the Virtual Learning Programme Provided by the Government via Radio/Television

- ✓ Lack of time to participate
- ✓ Perceived benefit for the lessons
- ✓ Unrelated topics
- ✓ Preference for face-face teaching
- ✓ Poor parental support

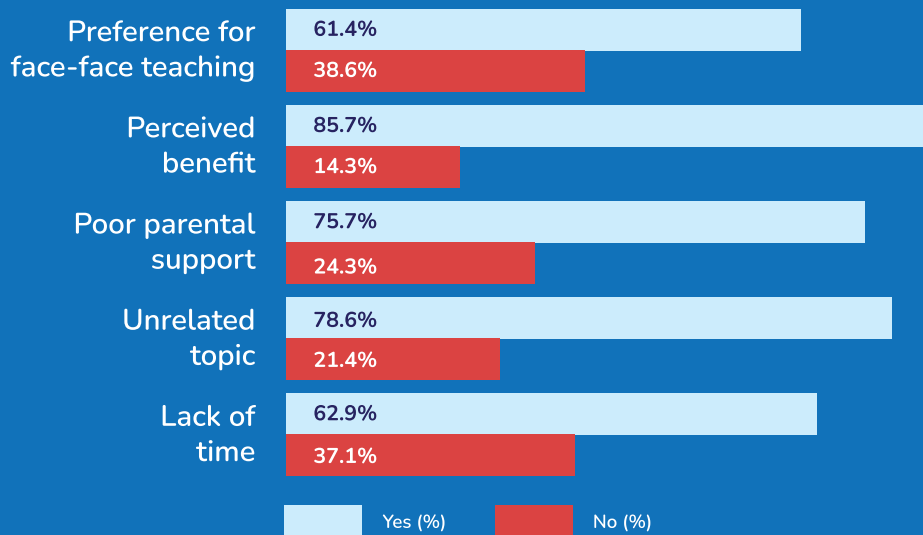
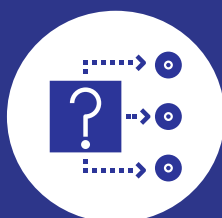


Figure 1.5: Reasons for not adopting radio programme provided by the Government.



## Reasons why Students could not Learn using any Digital Learning Tool

- ✓ Lack of technical know-how
- ✓ Poor electricity
- ✓ Lack of access to digital learning devices
- ✓ Financial constraints
- ✓ Poor internet connectivity

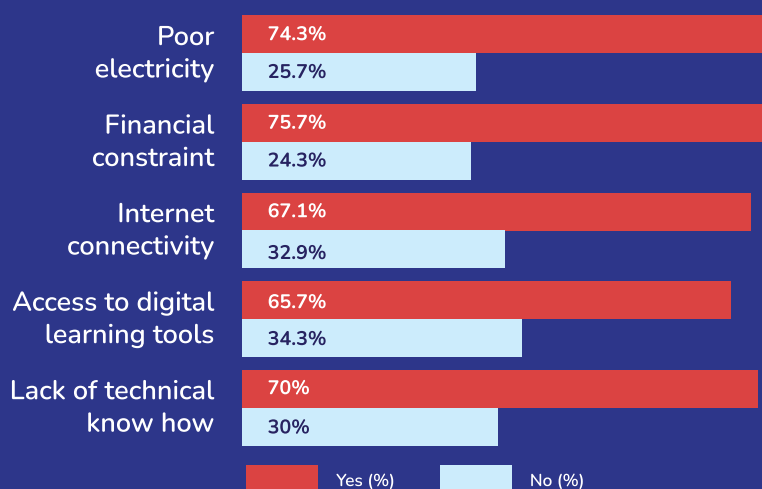


Figure 1.6: Reasons why students could not learn using any digital learning tool (Secondary school)



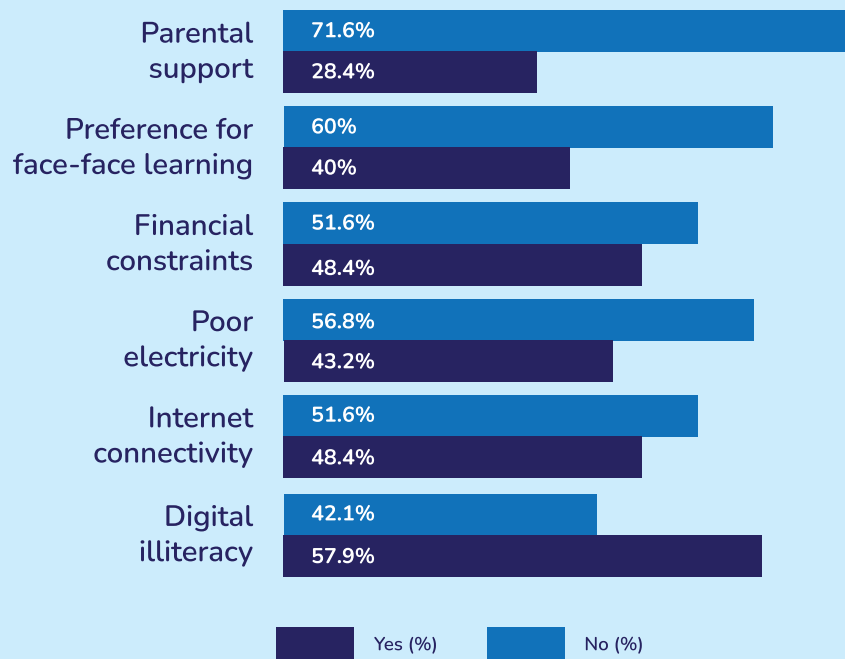


Figure 1.7: Reasons why students could not learn using any digital learning tool (Primary school)



## How did you Continue to learn during the Pandemic

- ✓ Use of online management systems provided by school
- ✓ Use of Radio or television
- ✓ Personal learning using a digital learning device

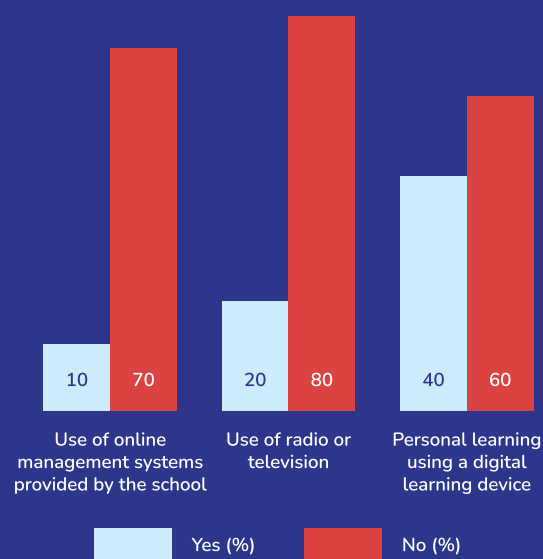


Figure 1.8: How students continued uninterrupted learning during the pandemic (Secondary school)

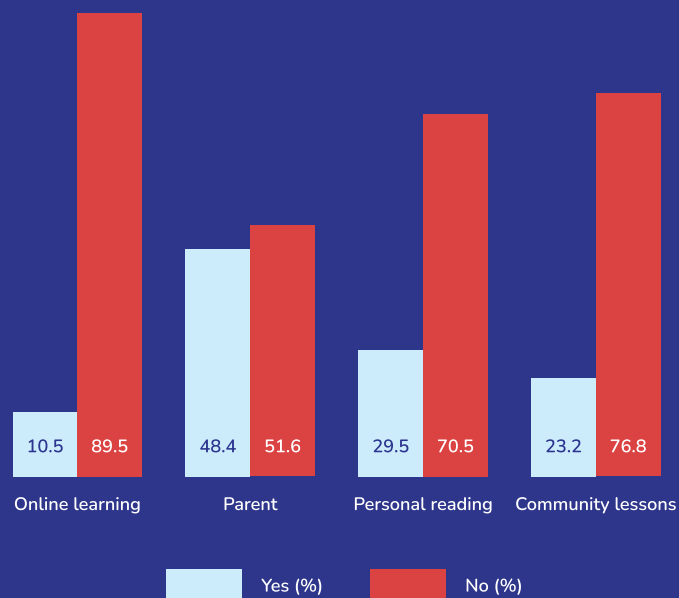
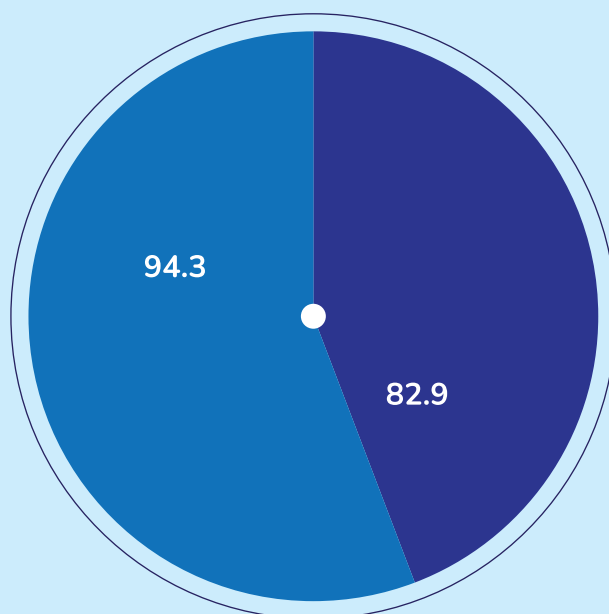


Figure 1.9: How students continued uninterrupted learning during the pandemic (Primary school)



## Perception of Students to Digital Learning

- ✓ Do you think access to digital information can improve your digital literacy skills?
- ✓ Do you have interest in ICT related subjects if provided?



- Do you think access to digital information can improve your digital literacy skills
- Do you have interest in providing ICT related subjects if provided

Figure 2.0: Perception of students to digital learning



## How can the Government Promote Digital Inclusion in your School?

- ✓ Provision of computer
- ✓ Provision of phones
- ✓ Training of students in ICT
- ✓ Recruitment and training of qualified teachers
- ✓ Access to internet connectivity

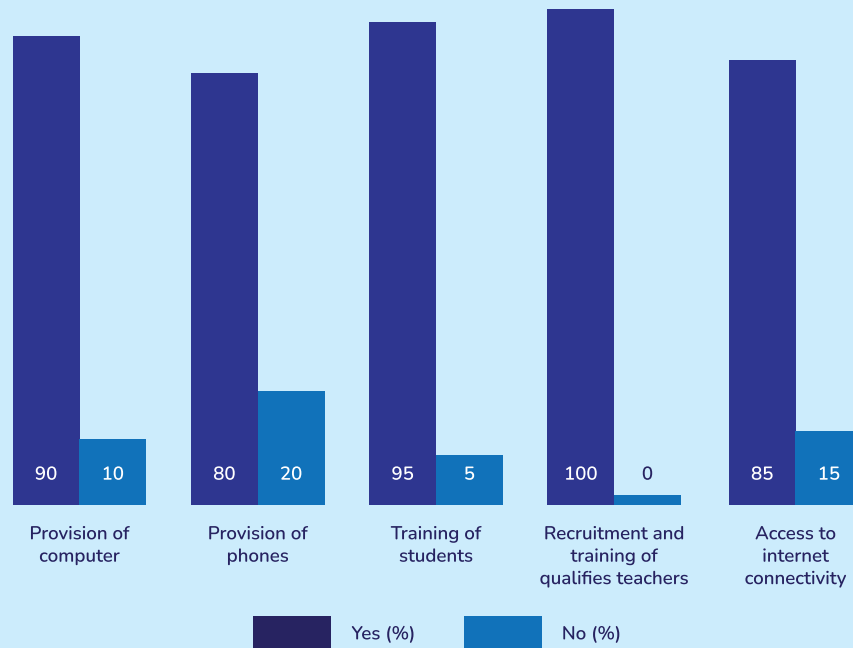


Figure 2.1: Strategies to promote digital inclusion in schools (Secondary schools)

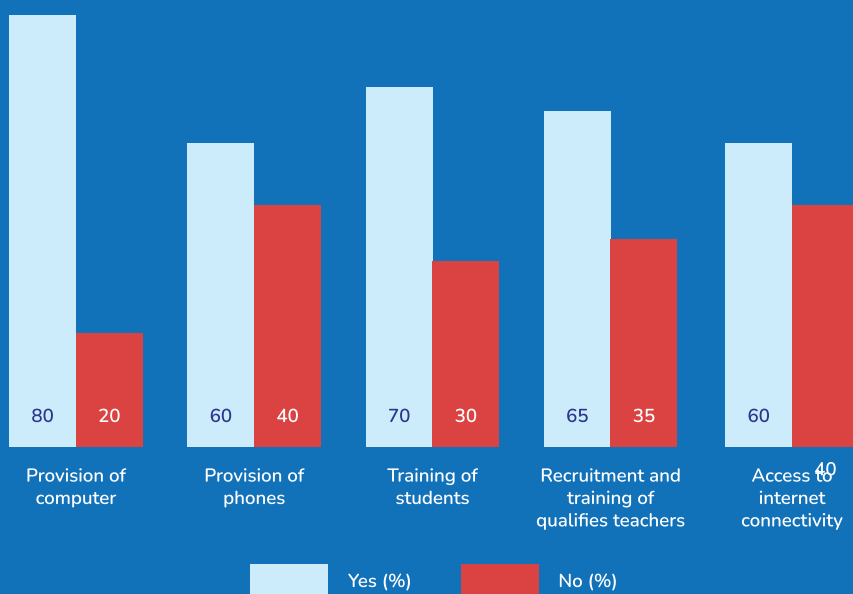


Figure 2.2: Strategies to promote digital inclusion in schools (Primary schools)

# PROJECT FINDINGS - TEACHERS



## Access to digital tools prior to the pandemic

- ✓ Phone
- ✓ Laptop
- ✓ Desktop
- ✓ Internet
- ✓ Radio
- ✓ Television

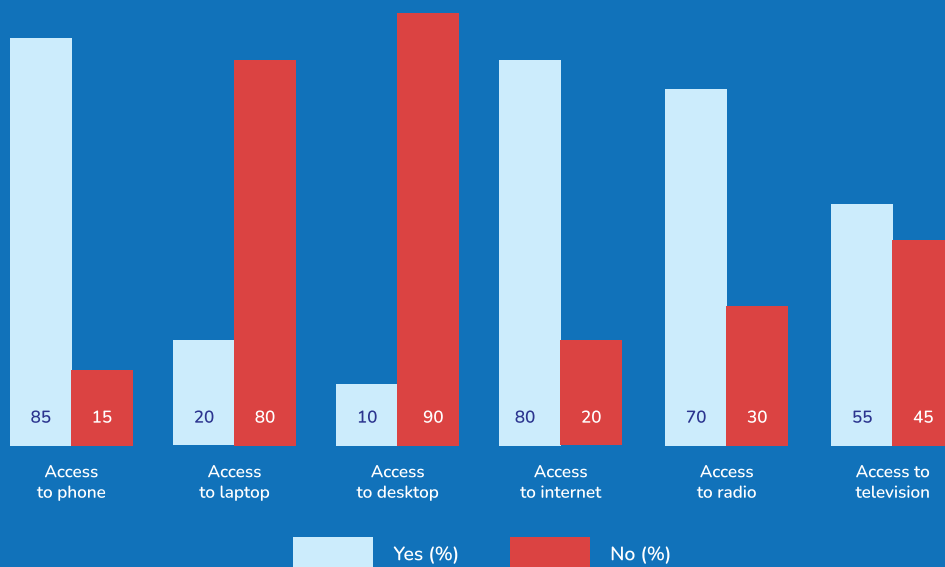


Figure 2.3: Access to digital learning tools prior to the pandemic



## How did you Teach your Students during school closures due to the Covid19 Lockdown?

- ✓ Whatsapp
- ✓ Zoom
- ✓ Google Classroom

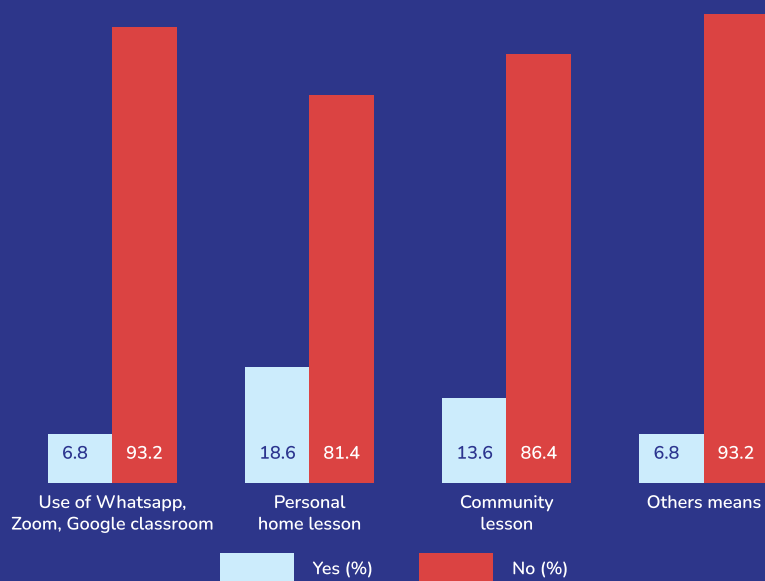


Figure 2.4: How students were taught during school closure



## Factors influencing assess and usage of digital tools for teaching

- ✓ Digital Illiteracy
- ✓ Poor Internet Access
- ✓ Poor Electricity
- ✓ Financial Constraints
- ✓ Lack of Parental Support

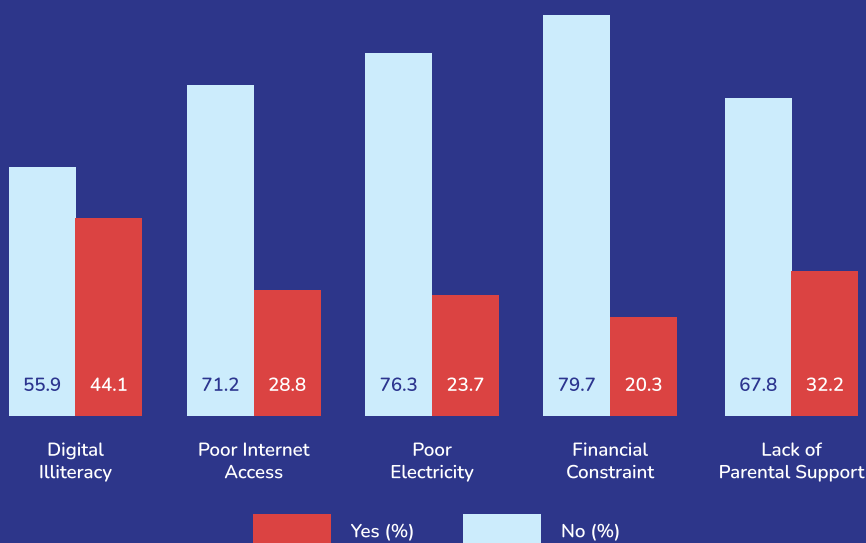
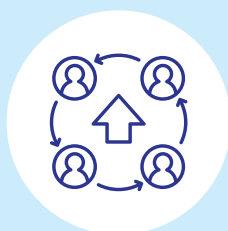


Figure 2.5: Reasons why teachers could not teach their students during the pandemic



## What are the Strategies to promote Digital Equity in your School?

- ✓ Provision of mobile devices
- ✓ Digital literacy skills training
- ✓ Improved digital competency training for teachers
- ✓ Provision of internet connectivity
- ✓ Construction of community ICT centres

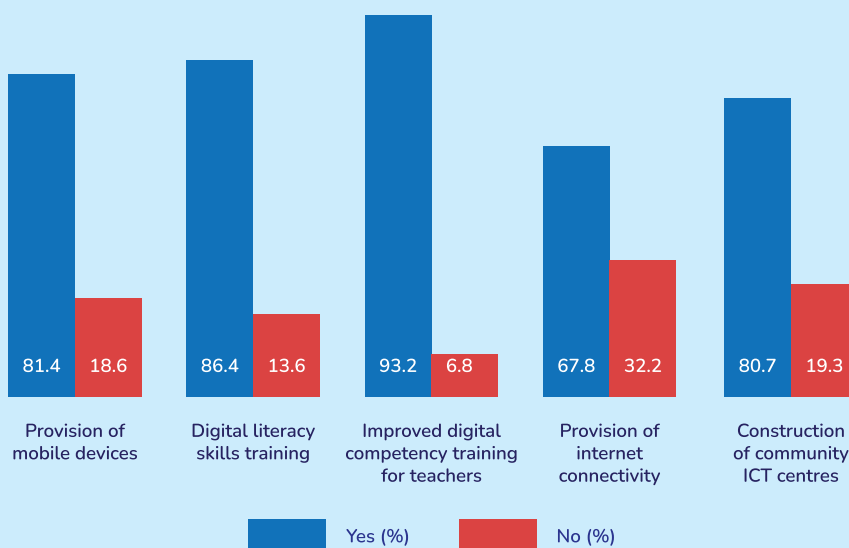


Figure 2.6: Strategies to promote digital inclusion

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# NOTICE

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