

HELPDESK RESPONSE 179

EdTech to Support Blended Learning in Mozambique

A curated list of EdTech interventions

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Abbreviations and acronyms

ASR	Accelerated School Readiness
BEFIT	Building Educational Foundations through Innovation & Technology
ICT	Information Communication Technology
MCTESTP	Ministério da Ciência, Tecnologia e Ensino Superior
MINEDH	Ministry of Education and Human Development
MoE	Ministry of Education
MOOC	Massive Open Online Course
NGO	Non-governmental organisation
PEBL	Partnership for Enhanced and Blended Learning
RAN	Rising Academy Network
TVET	Technical and Vocational Education and Training
UNFCU	United Nations Federal Credit Union
VSO	Voluntary Service Overseas

Purpose and goals of this request

This document was produced in response to a request from the UNICEF Mozambique country office submitted to the EdTech Hub Helpdesk in November 2023. The UNICEF team requested a curated list of blended learning approaches and resources that are relevant to the Mozambique context, with a special focus on resources that are implemented or sourced from the Eastern and Southern Africa region.

UNICEF is currently collaborating with Mozambique's Ministry of Education and Human Development (MINEDH) to introduce the Learning Passport initiative. Functioning as a digital online, mobile, and offline platform, the [Learning Passport](#)¹ aims to provide continuous access to quality education, addressing the learning poverty gap. The platform, designed by UNICEF in collaboration with Microsoft, will be used to support blended learning in schools and currently includes materials for Portuguese and mathematics for Grades 1 and 2.² The expected results are an improvement in pupils' motivation and learning outcomes on the platform, achieved by enhancing teachers' capacity to support students and providing a higher level of personalised learning opportunities. The UNICEF team is seeking tools and resources to support this initiative and the target audience of students in lower primary schools in Mozambique.

In response, the EdTech Hub Helpdesk has created this report to provide contextual and background information on the blended learning landscape in Eastern and Southern Africa, with a specific focus on Mozambique, along with a list of resources on blended learning. The report is structured as follows:

- **Section 1** provides definitions of key terms used in the report, including 'blended learning'.

¹ For more information on the Learning Passport, see <https://www.learningpassport.org/about-learning-passport>. Retrieved 3 June 2024.

² Grades 1–2 were prioritised given that only 48% of Mozambican children completed primary education in 2019, and according to the national learning assessment in 2016, only 4.9% of Grade 3 students were able to read at the expected level; moreover, the numeracy level of Grade 3 students was 7.7%. However, the Learning Platform is expected to expand to the rest of primary grades, secondary school, and teacher education in the future. UNICEF is supporting the Accelerated School Readiness (ASR) programme for 5-6-year-old children and supporting the Ministry of Education and Human Development (MINEDH) in integrating the ASR programme into the education system.

- **Section 2** gives background on the education ecosystem and ICT infrastructure in Eastern and Southern Africa and Mozambique, with a special focus on the actors who are designing and implementing blended learning in the region. This section also covers trends before and after the Covid-19 pandemic, common digital learning practices, and existing EdTech policies and initiatives in Mozambique.
- **Section 3** presents a list of relevant resources and approaches that may support blended learning in Mozambique, showcasing the key features, modality, and partners of each initiative.
- Lastly, **Section 4** summarises cross-cutting key takeaways and considerations based on the many initiatives analysed.

This report does not aim to cover every leading, innovative, blended or hybrid initiative with relevance to the Mozambique context. Rather, it presents a list of curated resources with examples of challenges, lessons learnt and teacher training approaches that can be used as a guide when designing a multimodal strategy for the education sector.

Executive summary

Through our exploration of blended learning, prioritising programmes targeting early primary education and development in Eastern and Southern Africa, we identified 19 EdTech interventions relevant to Mozambique's context. The majority are large-scale programmes, with governments playing pivotal roles as key partners. Moreover, many adopt a multimodal approach, specifically with the use of tablets, and are either accessible in Portuguese or adaptable to the local context. Our analysis of the curated list, considering both context and content, unveiled several key findings.

- **Collaboration for impact:** Emphasising collaboration with diverse partners, including government, network providers, and non-governmental organisations (NGOs), can enhance the reach and success of blended learning initiatives.
- **More focus on primary grades:** The existing gap in blended learning initiatives towards primary education underscores a valuable opportunity for implementation, aligning with UNICEF's objectives; however, more research on the use of blended learning in primary schools is needed.
- **Use of offline modalities:** Utilising applications that do not require the internet, including offline mobile and tablet-based programmes, TV, and radio, acknowledges the low internet penetration rates in the region and can lead to wider impact.
- **Inclusivity for marginalised learners:** Prioritising the consideration of gender, disabilities, and access challenges in blended learning initiatives can align with UNICEF's mandate to support marginalised learners.
- **Effective data utilisation:** Establishing robust data and monitoring systems to gather actionable insights for continuous improvement are key to both financing blended learning initiatives and supporting education outcomes.
- **Investment in teacher training:** Numerous programmes highlight the challenge of teacher adaptation to technology. Significant investment in teacher training for blended learning in primary education is needed to create sustainable, effective programmes.

1. Definitions and key features of blended learning

Blended learning, also referred to as mixed-mode instruction or technology-mediated instruction, is an educational approach that integrates online educational resources and online interaction with traditional classroom methods. While the term blended learning has been commonly used to refer to “a combination of in-person and digital learning experiences that are generally delivered as a part of a physical experience in a classroom” ([↑Ortiz et al., 2020](#): p. 6), during the Covid-19 pandemic, ‘blended learning’ and ‘hybrid learning’ were often used interchangeably to refer to any combination of in-person and remote learning ([↑Munoz-Najar et al., 2022](#)). To align with the purpose of this request, we adopt the former definition of blended learning as a combination or *blend* of in-person and digital instruction that usually takes place in a classroom setting.

According to [↑UNICEF’s \(2021\)](#) conceptualisation of blended learning, it is a planned event where the teacher and student(s) are present simultaneously. This differs from remote learning, whereby the teacher and students are separated by time and distance and there is no interface between them (this typically occurs during emergencies) and distance learning, which is a highly planned and controlled approach to education in which the student is in control of the learning process ([↑UNICEF, 2021](#)). Some of the main drivers of blended learning include the ability to personalise learning, greater potential for individual progress, and improved student engagement ([↑Bailey et al., 2013](#)).

While there are studies that indicate the benefits of blended learning, the majority focus on higher education and take place in high-income countries. [↑Vo et al.’s \(2017\)](#) meta-analysis of blended learning on student performance affirms that blended learning is notably linked to enhanced learning performance among higher education students in STEM disciplines compared to traditional classroom methods. Likewise, in their meta-analysis, [↑Cui & Zheng \(2018\)](#) observed enhanced learning outcomes when teachers actively engaged in peer evaluation within online blended learning settings. An evaluation of a pilot programme implemented within primary grades in India suggests that the incorporation of blended learning platforms within the classroom, together with high-quality digital content, experienced online instructors, and on-site teaching assistants, can significantly enhance both learning outcomes and student well-being,

regardless of their socio-economic background ([↑Dey & Bandyopadhyay, 2019](#)).

However, various challenges around blended learning have been raised, including the lack of evidence to support the approach in K–12 education ([↑Poirier et al., 2019](#)). Teachers primarily encounter barriers related to the utilisation of technology, while educational institutions face difficulties in providing suitable instructional technology and effective training support to teachers ([↑Rasheed et al., 2020](#)). Moreover, in low-income countries, where students possess limited digital literacy skills and face challenges accessing devices, blended learning initiatives must account for infrastructure constraints such as a lack of connectivity and access to EdTech services and the existing skills landscape. In such circumstances, education policymakers should explore blended learning programmes that incorporate more widely available technologies such as television and radio or popular messaging services such as WhatsApp. Programmes with offline components are likely to be more accessible, serving as a means to enhance educational access for marginalised groups ([↑Allier-Gagneur et al., 2020](#)). Finally, the gender digital divide in low-income countries is significant, with girls having less access to technology ([↑Webb et al., 2020](#)). Thus, the influence of blended learning on girls in Eastern and Southern Africa is expected to diverge significantly from the situations examined in the aforementioned studies.

2. Blended learning in Eastern and Southern Africa and Mozambique

Section 2.1 introduces blended learning within the context of Eastern and Southern Africa, including the key actors who are spearheading these initiatives in the region. Examples are provided for each stakeholder group, offering a nuanced understanding of their roles. Given that a significant portion of the tools in our curated list originate from the region, our approach is to first explore the broader context before delving into the enabling environment and educational landscape in Mozambique.

2.1. Introduction to blended learning in the region

Regional commitment towards increasing access to quality education for all students is referenced in a wide number of policies. The African Union underscores education as a fundamental human right, aiming for well-educated citizens and a skills revolution through science, technology, and innovation. The Continental Education Strategy for Africa (CESA 16–25) aligns with the United Nations' Sustainable Development Goal 4, emphasising transformative education for sustainable development. In recent years, Africa has achieved remarkable progress in increasing school enrolment. In sub-Saharan Africa, primary school enrolment for children was only 61% in 2000, but by 2019, it had risen to 81% ([↑Statista, 2021](#)). These advancements can be attributed to the collective efforts of governments, local communities, non-profit organisations, and the global community contributing to a trajectory towards achieving universal primary enrolment.

Although there has been significant progress in basic education enrolment, challenges persist, with an estimated 46 million out-of-school children in Eastern and Southern Africa ([↑UNICEF, 2023](#)), indicating a lingering gap in achieving higher access to basic education for all. Limited efficiency in government spending has been identified as a significant obstacle to achieving quality basic education across Africa ([↑Dugbazah et al., 2021](#)). While nearly half of all African countries meet the recommended education financing targets set by the United Nations, Africa has the lowest education spending efficiency scores globally ([↑African Development Bank, 2020](#)). To improve efficiency, the African Economic Outlook Report 2020 suggests enhancing public expenditure tracking surveys, implementing performance-based financing for better results, and elevating teacher standards to decrease school repetition ([↑African Development Bank, 2020](#)).

Other issues in the Eastern and Southern Africa region, such as large classroom sizes, inadequate health and sanitation facilities, lack of electricity, a shortage of textbooks and essential resources, and high teacher attrition rates have negatively impacted learning outcomes. To manage these barriers, MoEs are considering EdTech solutions, including the use of blended learning. In partnership with governments, the key actors in this endeavour include NGOs, international organisations, private businesses and entrepreneurs, local communities, and educators.

While blended learning is still largely new at the primary school level, universities both globally and in the region have actively implemented and studied this model. Projects such as the [Partnership for Enhanced and Blended Learning \(PEBL\) Project](#),³ a collaborative project led by the Association of Commonwealth Universities (ACU), bring together various partners in East Africa to enhance blended learning for participating universities, delivering pedagogical and tutoring support. An evaluation of the effectiveness of the PEBL partnership by [Young et al. \(2021: p. 1\)](#) found that there is strong evidence to support the outcome of their theory of change in “increased flexibility in East African Higher Education systems to expand capacity to meet increasing graduate learning demands without eroding quality.” But constraints were revealed, including resistance from faculty and limited IT infrastructure for both students and staff. Recommendations were made to raise awareness of the merits of blended learning, promote supportive policies and regulations in higher education commissions across the region, and encourage digital safeguarding.

2.2. Actors designing and implementing blended learning in the region

A diverse array of stakeholders plays a pivotal role in shaping and driving blended learning initiatives at the primary school level. We have found that the following are the most prevalent actors who design and implement blended learning initiatives in the region.

Governments and education ministries

Governments at central, regional, and local levels are vital in setting the overarching policies and frameworks for education; therefore, they often

³ See

<https://www.oerafrica.org/partnership-enhanced-and-blended-learning-pebl-east-africa>
Retrieved 30 April 2024.

take the lead in formulating strategies to integrate blended learning into the educational landscape of their countries. [Section 4](#) of this report highlights specific initiatives that, in most cases, MoEs have put in place to integrate blended learning.

NGOs

Both international and local NGOs based in the region conduct fundamental work to integrate blended learning in schools. These organisations contribute resources, expertise, and support to initiatives at various levels.

Global NGOs in the region which support blended learning, include [Learning Equality](#),⁴ [Worldreader](#),⁵ and [Curious Learning](#).⁶ Learning Equality creates, adapts, and distributes open educational resources and supportive tools for innovative pedagogy. Their tool [Kolibri](#),⁷ an open-source platform designed to facilitate content creation, peer-to-peer sharing, and user engagement with educational materials, is currently being used in over 200 countries and territories around the world. Worldreader is an international non-profit that supports comprehension, digital literacy, and emotional literacy skills for children through digital reading solutions. Their mobile application [BookSmart](#)⁸ provides instant access to digital books and is accessible on all devices, from inexpensive feature phones to smart TVs.

Likewise, the international non-profit Curious Learning, works with partners to curate, localise, distribute, and measure free, open-source applications that empower people to read. They collaborate with African MoEs and strategic partners to conduct studies and implement content deployment initiatives in over 40 languages, including [Brazilian Portuguese](#)⁹ ([↑UNESCO, 2021](#)). In 2019, Partnering with [Ubongo](#),¹⁰ one of Africa's leading 'edutainment' companies, Curious Learning launched *Read With Akili*, an interactive storybook.

⁴ See <https://learningequality.org/>. Retrieved 30 April 2024.

⁵ See <https://www.worldreader.org/>. Retrieved 30 April 2024.

⁶ See <https://www.curiouslearning.org/>. Retrieved 30 April 2024.

⁷ See <https://play.google.com/store/apps/details?id=org.learningequality.Kolibri>. Retrieved 6 May 2024.

⁸ See <https://booksmart.worldreader.org/>. Retrieved 6 May 2024.

⁹ See https://docs.google.com/spreadsheets/d/1E19XHn0TRXIGS_sfYp3_nj32w1vMKVVpvlrrTYCx6WE/edit#gid=168932981. Retrieved 30 April 2024.

¹⁰ See <https://www.ubongo.org/>. Retrieved 6 May 2024.

Some NGOs prioritise financing social innovations and blended learning initiatives. [Acumen East Africa](#)¹¹ is an example of an international non-profit impact investment fund¹² that funds social enterprises that serve low-income individuals. While their main focus in the region is agriculture and energy, they serve as a leadership partner for Ubongo. Similarly, [Gratitude Network](#)¹³ supports high-impact social entrepreneurs working in education, health, and human rights. In the region, they partner with [Shule Direct](#),¹⁴ a Tanzanian-based online educational platform. In Ethiopia, Gratitude Network supported the educational television and radio series, [Tsehai Loves Learning](#)¹⁵ through Whiz Kids Workshop. The TV show was broadcast nationally, reaching an estimated five million children.

Moreover, local and regional organisations like [Asante Africa Foundation](#)¹⁶ bolster education and digital literacy programmes. Asante Africa's [Accelerated Learning Program](#)¹⁷ supports teachers by bringing ICT technology into rural classrooms. In West Africa, [Jeune Espoir](#),¹⁸ a Guinean NGO, trains local educators to leverage digital tools in low-tech settings. Learning and partnering with organisations such as [Digital Promise](#),¹⁹ Jeune Espoir's Digital Literacy For Effective Learning programme and the Jeune Espoir App give high school students free access to complete digital versions of their courses and allow them to study offline, in French. In Tanzania, [Lyra](#)²⁰ supplies tools and digital offline learning to rural secondary schools. Working closely in partnership with Shule Direct, Camara Education Tanzania, and Apps and Girls, Lyra works to enable students and teachers to access high-quality, relevant, offline content and resources that complement the Tanzanian curriculum.

¹¹ See <https://acumen.org/east-africa/>. Retrieved 30 April 2024.

¹² Investments are generally made with a social outcome in mind as well as generating a financial return.

¹³ See <https://gratitude-network.org/>. Retrieved 30 April 2024.

¹⁴ See <https://www.shuledirect.co.tz/>. Retrieved 30 April 2024.

¹⁵ See <https://allchildrenreading.org/innovator/whiz-kids-workshop/>. Retrieved 30 April 2024.

¹⁶ See <https://asanteafrica.org/>. Retrieved 30 April 2024.

¹⁷ See <https://asanteafrica.org/accelerated-learning/>. Retrieved 6 May 2024.

¹⁸ See <https://jeuneespoir.org/>. Retrieved 30 April 2024.

¹⁹ See <https://digitalpromise.org/2023/12/21/powerful-blended-learning-in-low-tech-settings-5-lessons-from-guinea/>. Retrieved 30 April 2024.

²⁰ See <https://lyrainfrica.org/digital-learning>. Retrieved 30 April 2024.

Multilateral groups and foundations

Collaboration with multilateral groups and foundations, specialising in education technology or early childhood development can bring in expertise, resources, and best practices from a broader context. This collaboration may involve sharing knowledge, providing funding, offering technological solutions, or implementing strategies that have proven successful in other regions. Governments and local organisations can leverage the collective strengths of international entities to create more comprehensive, sustainable, and impactful blended learning experiences for students in Eastern and Southern Africa.

From preliminary research, core funders of EdTech and blended learning in the region include [Aga Khan Foundation](#),²¹ [Cartier Philanthropy](#),²² [Echidna Giving](#),²³ [Grand Challenges Canada](#),²⁴ [Hempel Foundation](#),²⁵ [Imaginable Futures](#),²⁶ [JBj Foundation](#),²⁷ [Kuwait Foundation for the Advancement of Sciences](#),²⁸ the [Lego Foundation](#),²⁹ [Mulago](#),³⁰ [Porticus](#),³¹ [UKAid](#),³² [UNESCO](#),³³ [UNFCU](#),³⁴ [USAID](#),³⁵ and the [World Bank](#).³⁶

In 2023, UNESCO launched the [Global Skills Academy](#)³⁷ with the aim of enhancing the employability of one million children and youth amid an approaching economic downturn. Leveraging strategic partnerships and mobilising over 230 Technical and Vocational Education and Training (TVET) institutions across 150 countries, the programme connects individual learners, institutions, and governments. Through these connections, the Global Skills Academy facilitates access to diverse training programmes, offering an avenue for schools to integrate these resources

²¹ See <https://the.akdn/en/home>. Retrieved 30 April 2024.

²² See <https://www.cartierphilanthropy.org/>. Retrieved 30 April 2024.

²³ See <https://echidnagiving.org/>. Retrieved 30 April 2024.

²⁴ See <https://www.grandchallenges.ca/>. Retrieved 30 April 2024.

²⁵ See <https://www.hempelfonden.dk/en/>. Retrieved 30 April 2024.

²⁶ See <https://www.imaginablefutures.com/>. Retrieved 30 April 2024.

²⁷ See <https://www.jbj.foundation/>. Retrieved 30 April 2024.

²⁸ See <https://www.kfas.org/>. Retrieved 30 April 2024.

²⁹ See <https://learningthroughplay.com/about-us/the-lego-foundation>. Retrieved 30 April 2024.

³⁰ See <https://www.mulagofoundation.org/>. Retrieved 30 April 2024.

³¹ See <https://www.porticus.com/>. Retrieved 30 April 2024.

³² See <https://www.gov.uk/>. Retrieved 30 April 2024.

³³ See <https://www.unesco.org/en>. Retrieved 30 April 2024.

³⁴ See <https://www.unfcu.org/>. Retrieved 30 April 2024.

³⁵ See <https://www.usaid.gov/>. Retrieved 30 April 2024.

³⁶ See <https://www.worldbank.org/en/home>. Retrieved 30 April 2024.

³⁷ See <https://globaleducationcoalition.unesco.org/global-skills-academy>. Retrieved 30 April 2024.

into their blended learning approaches and better prepare students for future employment challenges. Mozambique is one of the countries of interest for three of the programmes that are part of the Academy: [Scholas Occurrentes Pontifical Foundation](#),³⁸ [Gesellschaft für internationale Zusammenarbeit \(GIZ\)](#),³⁹ and [World Education](#).⁴⁰

Local communities and educators

Engaging with local communities and educators at a grassroots level can foster a collaborative approach that reflects the Eastern and Southern African context. Their active engagement contributes to the contextualisation of approaches and promotes sustainability and buy-in at the school level.

In their research on technology-enabled learning in Kenya, The International Research & Exchanges Board (IREX) and Education Design Unlimited (EDU) found that community-led coordination emerged as a crucial aspect of pandemic distance learning strategies, emphasising the need to strengthen local resources for future resilience ([↑Otieno & Ward, 2022](#)). Respondents also stressed the importance of enhancing digital literacy among teachers and school leaders, highlighting basic computer skills training and the effective use of distance learning modalities.

During the pandemic, [Zizi Afrique](#)⁴¹ partnered with educators to reach learners in arid and semi-arid land communities. Weekly SMS content based on individual learning levels was used to reinforce concepts introduced during radio programmes. The initial results showed promise, with 54% of students progressing from reading a single word or sentence to reading at least a paragraph ([↑Otieno & Ward, 2022](#)). While this programme was mainly remote in response to the pandemic, radio is frequently used both in and outside the classroom by teachers in low-resource communities. In the next section, we highlight [Rising Academies](#),⁴² a blended learning initiative that utilises radio as its primary modality.

³⁸ See <https://scholasoccurrentes.org/>. Retrieved 22 May 2024.

³⁹ See <https://www.giz.de/en/html/index.html>. Retrieved 22 May 2024.

⁴⁰ See <https://worlded.org/>. Retrieved 22 May 2024.

⁴¹ See <https://ziziafrique.org/>. Retrieved 30 April 2024.

⁴² See <https://www.risingacademies.com/about>. Retrieved 30 April 2024.

Private sector and entrepreneurs

Businesses and entrepreneurs in the private sector also greatly shape the blended learning landscape. Entrepreneurial ventures can contribute innovative solutions, technological advancements, and financial support to bolster blended learning initiatives. For example, in Mozambique, UNICEF partners with Microsoft to develop their [Learning Passport](#)⁴³ platform. In Tanzania, Ubongo partnered with UNESCO and Samsung to implement their [Digital Village Project](#).⁴⁴ Other businesses supporting digital education in the region include Airtel, Vodacom, Orange, Penthera, Tigo, Viamo, Huawei, and Coursera.

Orange, a telecom operator present in at least 16 African countries, offers free access to accredited learning platforms and recently introduced the online training platform [Orange Campus France](#).⁴⁵ This platform enables universities to host training courses and content for learners and provides mini e-learning servers to teachers. The Moodle platform, employed by Orange, permits users to download courses to smartphones for offline learning. While this initiative aims to empower educators, challenges include the necessity for teacher training for more effective use of the platform, as well as adaptation and personalisation of content. There are also concerns about information security and the implementation of parental control measures (↑UNESCO, 2021c).

Similarly, in Tanzania, the telecommunications company Vodacom implemented an e-learning portal called [E-Fahamu](#)⁴⁶ to bridge digital education gaps in the national education sector. Leveraging mobile network technology, the portal offers free, curated, local, and global digitised learning materials, accessible via mobile phones or computers. Learners and educators can choose materials based on their levels and preferred learning formats. Currently, the portal serves over 150,000 learners and is part of Vodacom's collaboration with the Basic Internet Foundation for the School Connectivity Project, supported by UNICEF and additional partners. Vodacom aims to expand its reach by creating similar portals in the Democratic Republic of the Congo, Ghana, Kenya, Lesotho,

⁴³ See <https://www.learningpassport.org/>. Retrieved 30 April 2024.

⁴⁴ See <https://www.ubongo.org/case-study/elearning-resources-educational-content-for-digital-school-devices/>. Retrieved 30 April 2024.

⁴⁵ See <https://moodle.campusafrika.gos.orange.com/>. Retrieved 30 April 2024.

⁴⁶ See <https://e-fahamu.vodacom.co.tz/sw-tz/user/auth/#/signin>. Retrieved 30 April 2024.

Mozambique, the Republic of the Congo, and South Africa ([↑UNESCO, 2021c](#)).

Moreover, social enterprises are working to implement blended learning in the region and beyond. Based in Kenya, [Eneza Education](#)'s⁴⁷ mobile platform gives students access to quizzes, mini-lessons and tips via the web and text messaging. Schools and parents can purchase accounts and see students' progress. Eneza also partners with Safaricom to offer low-cost subscriptions. While this bi-directional programme has shown success and continues to expand throughout Africa, Eneza predominantly targets secondary students.

Finally, the [Rising Academy Network \(RAN\)](#)⁴⁸ facilitates a network of schools using a blended learning approach that combines simple, low-cost technology as a routine part of every lesson with modern, effective teaching practices. RAN's approach uses a combination of low-cost modalities including radio and mobile phones to reach communities with limited internet access. Working closely with governments and key partners, RAN also provides intensive teacher coaching and curriculum development. Though founded in Sierra Leone, the network now serves students in Liberia, Ghana, and Rwanda.

Collaborative approaches

Finally, many blended learning initiatives follow a collaborative approach that involves multiple stakeholders working together. MoEs often partner with local NGOs, international organisations, and private companies to create and implement their initiatives. For example, in Malawi, a consortium of partners, including the government of Malawi, Imagine Worldwide, onebillion, and VSO are collaborating to scale [BEFIT](#).⁴⁹

In 2021, UNESCO marked Africa Day by convening an online Global Education Coalition (GEC) Forum. Experts in the forum discussed the key factors in cultivating robust digital learning ecosystems in Africa:

1. Collaboration

⁴⁷ See <https://enezaeducation.com/>. Retrieved 30 April 2024.

⁴⁸ See <https://www.risingacademies.com/about>. Retrieved 30 April 2024.

⁴⁹ Building Educational Foundations through Innovation & Technology (BEFIT): Malawi Scale-Up Program. See <https://www.imagineworldwide.org/updates/building-educational-foundations-through-innovation-technology-befit-malawi-scale-up-program-overview/>. Retrieved 30 April 2024.

2. Greater investment in infrastructure, connectivity, and Open Educational Resources
3. Sound policy
4. Support for innovation.

Collaboration among diverse stakeholders, involving government bodies, the private sector, higher education institutions, civil society, centres of excellence, and donors, aims to build inclusive, sustainable, and thriving digital learning ecosystems ([↑UNESCO, 2021c](#)).

As a part of collaboration, co-designing initiatives can also ensure sustainability. In their study on massive open online courses (MOOCs) for large-scale teacher professional development (TPD) in Syria and Lebanon, [↑Kennedy & Laurillard \(2019\)](#) found that the effectiveness of blended learning MOOCs was attributed to their co-design elements.

While we give special attention to government-led initiatives in the region, [Section 4](#) also showcases examples of successful collaborations between governments, NGOs, international organisations, the private sector, and local communities, illustrating how these partnerships contribute to the holistic development and implementation of blended learning initiatives.

2.3. Current trends and challenges in the enabling environment

It is important to analyse the various enabling factors that have contributed to the successful development of blended learning in the Eastern and Southern Africa region and in Mozambique. Several challenges can also pose hurdles for stakeholders during implementation. Enabling factors can include flexible funding policies, stakeholder engagement, and student equity, while challenges can consist of resource constraints, unstable political contexts, and resistance to change. Supporting blended learning initiatives with local teacher networks can yield benefits ([↑Taggart et al., 2024](#)). Moreover, incorporating nutrition-based and early childhood development programmes can also improve primary school enrolment, and ultimately better enable a blended learning environment (see [↑Martinez et al., 2012](#)). In this section, we highlight two key areas that both support and hinder blended learning:

1. Trends before and after the Covid-19 pandemic
2. Infrastructure and digital learning practices.

Trends pre- and post-Covid 19

The effects of the Covid-19 pandemic were devastating across the African region. [↑UNESCO's \(2021c\)](#) report for Africa Day unveiled that the disruptions in learning resulting from the pandemic worsened existing disparities, disproportionately impacting vulnerable groups, especially girls, children with disabilities, and those in rural areas. While governments across the region introduced educational programmes on television and radio, these were only accessible to individuals with access to such devices. Similarly, online learning was limited to those with internet access. Despite rapid government interventions, such as educational broadcasts via TV, radio, and internet, the digital divide remained a substantial obstacle, with only 34% of African households having internet access, and merely 11% of learners having access to a computer at home ([↑UNESCO, 2021c](#)).

Mozambique's education system grappled with poor learning outcomes before the pandemic. In 2016, only 4.9% of Grade 3 students achieved MINEDH's desired literacy level. Additionally, 26% of children aged 5–12 were not attending school ([↑UNICEF, 2020b](#)). At the start of the pandemic, schools in Mozambique were closed for nearly a year (51 weeks) ([↑UNESCO, 2022](#)), leading to extensive learning loss. School closures affected an estimated 8.5 million students and nearly 15,000 schools nationwide ([↑United Nations, 2020](#)).

According to expert survey respondents in a study on the impact of Covid-19 on education in Africa ([↑eLearning Africa & EdTech Hub, 2020](#)), it is the primary level that is considered least capable of coping with the disruptions to schooling. In Mozambique, an examination of reading skills before and after the pandemic, using data from the Avaliação Longitudinal da Desistência Escolar (ALDE, Longitudinal Assessment of School Dropout), indicated significant declines in fundamental literacy skills ([↑Kan & Pontuschka, 2023](#)). Young learners can face additional challenges in the absence of school, including developmental delays such as motor function, speech and language, cognitive and social skills, and nutritional deficiencies.

Teachers also struggled to adapt and continue instruction during the pandemic. One study in Mozambique found that 67% of teachers surveyed

faced difficulties using digital learning platforms, and only half managed to teach all of their classes ([↑Martins et al., 2021](#)). Across higher education, academics and students relied on email, WhatsApp, Google Classroom, and numerous other digital tools to continue instruction ([↑Mahaluça et al., 2022](#)).

In a 2020 study, the World Bank ([↑Azevedo et al., 2020](#)) utilised simulations to research potential impacts of the pandemic and to inform mitigation, recovery, and “building back better” strategies ([↑UNICEF, 2020a](#)). They identified the need for effective remote learning strategies with support to students, teachers, and parents, particularly in marginalised communities, and the need for education systems to adapt, given the rising proportion of students who lack fundamental life skills and competencies. There is great potential for blended learning, fostering an environment where the boundaries between school and home are fluid, enabling continuous learning experiences.

Despite these challenges, the pandemic underscored the potential of EdTech, presenting an opportunity for a new educational future in Africa through collaborative partnerships across various sectors. In 2020, educators had to adapt to different forms of remote teaching, each demanding distinct skills and pedagogical expertise. In Africa, radio and television-based learning was the most prevalent tool during the pandemic ([↑UNESCO, 2021a](#)). Radio continues to be the most economically efficient among distance learning models for reaching substantial numbers of children who are not attending school ([↑UNESCO, 2021b](#)).

Table 1. *Percentage of households using ICT in Mozambique. Source: RIA After Access survey data (2017) as cited in [↑Gillwald et al., 2019](#).*

Technology	National	Urban	Rural
Landline	1%	2%	0.1%
Desktop	2%	5%	0.3%
Laptop	1%	7%	4%
Tablets	8%	15%	4%
Television	23%	40%	10%
Radio	37%	40%	35%

There is extensive evidence that interactive, radio-based instruction has helped reduce education gaps and increased access to children from disadvantaged communities, especially in sub-Saharan Africa ([↑Global Education Monitoring Report Team, 2023](#)). The success of both radio and television-based instruction is contingent on resources, policy context, and educational objectives. Similarly, there is evidence to show that television-based instruction can be effective, especially when it is complemented with face-to-face instruction ([↑Global Education Monitoring Report Team, 2023](#)).

However, challenges such as scheduling, equipment quality, reception, curriculum, and broadcasting costs have impacted the effectiveness of interactive audio and radio instruction ([↑Global Education Monitoring Report Team, 2023](#)). While radio instruction is cost-effective for large student populations, it becomes less efficient for smaller groups, particularly those speaking minority languages. There is less evidence on the cost-effectiveness of television, but it is proven to be most effective when supplemented with in-person guidance. In both cases, ensuring the sustainability of remote programmes beyond the Covid-19 pandemic involves government commitment, ongoing teacher development, programme integration into curricula, and effective monitoring and evaluation ([↑Global Education Monitoring Report Team, 2023](#)).

Unfortunately, advancements in digital learning achieved during the Covid-19 period have stalled. Some countries have experienced setbacks due to widespread misunderstanding regarding the potential applications of digital tools, not solely as emergency measures, but as potential resources to enhance learning, particularly in primary education. Globally, 32% of recognised national digital learning platforms either no longer exist, have not been updated since 2020, or have non-functional links ([↑Rui et al., 2023](#)). This trend is particularly noticeable for platforms created by countries in sub-Saharan Africa and South Asia. Moreover, studies like UNESCO's *An Ed-Tech Tragedy?* ([↑West, 2023](#)) illustrate how technology-based solutions left most global learners behind during the pandemic and exacerbated existing inequities. The shortcomings experienced through remote learning during the pandemic serve as a reminder of the demonstrated positive attributes of classroom-based education, emphasising the importance of blended learning initiatives that take into account student presence in the classroom.

Infrastructure and digital learning practices

Sound infrastructure is essential for implementing blended learning. This includes access to electricity, internet connectivity, and basic facilities such as schools. In nearly all infrastructure indicators, sub-Saharan Africa is positioned at the lowest level among developing regions. The region received a score of 2.91⁵⁰ in the infrastructure category of the *World Economic Forum's Global Competitiveness Report*, indicating a significant inability for teachers and learners to access basic infrastructure ([↑Calderon et al., 2018](#)).

Over the last 25 years, sub-Saharan Africa has witnessed a substantial increase in telecommunication access, with the median number of fixed and mobile phone lines per 1,000 people rising from about three in 1990 to 736 in 2014 ([↑Calderon et al., 2018](#)). The expansion of internet-enabled networks (3G and 4G) has also increased accessibility. However, when compared to other global regions, sub-Saharan Africa still lags behind, indicating a notable digital divide ([↑Begazo et al., 2023](#)). Across countries in sub-Saharan Africa, while 84% of people on average live in areas where 3G service is available, and 54% have access to 4G mobile internet service, only 22% were using mobile internet services as of the end of 2021 ([↑Begazo et al., 2023](#)).

Lack of access to electricity is also a major challenge in sub-Saharan Africa. While the total rates of access to electricity grew from 14% in 1990 to 46% in 2019, rates in the region remain low ([↑Blankenship & Golubski, 2021](#); [↑Calderon et al., 2018](#)). According to the [↑World Bank \(2023b\)](#), unless the current rate of electrification is tripled, over 500 million people in sub-Saharan Africa will lack access to electricity by the year 2030. Progress, however, is underway. For example, in Mozambique, the Energy for All (ProEnergia) Project with a USD 148 million budget is currently working to bring connections to Cabo Delgado, Nampula, Niassa, Sofala, and Zambezia, the five poorest provinces of the country ([↑World Bank, 2023a](#)).

Since 2020, Mozambique has undergone a rapid digital transformation. However, significant challenges remain. Access to grid electricity has risen from 34% in 2020 to 40% in 2022. Nevertheless, approximately 17.5 million Mozambicans still lack access to electricity across urban and rural areas. The availability of electricity grid connection is predominantly concentrated in urban regions, leaving a significant portion of the rural population

⁵⁰ This index takes values from 0 to 7 and higher scores indicate more competitiveness.

without electricity. In 2020, merely 4.5% of the rural population had access to electricity, contrasting sharply with the 75% electrification rate in urban areas ([↑Government of Mozambique, 2021](#)).

Table 2. *Overview of technology connections and electricity status in Mozambique.* Source: [↑International Energy Agency \(2021\)](#).

Technology	Total connections	% of the total population
Cellular mobile connections	17.4 million	52.5
Internet connections	7.54 million	23.1
Social media users	3.05 million	9.3
Access to grid electricity	14.5 million	44

Well over 22 million people in Mozambique, about two-thirds of the country's population, do not have access to the internet ([↑Begazo et al., 2023](#)). Among those who do not have access to the internet, about 75% state that they do not have the financial means to afford the costs of online services or connected devices such as smartphones and computers. One-third of the population resides in rural areas where there is no available mobile broadband signal, making it impossible to connect regardless of the cost. Additionally, one-third of mobile phone users lack the necessary skills to use the internet on their devices. A significant digital divide persists, particularly between urban and rural areas (see [Table 1](#) above).

There are three major telecommunications operators in Mozambique: Vodacom (a private enterprise), Movitel (a joint venture between Viettel Group⁵¹ and Frelimo⁵²), and TMcel (resulting from the merger of TDM⁵³ and Mcel) ([↑Gillwald et al., 2019](#)). Vodacom holds a dominant position in the sector, commanding almost 50% of the market share in mobile services ([↑International Trade Administration, 2022](#)). In 2020, the country had approximately 16 million mobile subscriptions, encompassing more than half of the population. Efforts to bridge the digital divide are underway,

⁵¹ A Vietnamese telecommunications company.

⁵² A holding company of Mozambique's ruling Frelimo Party, in 2011.

⁵³ Telecomunicações de Moçambique.

with initiatives like the introduction of digital villages aimed at enhancing connectivity and providing ICT access in rural areas ([International Trade Administration, 2022](#)).

As evidenced throughout the pandemic and delineated below, many blended learning modalities and other EdTech models heavily depend on robust ICT and telecommunications infrastructure. The accessibility of electricity, networks, and devices in Mozambique is integral to the successful implementation of blended learning, emphasising the importance of understanding the country's unique infrastructure context. Continued investment and development in these foundational elements are crucial to fostering effective digital learning practices.

2.4. Current landscape of blended learning in Mozambique

There is a paucity of research on the use of blended learning in primary and pre-tertiary education in Mozambique. The majority of existing studies on blended learning in Mozambique focus on higher education. [Rhongo & da Piedade's \(2022\)](#) analysis of teachers' challenges with e-learning highlights the challenges that professors face when developing a hybrid learning approach including acquiring ICT skills, mastering e-pedagogy, refining didactics, and navigating communication resources. Through a survey with 164 professors, results showed that the majority had experience using Zoom (71%), Google Meet (68%), WhatsApp (64%), Moodle (86%), and Google Classroom (83%). Similarly, [Mahaluça et al.'s \(2022\)](#) study investigates the innovative mechanisms employed by higher education institutions in Mozambique during the Covid-19 pandemic. The study, which included 46 institutions, reveals that WhatsApp was the most widely adopted platform. These findings underscore the need for clear guidance on platform selection and technical training for educators to enhance the effectiveness of the teaching and learning processes.

While these studies are rooted in higher education, with most taking place before or during the Covid-19 pandemic, the evidence on teacher skills and platform adoption in the country may be valuable for planning future blended learning initiatives at different educational levels. Moreover, the lack of research on blended learning in early and primary care education in Mozambique highlights a gap in both research and policies.

The Covid-19 pandemic compelled countries across the globe to urgently adapt their teaching and learning methods and inspired a host of blended learning practices in elementary education in Mozambique schools. The Mozambique government started to organise activities for both in-person and remote classes, the uptake of the latter being facilitated through ICT, brochures, and support texts. In that period, teachers in primary and secondary education faced several challenges in adapting to the new educational formats ([Fortes et al., 2022](#)).

Teachers struggled with the reduced face-to-face teaching time with students and lacked the means to acquire EdTech devices to facilitate remote teaching. In addition, teachers also struggled with digital literacy levels, often struggling to use various EdTech devices and modalities. To mitigate the impact of these challenges, MINEDH, in partnership with Televisão de Moçambique, broadcast Radio School and teleschool programmes.

Despite the many challenges of implementing blended learning in primary schools in Mozambique, the Covid-19 pandemic created some opportunities to enhance the accessibility of education to students in the cities and rural areas in the country ([Fortes et al., 2022](#)), including:

- Increased use of adaptive learning, according to context and student needs
- Student-centred learning opportunities
- Investment in digital skills training for teachers and school leaders
- Development of digital literacy skills among students
- Further development of blended learning and access to the internet for educational purposes
- Development of blended learning environments for elementary and secondary education.

At present, blended learning initiatives are more common in higher and secondary-grade classrooms in Mozambique. However, through initiatives like the Learning Passport, blended learning is increasingly being considered for primary grades as well.

Existing EdTech policies and initiatives within Mozambique

In the last decade, Mozambique has designed various policies and initiatives to foster educational progress and has made efforts to guarantee access to education at schools and universities in cities and rural areas. Many of these policies detail how EdTech and ICT provision can be used to increase access and quality of education services to learners in Mozambique. [Table 3](#) below presents a brief description of existing policies and programmes within Mozambique that prioritise the need for EdTech and more specifically blended learning approaches to increase learning outcomes and access. [Table 4](#) presents a list of current blended learning initiatives in Mozambique.

Table 3. Existing EdTech policies in Mozambique prioritising the need for EdTech and blended learning approaches

Policy	Description
<i>Estratégia de Educação à Distância (2023–2032)</i>	The <i>Estratégia de Educação à Distância</i> ('Distance Education Strategy') (2023–2032) aims to provide a clear pathway for implementing distance education services across all education levels and sublevels. This strategy was formulated based on insights gathered from the implementation of its two predecessor strategies (†MINEDH, 2022).
<i>Plano Estratégico da Educação (2020–2029)</i>	The <i>Plano Estratégico da Educação</i> 2020–2029 ('Strategic Education Plan') recognises and outlines how to strategically expand the implementation of information and communication technology (ICT) policies to support educational practices, especially in secondary and higher education. The document acknowledges the capacity of ICT to enhance the quality of education for everyone, equipping students for the demands of the 21st century. The plan also outlines the importance of ensuring the accessible use of new ICT across different levels of the system, including the provincial and district offices, educational institutions, and schools (†MINEDH, 2020).
<i>Plano Tecnológico de Educação (2011)</i>	The <i>Plano Tecnológico de Educação</i> ('Technological Plan for Education'), developed by MINEDH in 2011, reflects the country's strategic and integrated vision to address the main challenges in the education sector. The document focuses on the application of ICT in three main areas: 1. Empowering teachers to master ICT tools, enhancing the teaching process and improving pedagogical management; 2. Using ICT in school management to create transparent and efficient administrative systems, in coordination with other levels of the system; 3. Integrating ICT in the classroom as teaching and learning tools for both teachers and students (†MINEDH, 2011).
<i>Strategic Plan for the Information Society (2019)</i>	The <i>Strategic Plan for the Information Society</i> developed by the Government of Mozambique documents the need to use technological resources to foster development in the country. The document also provides an overview of the status of the structure and access to technological resources in the country, as well as delivers a perspective on what is needed and planned for the subsequent years. This includes the need for a significant increase in broadband internet access and communication technology devices among the Mozambican population. The document also foresees the need to create initiatives and policies to adapt the educational system to the demands of the 21st century (†Ministério da Ciência, Tecnologia e Ensino Superior (MCTESTP), 2019).

Table 4. Existing blended learning initiatives in Mozambique

Initiative	Description
Programa de Ensino Secundário à Distância	Programa de Ensino Secundário à Distância ('Secondary Distance Education Plan') was initiated in 2004 in Nampula province and initially piloted in five districts: Erati/Namapa, Mecuburi, Meconta/Namialo, Moma, and Rapale. By 2008, its scope had extended to encompass the entire country. Designed to enhance educational opportunities, this initiative is endorsed by the Ministry of Education and overseen by the Institute of Open and Distance Education (IEDA). Its primary objective is to broaden access to General Secondary Education for graduates of primary and lower secondary schools or their equivalents. Key goals include providing an alternative pathway for General Secondary Education (GSE) studies, emphasising self-directed learning, and fostering inclusivity in GSE, particularly for women and individuals with special educational needs (†Government of Maputo City, 2018).
Tablet comunitário	Developed in 2015, and extensively used during the Covid-19 pandemic, in partnership with MCTESTP and MINEDH, Tablet comunitário is a digital school, designed in the form of a trailer, making it easily movable to any location, including rural areas. The trailer contains large monitors and screens that allow for the dissemination of specific content (on demand) relevant to a given community, internet access, direct selection of content of interest, and video conferencing services. It is powered by solar energy, has a satellite internet connection, and can be transported by being attached to a vehicle. Through this project, about 90 communities in Mozambique have accessed digital learning content in combination with practices at local schools to enhance learning (†MCTESTP, 2019).
SchoolNet Mozambique (SNMoz)	SchoolNet Mozambique is a project developed by MINEDH in partnership with SchoolNet Africa and Microsoft in its start-up phase. It was first created as 'Internet para as Escolas'. In 2020, the project was handed over to the Ministry of Education, which took the lead in providing ICT access to schools across Mozambique. It aims to support schools by facilitating access to ICTs, offering teacher and school leader training and developing education content for use by learners and teachers in Mozambican schools. The strategic objectives of SNMoz focus on aiding primary and secondary schools and technical and vocational institutes in leveraging ICT to enhance learning and teaching (†MINEDH, 2020).
MoRENet	The Mozambique Research and Education Network (MoRENet) is a platform that provides data communication services to Higher Education, Technical Vocational Education and Training (TVET) institutions, and research organisations in Mozambique. The network aims to integrate national educational and research institutions into a high-speed national data communication network. And to offer quality services with financial, technological, and institutional sustainability, establishing itself as a key partner in the development of the Mozambican academic community (†MCTESTP, 2019). According to the most recent data available (2018), the MoRENet platform supports five other higher education institutions in Mozambique, including Universidade São Tomás de Moçambique, Escola Superior de Ciências Náuticas, Instituto Superior de Gestão e Negócios, Instituto Superior Politécnico de Manica, Universidade Pedagógica (Beira), INAM (Nacala) (†MCTESTP, 2019).

3. Resources and approaches to blended learning that may be applicable in Mozambique

The Helpdesk Team conducted a desk review to identify examples of blended learning initiatives for informing related plans and programming in Mozambique. In collaboration with UNICEF Mozambique, we established a set of criteria that aligned with their scope. Through this process, the Helpdesk identified 19 blended learning initiatives that exhibit key features aligned with these criteria. Listed below are the criteria that the Helpdesk used.

Inclusion criteria

- Tools and resources highlighting effective practices in blended learning, including EdTech interventions and large-scale initiatives
- Programmes targeting early primary education, specifically Grades 1 and 2
- Special focus on initiatives developed in Eastern and Southern Africa and countries with similar levels of infrastructure and access to ICT devices
- Initiatives considering a multimodal approach with the use of laptops, tablets, and phones, with a special focus on tablets

Supplementary criteria

- Tools and resources available in Portuguese
- Programmes that engaged directly with governments

Table 5 below lists initiatives that fit the above listed criteria, but excludes tools focused on education levels other than primary (e.g., secondary education), those from vastly different contexts, or those employing solely low-tech interventions such as TV and radio. Additionally, initiatives strictly dedicated to remote learning are not included. A comprehensive overview of initiatives is provided in this [spreadsheet](#).⁵⁴

⁵⁴ See

<https://docs.google.com/spreadsheets/d/1S76XK7aHnFG4Fc0zShVgLQHY2hBMgQXb/edit?usp=sharing&oid=108070116370625763343&rtopof=true&sd=true>. Retrieved 5 June 2024.

In addition to providing basic information, our analysis encompasses the key features of each tool or programme, available languages, strategic partners, and links to evaluations or impact studies when accessible. We also indicate the direction of communication between teachers and students. One-way communication typically refers to situations where a teacher imparts lessons to students without providing an opportunity for students to communicate back to the teacher. This is often associated with traditional broadcast media like television or radio, but also particular mobile applications. Bi-directional communication involves a teacher conveying information to students, and students responding back to the teacher, while multi-directional communication encompasses instances where teachers and students communicate with each other and students also engage with their peers.

Table 5. *EdTech interventions*

Initiative	Analysis
Akelius⁵⁵ Languages: <i>English, French, German, Greek, Italian, Portuguese, Russian, Spanish, and Swedish</i> Level: <i>Primary</i> Modality: <i>Laptops, but available on other devices and different operational systems</i> Direction: <i>Bi-directional</i> Evaluation:⁵⁶ ↑Manapbayeva & Aliyeva, 2023	Location: Global, including São Tomé and Príncipe Description: Fostering language learning. The platform was developed with a focus on language learning for individuals in refugee situations, but today its impact extends to other contexts where it can contribute to literacy processes in the Portuguese language. It can be accessed both online and offline (through downloaded content). Key features: ■ Blended learning platform without connection costs, allowing for better levels of access in schools in rural areas. ■ Important tool for the improvement of literacy levels in the country, considering the challenges with initial and continuous teachers' professional development. Partnership: UNICEF / Akelius Foundation and Governmental partnership: Ministry of Education and Sports
Asante Africa's Accelerated Learning Program⁵⁷ Languages: <i>English and Kiswahili</i> Level: <i>Primary and secondary</i> Modality: <i>Computers, tablets</i> Direction: <i>Bi-directional</i> Evaluation: ↑Asante Africa Foundation, 2022	Location: Kenya, Tanzania, Uganda Description: The accelerated learning programme provides teachers in rural East Africa, with support, training, and techniques to create a highly engaging learning environment. Using technology in the programme is an integral part of linking teachers to their students, supporting teachers' curriculum development, and supporting after-school clubs. Key features: ■ Provides teachers with training that incorporates the use of local resources, low-cost solutions, and hands-on skill development. Teachers are provided with the necessary digital tools to create a curriculum designed for today's digital age. ■ Focuses on building students' confidence, leadership, and communication skills, and digital literacy training. Partnership: Local governments, NGOs, corporations, and individuals

⁵⁵ See <https://languages.akelius.com/>. Retrieved 30 May 2024.

⁵⁶ Evaluations comprise an external case study and internal impact studies, for example. Some evaluations are more robust than others.

⁵⁷ See <https://asanteafrica.org/accelerated-learning/>. Retrieved 30 May 2024.

Initiative	Analysis
BEFIT (Building Educational Foundations through Innovation & Technology)⁵⁸ Language: <i>Chichewa</i> Level: <i>Primary</i> Modality: <i>Tablets</i> Direction: <i>One-way</i> Evaluation: † Levesque et al., 2022	Location: Malawi Description: BEFIT is a child-directed, tech-enabled learning programme that aims to improve the foundational literacy and numeracy skills of learners in Standards 1–4 in Malawi. Originally a project by the non-profit organisation onebillion and Unlocking Talent (a collaborative project between onebillion and VSO), designed for out-of-school youth, in Malawi, the programme has transitioned to a blended learning model for schools. Key features: ■ Embedded within the national curriculum and school timetable. ■ Tablets work without internet or grid power. ■ Learning is at the right level for each child. ■ The programme introduces solar power, provides ICT training, upskills communities, and catalyses job creation. ■ Aims to be fully sustained by the government, operationally and financially, in the post-implementation phase. Partnership: Led by the Malawi Ministry of Education's Directorate of Basic Education (DBE) and temporarily supported by a consortium of partners, including Imagine Worldwide, onebillion, VSO, and others.

⁵⁸ See

<https://www.imagineworldwide.org/updates/building-educational-foundations-through-innovation-technology-befit-malawi-scale-up-program-overview/>. Retrieved 30 May 2024.

Initiative	Analysis
BookSmart by WorldReader⁵⁹ Languages: <i>English, Kiswahili, Ewe, Twi Akwapi, Twi Asante, and other languages</i> Level: <i>Pre-primary and primary (ages 3–12)</i> Modality: <i>Mobile phones, tablets, computers</i> Direction: <i>One-way</i> Evaluation: ↑Worldreader, 2022; ↑Nicolai et al., 2023	Location: Global, including Eastern and Southern Africa Description: BookSmart is a digital tool that supports children in building their reading skills through high-quality books, interactive activities, and celebrations for success. The application also provides reading challenges, activities to build soft skills, and tips to support caregivers. Can be used both online and offline. Key features: ■ Thousands of books available in multiple languages, which can be accessed anytime, on any device. ■ Provides reading challenges that jumpstart reading. ■ Offers tips to support teachers and caregivers. ■ In the region, books are sourced from local publishers with stories from Kenya, Ghana, South Africa, and beyond. Partnership: MoEs, institutions, libraries, and school networks, global and community-based organisations, local and international publishers, foundations, corporate partners, other tech-based companies (e.g., Moya App in South Africa)
Bridge⁶⁰ Languages: <i>Kiswahili and English</i> Level: <i>Pre-primary and primary</i> Modality: <i>Tablets, computers</i> Direction: <i>Bi-directional</i> Evaluation: ↑UNICEF, 2018	Location: India, Kenya, Liberia, Nigeria, and Uganda Description: Bridge is a network of low-cost schools serving more than 100,000 pupils in 520 nursery and primary schools. Its ambition is to transform learning by developing lessons aligned to national curricula using a range of technologies. Bridge uses blended learning to address whole-school issues including teacher training, lesson delivery, and monitoring and evaluation. Key features: ■ Bridge’s highly standardised ‘academy in a box’ provides the training, processes, tools, materials, and curricula that communities need to open and run a low-cost quality school. ■ Every step of implementation is in-house. ■ The programmes are data-driven and evidence-based. Partnership: MoEs

⁵⁹ See <https://www.worldreader.org/our-work/technology/booksmart/>. Retrieved 30 May 2024.

⁶⁰ See <https://www.bridgeinternationalacademies.com/>. Retrieved 30 May 2024.

Initiative	Analysis
EdoBEST ⁶¹ Languages: <i>Edo, English</i> Level: <i>Primary and secondary</i> Modality: <i>Mobile phones, laptops, tablets</i> Direction: <i>Multi-directional</i> Evaluation: †Oviawe et al., 2019; †Munoz-Najar & Oviawe, 2020	Location: Nigeria Description: EdoBEST is a government-led intervention programme designed to revolutionise basic education in Edo state. The EdoBEST@Home platform includes interactive audio lessons, digital self-study activity packs, digital storybooks, mobile interactive quizzes, learning guides for parents, and virtual classrooms that enable interaction between teachers and students. Key features: ■ Through EdoBEST, the government has transformed learning outcomes for over 370,000 children across 1,029 public primary and 232 junior secondary schools. Between 2018 and 2022 over 16,000 teachers were re-trained to be technologically supported and empowered teachers (†Oviawe et al., 2019). ■ Establishing partnerships with telecommunication operators seemed important for students and teachers to access educational resources without paying for the bandwidth. ■ Supporting teachers, and ensuring they are equipped with digital and pedagogical resources are some of the requirements to enable teachers to teach remotely. ■ Producing interactive content, engaging learning activities, and automated formative assessments appear to sustain student participation in the learning process. Partnership: Local government

⁶¹ See <https://edobest.org.ng/>. Retrieved 30 May 2024.

Initiative

Kit Kit School⁶²

Languages: *Multiple*

Level: *Pre-primary and primary*

Modality: *Tablets*

Direction: *Bi-directional*

Evaluation: ↑Enuma, Inc., n.d.;
↑Enuma, Inc., 2019

Analysis

Location: 50 countries including Kenya, Rwanda, and Tanzania

Description: Kit Kit School is a tablet-based application with early learning and primary school curricula in literacy and numeracy. It is designed as a comprehensive learning platform that includes the game-based Kit Kit learning app, library, and tools.

Key features:

- Awarded the Xprize (in partnership with UNESCO and the Tanzania MoE). Over the course of the 15-month field test, the total Kit Kit school playtime was 1,197 hours (an average of 285 hours per pupil).
- Kit Kit School delivered some of the highest gains for students participating in the field test, with the highest levels of engagement among finalists and benefits that extended beyond academics and to their families and communities.

Partnership: MoEs, Ubongo, International Rescue Committee, Korea International Cooperation Agency

⁶² See <https://kitkitschool.com/product>. Retrieved 30 May 2024.

Initiative	Analysis
Kolibri⁶³ Languages: <i>Multiple</i> Grade: <i>Primary</i> Modality: <i>Laptops, but available for other devices and different operational systems</i> Direction: <i>Multi-directional</i> Evaluation: †Open Development and Education, 2022	Location: Global, including Eastern and Southern Africa, and São Tomé and Príncipe Description: Kolibri is an adaptable set of open solutions specially developed to support learning for those who do not have access to the internet. Centred around an offline-first learning platform that runs on various low-cost 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. Key features: ■ Kolibri installers, updates, and content can be downloaded once to a device in an area with an internet connection. That ‘seeded’ device can then be used to share new content and updates with other devices over an offline local network. ■ Kolibri Studio is a curriculum tool used to organise resources and build custom channels, aligned to the local curricula, or according to specific learning needs. ■ The Kolibri Fly programme uses the Kolibri Product Ecosystem to extend quality learning opportunities for refugee and host community learners. ■ The platform has been designed to be accessible for learners with disabilities. Partnership: NGOs, MoEs, entrepreneurs, and other relevant stakeholders with UNDP’s networks

⁶³ See <https://learningequality.org/kolibri/>. Retrieved 30 May 2024.

Initiative

M-Shule⁶⁴

Languages: *Swahili and English*

Level: *Primary and secondary*

Modality: *Mobile phones (SMS), chatbot over messenger app, web app*

Direction: *Bi-directional*

Evaluation: [↑EdTech Hub, 2021](#);
[↑Jordan et al., 2023](#)

Analysis

Location: Kenya, Uganda, and Tanzania

Description: The M-Shule mobile learning platform connects learners with tailored training, critical information, and analytics through SMS. It was designed to equitably reach low-income and vulnerable populations from urban to rural areas — even if they do not have smartphones or internet connectivity. Projects target refugees and students with disabilities.

Key features:

- Personalised content for each learner, delivering training of varying complexity and allowing different learners to enrol in courses covering the topics they need the most.
- The curriculum uses simple, rule-based AI ‘adaptive learning technology’, meaning that the system creates more challenging content as the student progresses through the curriculum.
- Reported benefit: Teachers and schools change their classrooms from curriculum-driven to student-driven learning centres, with diverse approaches for different learning needs, paying particular attention to issues of gender.

Partnership: Tusome, Xavier Project, Aga Khan Foundation, Education Design Unlimited, Oxfam, VSO International, Danish Refugee Council

⁶⁴ See <https://www.mshule.com/>. Retrieved 30 May 2024.

Initiative	Analysis
Multirio ⁶⁵ Language: <i>Portuguese</i> Level: <i>Learners of all ages</i> Modality: <i>Mobile phones, tablets, computers</i> Direction: <i>Bi-directional</i> Evaluation: <i>Unclear</i>	Location: Brazil Description: Through the digital platform, MultiRio offers over 10,000 titles, including videos, podcasts, news articles, publications, animations, augmented reality children's books, interactive digital games, series with 3D conversion, virtual reality videos, and holographic simulations, among others. Key features: ■ It employs a platform where various digital media, such as the MultiRio Portal, social networks (TikTok, YouTube, Instagram, Twitter, and Facebook), and print media interact, diversifying the possibilities of access to its products. ■ It provides the government schools in the city of Rio de Janeiro and the general population with real-time access to the latest in educational tools and interfaces. Partnership: Municipal Multimedia Company, affiliated with the Municipal Education Department of the City Hall of Rio de Janeiro
Mundu Novu Language: <i>Portuguese</i> Level: <i>Primary and secondary</i> Modality: <i>Laptop, speakers, projector</i> Direction: <i>Bi-directional</i> Evaluation: <i>↑Semedo & Gutiérrez-Esteban, 2014</i>	Location: Cape Verde Description: Implemented in 2009, Mundu Novu aimed at integrating ICT into Cape Verde's educational framework, and rolled out across 29 primary and secondary schools in the country. The programme consisted of equipping schools with technological devices, such as projectors, screens, laptops, and the computer lab kit, equipped with approximately 20 computers and an interactive whiteboard each (↑Semedo & Gutiérrez-Esteban, 2014). Key features: ■ Enhancement of management and encouragement of the use of ICT by teachers. ■ A computer lab kit was provided to facilitate ICT learning in 94% of the classrooms in the pilot schools. Partnership: Government of Cape Verde

⁶⁵ See https://www.multirio.rj.gov.br/index.php/institucional/a_multirio. Retrieved 30 May 2024.

Initiative	Analysis
Mwabu Learn⁶⁶ Languages: <i>English and seven local Zambian languages</i> Level: <i>Primary (Grades 1–3)</i> Modality: <i>Mobile phones, tablets, computers</i> Direction: <i>Multi-directional</i> Evaluation: ↑American Institutes for Research, 2020	Location: Zambia Description: Mwabu supports teachers in rural Zambia by offering tools and training suitable for large class sizes and low resource settings. Their core product is designed for use in schools. They aim to support, not supplant, existing teaching systems. Key features: ■ Mwabu Learn supports children’s understanding through self-directed lessons developed by teachers. ■ Device deployment is matched to school budgets. Where possible, learners use shared tablets on a rotational model. Alternatively, reduced budgets are accommodated by simply using a teacher device linked to a (solar-powered) projector. ■ An interconnected network of teachers, learners, and parents, who share best practices provides long-term support. ■ Community buy-in: Before the Mwabu approach is implemented, parents are informed about how it relates to education. ■ Content is contextually relevant and aligned to the local curriculum, and illustrated and animated using African characters, culture, and voicing. ■ Coming soon as an upcoming upgrade: Zambian content is being refreshed to allow it to be adapted to enable greater curriculum alignment in other African countries. Partnership: MoEs, district education officials, head teachers, teachers, communities, and parents

⁶⁶ See <https://mwabu.com/>. Retrieved 30 May 2024.

Initiative	Analysis
onebillion⁶⁷ Languages: <i>Fifty languages, including Portuguese</i> Level: <i>Pre-primary and primary</i> Modality: <i>Mobile phones, tablets</i> Direction: <i>Bi-directional</i> Evaluation: †Schmitt, 2021	Location: Brazil, Ethiopia, Kenya, Malawi, Sierra Leone, South Africa, Tanzania, Uganda, and additional countries Description: onebillion, a UK-based non-profit organisation, strives to educate one billion children in low- and middle-income countries through mobile and tablet apps. These apps are designed to progressively enhance children's early mathematical and literacy skills, operating independently without direct adult support — an asset for schools with high student-to-teacher ratios. Key features: ■ Use of local languages: 'Oneclass' learning centres employ local teachers to instruct maths curricula in native languages, and offer a library filled with over 200 stories in local languages. ■ Each onebillion app includes three zones: study (learning), play (competition and content creation), and bedtime stories. ■ 'Oneclass' can be powered by a low-cost renewable solar energy system. ■ 'Onetest' is a rapid digital assessment used by MoEs, teachers, and researchers that gives a snapshot of a child's level in literacy and numeracy. Partnership: MoEs, local partner organisations and NGOs (e.g., Imagine Worldwide, EIDU, Hello World The Tongole Foundation, Vibrant Villages, Haileybury Youth Trust, iSchool Africa, VSO), private enterprises (e.g., Cisco), students and teachers

⁶⁷ See <https://onebillion.org/about/>. Retrieved 30 May 2024.

Initiative	Analysis
ProFuturo ⁶⁸ Languages: <i>Portuguese, English, French, Spanish</i> Level: <i>Primary and Teacher Training</i> Modality: <i>Mobile phones, tablets, computers</i> Direction: <i>Multi-directional</i> Evaluation: †Cardim et al., 2023	Location: Angola Description: ProFuturo is an educational programme launched by Fundación Telefónica ⁴ and Fundación la Caixa ⁵ in 2016. Its mission is to reduce educational inequality through high-quality digital education for boys and girls in underserved environments in Latin America, sub-Saharan Africa, and Asia. Key features: ■ It recognises the role of the teacher as a central agent of transformation. ■ It can reach places without connectivity. ■ It collects and analyses data to monitor, evaluate, and ensure results. Partnership: Telefônica Foundation and Foundation “la Caixa”
Projeto Meu Kamba Language: <i>Portuguese</i> Grade: <i>Primary</i> Modality: <i>Computers</i> Direction: <i>One-way</i> Evaluation: †Barbante, 2021	Location: Angola Description: Implemented as a pilot-programme through Meu Kamba, the teacher, in real time, sends a series of materials to the students present in the classroom, interacting with them and assessing their progress. This entire sequence operates within a virtual classroom, with each element — the teacher and students — on their computers, participating in the teaching and learning process, while adhering to the curriculum set by the Ministry of Education. Key features: ■ The computers are equipped with a range of applications tailored to the education system, including videos, manuals, and exercise applications. Partnership: As part of the National Information Society Plan 2013–2017, the Government of Angola collaborated with a private company with the same name as the programme.

⁶⁸ See <https://discover.profuturo.education/global/pt/recurso/conteudos-de-lingua/>. Retrieved 30 May 2024.

Initiative	Analysis
SEDUC Feira de Santana ⁶⁹ Language: <i>Portuguese</i> Level: <i>Primary and secondary</i> Modality: <i>various</i> Direction: <i>One-way</i> Evaluation: <i>Unclear</i>	Location: Brazil Description: SEDUC Feira de Santana is a local initiative that provides a collection of videos created by public system teachers via YouTube. The videos can be watched at school as part of additional support for teachers, or at home to supplement instruction by caregivers. Videos are available for Grades 1–12. Key features: ■ The videos supported over 100,000 basic and secondary education students during the 18-month lockdown due to the Covid-19 pandemic. The platform is still active and used for instructional support in the district. Partnership: District initiative
SPARK schools ⁷⁰ Language: <i>English</i> Level: <i>Primary and secondary</i> Modality: <i>Tablets, computers</i> Direction: <i>Bi-directional</i> Evaluation: <i>UNICEF, 2018</i>	Location: South Africa Description: SPARK Schools is a network of primary schools dedicated to delivering accessible, high-quality education. SPARK is an acronym for the school's core values: Service, Persistence, Achievement, Responsibility, and Kindness. SPARK schools use a 'Learning Lab', which combines traditional classroom instruction with adaptive software intended to accelerate learning and increase student achievement. Key features: ■ The programme has 'blended learning facilitators': staff members who facilitate online learning. They work with specialised subject teachers to adapt their lesson plans. Partnership: unclear

⁶⁹ See <https://www.youtube.com/@seducfsa/videos>. Retrieved 30 May 2024.

⁷⁰ See <https://sparkschools.co.za/>. Retrieved 30 May 2024.

Initiative	Analysis
Ubongo⁷¹ Languages: Kiswahili, English, French, and Kinyarwanda Level: Pre-primary, primary, and secondary Modality: TV, radio, mobile phones Direction: Bi-directional Evaluation: †Borzekowski et al., 2019; †Borzekowski et al., 2020; †Borzekowski et al., 2023; †Watson et al., 2021	Location: Kenya, Malawi, Nigeria, South Africa, and Tanzania Description: Ubongo broadcasts edutainment or educational children's television series that are localised on free TV or radio programmes nationwide in 38 African countries. Additional content and toolkits for educators and caregivers are freely available for non-commercial use. Free Android apps for learning are available in English and Kiswahili. Key features: ■ Interactive voice response (IVR) allows users to engage with content (songs and lessons) sonically through their mobile devices. It is an effective and affordable way for children to keep learning, even when they don't have access to TV and / or radio programmes. ■ Ubongo Chat leverages the reach of the low-data mobile application, WhatsApp, to deliver localised and interactive learning resources for 0–14-year-old kids, supplemented by mobile-based learning support for caregivers. ■ Partnerships with governments, NGOs, and telecommunication operators are key. ■ According to the 2020 'Akili and Me' impact study (†Borzekowski et al., 2020): Kids are most engaged in learning when it's in a language they speak and understand. Partnership: Governments, Multilateral Organisations (e.g., UNESCO), NGOs, Private companies (e.g., Samsung, Vodacom, Airtel), low-cost private schools (e.g., Silverleaf Academy)
Um por todos, todos por um⁷² Language: Portuguese Level: Primary (Grades 1–5) Modality: Various Direction: Bi-directional Evaluation: Unclear	Location: Brazil Description: 'Um por todos, todos por um' ('One for all and all for one') aims to build citizen engagement, ethics, participation, and responsibility, with the school as the main nucleus for the development of actions. Experiences provided by teaching and learning processes are carried out in the classroom or virtual learning environment with the participation of an educator. Key features: ■ Available in all public schools in the country. ■ Online platform for independent or in-class instruction with self-paced and project-based learning activities. Partnership: Federal government and Instituto Maurício de Sousa Institute

⁷¹ See <https://www.ubongo.org/>. Retrieved 30 May 2024.

⁷² See <https://www.gov.br/cgu/pt-br/educacao-cidada/programas/upt>. Retrieved 30 May 2024.

4. Considerations for blended learning in Mozambique

In this section, we propose a short list of recommendations based on the review of the Mozambique context and existing and relevant blended learning resources highlighted in [Section 3](#).

- 1. Collaboration with multiple partners could be one way to increase the scope and impact of blended learning initiatives.** Through the review of existing infrastructure and key actors in Mozambique and in the curated list of blended learning initiatives presented in the previous section, a key theme that stands out is the importance of collaboration between various stakeholders. Partnerships between the government and private actors can be beneficial to the successful implementation of blended learning in Mozambique. One example is the potential collaboration between UNICEF and Vodacom on the creation of digital learning materials. Collaborations with private enterprises, particularly phone and tech companies, have been explored in other African contexts and could be a potential partnership for UNICEF to consider.
- 2. Current blended learning initiatives in Mozambique focus on higher education. There is a need for initiatives focusing on primary and secondary levels.** While a substantial body of literature explores blended learning methodologies in higher education institutions in Mozambique, a focus on primary and secondary education remains limited. Despite the potential of digital and blended learning approaches to enrich teaching and learning at all educational levels, demonstrated in other low- and middle-income country contexts, the scarcity of research focusing on primary and secondary education in Mozambique highlights a significant gap in understanding and addressing the unique challenges and opportunities inherent to these educational contexts. Initiatives aimed at bridging this divide by fostering additional research endeavours and studies specifically tailored to primary and secondary education settings are crucial for advancing the digital transformation of education in Mozambique.
- 3. Blended learning initiatives must consider the most marginalised learners.** To align with UNICEF's mandate to reach the most marginalised learners, blended learning initiatives must consider gender, disabilities, and the access challenges that impact learners. A significant concern relates to the infrastructural challenges highlighted in [Section 2](#) of this report. The myriad infrastructural challenges

highlight the need for UNICEF and other providers to consider low- and high-tech options and multi-modal approaches. The M-Shule initiative highlighted in the curated list is one example of a blended learning initiative that specifically targets refugees and learners with disabilities and could be a valuable resource for UNICEF. UNICEF could also reach students from marginalised communities by reviewing resources that offer an offline component. Making offline learning resources available could benefit learners who do not have access to internet connectivity. Examples from the curated list include Kolibri and BEFIT.

4. Use data effectively. There is an opportunity for UNICEF to set up strong data and monitoring systems for programmes to enable the effective collection of relevant data as part of an iterative process. Such data collection could aid understanding about whether or not a blended learning initiative is working as it should. Effective data collection can help to understand the challenges with implementation, including teacher perceptions, training needs, effectiveness of content, among others.

5. Invest in teacher training for blended learning. Through impact evaluations, numerous programmes in the curated list highlight the challenges of teachers' adaptation to technology. To foster the establishment of sustainable blended learning initiatives, substantial investment in teacher training emerges as imperative. In the available literature, we encountered a lack of evidence specifically addressing teacher professional development for blended learning within primary education contexts.

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