Introducing technology in education during the time of pandemic: The case of the University of Bamenda

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Abstract

In 2020, the adoption of technology in education rapidly became a method to fight against the propagation of the coronavirus disease 2019 (COVID-19). During the academic year 2020-2021, the University of Bamenda in Cameroon embarked on remote working and online teaching by scheduling 50% of its courses online via eLearning platforms. The results obtained during the academic year were not satisfactory. To determine the flaws in the introduction of technologies at the University, I surveyed 30 teachers and 46 students. The data obtained were analysed through the coding and categorising framework. Alongside infrastructural issues like unstable electricity, unavailability of internet connection, and the scarcity of electronic devices like computers, the research exposed human factors like resistance to new technologies, new methods of teaching and preparing courses. Although technology facilitates education in developed nations, this instrument still presents some impasses in developing countries, such as Cameroon. Through the description of the predicaments of the University of Bamenda, this study proposes solutions for the effective application of technology in education that may be useful in developing nations.

Keywords: *COVID-19, Technology, Education, eLearning, University of Bermuda*

Introduction

Learning is no longer circumscribed within the walls of a classroom. Technology and an increase in internet-accessible devices have given students the ability to learn anywhere and everywhere. Before the advent of the Coronavirus disease (COVID-19), an infectious disease caused by the SARS-CoV-2 virus, distance learning was an optional teaching method that several schools suggested to their pupils. However, in 2020, it became an essential approach in education. In Cameroon for instance, schools were closed and distance learning was enforced. In the Northwest region of Cameroon, the University of Bamenda used eLearning platforms to teach students at home during the academic year 2020-2021. The record of that academic year allows me to determine whether the introduction of eLearning at the University of Bamenda succeeded to safeguard education during the period of pandemics.

This paper discusses the problems that teachers and students encountered during the introduction of technology at the University of Bamenda. Although the analysis focuses on a given case study, it is important to note that the problems outlined may be common to many African institutions. This paper is divided into six main sections. In this first section, I introduced the work. In section two, I discussed the application of technology in education. In the third section, I review the impact of COVID-19 and its contribution to the ascension of technology in education. The fourth section investigates the case of the University of Bamenda. The fifth section discusses the strategies to implant technology in Africa, and the last section concludes the work.

ICT in Education

Information and communications technology (ICT) was introduced in education in the early 1980s after the world had witnessed the launch of Sputnik (the Soviet Union's first satellite) to foster the creation of modern artificial satellites (Debi, 2019). A few decades later, the goal of technology in education shifted. Teachers and learners used technology to communicate and collaborate on projects, and engage in the kind of critical thinking that resulted in problem-solving, decision-making and acquiring 21st-century digital citizenship skills (Debi, 2019).

The introduction of technology in education led to the coinage of a plethora of terms like ELearning, Distance Learning, Online Learning, Open Learning, Mobile Learning, Massive Open Online Courses (MOOCs), ICT, etc. It is often difficult to differentiate those concepts, although some characteristics distinguish them. For instance, while online learning means that the *majority* of the coursework will be instructed via the internet, eLearning excludes all forms of face-to-face interactions between teachers and learners, the *entire* program is conducted on the Internet via email, forums, chat, or video conferencing (Solanki, 2020). On the other hand, the term, Open Learning refers generally to activities that either enhance learning opportunities within formal education systems or broaden learning opportunities beyond formal education systems (Brügelmann,1975). Open learning is

connected to the concept of MOOCs which are courses made available by teachers on the internet for learners who can study the learning content in a self-paced way (Quiliano-Terreros, Ramirez-Hernandez, & Barniol, 2019). Additionally, Information and communication technology (ICT), refers to technologies that provide access to information through telecommunication. In the domain of education, ICT implies the use of electronic devices to handle and communicate information for educational purposes (Cambridge, 2022).

ICTs and other related concepts complement, enrich and transform education. Yet, for a long time, those concepts were absent in many African countries, and lots of African schools did not have computers on campuses. Subsequently, in 2015, UNESCO launched the ICT Transforming Education in Africa to provide African schools with computers, train teachers on the use of ICTs, and align African educational systems with worldwide digital advancement and perspectives. Besides, a charity initiative, "Computers for African Schools" donates computers to many African schools to allow pupils to gain experience in the use of computers, and to understand how IT functions. Despite these efforts, the needs still surpass the supply. During the coronavirus pandemic, the absence of ICTs disrupted education in many African nations (UNESCO, 2015).

ELearning and the Coronavirus Pandemic

In 2020, the World Health Organisation (WHO) declared the rapidly spreading COVID-19 outbreak as a public health emergency of international concern. In an attempt to reduce the spread of COVID-19, most governments decided to temporarily close schools, considered a foyer of rapid propagation of the virus. Consequently, in April 2020, a total of 1,404,074,407 schools were closed worldwide (UNESCO, 2022). To ensure the continuity of education despite the lockdown, governments sought to use technology and offer online classes as a substitute for face-to-face teaching. Many countries deploy remote learning technologies such as TV, radio, online and mobile platforms.

In western world countries, eLearning platforms were the preferred substitute for in-class teaching. From 2020 to 2021, learners from primary to tertiary education got acquainted with eLearning platforms, which encouraged collaboration and interaction. Examples of such include *Zoom* (which became the 1st choice for meetings and webinars for its ease and functionality), *FlipGrid, Google Classroom, Buncee, EdModo, Edulastic, Microsoft Teams Coursera, MOOC, Udemy, EDx* etc. (Arden, 2021). Even though those platforms were well-known and broadly used by European and American students, a majority of those platforms remained unknown to many African learners and teachers.

Several African nations used remote distance learning tools like radios and TV to instruct learners during the pandemic. In Cameroon for instance, the ministers of primary and secondary education chose to broadcast programmes and teachings on TV and radios. However, the TV and radio teaching programs recorded various complaints from parents. The first was the competence and performance of teachers. Many parents who listened to the programs with their children noted frequent language infelicities like grammatical mistakes, wrong choice of vocabulary, context expressions, inappropriate use of terms, etc. Parents also complained about the quality of the image and sounds. Another complaint concerned power cuts. Many students had just one lesson per week, and it often happened that students spent several weeks without lessons because of prolonged power shortages. In order to avoid the hindrances linked to the use of TV and radio teaching programs, tertiary education in Cameroon opted for a format where teachers and students would interact through eLearning platforms. The data presented and analysed in the next section highlights the limitation of this method at the University of Bamenda.

ELearning in the University of Bamenda During the COVID-19 Pandemic

The Republic of Cameroon counts eight state universities, among which is the University of Bamenda (UBa). UBa is located at Bambili, a subdivision in Bamenda, Mezam Division, Northwest region of Cameroon. The University opened its doors in 2011 and became the second Anglo-Saxon University in Cameroon after the University of Buea. The scope of this research was limited to the University of Bamenda for various reasons, the first being convenience. As a lecturer at UBa, it was more convenient to collect data in my immediate environment. Another reason is the ongoing crisis in the area. Since 2016, Cameroon's Northwest and Southwest regions have been witnessing a socio-security crisis known as the "Anglophone crisis". The crisis is causing the death of thousands of civilians and militaries (Agwanda, Nyadera, & Asal, 2020). Therefore, UBa is going through two trials, the socio-security crisis and the COVID-19 pandemic, which are big challenges to deal with. Moreover, the University created an eLearning platform in 2021 to facilitate online teaching and students' evaluation during the school shutdown. The platforms had three main functions, uploading lessons for students, interacting with students who had questions after reading the lesson, and evaluating students. Before examining the problems caused by the

introduction of technology at UBa during the COVID-19 pandemic, let me make an inventory of the situation of technology at the University.

UBa is part of a national project known as the "E-National Higher Education Network" launched in 2014 by the head of state and executed by the Ministry of Higher Education. This project, which ended on December 31, 2020, aimed at accelerating the digital transformation of Cameroonian higher learning institutions. The project was divided into 6 components:

1. The donation of 500,000 laptops to Cameroonian students of all recognised higher education institutions;
2. The construction and equipment of University Digital Development Centres;
3. The establishment of the National Network of Digital Interconnection of the Universities of Cameroon (RIC);
4. The construction and rehabilitation of computer networks on the main campuses of the eight State Universities;
5. The development of the Integrated Management System in Higher Education Network in Cameroon (SIGIRES); and
6. The provision of high-speed Internet access (9 gigabits) to the RIC, for the benefit of State Universities (Actu Cameroun, 2020).

In 2017, many UBa students were granted laptops, as envisaged by the first component of the project. However, several complaints surrounded the grant: 1) not all students received the laptops. 2), the laptops were reported to be of bad quality, 3) they had very limited capacities, and 4) the laptops were not robust. By the end of 2017, barely some few months after the acquisition of the gadgets, many students reported that their laptops were already out of use.

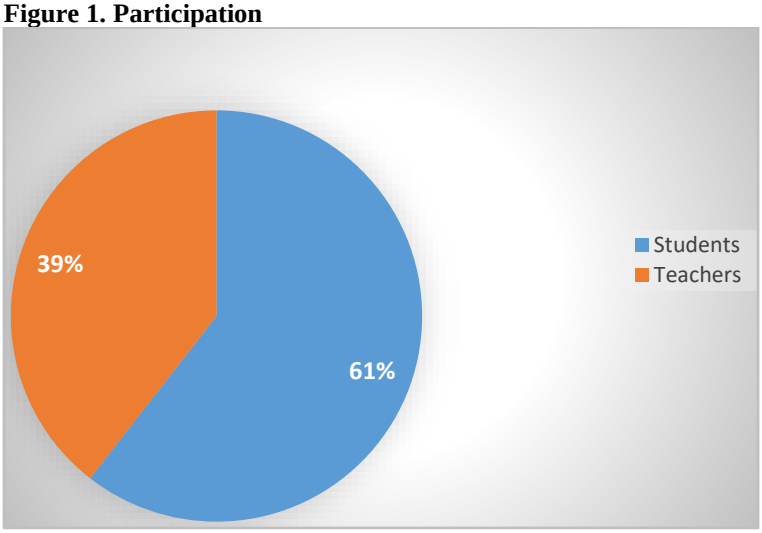
Unfortunately, the E-National Higher Education Network project was not efficient. In UBa for instance, no Bachelor's degree students of the Department of Linguistics and African Languages (LINA) owned computers. Many Bachelor's and Master's degree students do not have an email address. The majority of them are unable to search and download books and articles on the net. Some others do not know how to type and print their assignments on computers. UBa students still submit handwritten assignments. Added to that, UBa has only one computer centre just large enough to contain students of the Faculty of Technology. Indeed, the computer centre is so small that it cannot contain one-quarter of the students. Besides, more than half of the computers in the centre are out of use. There are no internet or Wi-Fi services available for students. Also, the university does not have an online library. Regrettably, students are not the only ones unskilled in ICTs. Many lecturers (especially the senior ones) are unable to type and print their questions, and regularly call on secretaries. Furthermore, during conferences, seminars, and workshops, lecturers rarely used software like PowerPoint for their presentations, spending boring time reading sheets of paper to the audience. It is in such a mitigating context that the University of Bamenda had to introduce eLearning.

During the academic year 2020-2021, UBa conducted 50% of its classes online. Teachers were to lecture the contents of their course syllabi online, but conduct exercises, tests, and exams in class. This method has posed a lot of problems to lecturers and students of UBa. To identify those drawbacks, in November 2021, I handed over one hundred semi-structured questionnaires to lecturers and students, i.e. 50 questionnaires to lecturers and 50 to students. The questionnaire mainly focused on the difficulties they encountered when using software for distance learning. In the last section of the questionnaire, I allowed each participant to suggest solutions to enhance eLearning in UBa in particular and in Cameroon universities in general. The data were analysed through the coding and categorising framework. To get closer to my central themes, I kept reviewing and consolidating my coding framework as I went through the answers.

Discussing the data

In January 2022, 76 participants, that is 46 students and 30 teachers, returned their answered questionnaires. Thus, 39% of my participants were teachers, and 61 % were students as seen in figure1.

Figure 1. Participation



The questionnaire dwelled on the difficulties that teachers and students of UBa encountered during the distance learning program during the academic year 2020-2021. The survey first questioned the participant's knowledge of eLearning. All the 46 students admitted that the online learning program of UBa was their first contact with eLearning and 11 teachers were in the same position. On the question of participants 'access to essential tools like computers, 38 students did not have computers at home and 3 teachers complained that their computers were out of use during that period. A third question was on the respect to course syllabuses. I tried to know whether teachers succeeded to cover all their course syllabi online and if students understood teachers' 'e-teaching'. All 46 students declared that they found it difficult to follow lectures online. The 30 teachers also confessed that they did not cover all their course syllabi online. The second part of the questionnaire allowed participants to reveal the methods they used to deliver or understand lessons to follow course syllabi. All participants (both teachers and students) acknowledged that they took advantage of the 50% of in-class discussions to lecture or understand lessons. Additionally, I questioned participants 'use of the University eLearning platform. 39 students admitted that they did not understand how the platform functioned, thus they did not use it at all. Up to 6 teachers were in the same situation. Figures 2 & 3 provide a comprehensive picture of the data displayed in this paragraph.

Figure 2. Student's accessibility to ELearning facilities and lesson comprehension

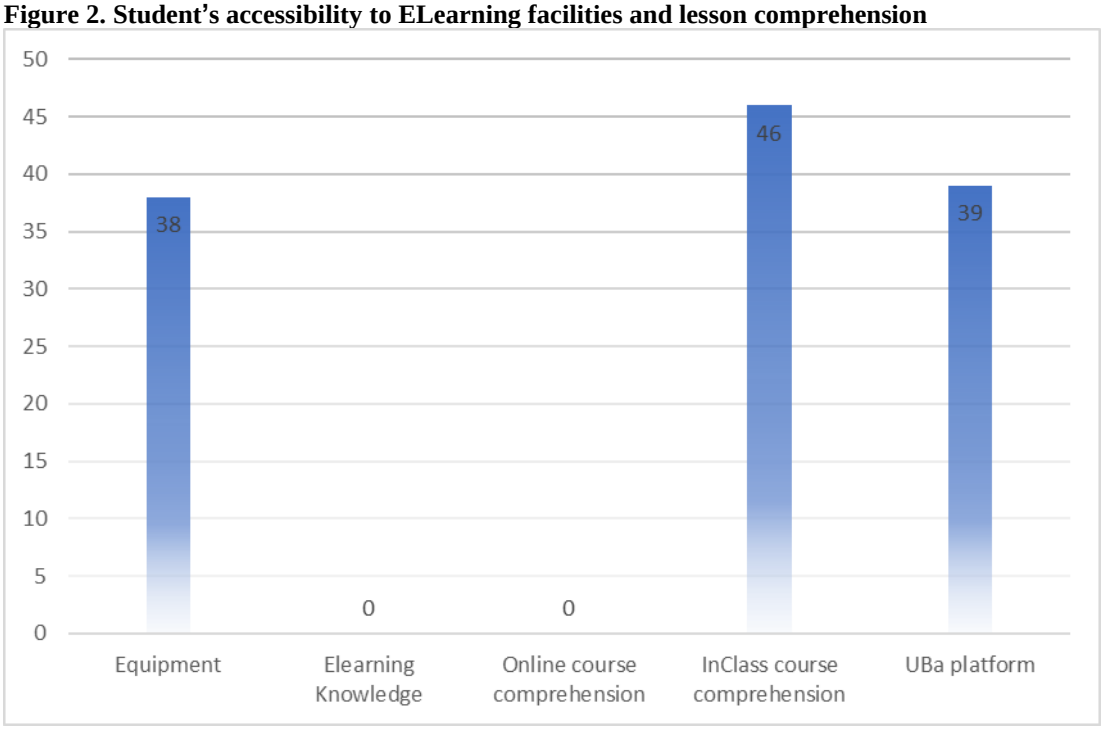
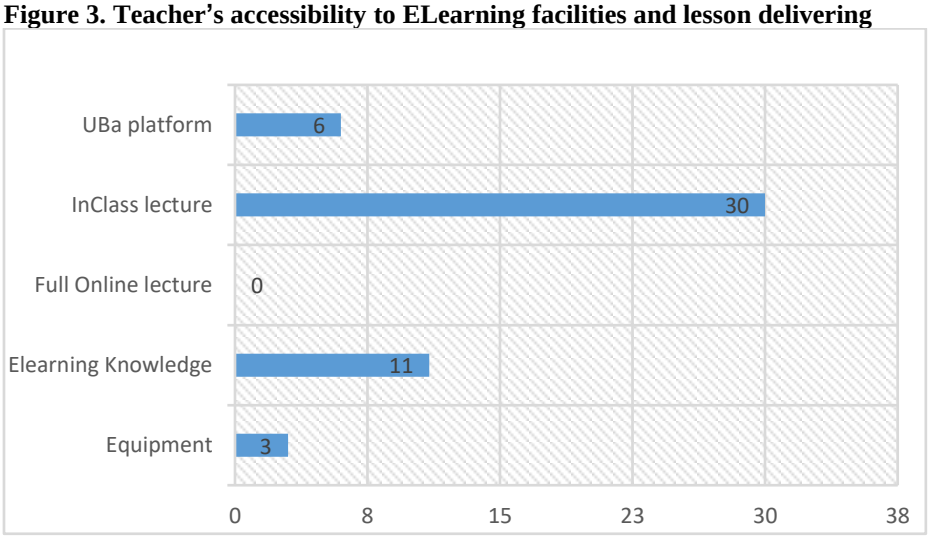


Figure 3. Teacher's accessibility to ELearning facilities and lesson delivering



The above themes (eLearning equipment, eLearning knowledge, online delivering/comprehension, in-class delivering/comprehension, and UBa eLearning platform) were not the only issues that hindered eLearning in UBa. Other trivial infrastructural and human factors thwarted the distance learning program. First of all, I must indicate that internet access is very challenging in sub-Saharan Africa. For instance, not all zones of Cameroon have access to the internet, and internet connection is still very costly. Many Cameroonians cannot afford more than one hour on the internet a day. Students, therefore, had difficulties participating in online learning since it consumes a lot of data. Moreover, electricity is still very unstable in Cameroon. In Bamenda for instance, people can stay for days without electricity. Thus, even if all students and teachers of UBa had computers and internet access, power cuts could prevent them from taking part in the eLearning program. Furthermore, unskillfulness in ICTs (a human factor) obstructs eLearning in UBa. Many Cameroon youths believe that their knowledge of social media like WhatsApp, Facebook, Instagram, etc. is a giant step toward the digital world, yet many of those youth do not even have email addresses. Students could not open accounts on the UBa eLearning platforms because the platforms requested email addresses. Likewise, some teachers are not willing to learn how to use the computer tool. Because

lecturers did not know how to start a meeting on ZOOM or how to organize a class in Google Classroom[1], they used WhatsApp groups to disseminate their lessons. However, some lecturers took advantage of the pandemic to learn how to use platforms like ZOOM and Google Classroom. We noted by the end of the academic year, in 2021, that some lectures were organised in ZOOM. Indeed, there are methods to improve the use of ICT in African schools as well as the knowledge of teachers and students in their use.

Towards the Development of eLearning in Africa

Though the application of technology in education has become a basic prerequisite in developed nations, it is not yet of main concern in many African countries. African nations are still fighting to decrease the proportion of out-of-school children, increase the enrolment rates, ensure the availability of teachers and their salaries, build schools etc. (UNESCO, 2015). Within all these aspirations, ICT has not been given great importance. However, I am conscious of the efforts made by many African leaders, especially during the pandemic, to introduce technology in schools. The case of the University of Bamenda allows me to recognise that there is still a lot to do. The use of technology in education presents many benefits, (1) achieving broad socio-economic goals, (2) steering development and competition, (3) enhancing learning and (4) providing students with new sets of skills (UNESCO, 2015). Therefore, resources need to be made available to foster the advancement of ICT and eLearning in the University of Bamenda in particular and in Africa in general.

In the suggestion section of the questionnaire, all participants recommended that computers should be given to all educational stakeholders. Considering the financial situations of many parents, it may be inappropriate to expect every parent to buy computers for their children. Funds must be poured into schools to buy computers. As earlier mentioned, UNESCO and the Cameroon government worked on that perspective, although much effort is still needed. More organisations have to participate in the struggle. The objective should be 'One Computer for One Student in Africa'.

Teachers further recommended that the internet should be rendered accessible for educational stakeholders. Indeed, internet connection is still a luxury in many parts of Africa. Fortunately, in 2011, the American company, Google, through CSquared, launched the "Project Link in Africa" whose long-term vision is to increase internet penetration in Sub-Saharan Africa and, also to reduce internet access costs by investing in the required infrastructure (CSquared, 2022). The project already gives hope. However, this wouldn't be a reality if the electricity supply is not stabilised. ELearning cannot be effective without electricity since computers need power supply to function. An alternative could be solar energy. However, this system is still very costly in Africa. Here again, African governments need to be assisted to provide energy to their citizens.

Moreover, nine teachers suggested ICT training sessions for both teachers and students. ICTs training programs have often focused on teachers 'training only. It has always been assumed that trained teachers will train students. Yet, nothing prevents training both entities at once. In Cameroon, It was noted that many ICT teachers end up being arithmetic, mathematics, and physics teachers when sent to schools. Some of the reasons advanced are that, (1) those courses are considered to be more important, (2) schools suffer from the lack of teachers, and (3) there is not sufficient money to pay part-time teachers. Consequently, ICT training sessions should be planned for both teachers and students in schools. However, we shouldn't limit it to training sessions. Policies should be designed to incorporate ICT in the educational system of African nations. As noted in Jones (2003) and Tyack & Cuban (1995), we often observe a great advancement in eLearning when ICTs are included in the educational policies of nations. Policies render things mandatory. Many African nations did not design a policy inforcing the application of ICT in their educational systems. As a matter of fact, the development of technology in education should not be left in the hands of educational stakeholders alone. All members of the society (economic agents, NGOs, politicians etc.) should take part in the struggle. It is often estimated that politicians have a big role to play since they make the laws. Economic agents 'and NGOs 'roles should not be neglected, as they often provide the funds.

Conclusion

The outbreak of the COVID-19 pandemic globally in 2020, increased the use of technology in education. Distance learning, online learning, eLearning, and digital learning platforms were on-trend. The pandemic even pushed some African countries to embark on eLearning after the closure of schools. In this study, I report on the degree to which eLearning is not yet a reality in Cameroon, using the case of the University of Bamenda to highlight the

[1] It is important to note that students and teachers were not prepared to use technology in education. No eLearning training programs were ever organised to provide students and teachers with necessary skills.

problems that hinder the application of technology in the educational system of many African nations. Nevertheless, we should not dwell on the problems, but rather recommend solutions to handle those problems. African students, just like European and American students, merit using technology to learn. It is time for African students to stop seeing teachers as the only source of information and knowledge. In this research, participants recommended the availability of computers, the internet, and electricity to enhance learning during school closure. I also point out the need to design policies and apply for aid from generous donors like NGOs and charity groups.

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