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Background report

▶ Digitalization in teaching and education in Malawi

*Digitalization, the future of work
and the teaching profession project*

Tionge Weddington Saka



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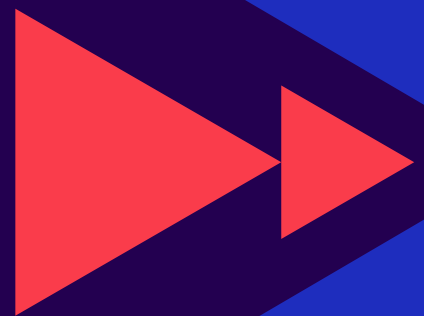
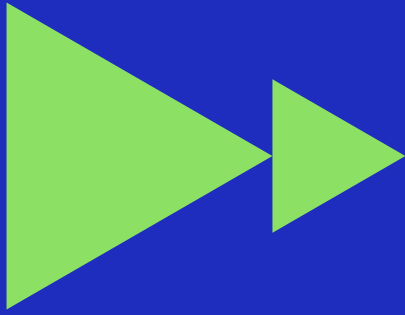
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▶ Abbreviations

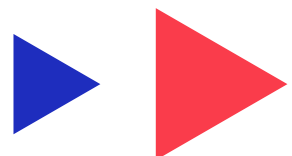
▶ CPD	continuing professional development
▶ EMIS	Education Management Information System
▶ GDP	gross domestic product
▶ GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
▶ ICT	information and communication technology
▶ IPTE	Initial Primary Teacher Education
▶ JCE	Junior Certificate of Education
▶ LTR	learner–teacher ratio
▶ MACRA	Malawi Communications and Regulatory Authority
▶ MGDS	Malawi Growth and Development Strategy
▶ MSCE	Malawi School Certificate of Education
▶ PSEUM	Private Schools Employees Union of Malawi
▶ PSLCE	Primary School Leaving Certificate Examination
▶ TVET	technical and vocational education and training
▶ TUM	Teachers' Union of Malawi
▶ UNESCO	United Nations Educational, Scientific and Cultural Organization
▶ UNICEF	United Nations Children's Fund
▶ VSO	Voluntary Service Overseas



▶ 1. Key findings

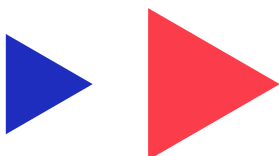
Malawi is taking significant steps towards the integration of information and communication technology (ICT) in all sectors and is working to intensify human capacity for innovation and ICT utilization, with the overall aim being socio-economic development and poverty reduction. The country's commitment towards this goal is captured in the National ICT Policy of 2013 and the third Malawi Growth and Development Strategy (MGDS), 2017-2022.

The education sector plays a pivotal role in developing an ICT literate society. Notable efforts in this regard have included providing computers and tablets to schools and training for teachers in the use of ICT, with the support of development partners. Full and effective integration of ICT in schools, however, is hindered by lack of access to electricity, computers, tablets and other devices, supportive ICT infrastructure and secure storage for digital devices. Other major challenges include lack of internet connectivity, inadequate teacher capacity and limited opportunities for professional development. There is a need for more robust data on the use of ICT in primary and secondary schools to inform decision-making and sector planning.



► 2. Introduction

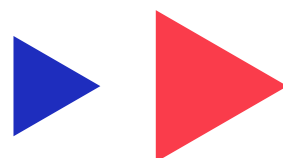
ICT is essential for the sustainable development of all countries, considering the profound impact it has at economic and social levels. In recognition of this, Malawi developed the National ICT Policy in 2013 with the goal of contributing to socio-economic development through maximum integration of ICT in all sectors and the provision of ICT services to rural areas and to vulnerable and disadvantaged groups. Some of the key priorities of the policy include development of ICT infrastructure and human capacity. As such, the policy promotes the use of ICT at all school levels to enhance ICT literacy, improve management of education systems and increase access to and quality of education. More comprehensive data is needed to inform the decisions and policies that will move this agenda forward, especially in the education sector where digitalization is increasingly becoming essential to teaching and learning. The present study therefore aims to assess the current status of the availability and use of digital technology in the education sector, the challenges to its effective integration and the opportunities for teaching and learning.



▶ 3. Methodology

The study focused on trends and practices in digitalization at the primary and secondary education levels. The methodology employed for this study included document review, qualitative analysis, face-to-face interviews and email correspondence. Primary data were collected through interviews with key informants. The interviews were guided by pre-established questions, which were standardized for all participants. Due to social distancing measures and mobility restrictions as a result of the coronavirus disease 2019 (COVID-19), data from some key informants were collected electronically via email. The researcher conducted interviews with selected directors from the Ministry of Education and the Malawi Institute of Education, employer representatives and development partners with an interest in education. All interview participants were purposefully selected, with a total of eight informants providing data.

Secondary data were collected through the review and analysis of policy documents and published research. An additional source of secondary data was media reporting. To collect these data, major weekend papers in the country – Malawi News, Weekend Nation and Nation on Sunday – were reviewed for content on the use of technology in the teaching profession. This review also assisted with identifying practices related to digitalization in education and the challenges experienced. In addition to reviewing media, electronic content of selected education stakeholders was also reviewed for relevant information and data.



► 4. Brief overview of the education sector

The formal education system in Malawi follows an 8–4–4 structure: eight years of primary, four years of secondary and four years of tertiary education. Learners sit for the Primary School Leaving Certificate Examination (PSLCE) at the end of the primary cycle. This determines their eligibility for entry into secondary school. Following four years of secondary schooling, students are examined for the Malawi School Certificate of Education (MSCE). Successful completion of the MSCE determines eligibility for entry into post-secondary institutions, with the exception of technical and vocational education and training (TVET) institutions. Twelve secondary schools in Malawi offer vocational and technical training.¹

Education in Malawi is provided by both the government and the private sector. Primary education in public schools is tuition free, while in private schools learners pay school fees. Learners in public schools, however, are asked to contribute to school development by paying into a school development fund, the contribution to which varies from school to school, depending on the needs of the school.

Data from the Education Management Education System (EMIS) show that the majority of children of primary school going age are in school, with the net enrolment in 2017 being 88 per cent. Public financing, public awareness campaigns about the importance of education and social assistance programmes such as school meals have contributed to sustaining this enrolment rate. Many children that attend primary school, however, do not transition to secondary school, with the net enrolment rate in secondary schools estimated to be 16 per cent in 2017. Lack of teachers, child marriage, early pregnancy, family responsibilities, long distance to schools, school fees and transportation costs are some of the key reasons why children drop out of secondary schools (UNICEF 2019).

4.1 Teacher data

In 2018, there were 92,033 primary and secondary school teachers in Malawi. Of the 77,635 primary school teachers, 66,203 were working in rural areas, while 11,432 were working in urban areas. Private primary schools employed 3,943 teachers. Table 1 displays the number of primary and secondary teachers in Malawi.

► **Table 1. Number of primary and secondary school teachers in Malawi**

Level	Number of teachers		Total
	Male	Female	
Primary	43 689	33 946	77 635
Secondary	11 106	3 292	14 398
Total			92 033

Source: EMIS, 2018.

The availability of qualified teachers, classrooms and teaching and learning materials in Malawi has not kept pace with student enrolments, compromising the quality of education. The projected required number of teachers in primary schools is shown in table 2. Data from EMIS (2017) show that the pupils per qualified teacher ratio is 76.9 in primary school and 45.4 in secondary school (UNICEF 2020). To reduce the current learner–teacher ratio (LTR) to 60:1 (national target), more than 9,000 primary school teachers need to be recruited. Funding to support new hiring and a shortage of trained teachers and classrooms are some of the reasons for the existent teacher gap.

¹ The Malawi Government is working to improve the quality and relevance of the vocational education and training subsector. It plans to achieve a seamless integration of vocational education and training into the mainstream education system, ensuring that the subsector produces adequate and relevant skilled graduates for the labour market (Government of Malawi 2020a).

► **Table 2. Projected enrolment and required number of teachers in primary schools from 2020**

Year	Enrolment of learners	No. of teachers	LTR	Teacher gap (60:1)	Required no. of teachers at 60:1
2020	5 525 965	82 548	66.9	9 551	92 099
2021	5 683 251	85 566	66.4	9 155	94 721
2022	5 840 537	88 585	65.9	8 757	97 342
2023	5 997 823	95 585	62.7	4 379	99 964
2024	6 155 110	98 604	62.4	3 981	102 585
2025	6 312 396	101 623	62.1	3 584	105 207
2026	6 469 682	104 642	61.8	3 186	107 828
2027	6 626 969	107 660	61.6	2 789	110 449
2028	6 784 255	110 679	61.3	2 392	113 071
2029	6 941 541	113 698	61.1	1 994	115 692
2030	7 098 827	116 716	60.8	1 598	118 314

Source: EMIS, 2020.

Disparities in the deployment of both primary and secondary school teachers has also been noted as a major challenge, with many remote and rural schools struggling to recruit qualified teachers. Data from EMIS (2018) demonstrate that the pupil qualified teacher ratio ranges from 46:1 in Zomba Urban to 84:1 in Machinga (UNICEF 2020).

Reasons for teachers leaving schools in Malawi include transfer to a non-teaching post, retirement, illness and transfer to another school, as summarized in table 3. At the primary school level, the most common reason for male teachers leaving a school is transfer to another school, while for female teachers it is due to transfer to a non-teaching post. The data seem to point towards females leaving the profession, although the reasons for this are not provided.

► **Table 3. Number of teachers leaving a school, by reason**

Reason for leaving a school	Primary schools		Secondary schools
	Male	Female	
Transferred to a non-teaching post	198	2 855	160
Resigned	271	113	-
Retired	595	175	268
Prolonged illness	98	328	12
Dismissed	136	75	120
Death	210	78	49
Transferred to another school	3 962	152	969
Reason not known	212	2 903	-
Other	105	86	185

Note: Data disaggregated by sex at the secondary school level are not available.

Source: EMIS, 2018.

4.2 Teacher training and professional development

The basic training requirement for a secondary school teacher in Malawi is a Bachelor of Education degree from a recognized or accredited tertiary institution. Some teachers, however, go through general degree programmes. In this case, they are required to undertake a one year University Certificate in Education course to be equipped with requisite knowledge and skills.

To become a primary school teacher, one needs to complete a primary school teaching certificate programme offered in a teacher training college. The current primary school teaching certificate programme, or Initial Primary Teacher Education (IPTE) programme, is a two-year course. The IPTE programme has recently been reviewed and is being implemented in all teacher training colleges in Malawi. The reviewed IPTE programme aims “to produce a reflective, autonomous, lifelong learning teacher, able to display moral values and embrace learners’ diversity” (Malawi Institute of Education 2017). As such, the current IPTE curriculum adopted a reflective practitioner model for teacher education, which connects theory and practice and integrates content and pedagogy in the teaching and learning process. Following completion of the programme, primary school teachers are awarded a T2 teaching certificate (the certificate given to teachers who possess the MSCE and have successfully completed the programme). Discussions are currently under way to have primary school teachers trained to diploma level. The qualifications of primary and secondary school teachers in 2018 are shown in table 4.

► **Table 4. Qualifications of serving primary and secondary school teachers**

Qualification	Primary school teachers	Secondary school teachers
Junior Certificate of Education (JCE)	7 572	-
Malawi School Certificate of Education (MSCE)	67 324	-
Diploma in education	2 521	3 667
Degree in education	81	4 021
Non-education diploma	200	1 044
Non-education degree	84	1 010
University Certificate in Education	-	436
Other	-	4 220

Source: EMIS, 2018.

The current minimum qualification required to enrol in primary teacher training colleges is an MSCE. The system, however, still has teachers with a Junior Certificate of Education (JCE), which was a qualification granted to students after passing national examinations that were administered in the second year of secondary education. The qualification was phased out, but it has just been reinstated. Initially, those with a JCE were allowed to undertake primary education programmes.

For many years, in-service training was only conducted for literacy and language teachers in primary schools and mathematics and science teachers in secondary schools. In 2018, the Department of Teacher Education and Development extended the in-service training on mathematics and science under the Strengthening Mathematics and Science in Secondary Education programme to other subject areas, and has developed, disseminated and rolled out a Continuing Professional Development (CPD) Framework to key education stakeholders across Malawi (Government of Malawi 2018, 2019a).

4.3 Financing

Public education expenditure in Malawi is financed through a combination of domestic budgetary resources, grants from external donors and concessional credits (World Bank 2016, 9). According to the Ministry

of Education, Science and Technology, in the 2018/19 financial year, the overall government budget for the education sector was 275.8 billion Malawian kwacha, of which 224.5 billion kwacha was for recurrent expenditure and 51.3 billion kwacha was for development outlays. The government spent 4.4 per cent of gross domestic product (GDP) on average on education between 2012 and 2019 (Government of Malawi 2019a). This is almost equivalent to 4.5 per cent of GDP, which sub-Saharan African countries spend on average on education.

Table 5 shows that, as a percentage of the national budget, education spending is greater than 20 per cent. It has been so since 2011 (Government of Malawi 2019a, 42). The largest share of the education budget goes to primary education, followed by higher education. These funds are used in public education institutions only. Private education institutions generate their own funds, primarily through tuition fees. The majority of the education sector budget in primary and secondary education goes towards personnel salaries.

► **Table 5. Education budget and expenditure**

Budget and expenditure	Financial year (%)		
	2016/17	2017/18	2018/19
Education budget as percentage of national budget	26	26	27
Primary education budget as percentage of total education budget	61	65	62
Secondary education budget as percentage of total education budget	15	12	13
Higher education	20	20	21

Sources: Government of Malawi 2019a; EMIS 2018.

4.4 Terms and conditions of employment

The general working conditions for teachers in Malawi are inadequate, leading to lack of morale in many instances. Some of these conditions include lack of promotion opportunities, lack of teaching and learning materials and supplies, poor housing and school infrastructure and low salaries.

Teachers' conditions of service are, however, similar to those of other workers in the civil service. Teachers in government primary and secondary schools are employed on a permanent basis and have a contributory pension scheme (teachers contribute 5 per cent of their monthly salary to their pension while the government contributes 10 per cent). According to the circular released by the Secretary for Human Resource Development and Management (18 October 2019), teachers' annual salaries range from 1,632,936 kwacha to 13,671,912 kwacha, depending on the grade and post in the civil service. Since many teachers have lower grades, their salaries are generally low, with some supplementing their salaries through small-scale businesses. Unlike in the civil service, teachers in private schools are employed on a contract basis. The contracts are for one to three years, and salaries vary between schools.

The standard working day for teachers is from 7:30 a.m. to 4:30 p.m. The end of the day for teachers in primary and secondary schools varies according to several factors, including the class the teacher is teaching and whether the school has a double shift or not. Most teachers in Malawi have a heavy workload due to large classroom enrolments and teacher shortages. In most cases, unlike in secondary schools where there are specializations, primary school teachers typically teach all subjects in their class.

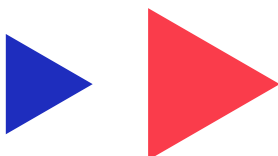
4.5 Existing policy frameworks

The education system in Malawi is governed by the following legislation and policy frameworks:

- **Education Act, 2013.** The Education Act provides for the establishment, organization, governance, control, regulation and financing of schools and colleges, among other things.

- ▶ **National Education Policy, 2013.** The policy outlines the government’s priorities for the sector and defines the education policies that guide the development of the education sector in Malawi (Government of Malawi 2013, iii). The policy was operationalized through the National Education Standards and the National Education Sector Investment Plan.
- ▶ **National Education Standards, 2015.** These standards assist policymakers at national, divisional and district levels in the evaluation of the effectiveness of the education system in their area and across the country, and guide individual institutions and practitioners in reviewing and improving their practices (Government of Malawi 2015, 3). The National Education Standards are being implemented in all primary and secondary schools across Malawi. The current practice is that school inspectors apply the standards during school inspections.
- ▶ **National Strategy for Teacher Education and Development, 2007-2017.** The strategy provides guidelines for the establishment of a coherent and responsive teacher education and development programme towards professionalization of teachers and quality education in Malawi. The strategy is in the process of being revised.
- ▶ **National Education Sector Investment Plan, 2020–2030.** The plan is a long-term, strategic document that provides guidance on the planning and implementation of all education development programmes, projects and activities. The plan places emphasis on ICT-enabled pedagogy to improve the quality of teaching and learning and on the development of an ICT policy to strengthen administration, financial management and accountability in the education system.

Given that teachers, their education and training and their conditions of work are essential to student learning, Malawi is currently in the process of developing a teacher policy through the Norwegian Teacher Initiative on Strengthening Multi-Partner Cooperation to Support Teacher Policy and Improve Learning, as funded by the Norwegian Agency for Development Cooperation (Norad).

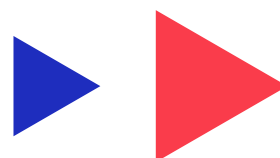


► 5. Technology and teacher management

Based on key informant interviews, the use of technology in teacher management is still in its early stages of development. As pertains to teacher education, technology is being used to manage the recruitment process, process examinations for student teachers and the general management of student teacher records.

Malawi uses EMIS to collect, analyse and present data on several indicators including teachers to enable education sector planning in Malawi. The data is collected on a regular basis and is published annually in the Education Statistics Bulletin. Through EMIS, information on education-related indicators and data needs for the review and implementation of the MGDS is collected and presented at various levels (national, urban-rural, regional and district, as well as disaggregated by sex). EMIS requires further strengthening to fill in the data gaps and ensure the validity and reliability of data.

There is no separate teacher management information system, though there are plans to implement one by 2025 (Government of Malawi 2020b).



► 6. Digital skills training and development for teachers

Malawi values the use of technology in teaching and learning, as evidenced by the revised IPTE curriculum, which includes, as a core element, ICT as a tool for teaching and learning. The central aim is that student teachers will be able to demonstrate an understanding of the purpose and use of ICT and apply it to research, teaching, learning and assessment processes (Government of Malawi 2017a). As noted by one of the key informants, instructors in various teacher training colleges work with teacher candidates to use ICT in looking for relevant information and to use such information to design lessons. In addition, instructors use ICT to source information for, plan and teach lessons. Related to the foregoing, another key informant indicated that teacher training colleges use tablets for teaching and learning. It was further reported that the colleges use video clips (some of which were developed by the Malawi Institute of Education) to demonstrate different teaching methodologies.

However, a recent study by the Malawi Institute of Education (2019) revealed that there are challenges in the use of and access to ICT in teacher training colleges. The study revealed that 78 per cent of the 10 colleges studied had ICT equipment and only 44 per cent had access to the internet. Further, 51.6 per cent of the lecturers that were observed did not promote the use of ICT in their lessons.

Some institutions that prepare secondary school teachers offer ICT-related courses, such as Chancellor College, which has a course on Instructional Media and Technology (Chancellor College 2020). This course prepares student teachers to use media and technology for pedagogical purposes.

Development partners have also been working to equip teachers with digital skills. For example, one key informant reported that the Malawi National Commission for UNESCO had a module on ICT through its Global Citizenship Education programme. The Malawi National Commission for UNESCO partnered with Domasi College of Education in 2017 to train trainers from teacher training colleges on transformative pedagogy in Global Citizenship Education, where the ICT component was covered. In 2020, training on Global Citizenship Education involved teachers in secondary and primary schools, whose capacities were also built in transformative pedagogy, which covered the use of modern digital teaching methods.

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), through its Basic Education Programme, aims to increase inclusivity in primary schools. The programme supports the Ministry of Education, Science and Technology to develop and implement the Blended Learning Course on Inclusive Education. This is a year-long certificate course for primary school teachers on identifying and supporting children with learning difficulties. The course is implemented through an ICT-based learning format (GIZ 2020). The blended learning format combines face-to-face workshops (held during school holidays) with offline, tablet-based, self-study materials and online assignments and discussions. The course allows teachers to upgrade their knowledge and skills in inclusive education and ICT. The first cohort of the course had 180 participants, and 177 successfully completed the course in 2018. The second cohort also has 180 participants, who are expected to complete the course by the end of 2020.

The Unlocking Talent project, which is being led by Voluntary Service Overseas (VSO) and its partners in collaboration with the Ministry of Education, Science and Technology, focuses on equipping students with education technology to address major education challenges such as lack of teachers, learning resources and classrooms. Children learn through customized, low-cost tablets, which are pre-installed with offline applications containing learning material. The applications are developed by onebillion, a non-profit organization. The tablets are accessed in solar powered learning centres, with lessons being led by teachers trained in digital education technology. The project has been active in Malawi since 2013 and involves instilling digital education technology within teacher training programmes and training pre-service and in-service teachers in the use of tablet technology (VSO 2020).

▶ 7. Pedagogical uses of technology

The use of digital technology in primary and secondary schools in Malawi requires further development. There is general awareness about the potential of digital technology for teaching and learning. As noted by some of the key informants, technology is used:

- ▶ in the production and presentation of visual aids;
- ▶ in the development of course content via online information;
- ▶ in keeping and updating administrative records via computer packages;
- ▶ in sharing teaching materials and relevant professional information through messaging applications;
- ▶ in distributing assignments, facilitating their submission by students and administering examinations via online platforms;
- ▶ in allowing students to conduct research through online sources;
- ▶ in delivering lessons via computers and LCD projectors;
- ▶ in providing electronic versions of reading and learning materials;
- ▶ in supporting access to pre-recorded lessons and materials;
- ▶ in facilitating group work through online collaborative spaces and through messaging applications.

Not all of these practices are regularly used due to several challenges, as identified by key informants:

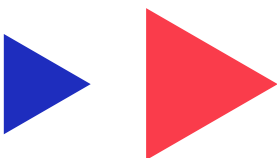
- ▶ Affordable technology and equipment for both teachers and learners in schools or at home are not available. Most schools and homes, especially in rural areas, do not have computers, smart phones or other devices due to insufficient funds.
- ▶ The majority of schools do not have access to electricity, which diminishes their capacity to integrate technology. Overall, Malawi has internet connectivity challenges, with only 14 per cent of the population using the internet in 2019.²
- ▶ There is lack of capacity on the part of teachers to use technology for teaching and learning. There is the need for more professional development in the integration of ICT in education.
- ▶ There is a lack of ICT-supportive infrastructure in schools and training colleges. Most teacher training colleges have outdated ICT-related infrastructure, and some teacher training colleges do not have an expert that is trained specifically to provide ICT services.
- ▶ Internet costs are prohibitive.
- ▶ Budget limitations are an obstacle to ICT implementation.
- ▶ Some teachers are reluctant to engage in the use of technology in the classroom.
- ▶ There is a lack of policy guidelines on ICT in education.
- ▶ There is a lack of adequate security for digital devices and equipment, with devices being stolen in some schools.

In Malawi, computer studies is one of the subjects that is supposed to be taught in secondary schools. There is no available data, however, on the proportion of schools that have access to the internet and computers. A proxy indicator for computer and internet access is the availability of a computer laboratory. Despite the importance of such facilities, only 14 per cent of schools had computer laboratories in 2018 (Government of Malawi 2019a).

² World Bank statistics: <https://data.worldbank.org/indicator/IT.NET.USER.ZS>.

A recent education sector analysis revealed that the enhancement of ICT in the education sector is hindered by a number of challenges, including the fact that the sector lacks strategic guidance in holistic ICT planning, coordination and implementation. Consequently, a silo approach to implementation is adopted, leading to duplication of effort in some institutions. Furthermore, there is limited ICT infrastructure connectivity to all education institutions, preventing maximum utilization of the education systems. There is also limited system capacity to facilitate delivery of lessons to learners at all levels, management of learners and teachers and education administration. The lack of visibility of the sector compromises its ability to showcase the various initiatives being carried out or to maximize the potential of ICT to coordinate with various stakeholders, both local and international (Government of Malawi 2019b, 27).

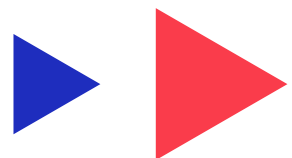
The Unlocking Talent project, which is being implemented by VSO in close collaboration with the Ministry of Education, Science and Technology, makes use of tablet technology to facilitate tailored and interactive learning for primary school learners in early grades. Early grade learners learn through applications installed on the tablets, which are charged by solar power. Unlocking Talent is supporting 150,000 learners in 15 districts and is aiming to reach out to 225,600 learners by 2023. Children learn to read, write and become numerate through activities, games and stories in the local language of Chichewa. A randomized control trial showed that children using the numeracy and literacy applications were progressing more in their learning than in normal practice (VSO 2020; Mwalwimba 2019).



► 8. Teaching ethical and critical use of digital technology

Interviews with key informants revealed that ethical and critical use of technologies is not commonplace, with some informants pointing out that teachers have not been trained in this regard. One key informant did note, however, that the Malawi National Commission for UNESCO introduced a Digital Wellness and Information Ethics programme in 2018 for computer studies teachers in secondary schools across the country. The training led to the production of a teachers' manual and a students' manual for secondary schools. The targeted schools were said to have introduced computer clubs that were imparting skills on digital wellness and information ethics. In addition, in 2020, UNESCO organized a teacher training workshop on media literacy, cyber and digital wellness and information ethics (Kholowa 2020).

Considering how important the understanding of ethical and critical use of technology is, the Malawi Government and other education stakeholders need to integrate awareness of ethical issues in the development, deployment and use of technology in education. Deliberate efforts should be made to train both teachers and learners in that regard.



► 9. Relevant regulatory or policy frameworks in relation to digitalization and education

In this section, information on relevant regulatory or policy frameworks in relation to digitalization in education is presented.

9.1 Status of legislation

Malawi has enacted the Communications Act of 1998, revised in 2016, and the Science and Technology Act of 2003. The former provides for the regulation and provision of communication services, including the establishment of the Malawi Communications and Regulatory Authority (MACRA) to oversee the regulation, monitoring and provision of reliable and affordable communication services throughout the country. Addressing the ICT access gap in rural and remote areas falls under the scope of MACRA.

The Science and Technology Act of 2003 provides for the regulation and advancement of science, technology and innovation for sustainable socio-economic development in Malawi. It provided for the establishment of the National Commission for Science and Technology (NCST) to regulate, promote and coordinate the development and application of science, technology and innovation.

9.2 Status of relevant policies

The National ICT Policy of 2013 and the Science and Technology Policy of 2002 provide the regulatory context for the use of ICT in Malawi, including in the education sector. The former aims to develop the ICT industry and sector in Malawi and promote the development and use of ICT in all sectors as well as universal access to ICT services. Development of ICT infrastructure and human capacity in the use of technology are some of the key priorities. The policy promotes the use of ICT at all school levels to enhance ICT literacy, improve management of education systems and increase access to and quality of education.

The Science and Technology Policy of 2002 aims to promote, integrate and coordinate science, technology and innovation to support socio-economic development in Malawi.³ It is supported by the Science and Technology Act of 2003.

Key informants noted several initiatives related to the development of ICT that have a bearing on the use of technology in schools, including:

- establishment of School Net Malawi;⁴
- removal of import duty on preassembled computers and printers, which will reduce the cost of digital devices and equipment;
- introduction of computer studies in the secondary school curriculum;
- establishment of a government-wide area network;
- introduction of digital libraries, learning management systems and open and distance learning;
- taking steps towards making broadband internet affordable and available in rural areas.

Malawi is committed to developing a safe, affordable, reliable, equitable and sustainable ICT infrastructure, as spelled out in MGDS III, 2017-2022.⁵ Of particular interest are the medium-term outcomes and their strategies, as outlined in table 6.

³ The Science and Technology Policy was developed and approved in 1991 and revised in 2002.

⁴ School Net Malawi is a non-governmental, non-profit organization that provides and facilitates access to ICT in Malawian schools.

⁵ The third Malawi Growth and Development Strategy (MGDS) is the medium-term strategy designed to attain long-term development objectives in the country. It aims to reduce poverty through sustainable economic growth and social and infrastructure development.

► **Table 6. ICT infrastructure development, MGDS III 2017-2022**

Medium-term expected outcomes	Strategies
Increased access to information and communications services	Promoting the participation of community broadcasting stations, private couriers and privately owned telecommunications service providers
	Improving the regulatory framework of the ICT sector
	Developing public online services
	Promoting community ICT and multipurpose information centres
Well-developed ICT broadband infrastructure service provision	Improving broadcasting distribution, content and coverage
	Creating a conducive environment to attract investment in ICT infrastructure and services
	Enhancing enforcement of ICT regulation to protect the public from undesirable effects of ICT
	Promoting integration of ICT into core sector policies, strategies and operations
	Developing a reliable, fast, adaptive and robust ICT infrastructure
Increased stock of ICT-skilled and industry-ready workforce in public and private sector institutions	Intensifying ICT research, education and training in all sectors

Source: Government of Malawi 2017b.

The strategies have their corresponding activities to achieve the intended outcomes. To contribute to the actualization of these strategies, in 2020, the government signed a contract with Telekom Networks Malawi for the provision of free public Wi-Fi under the Public-Private Partnership Commission's Digital Malawi project, with financing from the International Development Association of the World Bank (Government of Malawi 2020c). The overall aim of the Digital Malawi project is to contribute to a digital transformation of Malawi's economy, society and government. It therefore aims at extending and improving access to critical ICT infrastructure for the public and private sectors; improving ICT governance; enhancing access to government services; and reducing infrastructure costs by providing reliable, fast and adaptive government digital systems that will facilitate provision of e-services and thereby enhance public service delivery. The Public-Private Partnership Commission has completed procurement of a service provider for free Wi-Fi zones (Telekom Networks Malawi) in some 30 sites throughout the country. Among the many targeted places for the pilot phase of this project, the commission is expected to reach out to about 16 secondary schools.

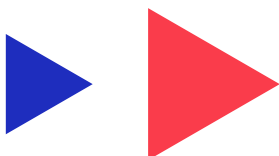
9.3 Status of social dialogue mechanisms

Teachers in Malawi are primarily represented by the Teachers' Union of Malawi (TUM). Along with the Private Schools Employees Union of Malawi (PSEUM), the membership base totals over 40,000. TUM has organized strikes in the past due to unpaid salaries, unpaid leave grants and withdrawal of teachers' promotions, among other grievances. The organization of social dialogue workshops in 2020, which included participation from the Ministry of Education, Science and Technology, TUM and PSEUM, highlighted the importance of social dialogue for engaging in more harmonious relations and advancing quality education for all in the country.

The Independent Schools Association of Malawi (ISAMA) is an organization representing independent private schools in Malawi. Its activities include advocacy, lobbying and shaping the implementation of education policies.

▶ 10. Support frameworks for teachers

A major support framework for teachers, as revealed in the key informant interviews, is the CPD Framework for teachers and teacher educators. The CPD Framework builds on national plans and strategies to institutionalize a continuous professional development system for teachers and teacher educators in Malawi. It encourages the incorporation of self-learning, digital learning, peer-to-peer teaching and mentor teaching (Government of Malawi 2018, 6). The CPD Framework has been disseminated and rolled out to key stakeholders (teachers and primary education advisers) across Malawi (Government of Malawi 2019a, 120).



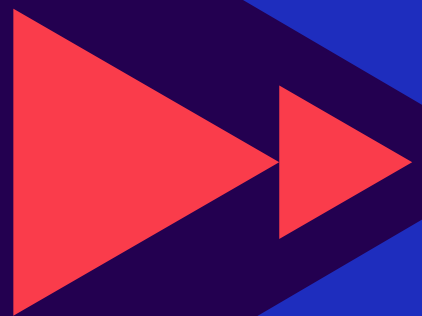
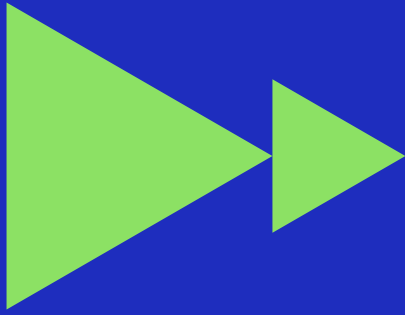
▶ 11. Analysis of positive contributions and challenges

The study has revealed several challenges to the use of ICT in Malawi. The 2018 Population and Housing Census found that batteries were the main source of energy used for lighting households in Malawi (52.9 per cent), followed by electricity (11.4 per cent), solar power (6.6 per cent), candles (6.2 per cent) and firewood (4.4 per cent). This means that only 18 per cent of Malawi households have access to electricity (solar and electric power) (Government of Malawi 2019c, 33). This is coupled with the fact that the 2017 ICT Development Index (an indexed measure of technology use and readiness) for Malawi was 1.74, placing it at 167 of 176 countries (ITU 2017). This demonstrates the difficulty Malawi has had in providing its citizenry with access to ICT equipment and the internet, which has had negative impacts on ICT use and skills development. Based on key informant interviews, the following were identified as existing challenges that could be addressed through technology:

- ▶ Reducing high dropout and repetition rates as well as low transition rates; technology can assist in providing remedial lessons, if appropriate equipment and qualified personnel are available.
- ▶ Addressing limitations in access to education at all levels and high LTRs.
- ▶ Improving efficiency in the selection of candidates to secondary schools and higher education institutions; currently, selections are carried out manually.
- ▶ Enabling access to books and other resources via an e-library; currently, learning materials such as books are insufficient.
- ▶ Granting access to instructional material; currently, large volumes of instructional material are printed.
- ▶ Accelerating communication on education issues and delivery of resources to users.
- ▶ Allowing access to and sharing of teaching materials and methodologies.
- ▶ Assisting in the development and management of a teacher management information system, which would facilitate information sharing and reduce administrative work.
- ▶ Tracking daily student attendance in school; currently, attendance registers are managed manually, reducing the time available for instruction.
- ▶ Continuing education during school closures.

The study has revealed that Malawi lacks robust data on ICT use in primary and secondary schools, including the number of schools connected to the internet (and the quality of that connection); the number of teachers trained to use ICT; the number of schools that have access to reliable power; the number of computers that are being used for learning purposes in schools; subjects for which computers are intended for use, and the extent of that use; and the extent to which other devices are being used for teaching and learning purposes. The recently launched *Practical Guide to Implement Surveys on ICT Use in Primary and Secondary Schools* (UNESCO 2019) could be used to assist the Ministry of Education, Science and Technology to collect the needed data. Availability of such data would be very crucial in informing critical decisions on ICT provision and use in schools in Malawi.

The study revealed that providing in-service training to primary school teachers has been a major challenge, with some teachers working for more than ten years without undertaking subject-specific in-service training (Saka 2019). The CPD Framework aims to address the gaps in policy and set guidance on systematic CPD provision by operationalizing institutionalized CPD for both primary and secondary school teachers and teacher educators throughout Malawi (Government of Malawi 2018, 9). The effective implementation of the framework will go a long way to improving CPD provision and learner outcomes.



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