

Madina M. Guloba and Blessing Atwine

## Digital technologies uptake is still low in Ugandan Secondary and Tertiary institutions

*'Although the use of digital technology as an enabler for learning became increasingly visible during the COVID 19 pandemic amid school closures, it exacerbated education inequalities.'*

### Executive Summary

The Ugandan Government has recognised the use of digital technologies in education as an avenue for providing learners and trainers' opportunities to operate with ease in a highly digitalised economy and fast-evolving world of work. In this regard, policies and initiatives have been put in place to facilitate the implementation of digital technology in schools to improve the quality of education. However, findings reveal that several challenges such as lack of digital literacy skills among teachers/trainers, fragile ICT infrastructure and high computer student ratios still limit the uptake of digital technologies. This has left the majority of the students lagging behind in the era of the 4th Industrial Revolution. Given these challenges, we recommend that the Government of Uganda, with support from partners and stakeholders, provides teachers with relevant skills training to deal effectively with emerging technologies. We also recommend increasing investments in ICT infrastructure in schools to eliminate inequalities and, lastly, finds creative ways of attracting private actors to invest in digital technologies.

### Introduction

In Uganda, the education system is under increasing pressure to integrate digital technologies/Information Communication Technologies (ICTs). This is intended to impart students' knowledge, skills, and attitudes to survive the fast-evolving digital era under the Fourth Industrial Revolution (4IR<sup>1</sup>). The use of digital technologies in education is vital for providing learners and trainers opportunities to operate with ease in a highly digitalised economy and fast-evolving world of work. A need that the COVID-19 pandemic has outrightly shown. In this regard, the Ugandan government has put in place policies and initiatives to facilitate the implementation of digital technology in schools to improve the quality of education. These include; the National ICT policy (2014) with an enshrined objective of addressing human resource capacity building by integrating ICT into the mainstream educational curriculum; an ICT in Education

sector policy (still in draft) to develop ICT competencies, using ICT to teach across the curricula, improving investment in educational ICT equipment and impart teachers with the necessary ICT skills. Digital technologies adoption would also enable teachers to use ICT in teaching and learning processes and establish education networks for sharing educational resources. Furthermore, several initiatives such as I-Network Uganda, Uconnect, Connect Ed and SchoolNet Uganda, all intended to ensure uptake of digital technologies.

Despite all these efforts, utilisation of digital technologies/ICTs in the delivery of education services is still very low, leaving the majority of the students to lag behind in a changing world. Teachers are still relying more on the traditional "chalk and talk" teaching method rather than embracing the use of digital technologies. This is attributed to several challenges such as; inadequate digital literacy skills among teachers/trainers, fragile ICT infrastructures such as expensive and inaccessible internet and unreliable electricity and high computer student ratios in schools/learning institutions. These all limit the uptake of digital technologies in secondary and tertiary

<sup>1</sup> The Fourth Industrial Revolution is a way of describing the blurring of boundaries between the physical, digital, and biological worlds. It's a fusion of advances in artificial intelligence (AI), robotics, the Internet of Things (IoT), 3D printing, genetic engineering, quantum computing, and other technologies

institutions, as discussed in this brief.

The brief is an excerpt of a country case study on Uganda on **“Strengthening Education and Learning Systems to deliver a 4IR-Ready Workforce”** conducted by the Economic Policy Research Centre (EPRC) in collaboration with the African Center for Economic Transformation (ACET). The study was based on both quantitative and qualitative research methods involving desk reviews of development literature and official documents as well as secondary data analysis backed by a purposive primary survey conducted between February to March 2020 in secondary and tertiary (BTVETs and Universities), formal and informal businesses, Ministries, Departments and Agencies, and development partners in the education sector.

**Key findings**

**Underutilisation of digital technologies/ICTs in the delivery of education services and products.** Current evolutions in technology require radical changes in teaching and learning methodologies from those used in the past. This means moving away from a rigid traditional “chalk and talk” method of teaching. However, the survey findings indicate that using digital tools such as PPT and video/ video projections in lesson delivery remains less than 40 percent despite access to computers being high-for students offering this subject (Figure 1). In addition, teachers are not required to be competent in using basic computer programmes (18 percent for secondary vs 30 percent for TVET), which also limits its application in lesson delivery. The continuous use of the traditional “chalk and talk” method by teachers makes students lag in the digital world and become less inquisitive and innovative.

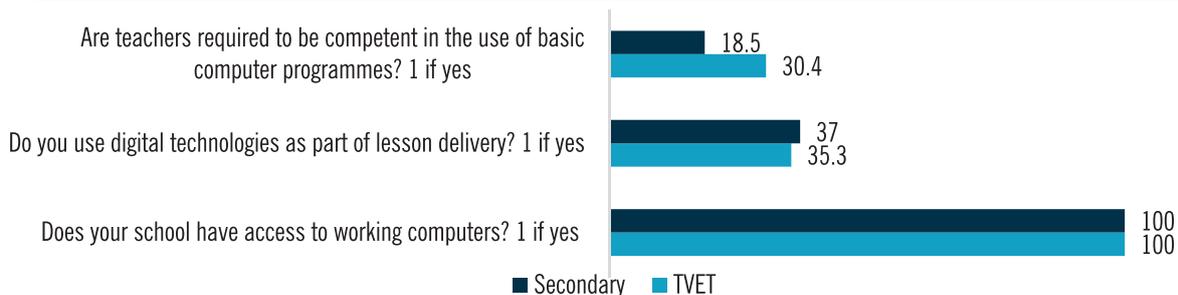
**Limited training for teachers/ trainers in digital/ICT skills.** Despite the apparent benefits of using digital technologies for educational purposes (such as enhancing the roles of students and teachers in the learning process and helping to create a collaborative learning environment). Survey findings revealed that

teachers are still not fully ICT literate and do not use ICT in their teaching (Figure 1). Teachers are crucial players in the successful use of ICT in education. Most schools lack computer literate teachers and ICT experts that can support and manage the application of digital technologies in the teaching-learning process. Indeed key informants noted that,

**“...there is no special programme that trains teachers in ICT related activities. Either teachers who teach ICT offered such courses during their training programmes (diploma or degree) or privately attend training courses outside their teaching qualifications to add to their knowledge space” (KIs, February 2020).**

**High student computer ratio a deterrent to ICT uptake.** The average student computer ratio varied across schools. However, many survey respondents indicated that it <5:1 and <75:1 for upper secondary and TVET institutions, respectively (Table 1). It is important to note that computers are put aside for ICT students only in secondary schools, which explains the low student computer ratio. However, this denies the rest of the student’s population access and an opportunity to learn the skills required to participate in the fast-evolving digital economy.

**Figure 1** Utilisation and access to digital technologies in secondary and TVET institutions



Source: Field survey data, February-March, 2020

**Table 1** Average computer/student ratio, %

	<5:1	5<15:1	15<35:1	35<50:1	50<75:1	>75:1	Other Specify	Total
<b>Secondary level</b>								
Lower Secondary	6.3	6.3	12.5	4.2	4.2	4.2	12.5	50.0
Upper Secondary	20.8	4.2	4.2	4.2	4.2	4.2	8.3	50.0
<i>Total</i>	<b>27.1</b>	<b>10.4</b>	<b>16.7</b>	<b>8.3</b>	<b>8.3</b>	<b>8.3</b>	<b>20.8</b>	<b>100</b>
<b>Vocational level</b>								
Formal BVET	23.5	5.9	17.6	11.8	5.9	17.6	5.9	88.2
Non-formal BVET	0.0	0.0	0.0	0.0	0.0	11.8	0.0	11.8
<i>Total</i>	<b>23.5</b>	<b>5.9</b>	<b>17.6</b>	<b>11.8</b>	<b>5.9</b>	<b>29.4</b>	<b>5.9</b>	<b>100</b>

Source: Field survey data, February–March, 2020

**Fragile ICT infrastructure to support the uptake of digital technologies in education.** Internet access is less than 30 percent (Figure 2). Despite this being a key element in integrating digital technology in teaching and learning, access is still very low, implying that internet connectivity is costly and inaccessible. In addition, the electricity supply is highly unreliable. Although most learning institutions had good access to electricity with over 80 percent (Figure 2), respondents indicated that power shortages were rampant, resulting in dependence on generators. Yet, they are expensive to run, thus limiting computer use and the uptake of digital technologies. An ICT student noted;

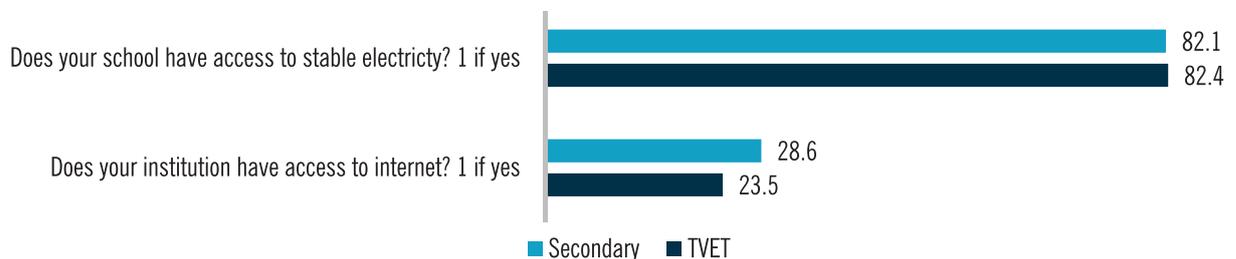
*“.....that sometimes we take weeks without learning computer because there is no power and generators are used only a few hours during the night” (FGD with secondary students, February 2020).*

## Conclusion and policy actions

Despite the universal recognition of the need to use digital technology in education to harvest the benefits of the 4IR in Uganda, severe challenges remain. As highlighted in this brief, there are visible efforts to integrate digital technologies in education in Uganda. Nonetheless, there is still underutilisation due to some challenges that the COVID-19 pandemic has worsened. A lot has to be done to change attitude and fully embrace ICT to improve service delivery, teaching and learning in schools/institutions.

In this regard, the following policy actions are recommended.

- **Provide training courses for teachers to gain experience in dealing with emerging technologies.** Through the Ministry of education and sports (MoES), the government should develop pre-service and in-service staff training programmes tailored to the school programmes to keep teachers up to date with the technological changes that will promote proper integration of digital technologies in teaching and learning.

**Figure 2** Figure 2: Access to digital and physical infrastructure, %

Source: Field survey data, February–March, 2020

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- **Integrate ICT knowledge in the training of teachers.** Beyond training of already produced teachers, it is of high importance to integrate ICT knowledge in the training of teachers as professionals before being enrolled in schools. In addition, the government should employ ICT instructors and technicians in learning institutions to teach basic and advanced computer knowledge, which are vital in this era of 4IR.
- **Increase investment in digital and physical infrastructure.** The government should invest heavily in providing adequate computers in schools to lower the student computer ratio. This will allow easy access to computers to the entire school population. Furthermore, there is a need to enhance internet connection in the schools to ensure easy access to teaching and learning materials by teachers and students primarily from the web. The various mode of electricity such as solar and biomass systems can be used in remote places where it is costly to provide grid electricity.
- **Attract the private actors to invest in digital and physical infrastructure.** This can be done through promoting public- Private partnerships to provide better ICT arrangements for students to learn. Private ICT companies, people, and groups should be attracted to partner with the government through social responsibility and social entrepreneurship to participate in closing the gap in schools through providing finance, technology, and ICT Infrastructure. Governments should consider having in place incentives for private companies who participate in supporting students.

### References

ACET (forthcoming). “Strengthening Education and Learning Systems to deliver a 4IR-Ready Workforce: Uganda Case Study.”

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