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Using Information and Communication Technology in Secondary Schools in Nigeria: Problems and Prospects

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Abstract

Though it has been rightly said that what is wrong with education cannot be fixed with technology; there is no doubt that modern life is dominated by technology. There is universal recognition of the need to use Information and Communication Technology (ICT) in education as we enter the era of globalization where the free flow of information via satellite and the internet hold sway in global information dissemination of knowledge. Already, Nigeria is on he wrong side of the international digital divide, as it has not made significant effort to integrate ICT into secondary school curriculum. A great deal of instructional and administrative work in secondary school in Nigeria is still carried out manually. This paper, therefore, examines the major obstacles militating against the use of ICT in secondary education in Nigeria. It identifies he high cost of computer hardware and software; weak infrastructure; lack of human skills and knowledge in ICT, and lack of relevant software appropriate and culturally suitable to Nigeria as the major stumbling block o the adoption of ICT in secondary education in Nigeria. Also, secondary schools in Nigeria are not given adequate funds to provide furniture, relevant textbooks and adequate classroom let alone being given adequate fund for high-tech equipment. At present the cost of subscribing to the Internet is too high for many of the impoverished secondary schools in Nigeria. In modern society, Nigeria needs ICT to aid teaching and learning and educational management. ICT is an instrument for the economic and technological development in the 21st century; therefore, Nigeria cannot afford to be on the wrong side of the digital divide.

Keywords

Information and Communication Technology, Cyber Education, Virtual Learning Environment, Internet Gateway, Nigeria's Telecommunication

Introduction

The role of technology in teaching and learning is rapidly becoming one of the most important and widely discussed issues in contemporary education policy (Rosen and Well, 1995; and Thierer, 2000). Most experts in the field of education agreed that, when properly used, information and communication technology hold great promise to improve teaching and learning in addition to shaping workforce opportunities. Poole (1996) has indicated that computer illiteracy is now regarded as the new illiteracy. This has actually gingered a new and strong desire to equip schools with computer facilities and qualified personal necessary to produce technologically proficient and efficient students in developed countries of the world. There is no doubt that computer can aid the instructional process and facilitate students' learning. Many studies have found positive effect associated with technology aided instruction (Burnett, 1994, and Fitzgerald and Warner, 1996).

In the more advanced industrialized nations, there has been a staggering amount of research and publication related to ICT use for educational purposes during the past decade. Today, nearly everyone in the industrialized nations gained access to ICT and the purchase of computers for school use in such nations as the United States has been increasing in such a pace that is difficult to keep track of how many computer machines are now in American schools (Harper, 1987). Becker (1986) reported a comprehensive survey of the instructional uses of computers in United States public and non-public schools. The report suggested that over one million computers were in American elementary and secondary schools and that more than fifteen million students used them during 1985. The report also says half-a-million teacher used computers during he same period and that half of U.S. secondary schools (about 16,500 schools) owned 15 or more computers. Also, over 7500 elementary schools owned 15 or more computers. It has been almost two decade since the figures quoted above were released. There is no doubt that those figures would have increased tremendously since then. Bergheim and Chin (1984) reported that the US government made available $529 million to schools out of which 60 to70 percent was spent on computer education. However, in the US administration's fiscal 2001 budget, more than $900 million was earmarked for educational technologies (Hess & Leal, 2001)

In Britain, the story is the same as the wider availability of computers in schools was made possible through government funding largely through the Local Education Authorities (LEA). Visscher et al (2003) reported that following the Education Reform Act in 1988, the central government made available $325 million, over time, to promote the use of computers in school administration and management. Just as the United States and Britain have been budgeting huge sum of money for cyber education, so have other developed nations been doing same. Even many developing nations have embraced ICT. In Africa, concerted efforts have been made by many governments to initiate Internet connectivity and technology training programs. Such programs link schools around the world that in order to improve education, enhance cultural understanding and develop skills that youths need for securing jobs in the 21st century. In Uganda, an interconnectivity programme known as "Uganda School Net" is dedicated to extending educational technology throughout Uganda (Carlson & Firpo, 2001). In Senegal, teachers and students are using computers extensively as information tools. These programs in African countries mentioned are supported by their government through the ministries of Education.

In a rapidly changing world of global market competition, automation, and increasing democratization, basic education is necessary for an individual to have the capacity and capability to access and apply information. Such ability and capability must find bearing in information and communication technology in the global village. The Economic Commission for Africa has indicated that the ability to access and effectively utilize information is no longer a luxury but a necessity for development. Unfortunately, many developing countries, especially in Africa, are already on the wrong side of the digital divide in the educational use of ICT.

Why does Nigeria need ICT?

The question of why Nigeria needs information and communication technology may appear too simplistic and unnecessary. However, the political conditions in Nigeria for the past thirty years leave no room for continuity. Over the years, political power in Nigeria has been used to entrench mediocrity, corruption in high places, misplace priority, and consumer culture. The direct effect of these is a battered economy and an educational system that is decaying by the day. In 1988, in an attempt to keep pace with development in computer education, Nigeria enacted a Policy on Computer Education. According to Okebukola (1997).

> The plan was to establish pilot schools and thereafter diffuse the innovation, first to all secondary schools and then to the Primary schools. Unfortunately, beyond the distribution and installation of computers in the Federal Government Colleges, the project did not really take off the ground (P.16).

Okebukola (1997) concluded that computer is not part of classroom technology in over 90% of public schools in Nigeria. Thus the chalkboard and textbooks continue to dominate classroom activities in most secondary schools in Nigeria. If a country such as Uganda which has less than a-fifth of Nigeria's resources, is now using information and communication technology to help secondary schools students to become better information users, why is Nigeria lagging behind? The answer is simply mismanagement of the huge resources of the country and inability of political leaders to prioritize Nigeria's developmental needs. There is no doubt that in the current harsh economic competition, the private sector in Nigeria has embraced ICT to stay afloat. The banking sector, insurance, manufacturing industries and multinational companies in the oil sector have embraced multimedia technology to bring innovative solutions to their current challenges.

If Nigerian wants to be a major player in the global market place of ideas and prepare her citizens for the new environment of today and the future, the country should embrace ICT for the following reasons: ICT as aids to teaching and leaning; ICT as a tool for management; ICT as instrument for economic development; ICT as instrument of high technological development, and ICT as a course of study.

ICT as aids to teaching and learning

The importance of ICT is quite evidence from the educational perspective. Though the chalkboard, textbooks, radio/television and film have been used for educational purpose over the years, none has quite impacted on the educational process like the computer. While television and film impact only on the audiovisual faculties of users, the computer is capable of activating the senses of sight, hearing and touch of the users. ICT has the capacity to provide higher interactive potential for users to develop their individual, intellectual and creative ability. The main purpose of ICT "consists just in the development of human mental resources, which allow people to both successfully apply the existing knowledge and produce new knowledge" (Shavinina, 2001,P.70).

The collective and rigid nature of learning and the passive nature of the learning associated with the use of radio, television and film do not contribute any innovative changes to traditional methods in education system. Information and communication technologies are being used in the developed world for instructional functions. Today, computers perform a host of functions in teaching and learning as many nations are adding computer literacy, reading and writing literacy as skills students will need for succeeding in a technologically developed world (Thomas, 1987). At the instructional level, computers are used by pupils to learn reading, mathematics, social studies, art, music, simulation and health practices.

In educational multimedia application Shavinina (1997) asserted that today's learning contents are domain-specific products and that they dominate the world market. According to Shavinina (1997), domain-specific educational multimedia is directed to knowledge acquisition skills development in the language arts, history, physics, literature, biology and so on.

There is no doubt that ICT provides productive teaching and learning in order to increase people's creative and intellectual resources especially in today's information society. Through the simultaneous use of audio, text, multicolor images, graphics, motion, ICT gives ample and exceptional opportunities to the students to develop capacities for high quality learning and to increase their ability to innovate.

Nigeria cannot afford to lag behind in using multimedia to raise the intellectual and creative resources of her citizens. This is particularly important for children whose adulthood will blossom in a cyber environment entirely different from that of the present (Shavinina, 1997). Nigerian children need to be taught by radically new educational programme and variety of educational contents with multimedia playing key role.

ICT as tool for educational management

It is not uncommon to find that many establishments in Nigeria, including educational institutions, still keep records in files and tucked them away in filling cabinets where they accumulate dust. Many of these files are often eaten up by rodents and cockroaches thus rendering them irretrievable. A great deal of routine administrative work in government establishment is still done manually with the state and the Federal government showing little or no interest in embracing ICT. The official administrative drudgery in government offices and education institutions can be better managed through ICT. Educational administrative functions include a wide variety of activities such as educational governance, supervision, support services, infrastructure, finance, budgeting, accounting, personnel selection and training system monitoring and evaluation, facilities procurement and management, equipment maintenance, research, and so on (Thomas, 1987).

In most Nigeria schools, officials still go through the laborious exercise of manually registering students, maintaining records of pupil, performance, keeping inventory list of supplies, doing cost accounting, paying bills, printing reports and drawing architectural designs. The huge man-hour spend on these exercises can be drastically reduced with ICT to enhance overall management procedure. Thomas (1987), said that "Computers bring great speed and accuracy to each of these tasks, along with the convenience of storing large quantities of information on 'small disks or tapes' (P.5).

The prevailing condition in school management in Nigeria is disheartening and discouraging. The country seems to be living in prehistoric times in the educational management while even developing countries in Africa such as South Africa, Kenya, Uganda and Tanzania are far ahead of Nigeria in ICT applications. Despite its huge material resources and population endowment, Nigeria cannot be counted among progressive nations using ICT in educational management, as technology has become a critical tool for achieving success in education.

ICT as instrument of economic development

The present government in Nigeria is pursuing the deregulation of the economy with a passion that has never been seen in the country. It is striving for a private sector driven economy hence it is selling its shares in many companies so that they can fully be managed by the private sector. Most of these companies in which government hold majority shares have been mismanaged over the years that they have become a huge burden and a financial drain-pipe to government, hence deregulation in the country today.

The importance of ICT in Nigeria strongly manifests itself from an economic standpoint. Today, as a result of globalization, industrial competition is increasingly harsh and companies must not only come up with innovative

products and services to the global market but must do so with unprecedented speed. For the companies to survive, they need intellectual and creative employees who's "novel ideas are to a certain extend a guarantee of companies' existence" (Shavinina 2001, P.65). Contemporary society strongly needs highly able minds that could productively solve many economic problems of today. Such highly able minds are nurtured by a country's educational institutions. Nigeria lags considerably behind others in the development of small and medium scale enterprises, which are the mainstay of modern economy and society. Modern society desperately needs highly able citizens who can bring innovative solutions to its current challenges and at the same time produce new ideas for ongoing socio-economic and political advancement (Shavinina, 1997). Nigeria can only be part of such modern society if ICT facilities are deployed to all sectors of the economy. Because, the country is already on the wrong side of the digital divide, it must lay the proper foundation for ICT use in the education sector.

ICT as tool for higher technological development

In today's world, not only are we surrounded by technology, but our primary means of reaching others in far and near places are mediated by technology. According to Elluh (1989), "technology is progressively effacing the two previous environments: nature and society" (p.134). The environment Elluh talked about is that which enables us to live, sets us in danger and it is immediate to us and mediates all else. He asserted that modern man cannot live without our gadgets. This is what makes human subservient to technology rather that technology being subservient to humanity.

There is no doubt that one of today's realities is an extremely fast development of high-technology. This has resulted in a huge change of the individual's life in business and private settings. There is strong need to know and use modern technology in our social life, the economy, the business and education. New and sophisticated breakthroughs in high technology encourage companies to introduce technological innovations rapidly into their business practices. The United States Space Programme has benefited immensely from rapid development in high-tech and today's information and communication technology. In many parts of the developed world, cellular, satellite, and wireless technologies combined with innovative business practices are beginning to make up for the shortcomings of the traditional wire line technologies. Nigeria was introduced to cellular technologies a little over two years ago and this has revolutionized the communication industry in the country, though majorities of Nigerians are yet to benefit from the services due to high cost.

If Nigeria must be part of developed world in the near future, it must embrace technology and discard some of the old habits and perspectives and retool completely. There is need for the country to re-strategize and expand its vision so as to cope with the challenges of a technological society.

ICT as a course of study

The most challenging aspect of the post-industrial era is how to meet the demand of the information society that modern man is trying to build. The role of education in developing modern society cannot be overemphasized. In fact, society and education are highly interdependent. As society changes, the educational system has to change accordingly (Westera and Sloep, 2001). Today employers of labour are in search of graduates with requisite knowledge, skill and training that would help to solve problems that do not yet exist today. In recent years thousands of university graduates found it difficult to secure good paying jobs. This has been due to the fact that there are no jobs out there as many government establishments and private companies are even retrenching workers as a result of hard times being experienced by the economy.

Though the Nigerian government has opened its doors to foreign investors and many of them are coming in, Nigerian graduates are not properly trained for the new positions that are opening up in the new companies being established. There is a high demand for highly skilled and technologically trained workers. Unfortunately, most Nigerian graduates acquired overdose of theoretical knowledge, which does not match well with the demands of workplace practice. Modern companies need employees that are proactive, enterprising, responsible and self-reliant professional. According to Walton (1995), modern employees represent the business' human capital.

Nigeria needs to replace the traditional pedagogical practices that still underpin its educational system. In a report of the World Bank sponsored research study on the state of the Nigerian graduate, Dabalen and Oni (2001) asserted that Nigerian University graduates of the past decade are poorly trained and unproductive on the job. The report indicted Nigerian University graduates as deficient in mastery of the English language and requisite technical skills. Such development calls for a rethinking of the objectives education should pursue.

In order to revolutionize Nigeria educational system, the country needs ICT not only as tools for communication but also as a field of study. Modern companies, especially those operated by the new foreign investors need skilled workers with basic knowledge in algorithm, flow chart design, complex programming, and web design. Nigeria also needs computer technicians and engineers. These new fields of study could be introduced as areas of study in Nigeria universities and polytechnics. Though, few Nigeria universities are already having computer study as part of their academic programs, most of them are still theoretical in nature to impact meaningfully on the society.

Nigeria needs to establish a virtual learning company along the model developed and implemented at the Open University of the Netherlands. The Netherlands virtual Company was established to answer to future challenges of modern society. According to Westera and Sloep, (2002), the Netherlands Virtual Company;

> "Is a distributed, virtual learning environment that embodies the functional structures of veracious companies; it offers students a rich and meaningful context that resembles the context of professional working in many respects; it aims to bridge the gap between education and professional working,; between theory and practice between knowledge and skills." (P.116).

The virtual Learning Company is regarded as a state of the art cyber education, which strives to bring together the context of education and workplace. Nigeria has just launched its own version of Open University in Abuja after so many years of planning. The Nigeria Open University has a lot to learn from the Netherlands example by offering a concrete and meaningful environment that closely resembles the student's future workplaces. The Nigeria University Commission recently established a virtual learning website but its impact is yet to be seen and it is too early to be assessed.

Obstacles to the use of ICT in secondary schools in Nigeria

There are several impediments to the successful use of information and communication technology in secondary schools in Nigeria. These are: cost, weak infrastructure, lack of skills, lack of relevant software and limited access to the Internet.

Cost

The price of computer hardware and software continues to drop in most developed countries, but in developing countries, such as Nigeria, the cost of computers is several times more expensive. While a personal computer may cost less than a month's wages in the United State, the average Nigeria worker may require more than two years' income to buy one.

Nigeria has over 6,000 public secondary schools. Majority are short of books, paper and pencils. Many of the schools lack adequate infrastructure such as classrooms and only few are equipped with television or radio. Apart from the basic computers themselves, other costs associated with peripherals such as printers, monitors, paper, modem, extra disk drives are beyond the reach of most secondary schools in Nigeria. The schools can not also afford the exorbitant Internet connection fees.

Weak infrastructure

In Nigeria, a formidable obstacle to the use of information and communication technology is infrastructure deficiencies. Computer equipment was made to function with other infrastructure such as electricity under "controlled conditions". For the past fifteen years Nigeria has been having difficulty providing stable and reliable electricity supply to every nook and cranny of the country without success. Currently, there is no part of the country, which can boast of electricity supply for 24 hours a day except probably areas where government officials live. There have been cases whereby expensive household appliances such as refrigerators, deep freezers and cookers have been damaged by upsurge in electricity supply after a period of power outage.

Electronics equipment such as radio, television, video recorder and even computers has been damaged due to irregular power supply. When electricity supply is not stable and constant, it is difficult to keep high-tech equipment such as computers functioning, especially under extreme weather conditions as obtained in Nigeria. The high levels of dust during the dry season in Nigeria also make electronic equipment to have short live span.

In rural Nigeria most inhabitant do not have access to electricity, thereby denying rural secondary schools opportunity to benefit from the use of electronic equipment such as radio, television, video recorders and computers. The few Internet access available in Nigeria is found in urban centers. These environmental realities are difficult to manage because fans, sealed rooms and stable electricity are lacking in many urban homes and rural areas.

Another obstacle to ICT development in Nigeria is inadequate telecommunication facilities. Though the International Telecommunication Union (ITU) has rated Nigerian's Telecommunication Sector as the fastest growing in Africa, majority of Nigerians have no access to telephone. At the end of 1999, total private investment in telecommunication industry in the country was $50m and there were over 700, 000 lines with 450,000 connected. The government officials and officers acquired more than half the lines connected. On the Global System of Mobile Communication (GSM), Nigeria is also ahead of most African countries with more than 2 million subscribers connected. The telecommunication sector in Nigeria has attracted more direct foreign investment hence the growth rate is faster than any other sector of the economy. Between 2001 and 2003, about $3.8 billion new investment by foreign private investors have been recorded. As at the moment, more than 3 million landlines have been added to the existing telephone capacity.

Though Nigerian's telecommunication sector is growing faster than in most African countries, the over 3 million landlines and 2 million GSM subscribers are a far cry from the ideal when such figures are meant to serve Nigeria's nearly 124 million population. Again, most of the subscribers to the Global System of Mobile Communication (GSM) and landlines owners are found mostly in urban centers.

It is also on record that the connection fees for telecom facilities have reduced drastically over the years, the current rate is still too high for many Nigerians. In 1997, connection fees for telephone lines were about $1,500; today it is about $148. The current rate is too high in a country where the minimum monthly wage is about $51. To change this situation, Nigerian needs to figure out new ways of building necessary infrastructure to support ICT in the country.

Lack of skills

Nigeria does not only lack information infrastructure, it also lacked the human skills and knowledge to fully integrate ICT into secondary education. To use information and communication technology (ICT) in secondary schools in Nigeria, the need for locally trained workers to install, maintain and support these systems cannot be over emphasized. There is acute shortage of trained personnel in application software, operating systems, network administration and local technicians to service and repair computer facilities. Those who are designated to use computers in Nigeria do not receive adequate training, at worst, do not receive any training at all (Okebukola, 1997).

In Nigeria also, most secondary school teachers lack the skills to fully utilize technology in curriculum implementation hence the traditional chalk and duster approach still dominates in secondary school pedagogy. Information transfer using ICT is minimal or non-existence in secondary schools in Nigeria (Anao, 2003). Secondary school teachers in Nigeria need to be trained on educational technologies and the integration of computers into classroom teaching. According to Carlson and firpo (2001), "teachers need effective tools, techniques, and assistance that can help them develop computer based projects and activities especially designed to raise the level of teaching in required subjects and improve student learning (P.109)

Lack of relevant software

There is no doubt that the ultimate power of technology is the content and the communication. Though, software developers and publishers in the developed countries have been trying for long to develop software and multimedia that have universal application, due to the differences in education standards and requirements, these products do not integrate into curriculum across countries. Software that is appropriate and culturally suitable to the Nigerian education system is in short supply. There is a great discrepancy between relevant software supply and demand in developing countries like Nigeria. According to Salomon (1989), there are clear indications from many countries that the supply of relevant and appropriate software is a major bottleneck obstructing wider application of the computer. Even if Nigeria tries to approach this software famine by producing software that would suit its educational philosophies, there are two major problems to be encountered. First, the cost of producing relevant software for the country's educational system is enormous. Second, there is dearth of

qualified computer software designers in the country. To overcome this, people need to be trained in instructional design.

Limited access to the Internet

In Nigeria there are few Internet providers that provide Internet gateway services to Nigerians. Such Internet providers are made up of Nigerians who are in partnership with foreign information and communication companies. Many of these companies provide poor services to customers who are often exploited and defrauded. The few reputable companies, which render reliable services, charged high fees thus limiting access to the use of the Internet. The greatest technological challenge in Nigeria is how to establish reliable cost effective Internet connectivity. In a country where only about 0.6% of the populace has home personal computers, the few reliable Internet providers who have invested huge sum of money in the business have a very small clientele. They have to charge high fees in order to recoup their investment in reasonable time. Nigeria has about 500,000 Internets subscribers.

Secondary schools in Nigeria are not given adequate funds to provide furniture, requisite books, laboratories and adequate classrooms let alone being given adequate funds for high-tech equipment (computers) and Internet connectivity.

Again, due to the lack of adequate electricity supply, especially in rural areas in Nigeria, secondary schools located in those areas have no access to the Internet and are perpetually isolated and estranged from the world's information superhighway. Nigeria in lagging behind other African countries such as Uganda, Senegal and South Africa who are already helping secondary school students in those countries to become better information users. All Internet service providers in Nigeria are based in the urban areas.

For many years, the Nigerian government had a monopolistic control of telecom service, which does not allow for the competitive environments that reduce telephony rates. Paltridge (1996) asserted that the penetration of Internet hosts is five times greater than in monopoly markets and that Internet access in countries with telecommunication competition enjoyed a growth rate five times higher than the monopoly environments. All that may change for Nigeria now as the government had invited private participation in the telecom industry and many investors are already in the Nigeria markets but it will take many years to know their full impact on Nigeria education system.

Prospects

There are numerous and good prospects for the use of ICT in teaching and learning in secondary schools in Nigeria. The following major areas suggest the range of applications that computer can serve teachers and learners in Nigeria. First, computer can enhance educational efficiency. The efficiency in teaching various subjects could be improved. For instance, many secondary school teachers are already teaching large classes of students. In this situation, students no longer receive the much desired individual assistance. Furthermore, English language is taught and learned as a second language in Nigeria and many teachers of English are weak. It is possible to use carefully prepared computer programs to ensure that learners are accurately and systematically instructed. Also, the computer can enhance problem-solving skills of the learners by focussing on thinking skills especially in subject such as mathematics.

Second, computers can serve administrative functions. They can replace the laborious exercise of filing papers in filing cabinets and shelves where records accumulate dust over a long period of time. Another administrative application of the computers is their use for budget planning, accounting for expenditure, writing correspondences and reports, assigning students to classes, reporting students' progress and testing students and scoring tests which help to reduce paper work. It is true that many of the tasks above are not effectively and efficiently done in secondary schools in Nigeria.

Third, computers can be used for individualized learning in secondary schools in Nigeria. Due to large classes and differences in individual learning style and pace, microcomputers will enable the student to progress at his or her own pace and receive continual evaluation feedback and corrections for errors made. In this way, computers allow the development of partner-like interactive and individualized relations with the user. Computers play the role of the tutor and present the leaner with a variety of contents and symbolic modes.

Fourth, computers can change current pedagogical practices in secondary schools in Nigeria, which depended heavily on the traditional lecture method. It is universally accepted that computers allow more independent exploration, more personally tailored activities, more teamwork, and more significantly, less didactic instruction. The role of the teacher, therefore, changes from information dispenser to that of information manager, from authoritative source of information to a guide of self-propelled exploration (Smith, 1989).

Fifth, computers will offer the Nigeria teacher improvement in the techniques of research. The cumbersome exercise of searching by hand through the library's card catalog or periodical indexes can be made easier by typing few key worlds pertinent to the research topic into a computer and the researcher can receive extensive list of related sources of articles in books and journals in just a matter of minutes.

Conclusion

There is no doubt that teachers and students in secondary schools in Nigeria will have incredible resources available if they have access to the Internet. By integrating information and communication technology into secondary school curriculum, a fundamental shift in the way teacher teaches and students learn will be evolved. However, to integrate computer into teaching and learning in Nigeria, there must be proper and adequate funding and financing of education. There has been a steady decline in government's budgetary allocation to education over the past five years, getting to all time low of less than 1% in the 2003 federal government budget. The greatest challenge to the state and federal government is to ensure that budget cuts resulting from dwindling revenue and the need to satisfy other sectors of the economy do not adversely effect education. Nigeria needs to invest heavily in the Internet business and create enabling environment for secondary school students to participate in downloading available and useful knowledge in the Internet. Secondary school students in Nigeria are already farther behind their peers in developed countries, thus widening the global digital divide.

Nigeria should join the World Links of Development (WorLd), a program initiated by the World Bank in 1997. The program has been establishing computer laboratories and bringing Internet connectivity to secondary schools in developing countries around the world. It is also training teachers in these countries to acquire skills necessary to integrate information and communication technology into their classroom practices. The WorLd program links secondary schools around the world in order to improve education, enhance cultural understanding, and develop requisite skills in youth which will prepare them for the job markets in the 21st century. African countries such as Uganda, Senegal and Zimbabwe are already benefiting from the WorLd program and it has improved the accessibility and quality of basic education in those countries.

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