

URUNANA rw'abarezi



ISSUE 08 June 2019



**How can Information
Communication Technology
help us to improve the quality of
basic education?**



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education for development
Rwanda

REB
Rwanda Education Board

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FOREWORD

better and enabling learners to learn beyond the classroom. We urge all schools to follow ministerial guidelines about the usage of ICT facilities being given to them and use those facilities at maximum to improve learning outcomes.

In the framework of VVOB's multi-year programme known as Leading, Teaching and Learning Together—Umusemburo w'Ireme ry'Uburezi (2017- 2021), Rwanda Education Board and the University of Rwanda College of Education are partnering on integrating ICT in continuous professional development (CPD) for teachers and school leaders. The CPD training programmes supported by VVOB aim at strengthening Effective School Leadership and Educational Mentorship and Coaching to improve learning outcomes. These programmes have been running in primary schools in four districts in Eastern Province and two districts in Western Province since 2017. In secondary education, the CPD programmes are being offered in 14 districts as part of the Mastercard Foundation Leaders in Teaching initiative. Leaders in Teaching is an initiative that transforms teaching and learning in secondary education across Africa so young people have the skills and competencies they need to succeed in work and life.

The theme for this eighth edition of Urunana rw'abarezi magazine is "the contribution of information and communication technology to improving the quality of basic education".

It is important to know, learn and share how schools across the country integrate and benefit from the use of ICT. The stories shared in this edition depict good practices, lessons learnt and tips on how ICT enhances teaching and learning, school administration and management, towards improving learning outcomes in basic education schools.

We hope that you enjoy reading this magazine, and that you will contribute to this platform by sharing your experiences and good practices to enhance quality of education in Rwanda.

We also wish to acknowledge the continued support and partnership with VVOB and partners in promoting quality education in Rwanda. We look forward to a technology driven society and the champions are the children in schools now.



Dear Reader,

It is my pleasure to welcome you to the 8th issue of Urunana rw'abarezi, our peer learning magazine for school leaders and teachers. Literacy today is not only reading, writing and counting. Computer literacy is also a must among other 21st century skills. This edition focuses on the contribution of information and communication technology (ICT) in improving quality education, with an emphasis on basic education.

Information and communication technologies such as computers, as well as other tools and aspects of this digital era, have transformed the ways we live, work and communicate; this is why we can no longer imagine any teaching and learning paths without information and communication technology. ICT can contribute to quality education through the use of digital learning-teaching resources, facilitation of administration and management activities in schools and enhancement of teacher professional development.

ICT is a bridge to a wide range of information but access to information does not mean that learning has taken place. Knowledge is constructed. Beyond access to information students need engaging and collaborative tasks. Using digital content can motivate students while improving their understanding and retention of key topics and concepts. Ensuring that all educators and school leaders are digitally literate and well versed on how to integrate ICT into the curriculum can impact student learning. Incorporating ICT in schools to improve quality education remains a priority for the Government of Rwanda and is considered a strategic lever for achieving the transformation of our country from a low-income economy based on subsistence farming to a middle-income-knowledge-based society as envisaged in Vision 2020.

Teachers should not fear ICT because it has not come to replace them or disempower them. It is meant to help the teacher preparing well enriched lessons, delivering them

Dr. Ndayambaje Irénée
Director General
Rwanda Education Board



A survey of ICT in education in the global context



The integration of ICT in education has recently attracted different players in the education sector: policy makers, teachers, learners and leaders. ICT in education may be referred to with different related phrases depending on the regions the concept is used. These include Computer-Assisted Learning (CAL), Internet-Assisted Learning (IAL), Technology Enhanced Learning (TEL), eLearning, although they do not necessarily mean the same. Based on publications by UNESCO, World Bank and other organisations involved in monitoring ICT in Education, this article surveys related developments in Africa, Europe, and America.

Africa

ICT integration in education in Africa varies from country to country and across different levels of education. Writing for the World Bank blog, Michael Trucano analysed the UNESCO Institute of Statistics entitled *Information and Communication Technology in Education in Sub-Saharan Africa: A Comparative Analysis of Basic e-Readiness in Schools*,

...More specific to Rwanda, the UNESCO project focus included contextualisation and institutionalisation of teacher training on the pedagogical use of ICT and leveraging e-assessment to support teaching and learning.

and noted a tendency to prioritise ICT in secondary education curricula compared to primary education. In the UNESCO report published in 2015, Rwanda was found to be the second country with lowest computer-learner ratio (40 students per computer at both primary

and secondary level) after Mauritius (23 students per computer at primary education level and 19 students per computer at the secondary education level). On the other hand, the ratio was highest in Madagascar with 500 students per computer.

Subsequent to this report, it is worth noting the UNESCO pilot project known as ICT Transforming Education in Africa funded by the Korean Government. This project was piloted in Rwanda, Zimbabwe and Mozambique, with intention to share lessons learned with other countries in Africa and other continents. More specific to Rwanda, the project focus included contextualisation and institutionalisation of teacher training on the pedagogical use of ICT and leveraging e-assessment to support teaching and learning.

Europe

The integration of ICT in education is much more advanced in Europe. According to results of a survey of schools that focused on ICT in education published in 2019 under the support of the European Commission, about



1 out of 5 European students attend schools which have access to high-speed Internet. There are also disparities between countries in Europe where Nordic countries (including Denmark, Finland, Iceland, Norway, and Sweden) lead. Within countries, schools within major cities were also found to be at the forefront.

It is also worth noting that ambitious technology-based projects have been started. A good example of such projects is the United Kingdom (UK) Open University that started in 1969 as the university of the air: all its programmes were delivered via radio and television (in collaboration with the British Broadcasting Corporation-BBC) and mailing. The success of this university inspired the start of other open universities around the world. The success of the UK Open University also inspired campus-based universities.

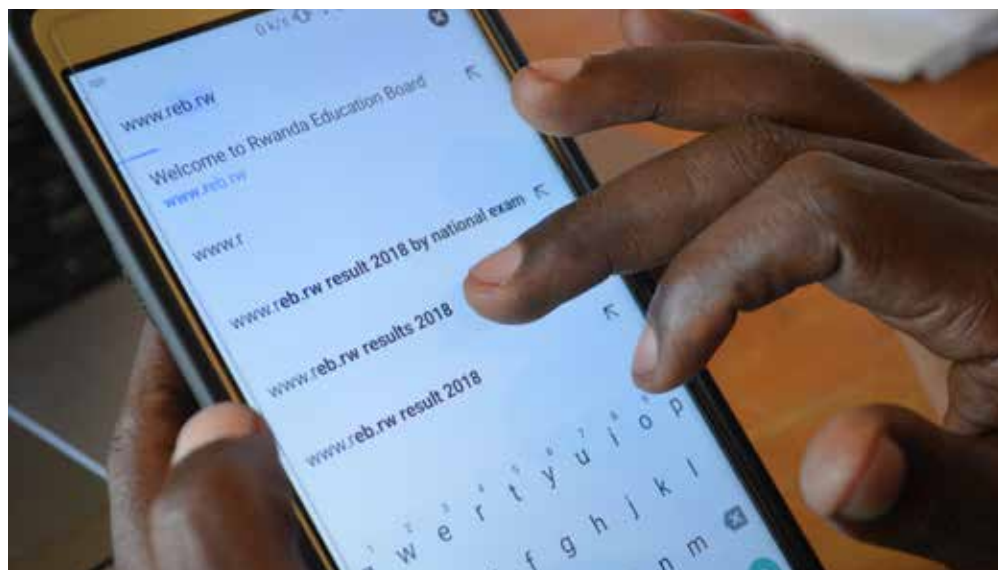
Initially, campus-based universities were skeptical about distance education and openly opposed accreditation of the UK Open University. However, after noting the success of the Open University's programmes, campus-based universities also engaged in online learning, which gave British universities a lead, along with universities in the United States of America.

As you will see in a later article (ICT in continuous professional development and further education of teacher and school leaders on page 16), there are scholarships that may fund teachers and other Rwandans who may be studying for online master's degree programmes offered by British Universities.

America

As for America, the disparities in terms of integration of ICT in Education reflect the economic disparities, with North America (mainly the United States and Canada) in the lead. Basic education in the United States of America (referred to as K-12 in this country) may also be offered online and there are standards that govern this practice. At the higher education level, many universities require students to get a specific number of credits from online courses.

In Canada, ICT is integrated in



...there are scholarships that may fund teachers and other Rwandans who may be studying for online master's degree programmes offered by British Universities.

education to enable each learner to learn necessary competencies to 1) use ICT and the Internet, 2) understand, contextualise and critically evaluate digital media in order to make informed decisions and 3) produce content as well as communicate effectively using ICT. In both the USA and Canada, the digital divide (disparity in terms of access to ICT and ICT competency development) prevails as it is the case in other countries.

The Caribbean countries and Latin

American countries lag behind the USA and Canada, but there are also disparities between those two groups of countries.

Asia

In Asia, the integration of ICT in education focuses on four priorities, according to the UNESCO's Asia and Pacific Regional Bureau for Education: 1) secondary education, technical vocational education and training (TVET) and higher education; 2) quality of teaching and teaching practices; 3) inclusion and equality; and 4) monitoring and evaluation. According to the UNESCO report published in 2014, Hong Kong was leading in terms of the ratio of primary students per computer: one computer per nine students, while the ratio was 14 students per computer in China. On the opposite side, Nepal had the highest ratio of 500 students per computer.

To sum up, ICT in education has gained traction across the world, although not at the same level.

Socioeconomic disparities between countries are also reflected in the digital divide; the disparity in terms of access to ICT infrastructure and devices as well as digital competency development. There are also disparities within countries where major cities tend to benefit more than smaller cities and rural areas. The field of ICT in education will continue to evolve at the global scale, and probably in a volatile way, which necessitates continuous learning and training on the part of teachers.■

Teaching and learning with technology: a fundamental step toward building a knowledge-based economy

By Vincent Nyirigira

ICT Innovation and Technology
Partnerships Engineer
ICT in Education Department, REB

The ICT in Education Department is one of the four departments at Rwanda Education Board. The Department is responsible for the overall implementation and supervision of ICT in education activities in the Rwandan basic education sector. These include digital content and instructional technology development, and increasing access to the Internet, learning devices and cloud solution technologies. A cloud service is a broad category that encompasses the myriad IT resources provided over the Internet.

Why distributing ICT devices in schools?

ICT in education is one of the pillars that help to improve education through the digitalisation of pedagogical material and enabling enhanced teaching. REB's ICT in Education Department enhances the capacity of pre- and in-service primary and secondary teachers to provide quality education, by improving their skills to integrate ICT in education, and use electronic assessments.

The primary focus for distributing ICT devices and tools in schools is on the creation of smart classrooms across the country. Having technology-enhanced classrooms can foster opportunities for teaching and learning by integrating learning technologies such as computers, internet connectivity, specialised software, multimedia digital content, audio responsive technology, audio-visual capabilities, interactive whiteboard, and projectors. Combined, all these components will contribute to quality education and

improve teaching and learning in classrooms.

Why using ICT in teaching and learning in the classroom?

Appropriate use of ICT in schools is considered a key factor in improving the quality of education. ICT is increasingly being used to assess teaching and learning interventions.

The Ministry of Education believes that ICT in education will contribute to achieving its mission to transform Rwandans into skilled human capital that will contribute to socio-economic development of the country by ensuring equitable access to quality education focusing on combating illiteracy, promotion of science and technology, critical thinking, and

positive values (ESSP, 2013). Therefore, teachers and learners are expected to use ICTs for teaching and learning purposes to improve the quality of education.

The Department of ICT in Education guides teachers on how to integrate and use ICTs in teaching and learning. Teachers are encouraged to continuously decide independently the variety of ICT they can use to enhance curriculum delivery within subject context.

Why providing digital solutions in schools?

Primary enrolment rate in Rwanda has increased substantially over the years, and more learners have enrolled in basic education in the past decade, thanks to campaigns such as Education for All (EFA) campaign.

The main goal for setting up ICT infrastructure in schools is to enable adaptive learning for student success. The Government initial strategy was to reduce or phase out investment in infrastructure and printed books to focus on curriculum and cloud-based services and leverage investment in ICTs for adaptive and personalised learning. The REB eLearning platform has been upgraded to facilitate content management, content delivery, and both online and offline modalities. This has facilitated students and teacher collaboration online. Smart classrooms in schools have enabled the development of an ecosystem with digital content, e-books, supplementary materials, curriculum and teachers guides, and e-assessment.

Enhancing education through the introduction of technology in basic education is a fundamental step towards the building of a knowledge-based economy. Therefore, providing cloud-based solutions, smart

Teachers are encouraged to continuously decide independently the variety of ICT they can use to enhance curriculum delivery within subject context.



classrooms, Wireless Access Points (WAP), interactive e-books, and promoting 21st century learning skills, allows primary and secondary school students' early development of computer skills while expanding their knowledge on specific subjects through online research.

Why teacher professional development in ICT so important?

Today's education systems around the world are changing substantially. Our societies are recognising that teachers are the most significant change agents. Therefore, equipping both in-service and pre-service teachers with relevant skills to engage students with digital learning tools that integrate technology into all aspects of curriculum delivery is vital.

The collaboration between the Rwanda Education Board (REB) and UNESCO through Korean Republic Funds-in-Trust (KFIT), a blended learning professional development course called Rwanda ICT Essentials for Teachers was developed and piloted successfully between 2016-

2017. Teachers were trained in two pilot sessions and REB is investigating how more teachers can be taken on board. The development of Advanced ICT Essentials for Teachers is intended to provide more in-depth training for capable teachers in terms of ICT for education.

Priority areas for the development of the course include: strategies to incorporate new technologies into teaching and learning such as interactive whiteboards, mobile phones, simulation and multimedia software. They also include strategies to use ICT to support inclusive education and students with special needs; and opportunities to use ICT to move towards progressive teaching methodologies such as student-centred approaches, pervasive education, etc.

Different course materials have been identified and aligned to UNESCO ICT-CFT. Additionally, accredited teacher professional development partners such as Microsoft Corporation and the University Rwanda have been identified to certify both in-service

and pre-service teachers with relevant digital skills.

REB in collaboration with Microsoft, trained 600 master trainers country wide. Master trainers who completed an online course received Microsoft Certified Educator (MCE) as part of the teacher continuous professional development process.

Why partnership in ICT in education is vital?

Studies show that public-private partnerships can play a vital role in mobilising the scale of resources required for financing and building ICT infrastructure, developing applications and locally relevant content, and developing the human capacity required for harnessing the full capacity of ICT productive tools (Ichiro and McNamara 2003). Collaboration with various education partners is key as it would make it possible for the education sector to fully realise the benefits and leverage the opportunities presented by ICT. Today's demand for education is high and it is important that quality education is enhanced at all levels of teaching and learning. ■

Have you ever been worried about the use children make of the Internet and the different risks they can be confronted with?

Between cyber-bullying, malicious or illicit material and health issues related to the use of internet, children from primary and secondary levels face a lot of dangers when using a computer. That is why it's the school's responsibility to ensure that children and teenagers can access the myriad of information on the Internet while staying safe.

The figure below by Straker et al., 2009, and Atkinson et al., 2009, illustrates different types of risks children and teenagers can face.

Humans are naturally curious, and children will tend to be tempted to use Internet for personal communication, entertainment use, instant messaging or adults' websites. The magnitude of usage offered by the World Wide Web exposes our kids to a variety of security risks: they can be exposed to age-inappropriate content but also inappropriate contact and conduct.

For all these reasons, our schools are committed to offer guidance in the use children make of computer tools, both online and offline in different proactive and supervised ways.

At Groupe Scolaire Saint Philippe Neri they're trying to implement the use of a software that will allow them to monitor the activity of all student computers in the classroom remotely.



Sister Marie Grace Mukashyaka

In January 2018, Sister Marie Grace Mukashyaka became the Head Teacher of Groupe Scolaire Sainte Bernadette Save, a home for nearly 800 pupils.

According to Sister Mukashyaka, the school had to embrace the ICT revolution: "Technology improves the quality of teaching and learning: the Internet makes it easier for our students to learn and for our teachers to teach. That connection with the outside world allows us to do research and to access new materials. It's also a must to be prepared for the job market. One of the reasons why it must be one of our priorities."

Smart Classrooms: a top priority

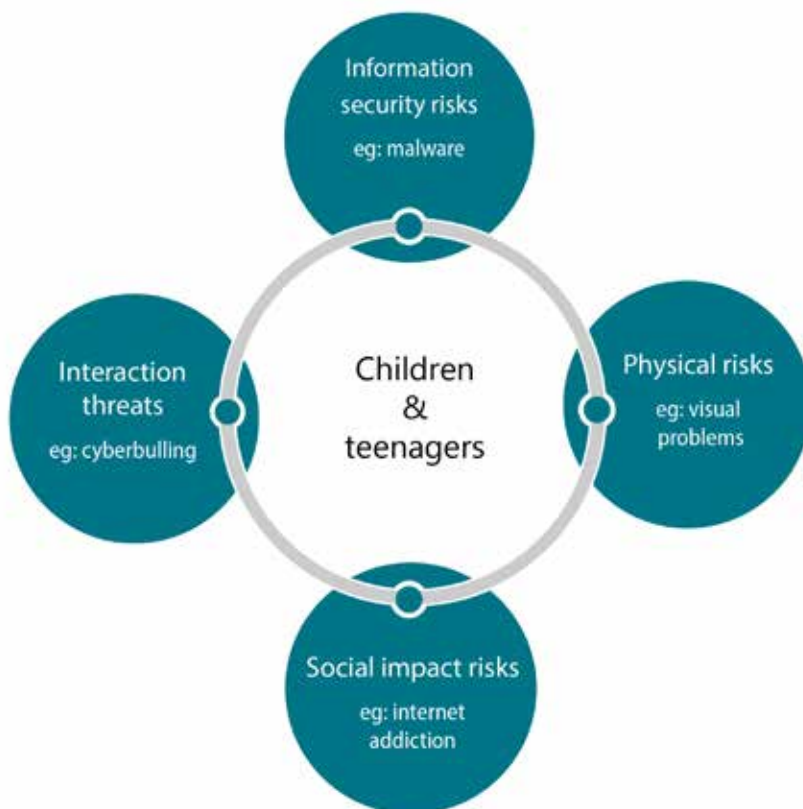
Groupe Scolaire Sainte Bernadette Save is a boarding school that was founded in 1938. Located in Gisagara District, Southern Province, the school continues to reinvent itself and is now equipped with two smart classrooms, thanks to Rwanda Education Board.

Let's keep our material safe

Like many other schools, Groupe Scolaire Sainte Bernadette Save received laptops from Rwanda Education Board (REB). According to Sister Mukashyaka, each school is responsible for their laptops. "Not keeping them safe would represent a big loss for everyone and small actions can make a big difference," she noted.

"It is important to set out all the rules at the beginning of each year. However, children often tend to forget this kind of information quickly. Hence having a clear reminder of the rules displayed in each facility will ensure the guidelines are not forgotten," Sister Mukashyaka said.

*You can see some of the basic rules you can display in a large format in your computer lab on page 25.





A teachers can have more time to deliver a quality course s/he has to dedicate less energy to monitoring the activity of students on computers.

Safety first at Groupe Scolaire Sainte Bernadette Save

Sylvie Tuyishime is the ICT teacher at Groupe Scolaire Sainte Bernadette Save. She graduated with a university degree in Computer Science, a big plus that only few schools are lucky to have. In addition to teaching, her goal is also to ensure safe and secure use of ICT devices by all students and teachers in the school.

Ms Tuyishime puts a lot of effort into protecting the computers: every laptop is equipped with an antivirus, a firewall and a parental control system to avoid intrusions but also to prevent access to certain websites and social networks. If they are free to navigate everywhere, children can easily see offensive images or messages. Social media are nice to stay in touch with people, but they're also platforms where you are quickly in contact with strangers. The school has a major role to play regarding the safety of students, offline but also online.

Parental control: how does it work?

Parental control is a great way of prevent pupils from accessing unsuitable content online and it's easy to use. People can choose to install a computer programme (most of the computers today already have a pre-installed option) or simply to use an online tool to set control on students' internet use. Some are free, others are not. However, don't take it as a replacement of adult presence in the room.

Parental control can offer varying types of protection such as filtering out

“If a teacher has to dedicate less energy to monitoring the activity of his/her students, s/he will have more time to deliver a quality course and a more qualitative follow-up”.

adult content from search results. Apart from parental control, search engines like Google have their own filter. If you turn it on, you can choose to block some content like pornography or advertising inappropriate for children.

‘Never, under any circumstances, browse unaccompanied’

Many schools simply follow this principle thinking it will keep their students safe. Although this basic rule is undeniable, we can still doubt its concrete implementation. Can we really expect a single teacher to monitor the activity of all students sitting in his class - which is often equivalent to 50 screens?

At Groupe Scolaire Saint Philippe Neri, in Gisagara District, the Deputy Head Teacher Anselme Ngaboyisonga and the

ICT Teacher Donatien Nshimiyimana are trying to implement the use of a software that will allow them to monitor the activity of all student computers in the classroom remotely. They will be able to see what everyone is doing without even leaving their desk.

Most of these computer programmes are not free but Virtual Eye On Networks (Veyon) is a good alternative. Veyon is a free and open source software supporting Linux and Windows operating systems, therefore fully compatible with Positivo laptops. *Junior Watch* is another free software that help schools to keep students safe. Among many other features, *Junior Watch* will allow you to block inappropriate sites, monitor browsing history and retrieve/delete files remotely. In addition, free software like *Norton Safety Minder*, *Qustodio*, *Kaspersky Safe Kids*, *Windows Live Family Safety* can also help to identify and block unwanted and distracting programmes on students' computers. As Mr Ngaboyisonga rightly said: “If a teacher has to dedicate less energy to monitoring the activity of his/her students, s/he will have more time to deliver a quality course and a more qualitative follow-up”.

It is imperative that all teachers are aware of the risks and taught how to counteract these types of exploitation. Every student needs to be aware of the dangers s/he may face online. An open relationship between students and their teachers will encourage them to seek advice.

And don't forget, small actions can create big change. ■



Ms Christine Muhayimana teaches biology and chemistry at College Saint Marie Kibuye. She uses a smart classroom for seven periods every week and finds it easier and enjoyable for herself and her students.

College Sainte Marie Kibuye: Holistic use of ICT to improve learning outcomes

College Sainte Marie Kibuye is located in Bwishyura Sector, Karongi District in Western Province. It is a boarding girls' school with 377 students. Sister Domina Murekatete who is leading the school has an impressive career path: she has served as a head teacher for eight years, two years as a teacher and one year as a discipline master. She is working closely with her Deputy Lambert Musabyimana who has been in education sector for the last 15 years and has held the position of a Deputy Head Teacher since 2013. Both school leaders share their holistic approach towards ICT integration and how it has transformed the school life in general.

ICT as a crosscutting tool

Currently, the school has 110 computers including 105 Positivo laptops donated by the Rwanda Education Board (REB) in 2017. The school management integrates and uses ICT in almost every aspect of the school life.

1. Smart Classroom

According to the school instructions, every subject has to be taught in a smart classroom at least one period a week. In addition, students are also allowed to use smart classrooms during their free time. The school management elaborated a timetable which gives priority to upper secondary students: they have now reached the level of doing research on the Internet, so they need more time on computers. Lower secondary students can still have access to the smart classrooms, but only when they are not used by their elders. Students' clubs can also use the smart classrooms upon request.

2. Internet research

Teachers have time to do research on the Internet for their own professional development. Every department has a computer for teachers. Teachers can also request to use smart classrooms whenever the timetable allows. Teachers usually use Internet to search teaching resources like audio, videos, images, charts...

3. Enhancing CBC implementation

Teachers access Competence-based Curriculum (CBC) syllabuses as well as other documents related to the curriculum and learning and teaching materials available on the REB website. This resolved the issue of few teaching and learning manuals which the school was facing before REB uploaded the documents. "We used to face challenges about CBC related teaching resources as they were very limited. But since last year we can download them from REB website," Sister Murekatete said.

According to the Deputy Head Teacher Lambert Musabyimana, using ICT not only allows them access to CBC resources, but also enhances CBC implementation as it allows students participation. "When students are learning in a smart classroom, everyone uses a computer. So, a student's competency is evaluated in a more practical way".

4. Email communication

Every teacher has an email address and the school management is now using it to share different kinds of documents with teaching staff. For example, when the Head Teacher, Deputy Head Teacher or School Based Mentor attends a workshop, s/he can share documents from the training with colleagues through email.

5. Using Whatsapp

The school created a WhatsApp group for all teaching staff which allows regular communication with the school management. Whatsapp also serves as a platform to exchange with other schools on education related updates and issues. "Teachers can exchange with their fellow teachers from other schools and myself as a head teacher exchange with my fellow school leaders on issues related to improving teaching and learning; school management and leadership in general," Sister Murekatete said.



6. Urubuto Software

Urubuto is an education system that, among other functions, allows a school to communicate to teachers and parents instantly, to manage students and staff permissions, monitor students' discipline and attendance and make school reports.

The school leader has overall access to the system while other staff members can only manage sections related to their specific roles and responsibilities.

To use Urubuto application, College Saint Marie Kibuye pays a monthly fee

of 50,000 francs (60USD) to the owner. According to Sister Murekatete it is worth spending such fee considering the number of services performed by this application. For more information about Urubuto Education system you can visit: <https://www.bktechouse.rw/our-products/urubuto-software>.

When the school embraced ICT...

Communication with parents has greatly improved with the adoption of Urubuto software and Whatsapp. Parents are invited to meetings, informed about their children's discipline and sent students' tests summaries through those programmes.

Sister Murekatete also gives a concrete example on how ICT is making their work easier as far as communication with parents is concerned: "We recently had a case of a student whose discipline marks were deducted and lied to her parents that it was a general case for all students. The parent had changed his cell phone number and didn't inform the school to update in the database, so he was no longer receiving updates about his child. Later on, he decided to come to school and we showed him all records in Urubuto software. He was surprised that his daughter had lied to him! This software is really helping us".

Teaching with ICT

According to Mr Musabyimana, it was challenging to use ICT in science teaching. "When we realised this issue and as part of CPD, we organised two sessions on how to integrate ICT in teaching and learning for all teachers. We discussed the importance of using teaching aids from Internet in general. We plan to outsource an experienced person to train our teaching staff on how we can integrate and use ICT in a more advanced way," Mr Musabyimana said.

"Both teachers and students are very excited about using ICT. Whenever students are given opportunity to use smart classrooms, they are very eager to learn and to discover even more. Teachers also find using ICT as very useful for science teaching," said Mr Musabyimana.

For Mr Musabyimana, one period per subject per week is not enough. "I would suggest having at least 30 percent of every subject to be taught using ICT. If smart classrooms were enough, we would organise more sessions".

Before the integration of ICT at College Saint Marie Kibuye

The school timetable was done manually on a black board during a general staff meeting. It was time consuming as it required making adjustments every now and then.

Communication was not easy

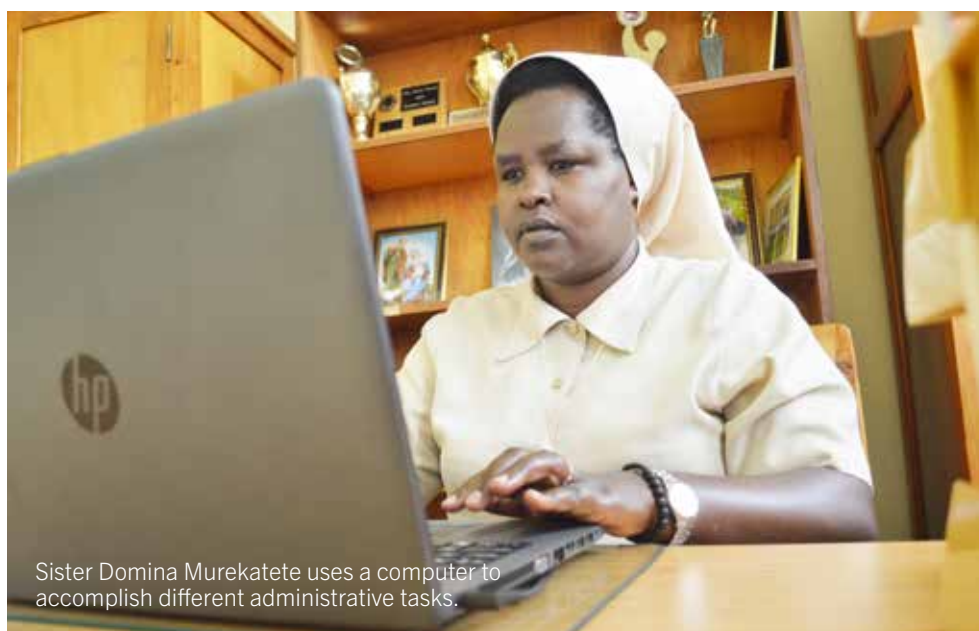
"For instance, we would be sent invitations to different meetings and they would take time to reach us or sometimes didn't reach us at all. So, if it was an invitation letter to an important workshop, then you would sometimes miss it," Sister Murekatete said.

Parents meetings

Inviting parents to meetings was generally done through students but some students would not transmit the message, resulting in low turn up in parent meetings.

Students' discipline

The communication between parents and the school was limited. There used to be cases where students would lie to their parents, simply because they knew it was hard for a parent to verify the accuracy of the information.



Sister Domina Murekatete uses a computer to accomplish different administrative tasks.

The contribution of ICT to achieving educational outcomes

While many schools in Rwanda still have limited access to information and communication technology (ICT), many others have gained access. Access to modern ICT such as computers, the Internet and smartphones that have internet access capability ease the everyday work in schools. Students, teachers and leaders from schools that have access to ICT shared with Urunana rw'Abarezi positive changes brought by ICT.

Increasing teaching and learning motivation

The first benefit of information and communication technology was increasing learning and professional motivation as reported by teachers and school leaders. "When students are tired, bored and sleeping, they become excited, very interested and very active when the class moves to a computer lab," declared Francois Xavier Kalimba, the Deputy Head Teacher in charge of studies at G.S Byumba Inyange, in Gicumbi District.

A different kind of students' motivation was also reported from G.S Kampanga in Kinigi Sector, Musanze District. This school participates in a student exchange programme with a partner school in Germany. Exchange between students at G.S Kampanga and the German school is conducted via emails and is coupled with some physical visits of a delegation of either German students to the school or Rwandan students to the German school. This motivated learners to put more effort in learning English so that their communication with German students becomes successful.

ICT enabled teachers to also improve their teaching practices in an efficient way: lesson plans are electronic and saved for being reused in the future. This helps teachers save a lot of time that would be wasted on re-writing the lesson plans on pen and paper. Teachers also save a lot of time by projecting images rather than drawing them on the chalkboard or pieces of paper. Moreover, teachers email resources to every student, which enables students to have instant access to them and use them. ICT is transforming current learners into researchers: students research different topics online as part of formal assignment or their own initiative.

"We used ICT for teaching computer literacy only because there was no Internet. Now that we have connectivity, our



// We had to travel to Kigali or to the district to submit reports. Now we email the reports, which reduced the cost of sharing reports with the Ministry of Education, REB and the district."

students learn by researching and capacity development for both teachers and students improved," said Filmin Nikwigize, the Deputy Head Teacher at Ecole Secondaire Saint Vincent Muhoza, Musanze District.

Improving teaching-learning

According to the Deputy Head Teacher at G.S Notre Dame du Bon Conseil de Byumba, Marie Claire Ingabire, it was hard to demonstrate some natural science phenomena before the school had access to computers and Internet.

Teachers have been using ICT to create reusable question banks they share with peers. When it is time to prepare

examination questions, teachers edit the questions rather than writing them from scratch. Teachers are also able to complete their students' academic reports in a short time. "With ICT, one day is enough to complete students' academic reports. Before, it took us more than seven days," stated Eric Ntakirutimana, the School Based Mentor at G.S Notre Dame du Bon Conseil.

Mr Ntakirutimana's statement is confirmed by Mr Kalimba, Deputy Head Teacher at GS Byumba Inyange, who highlights that before the school acquired computers, there were a lot of mistakes and delays in completing students' academic reports. As students' academic report has to be neat to avoid falsification, each mistake led to restarting completing academic report on a new form. Similarly, Jean de Dieu Twagirimana, the Head Teacher at G.S Kampanga, asserts that the number of academic reports that used to be completed by 30 teachers is currently completed by two teachers using ICT.

Improving leading

Before schools had access to computers, smartphones and the Internet, "we had to travel to Kigali or to the district to submit reports. Now we email the reports, which reduced the cost of sharing reports with the Ministry of Education, REB and the district," asserted Sister Christine Uwanyirigira, the Head Teacher at Ecole Secondaire Saint Vincent Muhoza.

ICT enabled school leaders to also improve the quality of their reports and raise their schools' visibility: "We can now visualise different documents including reports and we can share different developments at our schools via our school website," Sister Philomène Mukamanzi, the Head Teacher at G.S Notre Dame du Bon Conseil said. ■



“Today when you talk about ICT, I understand quick and quality work”

APEKI Amizero is a private school established in 2003. It accommodates close to 500 students, 249 boys and 238 girls in primary education. Before the school management started integrating and using ICT in learning, teaching as well as in administration and management work, they were facing several challenges including document theft and leakage. The Head Teacher Awunick Mutumwinka shares how they dealt with these challenges.

“Today when you talk about ICT, I understand quick and quality work,” Ms Mutumwinka said.

Undergoing challenges

Before 2010, no one knew how to use a computer at APEKI Amizero. Ms Mutumwinka had followed a training on how to use a computer but she was not practicing as the school had no computers yet. They used to write reports by hands, but later they were recommended to write them on a computer. “We decided to buy a desktop computer but we still had to take documents to a stationery shop for printing, which was not safe. People would read our documents including student tests and other confidential documents,” Ms Mutumwinka said.

Creating solutions

“After discovering that printing school documents outside the school was not safe, we bought a printer and a photocopier as a solution,” she said.

In 2014 the school decided to buy 10 desktop computers but the head teacher and her administrative assistant only knew how to use them by then, teachers still needed to learn. “We requested Kirehe District officials to help us. They sent their ICT officer to train our teachers on how to use a computer. After getting basic skills on how to use a computer we also recruited an ICT teacher to coach other teachers on how to integrate ICT in teaching and learning. Today every teacher uses the Internet to find learning and teaching resources online,” Ms Mutumwinka noted.

One Laptop per Child

Being a private school, APEKI Amizero has not received children's laptops provided by the government of Rwanda to public schools through “One Laptop per Child” programme. So, the school remained with only one alternative: borrowing from a neighbouring public school, which they did. “We are happy that our neighbouring school accepted to lend us children's computers when they are



Ms Awunick Mutumwinka, school leader

“Today every teacher uses the Internet to find learning and teaching resources online.”

not using them so that our students can also learn how to use them,” Ms Mutumwinka said.

ICT contribution

“Our students perform highly in national examinations. The majority get Division I grade and we always perform as the best school in Primary Leaving Examinations in Kirehe District. We believe that ICT has contributed to this in a way,” she said.

Four reasons why Ms Mutumwinka thinks ICT has contributed to improving learning achievements:

1. Internet resources

Teachers use teaching and learning resources found on the Internet. Teachers can now save time since they started using ICT in all education aspects. A teacher can use teaching aids from the Internet such as pictures, charts, maps, etc. and this saves time s/he would spend drawing and explaining on a blackboard.

2. Student tests

Student tests are no longer written on a blackboard. Typing students' homework on computer and distributing copies to students saves time students would spend writing it back in their notebooks from the blackboard.

3. Preparing students for national tests

Student tests are prepared based on national examination standards. “When we prepare termly exams, we use student codes, timing and instructions just like in the national exams. The purpose is to prepare students so that they don't get surprised during national exams, especially those in primary 6,” Ms Mutumwinka said.

4. Handy timetable

“We used to draw a timetable on a blackboard. We now use a computer programme that generates it automatically. The old way was time consuming as they would revise it several times, sometimes spending almost a whole month making revisions,” she said.

In addition, the school management plans to start using Urubuto software. “We already identified a trainer on the software. We believe it will help us improve the way we manage our school,” Ms Mutumwinka said. ■



Ms Awunick Mutumwinka decided to borrow children's laptops from a neighboring school to ensure her school doesn't lag behind.

#WhyTeach

Usabyimana's long and successful journey to the teaching profession

Geras Usabyimana is 48 years old and has spent almost half of his life teaching. He currently teaches mathematics at College Marie Kibuye in Karongi District, Western Province. He aspired to become a teacher since he was in primary school, a long and difficult dream that ended up coming true.

1. Childhood dream

"I met many teachers during my education but two of them were special. Their attitudes and deeds are still fresh and engraved in my mind. One taught me in Primary 4, another in Primary 8 and both had one thing in common: commitment to teaching. They would always feel bad when a student failed. They tried their best to build and nurture a relationship with students just like the bond between a child and a parent. Students would talk to them in class as if they were talking with their own parents whereas some other teachers were feared by students."

When Mr Usabyimana was admitted to a high school, he wanted to study education but he was denied. "The school leader simply said that I was good at maths and therefore recommended me to study mathematics and physics instead. I was not happy with the decision but had no other option. Two years later, I again asked the school management if I could shift to education but they refused. I was lucky enough to find a teaching job after completing secondary school. This was the time my dream was going to materialise."

2. The most valuable profession

"When I was young model people in society were teachers. They were very much respected by everyone because they were teaching for the community. But it is not only about the past, the same consideration should prevail, it is all about

the mindset. The teaching profession has been and will remain the most valuable profession ever because of its value to the humankind—it is the foundation of every other profession and touches all aspects of our life. Everyone knows that education is a human right, it is the foundation of everything else...we all know what happens when children are not sent to school: some end up in the streets and become a burden to their country."

"I don't understand why people would undermine teachers. It is a shame when it ever happens. How would a parent, a future parent or an educated person underestimate a teacher? In any case, every one has at one time been to school, or will be to school, and even if you haven't gone to school your children have been or will be in front of a teacher. Yes, there might be some teachers who misbehave but this shouldn't tarnish the image of the teaching profession. I think a good reference would be education institutions, they are always concerned about quality teachers to improve learning achievements which implies teacher motivation."

"People will tell you that other professions are well paying. Professions can never be the same, and you will hear complaints here and there even in other professions! Yes, there are issues in education just like in any other profession and I believe the government will continue to do their best to motivate teachers."

3. Shaping the future

"If you lack commitment to the teaching profession be aware that it will come back to you soon or later. Remember that the students you teach are the future, they will serve you and your country in different services which you may also need just as any other citizen. Some will be medical doctors, lawyers, business people...do you ever think about the kind of service you can get from 'unprofessional' service providers? I imagine that in such a situation you start questioning those who taught them or which school they went to! I always enter a classroom having this in mind, that I am shaping my



own future, my family's tomorrow—my legacy and my nation's foundation."

4. Using what you have

"Some people think that teachers cannot do anything because they are less paid. Such kind of thinking is erroneous. I started teaching when I only had a secondary education certificate. I saved some little money from my salary and used bank loans from Umwarimu SACCO, a saving and credit Cooperative for teachers, and managed to pay for my undergraduate studies—I did my advanced diploma in education and a bachelor's degree in statistics applied to economy."

"Similarly, I used bank loans and built my own house in 2012. In addition, I built some annexes which I rent out and make about 50,000 francs (USD60) every month. Later, I again applied for a loan at SACCO to run a small business (bar) at a local retail centre for my wife. Some of my neighbours were impressed—they couldn't believe that a teacher can be successful. They even call me the 'Director'. This is just one example. I know there are many other teachers who have achieved great things. It is all about using your brain to plan for what you have."

"As teachers we can use what we have learnt as well as what we earn and plan for our future as we help children to also shape their future by teaching them. We teach and encourage children to study for a better tomorrow, but we should also inspire them by serving as good examples... we should show them that educated people live a better life."

"My childhood dream to become a teacher, the value I attach to education and the way I live and help students learn and grow because of education remain the driving force for my commitment to the teaching profession." ■

#WhyI Teach

Viriginie Nyiraneza has been a teacher since 1995. Her husband served as a school leader for 11 years and then as a secondary school teacher for five years. In 2015, her husband had a car accident which resulted in permanent disability—a big shock to the family. They have three children, two in secondary education and one in primary education.

“When my husband’s former students knew that he had an accident which resulted in permanent work incapacity, they raised funds to pay school fees for our three children, for two years. They also organise regular visits to our family. This touched me, comforted me and boosted my commitment to teaching. It reminded me that teaching reward may come at any time, when you are not even expecting it—sometimes in trying moments you can ever imagine. I believe that a committed and dedicated teacher gets rewarded soon or later. I never regret having chosen teaching profession.”



“Other jobs can be stressful, but teaching takes stress and anxiety away—children become your friends... Spending all days with them makes you happy, you think positive and feel younger,” Clementine Byukusenge, E.S Munzanga, Karongi District.



“By being with students every day, I feel happy. I get more knowledge because as you get different students with different attitudes, you get new ways of being yourself. Every day, they are encouraging me to read and add more to what I have,” Consolée Nyiramahoro, biology teacher for 8 years, Gisagara District.

“Teachers are the roots, the basis, the foundation of any other career. I’m teaching with the hope of helping our country on a large scale. My passion is sharing my knowledge to the next generation,” Frank Rwema, chemistry and mathematics teacher for the last six years, Gisagara District.



“Teaching is my favourite job, that’s why you will see a happy atmosphere in my classroom all the time . I want to motivate my students to become teachers, just like me,” Felix Niyonzima, ICT teacher for 4 years, Nyaruguru District.



“Teaching is my vocation. Back when I was in primary school, my teachers inspired me. I could see their behaviour and attitudes and wanted to be just like them,” Napoleon Uwanyirijuru, chemistry and ICT teacher at G.S Mata, Nyaruguru District.

ICT in continuous professional development and further education of teacher and school leaders



Head teachers and deputy head teachers will be able to follow a CPD programme in a blended learning mode.

In Rwandan schools, information and communication technology (ICT) is used in diverse ways to support continuous professional development of teachers and school leaders. At G.S Notre Dame du Bon Conseil and G.S Byumba Inyange, both in Gicumbi District, teachers access online video recordings of colleagues teaching, to learn how teachers in other settings approach diverse Competence-based Curriculum topics.

At G.S Kampanga in Kinigi Sector, Musanze District in Northern Province, teachers and school leaders share a Whatsapp-mediated community in which they share continuous professional development (CPD) opportunities and competence-based curriculum resources. School subject leaders in the same sector also created similar continuous professional development communities. Teachers and school leaders access and participate in these WhatsApp-mediated communities via mobile phones. WhatsApp professional learning

VVOB handed about 700 laptops with internet modem to secondary schools in 14 districts to enable teachers and school leaders to take CPD courses in blended learning mode.

communities are not a particularity of teachers and school leaders in Kinigi Sector. In Muhoza Sector, in Musanze District teachers and school leaders have a WhatsApp group in which they discuss diverse topics prior to physical meetings.

At Ecole Secondaire Saint Vincent Muhoza, "the community of practice always takes place in a computer lab". A good example of community of practice activities that was enabled by ICT was searching online how big-size classes are handled. "One of our colleague found that splitting the class into small groups could help in managing large-size classes," highlighted Mr Philippe Samvura, School-Based Mentor at Ecole Secondaire Saint Vincent Muhoza.

VVOB support

VVOB, in partnership with the Ministry of Education, REB and the University of Rwanda College of Education, has been facilitating a continuous professional development diploma course in Effective School Leadership for school leaders and a certificate course in Educational Mentorship and Coaching for mentor teachers, sector education officers and science teachers. The CPD training programmes have



been running in primary schools in four districts in Eastern Province and two districts in Western Province since 2017. In secondary education, the CPD programmes are being offered in 14 districts as part of the Mastercard Foundation Leaders in Teaching initiative. Leaders in Teaching is an initiative that transforms teaching and learning in secondary education across Africa so young people have the skills and competencies they need to succeed in work and life.

To ensure a cost-effective delivery and a wider reach of the CPD training programmes, VVOB partnered with REB and UR-CE to redevelop the programmes into a blended learning mode. In this regard, VVOB handed laptops with internet modems to 687 secondary schools in 14 districts to enable teachers and school leaders to take the courses in blended learning mode. At the same time, a preparatory training on Digital Literacy for Online Learning was organised for 671 head teachers

“When I was doing my master’s degree in Development Studies, I collaborated with my peers on assignments, online and via emails, and I received supervisory support online. I submitted my assignments and dissertation online.”

Any national of a Commonwealth country (Rwanda included) is eligible to apply for those scholarships.

and deputy head teachers enrolled in the CPD training programme on Effective School Leadership to prepare them for a blended learning mode. The course enables learners to use learning technology to participate in online learning communities and engage with online learning resources.

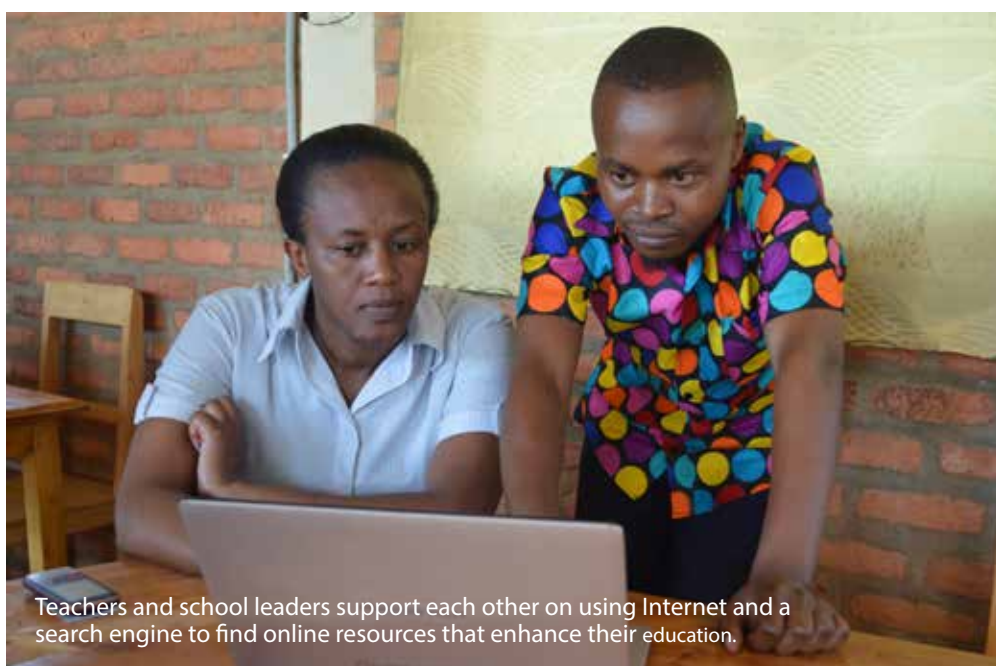
In addition, VVOB provided 210 tablets that are used in monitoring school leaders’ professional learning communities and induction of new teachers in teacher training colleges.

Further education of teachers and school leaders

Teachers and school leaders in different schools use ICT in their further education in local and foreign universities. At G.S Notre Dame du Bon Conseil, teachers used the Internet and a search engines to find foreign universities and postgraduate programmes in those universities as well as in local universities. After finding an appropriate university and program of interest, teachers and school

leaders complete online applications for admission in foreign universities. Teachers and school leaders also use ICT to work on their assignments and, especially the Internet and a search engine to find online resources that enhance their education. This was the case at G.S Byumba Inyange where teachers used the Internet to find resources that enhanced their learning to upgrade their education from advanced diploma (A₁) to bachelor’s degree (A₀). “When I was doing my master’s degree in Development Studies, I collaborated with my peers on assignments, online and via emails, and I received supervisory support online. I submitted my assignments and dissertation online,” so stated Mr Jean de Dieu Twagirimana, Head Teacher at G.S. Kampanga.

In addition to the ways teachers have been using ICT for further education, there are many more opportunities that are open to Rwandan teachers. Many universities provide full degree programmes online. When it comes to affordability for Rwandan learners, universities in the United Kingdom deserve particular attention: their online master’s degree programmes can be funded by Commonwealth distance learning scholarships. Any national of a Commonwealth country (Rwanda included) is eligible to apply for those scholarships. Successful applicants take online master’s degree programmes offered by British universities and the Commonwealth Scholarship Commission pays the full tuition fee as well as any cost related to short-term residential sessions at the offering university.■



Teachers and school leaders support each other on using Internet and a search engine to find online resources that enhance their education.

Facilitating school administration

Today schools need ICT for different purposes: communication within and outside the school, documents storage, information management, and integration in teaching and learning. ICT also plays an important role in facilitating school administration and management activities. The leaders of G.S Mamfu and G.S Kiziguro schools in Gatsibo District share with Urunana rw'Abarezi how ICT made their administrative and management work easier and effective.

G.S Mamfu



Felicien Nyirinkindi, Head Teacher

G.S Mamfu is located in Muhura Sector, Gatsibo District in Eastern Province. It is a 12 Year Basic Education school with more than 800 students in primary education and about 500 students in secondary. Like some other schools, the school received 105 Positivo laptops along with an internet router in 2017 from Rwanda Education Board (REB). In addition, the school has 277 children's computers donated by the government of Rwanda through One Laptop per Child programme in 2014.

Making all tasks easier

As outlined by Head Teacher Felicien Nyirinkindi, the following services have become easier since the school has adopted ICT:

- The school uses a software to make students reports
- Students can be transferred from one school to another through REB's online-based system known as School Data Management System (SDMS)
- Every teacher prepares student tests on a computer
- Report are made on a computer and submitted through Internet

- School documents are now printed from school, no need to print outside anymore
- Whatsapp groups make Mr Nyirinkindi's work easier: He is currently a member in three Whatsapp groups. One for teachers (school level), Head Teachers' WhatsApp group at sector level and another one at district level where school leaders share ideas on how to improve education. "I am able to share some important updates with teachers and

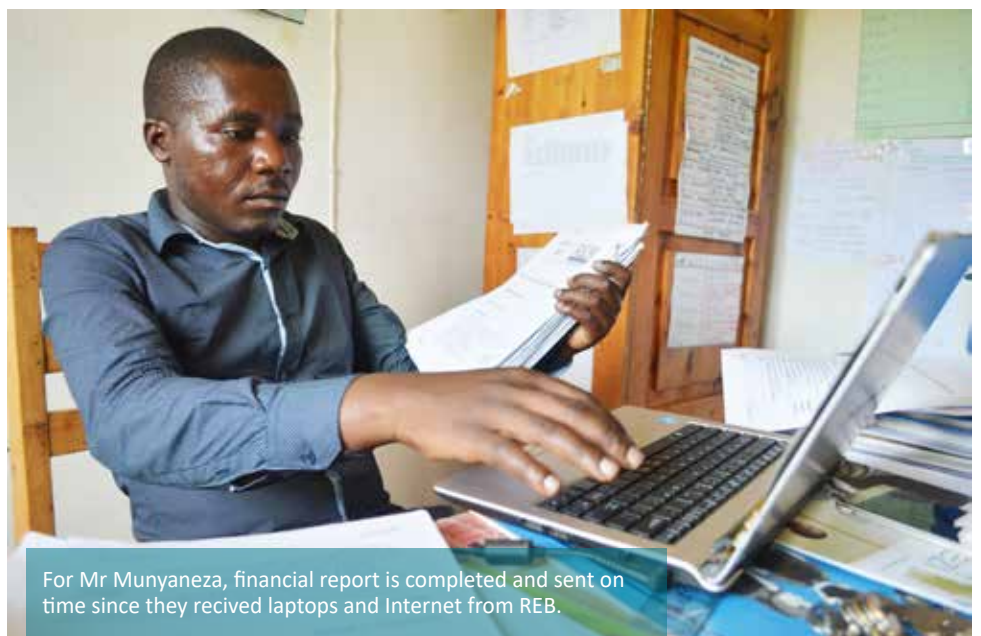
colleagues through Whatsapp," Mr Nyirinkindi said.

Challenges before REB support

Before receiving computers from REB, some teachers could use their smart phones to search for some teaching resources, but it was not effective. "Teachers had to use their own money to buy Internet. However, it was not convenient to use a smart phone to teach big classes and only few teachers had a smart phone," Mr Nyirinkindi said.

Theophile Munyaneza is the school accountant and administrative assistant. He is happy that ICT made his work easier. "We had only one computer with an internet modem. Some administrative tasks such as financial reporting could not be completed on time. Now that we have computers and access to Internet, my work became faster and easier. I now produce a monthly financial report on time and receive the school account statement without going to a bank. We also fill tax declaration online—saving time and money which we would spend if we had to go to an Irembo agent. We received the laptops when we needed them!"

// Now that we have computers and access to Internet, my work became faster and easier."



For Mr Munyaneza, financial report is completed and sent on time since they recived laptops and Internet from REB.



ation and management

G.S Kiziguro



Father Nizeyimana is able to fulfil many of his responsibilities without leaving the school.

// I just wonder how I can fulfil my responsibilities if ICT devices like computers, cell phones, or Internet were not working at all!"

G.S Kiziguro is 12 Year Basic Education school located in Kiziguro Sector, Gatsibo District in Eastern Province. The school caters for over 1,000 students in primary education and about 800 learners in secondary education. It was using 10 desktop computers until REB provided 105 Positive laptops and an internet router. For the Head Teacher Father Emmanuel Nizeyimana, ICT has become very crucial and unavoidable: "It helps us discover how far others have gone and leads us where we want to go."

Making school leader's work faster and easier

For Father Nizeyimana, they've reached a level where if ICT is interrupted everything else is also affected. "I just wonder how I can fulfil my responsibilities if computers, cell phones, or Internet were not working at all! I know how much we panic in case of power cut or internet interruption".

Father Nizeyimana believes that ICT is first of all a powerful learning-teaching tool. "There are a lot of resources online that help us to increase our knowledge and skills. It only requires time and willingness to use ICT and learn from what others have already discovered. There are a number of computer

applications that teach us how to do things easily, very fast and perfectly," he said.

As a leader, Father Nizeyimana is able to fulfil many of his responsibilities without leaving the school:

- Submitting and accessing students' data via the School Data Management System (SDMS) online

- Making the school timetable on a computer while they used to draw it on a black board
- Making students' reports using a computer programme
- Registering students for national examinations online
- Storing school documents electronically: on computers, flash discs and email
- Using Whatsapp groups to communicate with teachers, parents and education leaders

For Father Nizeyimana, ICT remains a great tool as far as school administration and management is concerned: "We don't have to write many reports anymore. We can produce one report and share it with the district, REB, MINEDUC, National Institute of Statistics, or just make some small adjustments".

"Some schools that do not have internet connectivity and decide to go to different places looking for it. If you count the time and money you spend on Internet outside your school you will realise that you can gain when you buy your own Internet at school," said Father Nizeyimana. ■

// ICT helps us discover how far others have gone and leads us where we want to go."

Integrating ICT in a school life:

Experience of Rusumo High School

Rusumo High School is a secondary school located in Kigina Sector, Kirehe District in Eastern Province. It is a boarding school with more than 800 students, with girls representing 44 percent of pupils. The Deputy Head Teacher Eduard Ndicunguye shares how they integrate and use Information Communication Technology (ICT) in every aspect of the school life.

Laptops from Rwanda Education Board

In 2017, Rusumo High School received 105 Positivo laptops, eight desktop computers and a 4G mobile router from Rwanda Education Board (REB). Students use 100 laptops while teachers use five laptops through their respective departments. The students' laptops have been put in two smart classrooms. In addition, the school has an ICT room with 44 desktop computers including eight laptops donated by REB. "The laptops in the

“Since we know that some students may be disrupted by some age-inappropriate websites, we always assign a supervisor in every smart classroom.”

smart classrooms are connected to the Internet and are used for learning and teaching different subjects using ICT as a tool while the ICT room has no Internet and is used to teach ICT as a subject such as teaching computer parts (physical hardware) as well as computer system (software),” said Mr Ndicunguye.

ICT as a subject

As Mr Ndicunguye explained, all students learn ICT as compulsory subject for two periods per week. In lower secondary, it is referred to as ICT subject. In upper secondary, it is taught as Computer and Library subject as they learn how to use internet and the physical library to do research.

ICT as a learning and teaching tool

Every subject has to be taught in a smart classroom at least one period a week. “This means to use ICT in preparing lessons and teaching. It involves using a laptop and Internet



The school makes sure every learner has access to a computer.



to prepare presentations, facilitate students practice on computers, using a projector to deliver a lesson... We have elaborated a timetable that shows when each teacher is going to use a smart classroom," Mr Ndicunguye explained.

Evening research

After class students are allowed to use the smart classrooms and each class can access it at least once a week. "A smart classroom has 50 computers in total. So, we allow a maximum number of 45 students to make sure every learner has access to a computer. We made this arrangement just in case one or two laptops have some issues. Since we know that some students may be disrupted by some age-inappropriate websites, we always assign a supervisor in every smart classroom. We want our students to focus on educational content," Mr Ndicunguye said.

Encouraging research among student clubs

Given the link between some student clubs and subjects, the school decided to allocate time for them to use smart classrooms for research. "Science club, Debating and Business clubs are the ones allowed extra time to use the smart classrooms during weekends. We developed a timetable for them," he said.

Training on pedagogical use of ICT

At the beginning of every first term the school management organises a training for teachers on how to integrate and use ICT in teaching and learning. The training is facilitated by the school ICT manager based on issues identified during the previous year. It is conducted on Wednesdays during the time allocated for teacher professional development activities.

Familiarising with ICT in teaching and learning

"We recommend every teacher to do necessary preparations in advance to avoid wasting time in case of technical issues," Mr Ndicunguye said.

Teachers generally use five laptops according to each one's department. However, when a smart classroom is free a teacher can request to use a laptop by filling a request form. "This arrangement gives teachers more time



Mr Eduard Ndicunguye, Deputy Head Teacher.

“We believe that ICT contributes to improving learning outcomes given the time we allocate to it.”

to familiarise with ICT”.

Urubuto software

"At our school it is a requirement for all teachers to prepare students tests on a computer. Once the tests are ready, they are sent to heads of departments who also share them with me. After correcting and marking the tests, students' marks are eventually submitted to me through Urubuto software, an innovative comprehensive school management solution," Mr Ndicunguye said.

"A student's test summary in terms

of percentage can be sent to his/her parent through a short message generated by the software," Mr Ndicunguye said.

ICT Challenges

"When Internet is slow the work is affected. Sometimes the alternative is to use my smartphone's internet bundle to connect my computer. In addition, the ICT manager only does basic computer maintenance," said Mr Ndicunguye. Repair centres are being established across the country by REB and Rwanda Polytechnic to support schools in device maintenance.

Key outcomes

- Teachers can now do researches on the Internet without leaving the school
- In general, teaching and learning resources are accessible and downloadable online
- Competence-based Curriculum resources can be accessed at the REB website
- "Students perform better since we started integrating and using ICT in teaching and learning. We believe that ICT contributes to improving learning outcomes given the time we allocate to it," said Mr Ndicunguye.■

ICT in all aspects

G.S Mata



G.S Mata is located in Mata Sector of Nyaruguru District in Southern Province. The school has more than 800 primary school students and 250 secondary school students.

Leading G.S Mata since 2016, Ms Aloysie Mukarubayiza (pictured) is excited about how ICT enabled her to improve her work: ***“ICT has improved the quality and the speed of the work we are doing in our school. Before we were keeping school data in papers, it was taking us much time to produce and send reports because we were doing them manually. Now, ICT has helped us manage our data and speeded up our reporting. The work which would take five days can now be done in two days.”***■

College Imanzi

“We no longer travel to Kigali to collect curriculum syllabuses, we can download them online and print them from here,” Head Teacher Joseph Nshimiye said.



College Imanzi is a secondary school located in Kibeho Sector of Nyaruguru District in Southern Province. It is a boarding school with over 200 students. This College has two ICT labs with 105 Positivo laptops, all connected to the Internet. They also have projectors and white projection screens.

Effort-saving process

Parents can pay school fees then scan bank slips and forward them to the school.

College Imanzi also uses a computer software to make student reports. Every time a report is updated, parents are also notified. They can then follow their children's progress without coming to school.

Before ICT, every time there was a document to send to the the district, they had to carry it there. But today, they scan and send them via email.

Home away from home

As College Imanzi is a boarding school, students are per definition away from their parents. Since the school is equipped with ICT labs, every student has a personal email address. Some can now communicate with their parents without having to use a phone. It's free communication and it's also teaching them to familiarise with computers.■

G.S Saint Bruno: Caring for learners with special needs



G.S Saint Bruno is a Twelve-Year Basic Education (12YBE) located in Gihundwe Sector of Rusizi District, Western Province.

Caring for learners with special needs

For the Head Teacher Philberte Muhimpundu, all learners should be given equal opportunity to access and use ICT tools. This means that limited access to ICT tools for learners with special educational needs is a hindrance to equality. ***“Currently, three students with special educational needs are enrolled in our school. The one with***

hearing disabilities for example always sits in front of the teacher. Children in their class know that, and everyone is doing her/his best to support them. We have also been supported by Humanity and Inclusion organisation (Former Handicap International) with braille materials to support students with vision impairment,” said Ms Muhimpundu.

Capacity building of teachers

While many schools are trying to integrate ICT in their daily teaching and learning activities, some teachers still have a huge skill and knowledge gap in ICT. Collaboration and mutual assistance between colleagues is therefore essential: ***“We don't have teachers who graduated in ICT. However, those with basic skills are supporting others to use ICT even though it's not easy for aged teachers who have been teaching for many years without using ICT. They are not very familiar with ICT devices, so they seek support from younger colleagues,”*** said Ms Muhimpundu.■

G.S St Bonaventure Nkanka



“Even if you don't have all the tools, be creative. We are now registering our students for the national exams online. We don't have a scanner, but I'm using my phone. I'm taking a picture of the documents, then I upload them on the computer.”

G.S Saint Bonaventure is a 12YBE located in Nkanka Sector of Rusizi District, Western Province. Mr Alphonse Ndayisabye, teacher of English and Swahili, took the position of ICT coordinator when the one in charge of ICT left the school.

“Before, most teachers couldn't do anything. Now, they are all able to integrate ICT in teaching and learning. We should share more, even between staff from different schools. If we share what we can do, we can master ICT in no time,” he said.■



ICT for mentoring and coaching

// A smart classroom is not just a computer lab where students can learn how to use computers, rather it is a classroom where ICT is used as a tool."



Mr Evariste Mwumvaneza (standing) coaches his colleagues on how to integrate ICT in teaching and learning.

Evariste Mwumvaneza is the Deputy Head Teacher at Ecole Secondaire Munzanga located in Murundi Sector, Karongi District in Western Province. He shares how ICT allows access to CBC resources online, and enhances mentoring and coaching activities.

In 2017, the school received 105 laptops from REB, an internet modem and two projectors. Prior to receiving these, the school already had some ICT devices including four computers, a printer, a photocopier and a TV screen in addition to smart phones owned by some individual teachers. Currently, they have two smart classrooms and each has a projector.

Stimulating critical thinking

"A smart classroom is not just a computer lab where students can learn how to use computers, rather it is a classroom where ICT is used as a tool," said Mr Mwumvaneza.

In addition to smart classrooms, the school also has a TV screen where students can watch different programmes. "We believe that TV also opens up student minds and stimulates their critical thinking. It serves as another teaching and learning tool," Mr Mwumvaneza said.

Sharing ICT with local community

"We receive different requests for using our Internet. The requests come from some local leaders who need to send reports. College and university graduates who need to send job applications or download some documents also come to us," Mr Mwumvaneza said.

Mentoring and coaching

Jean Uwizeyimana is the School Based Mentor at E.S Muzanga for the last three years. He has been a teacher since 2014. On

top of that, Mr Uwizeyimana is an English and Kinyarwanda teacher. After attending a training on ICT integration in teaching and learning organised by REB, he also helped his colleagues. "All teachers now have basic skills on how to integrate and use ICT in learning and teaching," Mr Uwizeyimana said.

Mr Uwizeyimana organises sessions to support his colleagues as follow:

1. Teacher professional development

"At the beginning of every school term we elaborate a professional development action plan where we include sessions on integrating ICT in teaching and learning. We do this by organising a model lesson using ICT so that my colleagues can also do the same. We also schedule some lesson observations and give constructive feedback".

2. Teaching and learning

"As a teacher I use ICT a lot in the teaching and learning process. For example, when I'm teaching phonetics in English language, I search words on the Internet and play them on speakers for students to learn different sounds. This is a practical example I shared with my colleagues, showing how ICT can be integrated in every lesson."

3. Making SBM job easier

"During mentoring and coaching sessions, I used flipcharts but when we got laptops, internet connection and projectors, my work became easier and faster. I can now prepare PowerPoint presentations on a computer and use a projector to coach and mentor my colleagues. While it was challenging to edit content on flipcharts or keep them for

future use, with today's technology I can store presentations as well as other documents, share them with my colleagues through email, on a flash disk or even on Whatsapp. I can make adjustments whenever needed."

4. Whatsapp as learning platform

"We used to think that WhatsApp is used for socialising with friends and some people would consider using it as a waste of time. However, such perception has changed. We created a Whatsapp group for all teachers and use it for sharing teaching and learning related content and updates. I once attended a workshop and learnt about core skills of the 21st century pertaining to education. These include collaboration and teamwork, creativity and imagination, critical thinking, and problem solving. I would share these skills with my colleagues with some additional explanations through Whatsapp while I was in the workshop."

ICT brought change

- Teaching was mainly done in theory (especially science) but today complementary and illustrative teaching-learning resources are found online and allows students to understand the relevance of science in their everyday life better hence increasing their passion of science.
- Last year, the school had the highest success rate ever in national exams: in O' level one student obtained the first grade (8 out of 8), while another student in A' level scored 70 out 73. The overall success rate was 100 per cent in A' level. The school management claims that ICT contributed to this. ■

Tips and tricks for effective

ICT in teaching and learning

- Include ICT-based resources and activities in your lessons
- Let advanced learners move at their own pace
- Involve advanced learners in supporting their peers
- Challenge students to critically evaluate what they access using ICT
- Maximise learning opportunities via ICT beyond the classroom environment
- Train teachers and students on safe use of computers and the Internet

Managing the computer lab

- Elaborate a timetable for smart classrooms
- Set up a system for device checkouts
- Identify computer problems and set a plan for maintenance
- Store devices properly in a locked cupboard at the end of each day
- Never allow students to use a smart classroom without a supervisor

ICT for Continuous Professional Development of teachers and school leaders

- Identify and participate in free online courses that offer certificate
- Explore scholarships available at different universities for online degree programmes
- Join and participate in networks of peers (online learners, teachers and school leaders) and instructors from diverse settings
- Build on your free online learning accomplishment to seek scholarships at offering universities
- Beware of non-accredited online learning degree programmes. If in doubt, seek advice from the Higher Education Council
- Critically evaluate online resources

ICT in school administration and management

- Make sure to have proper data backups and security for confidential information
- Set up and use an online financial management system (payment of school fees, grant management...)
- Use online communication with all stakeholders



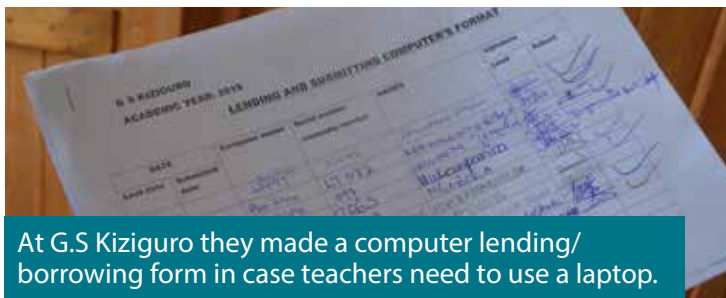
Use of ICT in education



Never allow students to use a smart classroom without a supervisor.



At G.S Kiziguro, Positivo laptops are properly placed in a wooden locker for safety.



At G.S Kiziguro they made a computer lending/borrowing form in case teachers need to use a laptop.

Example of scholarships for online degree programmes



COMMONWEALTH SCHOLARSHIPS

Commonwealth Distance Learning Scholarships

<http://cscuk.dfid.gov.uk/apply/distance-learning/>



At E.S Munzanga they ordered a special wooden locker where every laptop is placed in a way that no laptop gets in contact with another.



Placing laptops this way, one on top of the other is not safe. It may damage the screen/s of the ones at the bottom.



A School Based Mentor supports his colleagues on how to use ICT in teaching and learning.





POSITIVO BGM

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