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Research Article

The Current State and Future of eLearning in Educational Institutions in Cameroon: A Case Study of the City of Yaounde

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ABSTRACT

The development and use of ICTs and the internet has changed the way things are done in the world forever. The way of acquiring knowledge, through e-learning, is one of the significant changes. This study investigates the current status and future of e-learning strategy in educational institutions in Cameroon. The study adopts a case study approach. The sample consists of eight (8) educational institutions - four tertiary and four secondary. The findings have revealed the range of problems encountered in the integration of e-learning in schools and the strategies that could be adopted to improve e-learning in educational institutions. The most used e-learning platforms in schools are: Claroline in secondary schools; and Moodle, Coursera, and EdX (mostly MOOCs - Open Online Courses), in higher education institutions. It was concluded that all is not well with e-learning in the sampled institutions as the incorporation of the learning strategy in these institutions is yet to fully take root; and this might also give an indication of the current situation of e-learning in the country as a whole; especially considering the fact that all the schools studied are in the capital.

Introduction

'The internet has revolutionized the computer and communications…' landscape to the point where the world would not be the same again (Leiner et al., n.d). According to Leiner et al., the invention of the telegraph, telephone, radio, and computer set the stage for this unprecedented integration of capabilities', creating a formidable 'mechanism for information dissemination, and a medium for collaboration and interaction between individuals and their computers without regard for geographic location' (ibid).

From the foregoing, it is easy to see that the fallout of the internet revolution is the birth of the e-learning concept. Indeed, since the acceptability of the internet by the global academic community 'as a means of communication… academics have been aware of its massive potential as a learning tool' (Dewath, 2004). The era when learners must travel out of their immediate vicinities in search of knowledge seems to be a thing of the past. The introduction of e-learning as an alternative means of acquiring knowledge and skills, through the power of the internet and new information and communication technologies has empowered individuals to freely choose between an online course and a traditional course - a feat that would not have been imagined only a few decades back.

Education in Cameroon and government's action towards ICTs in schools

In recognition of 'the possibility of online learning to deliver cost effective, easily accessible and ever-current education for all ages and social background', irrespective of time and location, the Cameroon government promulgated a law in 2001, instituting ICTs in government secondary schools, probably as a prerequisite for the eventual take up of the e-learning strategy in the education system. Also, the law organising Cameroon's educational system, referred to as Decree N°2006/306 of 22 September 2006, recognised the potential demand for education due largely to the youthful population of the country.

According to the National Institute of Statistics (2010), post 2007 census figures showed that the less-than 15 age group represents 43.6% of total population, while half of the population is less than 18. The impact of an active population such as this on the educational system cannot be overstressed. The population of school attendees keep on increasing. The National Institute of Statistics further showed that in the school year 2008-2009 the demand for primary school population stood at 3,350,662, and that for secondary education was 1,013,667. Whereas in the higher education sub-sector there were 182,353 students in all for that school year; but this number almost doubled in 2014 to a staggering 357,504 students (Ministry of Higher Education, 2014, p. 23). For a small country like Cameroon these numbers are not small.

Education in Cameroon operates under four ministries namely:

- The Ministry of Basic Education (MINEDUB) - in charge of nursery, primary education and teacher training colleges;
- The Ministry of Secondary Education (MINESEC) - in charge of general and technical secondary education and technical teachers training colleges ;
- The Ministry of Employment and Vocational Training (MINEFOP) - in charge of post- primary education and vocational training;
- The Ministry of Higher Education (MINESUP), takes charge of post-secondary and higher education (National Institute of Statistic, 2010, p. 12).

The Ministry of Higher Education manages all the eight public universities and is supervisory body to hundreds of other private higher education institutions in the country. The Minister of Higher Education is the chancellor of all Cameroon's state universities. The eight public universities under the ministry include: University of Bamenda; University of Buea; University of Dschang; University of Douala; University of Maroua; University of Ngaoundere; University of Yaounde 1 (first university in Cameroon - founded in 1962); and University of Yaounde 2 (carved out of University of Yaounde). Like in most universities all over the world, these universities run specialised institutions in various academic and professional domains (Commonwealth Education Online, n.d).

The e-learning strategy can transform education in Cameroon at all levels. It is true that the concept is a relatively recent development in the country, but if we judge from the strides e-learning has made globally there is evidence that it can make even a greater difference in the way the country's youthful population learn and acquire skills. As rightly noted by Tony Blair in the preceding paragraphs (although referring to the situation in the United Kingdom), likewise, Cameroon cannot afford to train its youth 'in yesterday's skills' and expect them to be 'effective in tomorrow's world.'

Statement of the problem

The African Union has visualized 'what Africa might look like in fifty years' (now reduced to about forty-three years!) in its Vision 2063 document. Cameroon has articulated its development aspirations in a vision 2035 document. This vision envisages, amongst others, a universal access to quality social services, which could include ICT and e-learning. As a member state of the African Union, Cameroon has a mandate to connect with the vision by turning it into reality as it concerns the e-learning strategy in its own backyard. Cameroon might only achieve this by using education and taking advantage of available technology to transform its socio-economic landscape. In this way, a transformed Cameroon can rightly play a role in shaping, not only Africa, but indeed, tomorrow's world. There are policies in place that suggest government's thinking in this aspect. It is on record that the government of Cameroon officially introduced ICTs in educational institutions in 2001, through a cyber-education project that targeted secondary and tertiary education (Josue, 2007). In a statement relating to this, the government clarified that imported computers and their accessories shall be duty free for schools. Before the official launch of ICTs in public schools, however, private schools had introduced these technologies into their curricula as far back as the 90's. But they operated without a 'specific policy guiding the teaching or use of ICTs in education…' (ibid, p. 2). This situation gave rise to different programme offerings and teaching methods However, a national policy for the development of ICTs was later drawn up in September 2007 (IST- Africa, 2012). By this policy, the teaching of ICTs and by extension, e-learning effectively took hold in what can be referred to as a' harmonised system' – in other words, this policy gave direction to the incorporation of e-learning in educational institutions across the country. Thus, officially, the teaching of ICTs has been ongoing in the country for about nineteen years.

The level of enthusiasm and commitment shown by the government leading to the introduction of ICTs in Cameroon schools, and immediately after was unprecedented. The effort by government seem to have gone down well, as many multimedia resource centres were set up in some educational institutions; facilitators (training monitors) were trained to manage some of the resource centres; learning platforms were developed; and six state universities then were interconnected with internet (Josue, 2007, p. 2).

Whereas government's overriding goal for introducing ICTs in schools was because of the recognition that ICTs can serve as 'powerful tool(s) to help increase productivity, competitiveness, stimulate growth, create employment opportunities and as such improve the wellbeing of Cameroonians….'; as well as the recognition that these technologies are capable of building 'a people-centred, inclusive and development oriented information society, where its citizens can create, access, utilise and share information and knowledge in a bid to achieve sustainable social and economic growth….' the extent to which the laudable objectives have been achieved is yet unknown. And more so, it is unclear whether the initial gains (see Josue, 2007) recorded in the early days of the introduction of the ICT programme have been surpassed, or merely managed to be sustained, or worst still, whether the whole programme has gone downhill. This study therefore sets out to investigate the current status of e-learning strategy in educational institutions in Cameroon, and the future it holds for the education system, and the country at large. This initial study will be carried out using the city of Yaounde as a case study, with the hope of rolling out to the rest of the country when funding is secured.

Aims and objectives of the study

This is an exploratory study which sets out to determine the current state and likely direction, or future of e-learning in educational institutions in Cameroon, using the city of Yaounde as a case study. Specifically, the study seeks to

- Determine students' understanding of the concept of e-learning;
- Investigate the level of implementation of the e-learning strategy in educational institutions in Cameroon;
- Determine the challenges that institutions face in the implementation of the e-learning system in their campuses
- Analyse the perception of students and institutions on the future and impact of e-learning on education in Cameroon;
- Determine the resources that institutions possess which could be used in the implementation of e-learning.

Literature Review

The development of Information and Communication Technologies (ICTs) and internet has changed the way things are done in the world forever (Burkeman, 2009). The way of acquiring knowledge is one of the significant changes (Moore, Dickson-Deane and Galyen, 2010). Information and Communication Technologies 'can improve the quality of teaching, learning and management in schools and so help raise standards' (Livingstone, 2012, p. 2, citing ICT in Schools website, Department for Children, Schools and Families, 2010). We are now able to acquire knowledge wherever we are – whether from our immediate environment or external from it. This process commonly known as distance learning has further been made possible by advances in ICTs. Distance learning, as the name suggests, is learning that comes to the learner from a distance; with e-learning as one of its forms (Moore, Dickson-Deane and Galyen, 2010, p. 130). Commenting further on distance learning, Moore, Dickson-Deane and Galyen asserts that distance learning 'occurs between two parties (a learner and an instructor)' … and can be 'held at different times and/or places, and uses varying forms of instructional materials'. In spite of the important role ICTs/e-learning is expected to play in the transformation of Cameroon's education system, it is likely that the environment in which these 'components of development' operate in is not without challenges. It would be expedient, here, to look at the implementation challenges that Cameroon might have faced, or facing in her attempt to implement the e-learning strategy in schools.

The concept of e-learning

According to Dewath (2004), 'e-Learning is the employment of technology to aid and enhance learning'; it is the unifying term to describe the fields of online learning, web-based training, and technology-delivered instruction (Chanchary and Islam, n.d). Collaborating Dewath (2004) on the relationship between e-learning and technology, Watanabe (2005, p.78) sees e-learning as a form of 'distance education using the internet and/or other information technologies' or 'a self-learning process using IT communication networks and other means.' An American multinational corporation and technology company, Intel, was clear regarding the role of ICTs in the functioning of e-learning strategies, when it stated that e-learning 'comes from using information communications technology (ICT) to broaden educational opportunity and help students develop the skills they—and their countries—need to thrive in the 21st century' (Intel, 2012, p. 1). According to Beal (n.d), 'e-learning applications and processes include web-based learning, computer-based learning, virtual classrooms and digital collaboration' (para. 1). The author further stressed that, apart from through the internet, e-learning content can be 'delivered via the …intranet/extranet, audio or video tape, satellite TV, and CD ROM.' (op cit)

Putting the whole concept into perspective, Dewath (2004) notes that e-learning comes to the fore when, for example, students participate in an activity as basic as a 'video documentary in class', or a more complex activity, such as when 'an entire university course (is) provided online.' Also, corroborating Intel (2012), ICT for Literacy (n.d) states that 'e-Learning

occurs when someone or an individual learns through the usage of information, communication and technologies (ICTs)…' which suggests that 'e-learning happens simultaneously with the usage of ICT tools for learning.'

The advances of e-learning are phenomenal – this could easily be seen from its various phases of evolution, such as from the initial use of the television and overhead projectors to the advanced use of 'interactive computer programmes, 3D simulations, (tapes, satellite broadcast, interactive TV), video and telephone conferencing and real-time online discussion groups comprised of students from all over the world' (Dewath, 2004; Ellis, 2004, cited in Moore, Dickson-Deane and Galyen, 2010, p. 130).

E-learning can take different forms, such as a) 'correspondence courses…' (where credits and degrees are awarded based entirely on e-learning strategies); b) 'correspondence courses…' in which no credits or degrees are awarded by institutions to learners offering e-learning; c) 'on-campus courses where students can obtain some credits based on e-learning'; and d) 'on-campus courses in which the faculty use e-learning tools as a supplemental measure of their classes' (Watanabe, 2005, p. 79); such tools may include the use of electronic technology to deliver, support and enhance teaching and learning (Chanchary and Islam, n.d, p. 1). In most institutions of higher learning the world over, 'e-learning is used to define a specific mode to attend a course or programs of study where the students rarely or never meet face-to-face, nor access on-campus educational facilities, because they study online.' And it appears this is made possible because by the very nature of the design of e-learning, students are meant to be guided through specific information, so as to help them succeed in performing 'specific tasks'.

It has long been recognized that teacher quality plays an important part in educational outcomes, including in the classroom (Hanushek and Rivkin, 2006). By extension, therefore, the quality of any educational provision cannot rise above the quality of its teachers (Akuegwu, 2015; Barnes, 2013; Ajayi, 2010). However, reasoning along the lines of the e-learning strategy, McCallum (2014) asserts that 'what makes you a good instructor (or teacher) in the classroom – does not necessarily translate to good pedagogy in an online learning environment.' McCallum stresses that 'to promote success in the virtual class, it will require some important considerations - one of which is the online learning environment. The author maintained that this is so because whatever grade of students you are building an online course for – whether for primary pupils, secondary school students or higher education students, the environment should be that which would enhance the learning experiences of your learners.

Furthermore, McCallum suggests that when designing Online Learning Environment for learners, it is good to think of variables such as the age of the learners, the curriculum in place, developmental level of the learners, learning needs and interests. Considering this, therefore, a 'Learning Management system for primary students...' will be 'more visual based with lots of icons'; while e-learning courses for higher education students 'tend to be very textual based', but not forgetting visualization as this is a very 'powerful tool for comprehension, and it would be a mistake to assume that our older learners do not need visuals to support learning' (para. 4).

According to *Instructional Design Expert.Com* (n.d), for a successful online course the designer must consider five key components. These components will help him or her design and develop a functional course – that which 'meets computer-based training objectives.' The components include: Audience (everything designed and developed should be done with the audience or learners in mind); Course Structure (how a course is designed for e-learning will largely influence how the audience participates in the course); Page Design (liken the page design to the charm and charisma that a good instructor conjures); Content Engagement (since e-learning is a self-study medium, it will be necessary to consider how the learner interacts with the course material); and Usability (the e-learning course should work in reality; no matter how beautifully designed the e-learning environment might look, if it does not function then it is a waste of valuable time). *Instructional Design Expert.Com* concludes that 'among all of the components, none plays a larger role than the Audience.'

The conclusions by *Instructional Design Expert.Com*, as above, are indubitable, in that, if the course was not designed with the audience in mind, then for whom was it designed? Thus, for us, the potency of the e-learning strategy, as deduced from the words of Dewath (2004) encapsulates what e-learning stands for in real terms:

> E-Learning exploits interactive technologies and communication systems to improve the learning experience. It has the potential to transform the way we teach and learn across the board. It can raise standards, and widen participation in lifelong learning. It cannot replace teachers and lecturers, but alongside existing methods it can enhance the quality and reach of their teaching, and reduce the time spent on administration. It can enable every learner to achieve his or

her potential, and help to build an educational workforce empowered to change. It makes possible a truly ambitious education system for a future learning society.

Speaking earlier in 1998, the former British Prime Minister, Tony Blair, declared in what we would term a 'vote of confidence' on e-learning's ability to create an 'education system for a future learning society', and its importance to teachers that '…children cannot be effective in tomorrow's world if they are trained in yesterday's skills. Nor should teachers be denied the tools that other professionals take for granted' (Dewath, 2004). In the same vein, Rod Paige, a former US Secretary of Education (ibid), asserted that '… a click of a mouse button provides any student anywhere with unprecedented opportunities to learn. So if a child in Grand Junction wants to master Japanese, it's possible online….' if he 'wants to study Gravitational Entrophy'(sic) with Stephen Hawking, it's equally possible online.

Implementation challenges

ICT equipment challenges

An analysis of Cameroon's education at the primary and secondary levels with regard to the availability of computer in the school milieu shows that a lot still has to be done. For instance, in primary education, available statistics show that only 2.5% of schools have computers and 24% of secondary schools do not have them. The statistics vary according to the areas. In fact, only 1.1% of primary schools in rural areas, compared to 3.7% in urban areas have computers; while for secondary schools, 53% in rural areas and 13% in the urban areas do not have computers (National Institute of Statistics, 2010, p. 50).

One key issue to the equipment challenges faced in schools relates to maintenance. It is an open secret that Cameroon has a poor maintenance culture. This fact is buttressed by *CameroonWeb* (2015) which cited *Cameroon Tribune* to have quoted a Director at a Referral Hospital in Sangmelima, who lamented at the poor maintenance culture in Cameroon thus: 'the poor maintenance syndrome of Cameroon has led to the fast depreciation of structures that costs government billions of FCFA.' This poor maintenance culture could explain why there are few computers in most of the schools, even in those which were initially supplied with sufficient number of computers.

Also, five key challenges or barriers have been delineated by Wright (2014) as capable of truncating the e-learning effort; these include: 'power, internet connectivity and bandwidth, quality teacher training, respect and better pay for teachers, and the sustainability of implementations'. It is unlikely for the government to claim success in this sector until these barriers have been somehow addressed; anything less, uptake will be painstakingly slow; and at best, implementation will continue to be piecemeal. It is evident that without constant power supply very little will be achieved within the e-learning arena. To this, Wright adds, 'you need power to run technological devices and until power is widely available, reliable, and affordable for many in Africa and elsewhere, (e-learning – our emphasis) uptake will be slow.' Let us now briefly look at the five key challenges or barriers delineated by Wright above.

Electricity challenges

As indicated above, despite its electricity potential, Cameroon is still not able to provide enough electricity to its population. No one is excluded from the misery caused by the incessant power outages, even the schools. Available statistics show that about 90% of primary schools in the rural area did not have access to electricity in 2010. Although about 80% of secondary schools are connected to AES-SONEL (now Eneo) electricity grid. Supply is not guaranteed. To dampen the effect of these constant outages, establishments (not necessarily schools) located in the rural areas supplement their supply with solar panels (National Institute of Statistics, 2010, p. 52). It can only be imagined what impact this incessant cuts can have on government efforts to establish an enduring e-learning tradition in schools.

Teacher Challenges

Teachers are an important element in the implementation of any aspect of a curriculum. 'No education can rise above the quality of its teachers' (Akuegwu, 2006, p. 343). One of the challenges of implementing e-learning in schools in Cameroon appears to be traceable to the uncooperative attitudes of teachers in the two educational sub-systems. Esch (2012) was cited in the *Wikipadia* webpage to have suggested that one of the issues that could affect the implementation of e-learning in Cameroon schools is the issue of teachers from the two sub-systems of English and French not working as one. According to Esch, 'teachers from both English and French sub-systems, for cultural and historical reasons, still operate as separate in the educational system, and this prevents' them "from developing a joint pedagogical repertoire about professional matters and to engage in productive debates around new discourses and repertoires such as ICTs in support of teaching" (Esch, 2012, cited in *Wikipadia*, accessed 25 April, 2016). However, the challenges associated with 'inadequate qualified teachers can be

overcome in part by computers and other forms of distance education that deliver instruction in a cost-effective manner' (Jelman, 2009), if Cameroon should decide to invest in it.

Challenges of funding

Most e-learning projects rely principally on external funding to be accomplished; this does not only pose a security problem, but puts the sustainability of these projects into serious question. Not only that, most institutions, even the universities do not have the financial resources to purchase the type of equipment that can be used to run effective e-learning platforms. The Cameroon government hardly provides funding to government secondary schools to purchase computer hardware and software for use in e-learning; with schools depending on donations (Josue, 2007). The funding gap has even affected the learning resources. According to Josue (op cit p. 2), 'most of the online learning resources accessible through the government secondary school learning platform CAM-EDUC are in French, thus constituting a handicap for the English-speaking community.' Josue laments that '… all those online resources are based in Europe' making a case for 'empowering the national stakeholders to enable them to produce online learning materials corresponding to the local environment', very urgent. This underscores the importance of funding in the success of the e-learning curriculum in Cameroon.

Also, the issue of software is a serious challenge. Sometimes the software item schools or individuals want to use might not actually run in the computers available. For instance, it will be hard to run a software made for the latest computers on older PCs. Another headache relates to the operating systems in use. Where there are many versions of Microsoft® Windows, this poses problems to some teachers – as there might not be a uniform way of instructing the learners. So the ideal is that all the computers in the class or computer suite should be installed with the same operating system, for harmony. Again, the issue of grouping when using ICT/ e-learning can sometimes be challenging. Effective class management in this regard, especially if only one or two machines are available in the classroom can be a frustrating experience. The usual groups are in threes or fives; but for large schools this might not be possible; added to the demands that some groups might make on the teacher or instructor (*ICT for Africa*, n.d).

E-learning readiness challenge

As subtle as this aspect may seem yet we believe that it could impact heavily on all other aspects of the e-learning project. According to Chanchary and Islam (n.d), the e-learning readiness ranking includes four main areas: Connectivity, which relates to the quality and extent of internet infrastructure that a country possesses; capability - a country's ability to deliver and consume e-learning – this could be demonstrated in how e-learning is used in schools and businesses; content – there will be no e-learning without the content – individuals in a country need quality online learning materials that are easily accessible; and culture – this relates to some specific behaviours, beliefs and dedicated institutions that support e-learning development within a country. 'It indicates a country's ability to produce, use and expand Internet-based learning—both informal and formal, at work, at school, in government and throughout society' (p. 2).

Impact of e-learning on institutions and students' education

Apart from gauging the impact of e-learning through understanding how the teacher or the institutions incorporate (s) the new information and communication technology into their teaching, knowledge about the impact of e-learning could as well be obtained by understanding how students perceive the e-learning strategy overall. Against this backdrop, it can be argued that '…specific individual variables such as age, gender, and important characteristics such as 'previous experience of computers, technology acceptance, and individual learning style' (Keller and Cernerud, 2002. P. 56) may influence the degree to which students perceive the impact of e-learning on their education.

According to Keller and Cernarud (2002, p. 56, citing Brotherton and Abowd, 2002), 'there are reports of students overwhelmingly preferring to take class using e-learning than a traditional course [because] they felt that e-learning was a helpful tool in their learning.' With regards to experience some 'students may have experienced e-learning in [primary or] secondary schools' while others may 'have met computers for educational purposes at the [secondary school or] university' (Keller and Cernarud, p. 56). Commenting further on specific individual variables that may impact on students' perception of e-learning, Keller and Cernarud (2002, citing Venkatesh and Morris, 2000) note that men should normally 'be more used to computers than women [because] women typically display lower computer aptitude and higher levels of computer anxiety' (p. 56). More so, '… men's technology-usage decisions are more strongly influenced by perceptions of usefulness, whereas those of 'women are more influenced by perception of ease of use' (p. 56). This may suggest that young male students in both secondary school and university 'are more prone to adapt to e-learning than not so young female students' (p. 56).

E-learning, as a modern concept has both merits as well as demerits. Distance learning (of which e-learning is a part) is designed to satisfy different instructional and learners needs. Hence, when learners engage in distance learning this is done because of the convenience of being able to take courses and 'enhance professional possibilities from the comfort of their homes, 'with fewer disruptions to daily life' especially for those in paid jobs (*EduactionUSA*, n.d). According to Rosenberg (2001) and Hall (2001), as cited in webpage, http://www.kineo.com/za/resources/new-to-elearning/the-benefits-of-elearning), 'e-learning reduces learning time by at least 25 to 60 percent when compared to traditional learning… and it cuts down on the training time required because: a) it does not take as long to start and wrap up a learning session; b) learners set their own pace, rather than the pace of the group; c) no travel time is needed to get to and from training events; and d) learners can focus on elements of a programme they need to learn and can skip what they already know. When compared to the traditional mode of classroom learning, there is clear evidence that e-learning brings: faster delivery, lower costs, more effective learning, and lower environmental impact' (Ibid).

Other positive impacts as articulated by *EducationUSA* include: increased engagement from the learners; positive work attitude from the teachers involved, leading to the provision of more personalized learning; encourages family involvement in students' learning; provides inclusive learning - children with disabilities are given an opportunity – in other words 'students can learn in a relatively anonymous environment without the embarrassment of failure and/or socio-cultural bias from personal contact' (Chanchary and Islam, n.d); and above all, it benefits a country, in that, there would be a well-developed workforce as well as the creation of many IT jobs (Intel, 2012), thus boasting the economy of the country investing in it.

In spite of these accolades, e-learning has its pitfalls. The most glaring being the fact that it is extremely difficult to pick up any form of practical skills from online resources - for instance, it would not make a difference showing students a video of how to make a chair without them actually having hands-on experience on the actual thing. Other issues that have been recorded include: isolation – although e-learning offers ease and flexibility in its offerings (where students can remotely access any instruction in their own time and at the comfort of their bedrooms or lounges, there is loneliness and isolation associated with this type of learning (Epignosis LLC, 2014; Chanchary and Islam, n.d). However, 'learners can now engage more actively with professors or other students using tools such as video conferencing, social media, and discussion forums amongst others' (Epignosis LLC, 2014), for those who have the advanced tools; yet again, the total process is technology dependent and requires expensive resources such as fast internet, software and good computers - something which is a superfluity in a country like Cameroon. Some other obstacles that students have to overcome as they engage in e-learning relate to the issue of the absence of proper guidance for students to remind them about class time, or deadlines for assignments or exams – thus it is likely to make them easily procrastinate (Chanchery and Islam, n.d).

Resources available to institutions for the implementation of ICT/ e-learning

According to Ehlers (2013), there is a functioning e-learning programme at the University of Yaounde 1; this resulted from a partnership between the university and three other universities – Kenyatta University, Nairobi; Cape Town University, South Africa, and a German university; as well as support from the United Nations. Ehlers added that this joint initiative has successfully led to the setting up of a 'strong vision for e-learning in Yaounde, and which the new management of the university had taken up, thus leading towards sustainability. Narrating on the implementation of the joint project, Ehlers stated thus:

> First, 15 different teams, each consisting of a full time Professor and two assistants, mostly PHD students, were formed which agreed to a tight working schedule and to develop for each team one full lecture as an online course, thus digitalizing materials, designing tasks and implementing everything online in the Moodle Platform which had been provided by the project …

According to Ehlers, online lectures of very good quality are now available to all students in Yaounde I in the form of 'e-learning materials, lectures scripts, visualizations, podcasts, electronic syllabi and course descriptions, objective lists and learning assignments as well as e-Assessment self-evaluations.' The author adds that some professors are already using the available online material to 'enrich their classroom lectures; and some of them have even 'adopted e-learning in a Blended Learning mode to their teaching… and are pointing their students to these materials online using the e-learning portal of the university. It is yet unknown if this is typical of other universities.

Also, the government had planned for a number of Cyber Education Projects in Secondary Schools and Universities. These projects were aimed at launching Cameroon into the digital world. The first phase of the Cyber Education Project in

Secondary Schools was planned for a six-year period, from 2001-2007. The plan of action for this first face included (Josue, 2007, p. 6): the establishment of Multimedia Resource Centres (MRCs) in secondary schools – 100 were proposed – 10 in each region; the training of monitors, teachers, and administrative staff for the resource centres – at least 1,600 monitors were expected to be trained by 2007; training of ICT teachers on 'the pedagogy for ICT use and implementation'; to connect all MRCs to the internet; establish 'learning platforms and resources for students and teachers'; establish 'a distance training unit for teachers based at… the pedagogy support unit (of the Ministry of Secondary Education)…'

According to Josue (p. 6), the project recorded some achievements, some of which include: seventeen (17) MRCs were established in government secondary schools during the second month of 2007; fifty-four (54) monitors of MRCs were trained in 2006; while 90 more were on course for training, and were expected to be through by February, 2007; by the end of the planned period, i.e., 2007, sixty thousand (60,000) students had access to computers compared to just 10,000 in the beginning of the planned period in 2001; Josue points out that as a result of the project, 'teachers, directors, and the administrative staff of government secondary schools are (now) regularly trained by MRC monitors'; also, a teachers' distance training unit to be hosted by the pedagogy support unit was on course to be established – may have been established now; during that period 'ICT sensitisation campaigns and seminars (were) organised; and finally, 'the learning platform for secondary education, CAM-EDUC has been established.' Josue (p. 7) also cites MINESEC as claiming that '80% of government secondary schools have computer rooms – which the ministry said should be 'differentiated from the MRCs presently installed in schools in the framework of the Cyber Education Project, and two-thirds have computer labs' (op cit).

Furthermore, regarding the resources put in place to implement e-learning, the COMETES Project is relevant here. According to Josue (2007, p. 7), the COMETES Project is funded by the French authorities, and implemented in 'collaboration with the Ministry of Higher Education (MINESUP), the *Association des Universités Francophones (AUF*), the *Université Paris I Panthéon-Sorbonne* (France), and *CFA Stephenson* (France)'. It has as main objective the development of the 'professionalism' of Cameroonians 'through distance learning and training'… five state universities, three technology institutes, and two engineering schools' are participating in the project. Its aims include (Josue, p.7) to set up a common distance training platform in the various technological schools; to train "tutors" (monitors) in handling distance training courses and serving as mediators between remote training centres and local students; create a common distance training platform; to set up a university network in connection with UNESCO; develop a curriculum to teach ICTs in universities; etc.

According to Josue (p. 8), major achievements of the COMETES project include: the first workshop to train distance training monitors was organised in July 2006; the second training session was held on 20 February 2007; a learning platform for universities has been established: Cameroon students and lecturers now have access to distance training resources via ACOLAD 13 which is run by the University of Strasbourg in France; MRCs have been established in all universities and technological schools; distance training units are currently being established in universities and technological schools, some of which are already operational (e.g., School of Technology [IUT, in French] of the University of Douala and the Faculty of Agriculture at the University of Dschang); Several seminars, conferences, and meetings have been organised to sensitise university officials on the usefulness of ICTs for tertiary education; all universities are interconnected through a university network called UNINET, and the establishment of a university platform is underway; whether or not this has been achieved is as yet unknown.

Other similar projects that are said to have been established in Cameroon (Josue, p. 8) which boost resources for e-learning included: 1) the AUF Programme (*The Association des Universités Francophone*). This project ran a 'distance training programme called *Campus Numérique Francophone* which covers French-speaking countries of Africa, including Cameroon'; 2) 'The Commonwealth of Learning ICT and Literacy Programme'… the programme supported member countries 'to facilitate the use of ICTs in their educational programmes. Other national incentives (resources) have been in place and have 'focused on stimulating the use of ICT as a development tool to alleviate poverty and other challenges.' Some of these include: 'Introduction of compulsory ICT related programs in Primary and Secondary schools'; 'Liberalisation of the audiovisual sector by the Ministry of Communication'; 'Creation of multimedia resource centres at secondary and high schools by Ministry of Secondary Education'; 'UNDP Initiative on ICT Policy in Cameroon within the framework of the Second Tokyo International Conference for African Development (TICAD II)' (IST – Africa, n.d).

Methodology

This study set out to determine the current status of e-learning in educational institutions in Cameroon, and to find out what respondents think about its future in the country's schools. The researchers were also interested in determining the challenges institutions face in the implementation of e-learning, amongst others. The study collected data only in Yaounde, because of the limited resources at the disposal of the researchers at the time. The sample consisted of eight (8) educational institutions; four tertiary and four secondary. This included both private and state-owned institutions. We proposed to administer 88 questionnaires – 80 for students, and 8 for institutions; but actually succeeded in administering 70 questionnaires; 62 for students and 8 for institutions, a return rate of 87.5%. The sample for students was made up of 28% of girls and 72% of boys, aged between 13 and 34 years old.

The study adopted a survey research design and a purposive sampling method was employed. Ten students each were selected from the eight institutions and one participant from a relevant department, e.g. ICT, was selected from the tertiary institutions. The basis for inclusion of a participant each from a relevant department in the sampled higher institutions is because of the fact that such an individual will be in a position to provide the necessary information for their institutions than if anyone else was randomly selected. The questionnaire used for data collection was made up of a mixture of both open – and close-ended items. Two sets of questionnaires, for students and institutions were used for data collection. The close-ended items in the questionnaires were analysed using simple percentages, while the open-ended items were analysed using content analysis approach.

An introductory letter was drafted, signed by the Chief of Centre, National Centre for Education, and delivered to individual institutions, to solicit their cooperation and consent (including those of their students) to participate in the study. Participants were assured that the data collected will be strictly used for research purposes and will be treated with utmost confidentiality. These practices are in line with issues of ethics in research as suggested by a number of authors in the social sciences (see, for example Denscombe, 2010).

Results and Discussion

Ninety-six percent (96%) of student respondents said that there is a computer suite in their school and 88% of them said that they have access to it. It is so because the sample selected is from the city of Yaounde which has about 98.3% of secondary schools that have at least one functional computer at the disposal of the students[2] - a situation which is not typical for the whole country. However, a typical finding from the institutions that took part in the study shows that the biggest challenge faced by them is the reduced number of learners that have a computer and an internet connection at home. This could mean that many of the students come in contact with the computer and internet for the first time only in school.

Table 1 presents responses on varied ICT/e-learning issues. Regarding whether e-learning improves their knowledge in any way, 93% of the students who participated in the study stated that e-learning helps them to improve their knowledge. Perhaps, this is as a result of the presence of computers in all of the schools visited. This may have also motivated the students to acquire personal computers, as 80% of them (in both tertiary institutions and secondary schools) said they possess personal computers, and can use them (97%). But only 72% of them have access to internet at home and 68% have knowledge of what e-learning is. Their knowledge of what e-learning is could be due to the fact that some of them have attended lessons through the e-learning route or have access to e-learning products at home. In terms of the time allocated to e-learning at school, most respondents agreed that on the average about 2 hours per week is allocated for ICTs classes, which might also include e-learning. But, it is up to 3 hours for those in vocational programmes, and for those who are specialised in computer sciences.

Table 1: Responses on varied ICT/e-learning issues

ICT/e-learning issues	Responses (%) N= 62	
	Yes	No
Do you have a computer room/suite in your school?	96	4
Do you have access to the computer suite?	88	12
Do you have any computer Knowledge?	97	3
Do you have a Personal Computer at home?	80	20

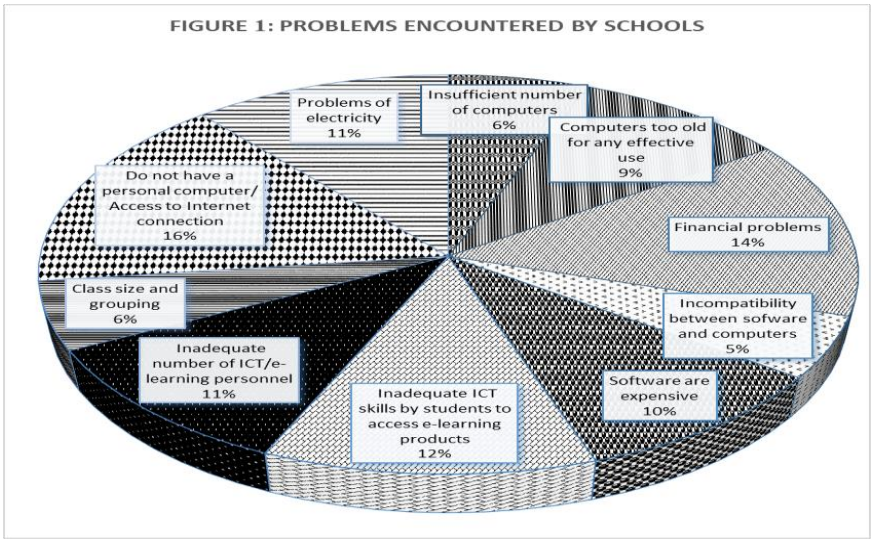
[2] This is not typical for the whole country, e.g. in the Centre Region (which does not include Yaounde) there are 67.7% of schools that have at least one functional computer at the disposal of the students, while in the Far North Region, for instance, it is 46.9%.

If yes, do you have access to internet connection?	72	28
Knowledge of e-learning	68	32
Does e-learning improve your knowledge in any way?	93	7

Regarding the advantages that e-learning offers them, and why they are interested in e-learning, respondents stated that it helps them improve their knowledge as well as to carry out research (class presentations, homework or further information regarding what they learned in class, etc.). Other advantages that attracted a large number of responses include: flexibility, availability of documents and information, facilitate training (self-tuition, quick training, easy access and it is interactive).

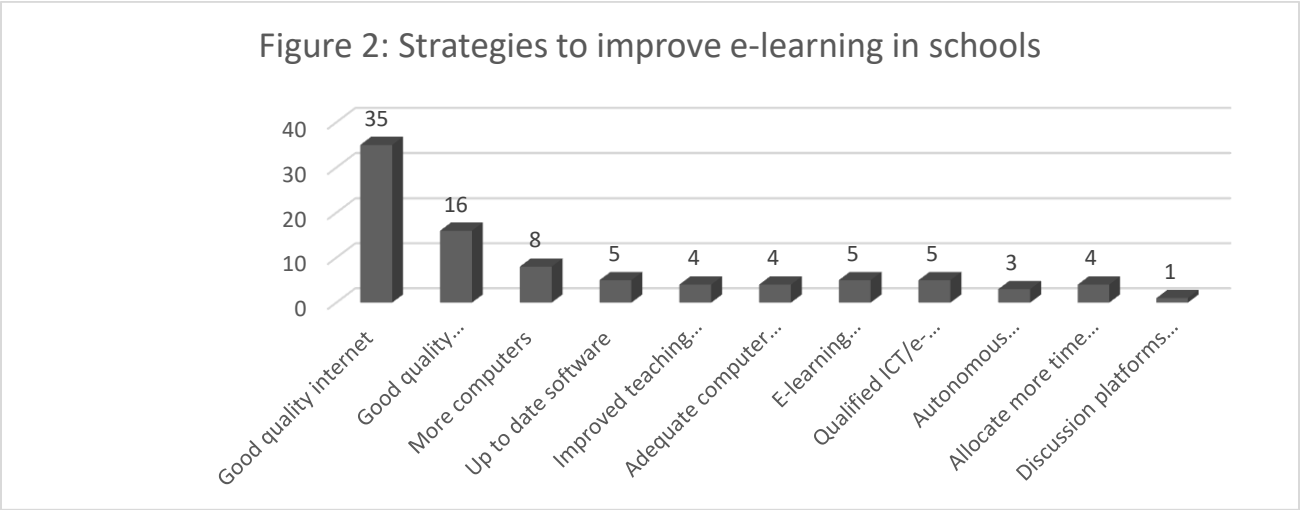
Respondents were asked to select from a list of options that which best describes the problems they think their schools face in the course of implementing e-learning. The problem most cited by the respondents who answered the question include: problem of access to computers and internet (16%), followed by financial problems (14%), inadequate ICT skills by students to access e-learning products (12%), Insufficient number of computers (11%); and the rest include inadequate number of ICT/e-learning personnel (11%); Other problems such as those of electricity[3], expensive software, computers being too old for any effective use, incompatibility between software and computers, class size and grouping did not attract many responses; but this does not suggest that these problems do not exist in schools; perhaps respondents just consider the issues as normal. Figure 1 gives a pictorial view of some of the problems encountered by schools in the course of implementing e-learning.

FIGURE 1: PROBLEMS ENCOUNTERED BY SCHOOLS



On the strategies that could be used to improve e-learning in their schools, 39% of the students who responded to the item suggested that internet of good quality should be provided at a reduced cost, or even free for students and that computer suites stocked with sufficient computers of good quality should be provided for the students (27%); more qualified ICT/e-learning personnel and improvement on the teaching methods (10%), sensitize people on the e-learning strategy and provide an autonomous electricity supply (see Figure 2). Wright (2014) sees the issues cited above as barriers capable of truncating the e-learning effort; the author specifically mentioned internet connectivity and bandwidth and the issue of quality of teachers or trainers as obstacles to this effort. On the issue of teachers or trainers, it is clear that no education can rise above the quality of its teachers (Akuegwu, 2006, p. 343), so much remains to be done in this area. Available literature, as cited in this work, has corroborated many of the issues raised in this exploratory study. See for instance Josue (2007); National Institute of Statistics (2010); Esch (2012) cited in Wikipedia, amongst others.

[3] About 80% of secondary schools are connected to AES-SONEL electricity grid (National Institute of Statistics, 2010, p 52). Despite its electricity potential, there is regular electrical load shedding.



Again, when asked to suggest what government can do to guarantee the future of e-learning in the country, the students suggested some of the following: e-learning should be formally included into the school programme; reduce prices of computers and improve access to internet; sensitise students and promote e-learning more; reduced the cost of software; improve on infrastructure and supply more computers to schools; increase the number of qualified IT personnel, etc. These suggestions by students, who are supposed to be the main users of e-learning products point to an underlying issue within the schools in the sample, regarding the current state of e-learning in these institutions, and may give a hint of what it might be like in other schools.

Analysis of data for the institutions that participated in this study shows that:

- 75% of institutions admit that the e-learning improves learners' performance ; that e-learning has several advantages for both schools and students :

✓ it provides a broader and more critical view of lecture contents
✓ it enables the sharing of educational resources between learners
✓ it enables learners to deepen certain concepts during lessons
✓ E-learning develops learners' skills.

On the challenges faced in implementing e-learning in schools, findings from the analysis of data for the educational institutions also show that:

➢ the biggest challenge faced by them is the reduced number of learners that have a computer and an internet connection at home;
➢ problem of access to the electricity and good internet connection ;
➢ Computer suites are very small in regards to the number of learners ;
➢ the incompatibility of existing software and operating systems to available computers;
➢ the insufficient number of qualified staff in ICT/e-learning.

As to what suggestions they will give to improve e-learning in schools, the following suggestions were proffered:

✓ the creation of suitable centres for this type of learning ;
✓ provision of good internet connection ;
✓ training more teachers in this field and facilitating learner's access to the e-learning tools at low costs
✓ equip schools with new computers / new ICT equipment

Regarding the e-learning platforms most used in schools, the findings have shown that the schools mostly use

- Claroline in secondary schools
- Moodle, Coursera, edX, and MOOC in higher education institutions

Conclusion

The introduction of e-learning as an alternative means of acquiring knowledge and skills, through the power of the internet and new information and communication technologies has empowered individuals to freely choose between an online course and a traditional course - a feat that would not have been imagined only a few decades back. The strong interest shown by study participants on issues relating to the integration of e-learning in the school curriculum opens new

perspectives to the government of Cameroon to exploit the benefits of this new way of learning, in order to leverage its development aspirations.

Both student participants and the institutions studied regard e-learning as a very important strategy for improving the quality of teaching and learning. Hence, a well-integrated e-learning strategy will help cater for the ever increasing number of Cameroonians seeking knowledge and new skills. However, for the e-learning strategy to effectively take root within the Cameroon education system may require, not only a clear definition of the e-learning strategy and the implementation of concrete measures, but also the adoption of a more active and participatory pedagogy – the sort that will bring together all players in the two sub-systems of Cameroon education.

One of the findings that have emerged from this study relating to the institutions and students that took part is the issue of the number of learners that have computers and internet connections at home; and this finding has implications for the way information is managed in schools. The institutions say their biggest challenge is the reduced number of students that have computers and internet connection at home. However, this is not the case with students, as a considerable number of them claim they have computers (80%) and internet connection at home (72%). This discrepancy could point to information gap between the institutions and the students. It is likely that the institutions have limited knowledge about students relating to their personal computer possession and internet connection at home, or some of the students might not actually possess a personal computer as they claim.

From the findings of the study as presented above, it can be concluded that the incorporation of e-learning in the curriculum of the sampled institutions is yet to take root; and this might also give an indication of the current situation of e-learning in the country as a whole; especially considering the fact that the schools studied are in the capital, were schools can easily reach out to the appropriate authorities for support. Based on the findings of this study and the conclusions drawn, the following two recommendations have been made:

1. Government should provide funding to schools to boost e-learning; this funding should be provided to both state and private institutions. This recommendation is pertinent because cost of resources associated with e-learning appears to be a bugbear in the integration of e-learning into the curricula of schools, especially as e-learning is known to exploit interactive technologies and communication systems;
2. And finally, judging from the enthusiasm shown by the young people in some of the schools visited (though this is not likely to be typical for all the schools), schools should create e-learning champions to motivate others who may not be as enthusiastic.

It is hoped that if the recommendations suggested above are implemented, in addition to other government actions, the e-learning strategy could take root, not only in the schools that participated in this study, but in the Cameroon education system, as a whole which may help to transform the way teaching and learning is carried out across the board by raising standards, and widening 'participation in lifelong learning'.

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