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Closing the digital gap in Cameroonian secondary schools through the CIAC project

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ABSTRACT

Although with the overwhelming impact of new technologies globally, numerous factors still account for the setbacks in bridging the digital divide in developing nations. Cameroon has for several years been trailing in the employment of Information and Communication Technologies (ICTs) to facilitate learning and teaching in schools. Nevertheless, a number of ICT projects have been implemented in secondary schools which have helped to reduce this digital gap amongst students. We report on one of the pioneer projects, the Computer and Internet Access Centres (CIAC) project, implemented by the Association for Development, Communication and Environment (ADCOME), a non-governmental organisation with headquarters in the South West Region of Cameroon. We begin by looking at its history, implementation, successes, challenges and possible solutions.

Keywords: *Access; ADCOME; Cameroon; CIAC; computers; digital divide; ICTs; internet; School Connectivity; rural; urban; NEPAD*

INTRODUCTION

Cameroon lies between Equatorial Guinea and Nigeria with a population of about 19.4 million people, with 52 % of the population living in urban areas (Tande, 2010). Very little information exists on the internet regarding the use of computers and internet technologies in education in Cameroon. This is an indication of Cameroon's position in relation to the use of ICTs in education. According to Grewan & Day (2003), "Africa's ICT industry is stifled by shortage of appropriately trained/experienced people", with a poor "e-readiness" (Ifinedo 2005) when compared to developed countries. In Cameroon, this is reflected in shortage of ICT researchers and low use of computers and the internet in many sectors of the society. In December 2000, there were only about 20,000 internet users in Cameroon which rose to 370,000 users in 2008 (Internet World Stats 2008). Although there is growth, this is still low for a population of about 18 million people. Nevertheless, it is worth noting that Cameroonians have a relatively high literacy rate in Africa with 67.9% of population being literate (CIA 2006). The quest for knowledge is very strong and despite the high rate of unemployment, many students still progress to universities.

About twenty years ago, most Cameroonian pupils progressing to secondary schools would have chosen general education rather than technical education. It was the general misconception that technical education was for the less intelligent pupils and hence, over 95% of the top pupils from primary schools proceeded to general education whilst the remainder went into technical education. This is reflected in the existence of more general education institutions than technical and vocational colleges, with vocational colleges having a capacity of only 14,000 places (Haan 2006) for the entire country. Nevertheless, with an increase in unemployment, these technical education graduates have had an edge over their general education peers in finding employment

after education as they are considered 'highly skilled' for industries. Unemployment has greatly affected the choice of education, with more pupils now choosing technical and vocational schools in order to find suitable employment or become self-employed after training.

In Cameroon, technical education students have been trained to use computers earlier than their general education counterparts who may not have the opportunity throughout their course to use computers. However, over the past five years, the situation is changing with more secondary schools installing computers. The availability of computers in such schools has probably been influenced by the need for students to take a public examination in computer science at the end of their course. Very few schools if any would normally have computers mainly to facilitate learning and teaching and it is not uncommon even for school teachers to lack computing skills (Palamakumbura 2008; Ololube 2006). Just like in Mongolia, computers and internet are not generally used by secondary schools for teaching in subjects other than computer science (Sambuu 2005) which is a similar situation in Nigeria, where ICTs have not been fully adopted in secondary schools (Aduwa-Ogiegbaen & Iyamu 2005) while universities also experience this shortage as ICTs have not completely permeated such institutions (Sife, Lwoga & Sanga 2007). Unlike in the UK and USA, computers and internet technologies are not fully employed in learning and teaching in higher education in Cameroon. A number of institutions have recently been involved in the struggle to bridge the digital divide in Cameroonian secondary schools through the use of computers and other information and communication technologies (ICTs). This is the case with the Computer and Internet Access Centres (CIAC) project implemented by the Association for Development, Communication and Environment (ADCOME). We will look at the history of this project, its implementation, successes, challenges and possible solutions and thence conclude our case study.

HISTORY

A non-governmental organization known as the Association for Development, Communication and Environment (ADCOME) was established in 1999 in Buea, a small town in the South West Province of Cameroon. The activities of this organisation however, started fully in 2000 after its launch by the governor of the South West Province. By this time, most of the population had not been introduced to the Internet. Buea has the only English speaking state university in Cameroon, which is one of the most preferred universities for English speaking students progressing into higher education. ADCOME's objective at birth was "Bringing Internet Closer to People" by reducing the cost of internet access, thus enabling more people to have access to the internet. This was done by opening an Internet Café which served the university and members of the local community at a reduced rate. A training centre was opened to cater for the training needs of many clients who were new to computer technology and hence had no web skills. Thus, through training and a reduction in the cost of internet access, many people were exposed to the internet. By 2001, other organizations came in to offer a similar service and ADCOME, satisfied with its contribution to "bring internet nearer to people", innovatively moved on to introduce the CIAC project.

The CIAC project focused on bridging the digital divide mainly in schools through installation of computers and internet and recruiting a computer engineer to teach in the schools. ADCOME hoped through this project, to introduce pupils and teachers to the internet and computer technology, hence enhancing teaching and learning through these modern technologies. At the time of the conception of this project, very few of such projects were ongoing in the country and hence a pilot project was instituted at the Baptist High School in Buea (Nana & Opio 2008), South West Province of Cameroon. This was quite successful after the first year, giving ADCOME the impetus to implement the project in other schools.

IMPLEMENTATION

Initially, ADCOME carried out a survey of schools in Cameroon to determine their ICT needs. ADCOME after having identified this need approached school authorities and introduced the project in a bid to get them interested in a possible implementation in their school. Once schools became interested, ADCOME signed a three year contract with the Parents Teachers Association (PTA). In most Cameroonian schools, the PTA institutes small fees, payable by each pupil and the funds would be used mainly for development projects. The school administration collects separate PTA fees in addition to tuition fees and hands this to the PTA staff who use this for various development projects in the school. PTA is managed by the school staff and parents who identify suitable developmental projects. ADCOME therefore approaches the school administration and speak to the PTA meeting regarding the CIAC project. Once a contract is signed, the PTA contributes financially in the implementation of this project. The project life cycle is shown in Figure 1.

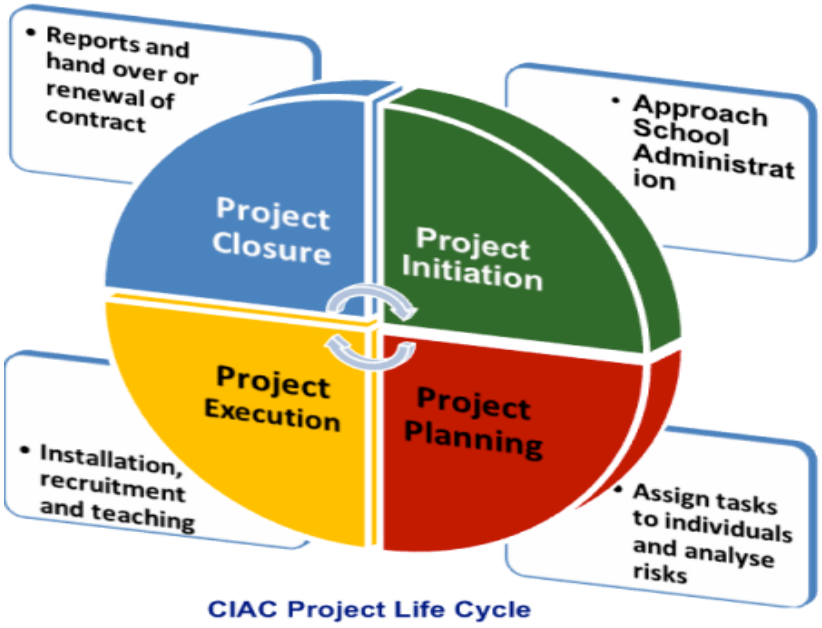

Figure 1: *CIAC project life cycle*

ADCOME acquires computers, a VSAT or wireless internet technology and other equipments needed for internet connection. The school provides a well protected room for the computer laboratory. All windows and doors are protected with iron bars as seen in Figure 2, to deter thieves. ADCOME then connects all computers into a network and then onto the internet. ADCOME hires a qualified computer science instructor who trains students and teachers in the schools. A project coordinator hired by ADCOME liaises with the stakeholders and also gives feedback on the project to both ADCOME and stakeholders. Computer Science teachers go through a general induction course for all staff in summer, to keep them up to date with new skills and technology in the field. This also serves as a refresher course for teachers who have already been teaching. Teachers continue networking after the induction course and share experiences, while supporting one another through a group discussion forum, coordinated by the project coordinator who takes time to visit schools to assess the project. Teachers are also required to submit monthly reports to the project coordinator who prepares a combined report of the project.

***Figure 2**: Installing computers in the laboratory*

The contract with schools normally lasts three years and it is estimated that by then, the school authorities and PTA would have acquired enough experience to sustainably run the project without ADCOME. The project is thus handed over to the school at the end of the contract, else, the contract is renewed and ADCOME continues managing it for an agreed period.

Some similar projects have mainly targeted schools in urban areas, neglecting rural areas, thus widening the digital divide between urban and rural schools in Cameroon. The CIAC project therefore steps in to reduce this gap by implementing the project in both rural and urban schools in Cameroon.

SUCCESSES OF THE CIAC PROJECT

The CIAC project has had a positive impact on students and teachers in schools where it has been implemented. When compared to other disciplines, attendance at computer science sessions has generally been very good and pupils have often asked for additional hours to access the computer laboratory. This is a similar situation to that in Kenya (Wims and Lawler 2007) where students consider computer classes very interesting compared to other disciplines.

The CIAC approach does not only support career advancement in the discipline of Computer Sciences for the students. The project delivery methodology supports other disciplines through incorporating learning content programs that support delivery methods in various subject areas, like mathematics, biology, geography, economics, languages, etc. The program also profile school staff training so they can effectively use content to support teaching and learning in the various disciplines. CIAC has also brought valuable contributions to school administrative systems through the support development and implementation of School Management Solutions in the various schools.

Through the unique delivery approach, many more schools in Cameroon are signing up for the project which is proving to increase enrolment in schools. Personal testimonies from school administrators have revealed an increase in enrolment because parents prefer to send their children to schools where they can acquire computer skills while studying, without having to pay an extra cost after their studies.

Table 1: *CIAC installation statistics from 2005-2008*

Year	Number of computers installed	Number of schools	Number of students
2005	241	7	12,950
2006	464	11	16,533
2007	182	6	11,384
2008	393	13	15,372
	1280	**37**	**56,239**

Between 2005 and 2008, about 1280 computers were installed in some 37 schools, benefitting about 56,239 students as shown in Table 1. Thus through this project, ADCOME can potentially impact many students. This number is far above the total number of internet users in Cameroon in December 2000 which stood at 20,000 according to Internet World Stats (2008). However, this is still very low and could take considerable time for this organisation to reach all schools lacking a computer lab, if other organisations were not involved in a similar project.

The confidence of pupils in working with computers has also increased as most of them can now access computers in schools, whereas otherwise, they won't be able to have access, except at internet cafes which are often crowded and costly. The following are selected testimonies from students, ex-students and school administration of the impact of this project.

Testimonies

> *"I was not that literate as far as computers are concerned, but now I can boast that I have gone somehow beyond in the issue. I'm able to create my own email account, browse and do research in the different areas of my studies. Above all, I'm able to work with applications; that is creating documents, etc."*
>
> A Form 4 student at Our Lady of Lourdes College, Bamenda

> *"I wanted to thank you for the opportunity handed over to the student Diasporas, namely the creation of a website for the school. It is a blast to "virtually" re-experience the student life long gone and get a sense of what Libermann has become and where it is heading to. I hope the technicians in charge of the website maintenance will post pictures of each graduating batch and create a blog enabling visitors to insert comments."*
>
> Ex-student of College Libermann, Douala

> *"The internet services in Lourdes College have improved the lives of the entire college community; the administration, the students and the teachers. We are able to make educative researches, connect with the outside world and be well informed on the day to day happenings in the world. I will like to say BRAVO to that."*
>
> The Principal, Our Lady of Lourdes College, Bamenda

It can be seen from the above testimonies that the CIAC project is helping students by facilitating the learning process as students can now employ the technologies in learning. This project through offering websites to the schools involved, is re-establishing easy links between the school and its alumni by providing this platform for interaction. Overall, this has facilitated various tasks

and also connected the schools to the outside world, thus giving the chance for many more people to know about the school. It is not surprising therefore that this exposure could attract many potential students and hence increase enrolment. This positive impact will enable other ICT project managers to provide ICTs to other schools which lack these.

Role model

The CIAC project has served as a role model in Cameroon. After its implementation, other similar projects have been implemented by various organizations. The government of Cameroon has also encouraged the use of ICTs in schools by creating multimedia centres in some selected secondary schools in Cameroon (Tetang 2007), most of which are in urban areas. The government's favourable policy towards ICT has opened up more opportunities for organisations such as ADCOME to implement such project and hence is helping to bridge the digital divide (Akinsola, Herselman & Jacobs 2005). The strength of CIAC however lies in the fact that it targets both rural and urban areas where the technology is most needed and involves both parents and school administration in its management. A similar approach of the delivery of the CIAC was adopted for the NEPAD e-School Initiative for Cameroon of which the technical processes were championed by ADCOME in liaison with various NEPAD e-School consortium partners (AMD and Microsoft).

International recognition

The CIAC project has been recognized both nationally and internationally. Internationally, the project was entered into the Global Junior Challenge, a global award promoted by the Digital World Foundation, a non-profit organisation founded by the Municipality of Rome and six major ICT companies. The CIAC project was one of several projects selected from developing countries to receive an award at the Global Junior Challenge in Rome, Italy in 2007 (GJC 2007) after a project exhibition (Figure 4).

In April 2007, the project was recognized as the best case practice CSR project within network of 21 countries in Africa and Middle East under the MTN Group (MTN Cameroon started supporting project rollout strategies ending 2004 which contributed greatly to out reach to many schools in rural communities)

***Figure 4**: CIAC project exhibition at the 2007 GJC award*

CHALLENGES AND POSSIBLE SOLUTIONS

ADCOME has faced some challenges whilst implementing the CIAC project and some of these challenges still continue today.

Challenges

The major challenge is financial. Most of the schools do not meet up with their financial commitment to the project, which has often inhibited expansion. ADCOME depends heavily on the schools' contributions to be able to run and sustain the project. The intended self-sustainability of the project after three years is threatened due to non fulfilment of financial commitments by partner institutions. Because of inadequate finance, this project is unable to reach all schools lacking a computer laboratory. Shortage of finance has often led to some of the computer teachers going for a month or two without any salary, which might also affect their output, although they are thereafter paid in arrears.

Given that most of the computers acquired have been refurbished computers, breakdown is a common problem and hence the choice of computer science teachers with technical proficiency in computer maintenance. Breakdown of computers is compounded by frequent and unexpected electric power cuts.

Possible Solutions

Most secondary schools are crowded but have very few or no computers and access to computers if present, is limited. It could be possible for the digital divide to still exist in schools with computer labs if few computers exist and only few students can access them or if students have very limited access to these computers. Generally, most schools have been supplied with an average of 20 computers (which is the project minimum standard) even for a school population of 1000 students, thus 50 students per computer. More of such labs still need to be created in schools and the number of computers per school needs to be increased, to meet the computing needs of students. If this is done, more computer science teachers will need to be hired, to spread the workload. Currently, ADCOME hires only one computer science teacher per school, which over burdens the teacher. To accomplish this however, the implementation budget needs to be increased and funds sourced. If enough funds are available, the project could be run without requiring students to pay and hence, will not disrupt the learning process (Greaves 2005). However, it will be challenging to run this project without charging the students (Moll 2005) given that the project needs to be self sustaining (Paterson 2007), except a permanent alternative source of funding is acquired.

Towards the end of 2004, ADCOME started sourcing funds for the project. The mobile telephone network company, MTN which is one of the major mobile phone providers in the country agreed to fund the project and re-brand it as MTN School Connectivity Program, similar to another initiative in South Africa by MTN South Africa. They agreed to sponsor the installation of ten computer labs each year for five years. Their contribution has mainly been financial while ADCOME is still responsible for the technical implementation. In 2008, PECTEN – and Oil Exploration Company in Cameroon began profiling contribution to some schools while crediting ADCOME experience in support schools to adapt new technologies to learning processes. This was the case of Government Technical High School (GTHS Ombe).

ADCOME needs to acquire new computers to avoid having problems with frequent breakdown. In the implementation budget, provision should be made for new computers which will have a longer lifespan. Although these could be more costly, ADCOME will save money than having to repair

computers from time to time. A standby generator should be installed in addition to the equipments so that the computers can keep running even after power cut.

CONCLUSION

The CIAC project has played a significant role in bridging the digital divide in Cameroon as students and teachers in secondary schools have greatly benefited from Internet and computer technology to facilitate their teaching and learning. This project nevertheless, still faces the challenge of getting the stakeholders to meet their financial commitment.

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