

Access and Use of Information Communication Technology (ICT) in the Delivery of Education Content in Institutions in African Countries

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Abstract

Education in African countries has developed and expanded at a very high rate. Some countries have had high-level enrolments in Primary, Secondary, Colleges and University level. Due to this rapid expansion, one would expect the countries to use the ICTs to cope with this expansion but experience from Kenyan Universities tells a different story. This paper therefore seeks to discuss whether ICTs are available at Universities level and if they are, whether they are being used or not. Also important are the skills that the human resources should have. The access to the technology by staff (teaching) will be discussed, focusing attention on the challenges both students and lecturers face in trying to process in this technological global world.

Introduction

The teaching and learning process is enhanced by the use of instructional media. Miller (1990:55) defines media as "the graphic, photographic, electronic or the mechanical means of enhancing the transmission and reception of visual information." He further explains the meaning of instructional media. According to him, instructional media consist of the hardware and the software, which are used to assist learners in acquiring knowledge, skills and attitudes. The administration of instructional media programmes therefore means the organization of media programmes in institutions of learning. In discussing the access and use of ICT in developing countries, the word institution in this paper will be used to refer to a University.

ICT must be viewed as necessities in the teaching and learning process. This paper therefore seeks to discuss the challenges that the developing countries face in trying to communicate education content in institutions of learning. Examples will be cited from the developing countries but most of them will be from Kenya since the author is well versed in what is happening in this country. After the conclusion, suggestions will be given on how the developing countries can improve on their access and use of ICT to enhance teaching and learning process.

Availability of ICT in Higher Institution of Learning

There are different types of media. Some of these are:-

- **Radio**

The radio works well in the world of ideas. Its one advantage is that it is easily available. As a medium of delivery of education content, it excels because it can be used to teach a variety of subjects, from history, political science to science. And with the advent of interactive radio, the learners can discuss the content learnt with the presenters (Lewis and Booth, 1990). Again, the radio is able to reach a big number of participants in the teaching and learning event because communication of knowledge can take place over considerable distance. It is relatively inexpensive.

- **Computer.**

In the technological world, the computer is a necessity in all areas of lives. A close look at offices in Eldoret town in Kenya reveals that most offices have a computer for their own use. However, as a medium for the delivery of education content, most of the Universities in developing countries especially in Kenya do not have the computer for learning. Those available in the offices are used by secretaries for word processing. A study by Macharia and Kadenyi (2004) revealed the results in the table below.

Table I. Access and use of computers in Chepkoilel campus, Moi University.

Department	Technology (Automation)
Administration	Fully automated
Library	Fully automated
Finance	Fully automated
Academics department	Partially automated
Hostels and Catering	Not automated

- **Access to the Internet.**

In most of the African countries, access to the Internet is difficult. Even in Universities that have computers do not have Internet. A good example is Moi University. The library has a cyber café that is used by all the students and it's difficult for members of teaching staff to use it. In other offices, it's only the management or top university administrators that have access to the Internet. In contrast, in the USA, the lecturers use the Internet for education purposes. Both of them (lecturers and students) can look for information using this mode. However, as a communication technology medium, the African countries are far from employing this aid taking advantage of the information and skills one can get through the Internet.

However, the availability of computers and access to the Internet has revolutionized learning in both developed and developing countries because learners have access to the information from different sources. The joke is that these days, in the institutions of higher learning, some learners have more information than their lecturers. Though it is advantageous to have the ICT, some researchers such as Schrage (1997) however states that this access to knowledge or information has weakened learner's ability in critical thinking, problem solving etc. A good example of this is a master class of 15 learners in a School at Moi University, Kenya. In a given term paper, they went to the Internet and downloaded complete papers (Cut and paste) and submitted to their lecturer, who unknowingly graded their 'work' highly. However, at the end of the semester, they performed very poorly in their end of semester examination because they had not synthesized the knowledge required to enable them do their examinations.

- **PowerPoint Presentation methods of delivery.**

Now, technology has become sophisticated. The lecturers in developed countries can afford to use this method of delivery with ease. When one visits an African university, it is interesting to find that some lecturers do not know that such a technology exists. It is only when they attend conferences outside their institutions that they find them in use.

- **Television**

This has the advantages of being audio-visual. It does not respect territorial boundaries. Even those separated by geographical boundaries can share the same programmes as those in other regions, i.e. the television helps to close other distance and aspects such as culture, climate, status e.t.c (Mcquail and Windahl, 1993). As a medium for the delivery of education content, has the advantage of teaching many students across campuses and

countries. In Singapore, the Universities have managed to teach thousands of students, using crossed circuit television. However, in African countries except for the countries that have introduced Virtual Universities such as Kenyatta University – Nairobi, Kenya, the others have yet to introduce the medium for educational purposes (KBC TV, 1999).

- **Telephone**

This is a medium that is available but least used in the delivery of education content. In more developed countries, teleconferencing is an activity that is used often. They take advantage of the immediate feedback of the telephone as a channel of communication.

In discussing the access and use of ICT, literature available deals with the availability or unavailable of the above in the institutions of learning. For example, the television is used to present instructions in most developed countries. As an educational aid, it has demonstrated its usefulness for mass orientation and for reaching those at home. The Open University of the U.K. has used the television extensively for distance education. Though the developed countries have their own problems in their institutions of learning, they cannot complain about access to ICT. Kegan (1994) says that, they have more than they need. Everything is available and well designed by the media specialist so that the work of instructors is to choose what they need for their particular learners.

The developing countries however, have more problems than their counterparts in the developed world. What is news there becomes news after several decades. A good example is the availability and use of computers in schools. In the US and Europe, computers became important in 1970s and 1980s, both for general and educational uses. In most developing countries, it is during the 1990s that the governments decided to think of computers for general use. Some countries have very few computers for general or education purpose. In Nigeria for example, the availability of computers in schools and Universities is minimal, especially when one considers the population. In Kenya there are two institutions, Kenyatta University (AVU) African Virtue University and the United States International University (USIU) in Nairobi Kenya have the ICTs.

The Challenges

Poor Planning Strategies

The developing countries have problems when it comes to planning. The challenges they have in administering instructional media programmes is compounded by the fact that when curriculum is being designed and developed, specific information about the media needed to achieve the stated educational objectives are not given. It is at the national level that countries should formulate policies regarding the administration of media programmes. A close look at the scanty literature that is available shows that curriculum planners are very silent about all this, making it difficult to use the ICTs that had not been planned for so that the lecturers know whether one will need a computer, telephone or television.

Gagne and Briggs (1979) points out the fact that it is during the instructional design process that the issue of materials and media development is decided. This, they argue is because instruction is designed systematically, from the objectives all the way to the evaluation process. However, Universities in developing countries have done what they think is best for them. That is, to draw the curriculum whereby the media programmes needed are left open to the specific groups of people to decide on what they want/need.

Hawkridge, et al. (1990) makes an observation about the developing countries that the governments are weak in making policies that can enrich the educational environment. The examples he gives are about the introduction of microcomputers in schools. He notes that by the 1980s most of the countries had no clear policies about this. Examples given are Kenya,

Zimbabwe, Botswana, Malawi and Egypt. This lack of planning from the government leads to situations that are awkward in universities in some countries whereby some programmes may need use of ICTs but because they are not available, the lecturers do without. If the planning stage is included, then the institutions of learning would have a starting point, because what is there right now is a lot of confusion when it comes to the administration of media programmes. The administrators would be in a better position to plan to have them when they know what it is that they need in order to achieve certain objectives. They can work hard, select or develop some media programmes. The policies from the governments would help them to do this.

Inadequate Knowledge in Instructional Design

The people charged with the responsibility of designing instructions in developing countries more often than not are people who are far removed from the situation. Such people are supposed to design instructions when most of them have forgotten or are not sure of what is actually required. For example, in Kenya when the system of education was changed to the 8.4.4. System, it was a sudden move. People sat down and drew the syllabuses for Primary, Secondary and even University education. Whatever was prepared hurriedly had not been authenticated. After all that is done on the ground, it becomes very difficult for the lecturers in the institutions of higher learning to use ICTs when most of them have little knowledge in instructional design. What is provided in these institutions are schemes of work or course descriptions and the rest is expected to happen naturally. Some designers have no idea of what is needed, and its relevance at different levels of learning (Dale, 1969). Having teachers and lecturers who have scanty knowledge in instructional design leads one to conclude that using the ICTs in these institutions is a difficult task. Kegan (1994) gives examples of how things are done in the USA. He reckons that the programmes are planned to the last detail. However, he also argues that just like elsewhere, some of the teachers are not as competent as they should be. This weakness is dealt with by having specialists handle most of what needs to be done. For example, this is done during the designing of instructions, development of media programmes and the administration of the same.

Training of Staff

The training of staff in developing countries is a difficult task. The requirements for those who wish to train as teachers for secondary schools and colleges leaves a lot to be desired. The profession attracts people who would be happier in other professions. That is, they take education as the last resort. Once these people are in colleges and universities, they go through the training without much interest. The situation is made worse by the fact that these institutions lack most of the facilities that are needed to enhance the teaching and learning process. What compounds the situation in the developing countries is the fact that most of the things that the trainee teachers should learn practically are dealt with theoretically. For example, the training of a teacher to teach science subjects – chemistry, physics and biology in secondary schools without giving them practical lessons in the laboratories yet these teachers will be required to perform experiments with their students. If there are no laboratories for practical lessons, then it is difficult for lecturers to access and use ICTs.

The training that teachers go through therefore makes them ill prepared to administer media programmes later in life because their training should have prepared them for this so that once they are in the field, they can improve on what they acquired during training. Brunner (1977) argues that the teacher is a very important component in the teaching – learning process. He says that what one teaches and how one teaches it with the help of aids and other such devices depends upon the skills and the wisdom that goes into the construction of the programmes. For the teacher to be able to teach well depends on the mastery of the knowledge

to be communicated. According to the above author, in the USA, many primary and secondary schools teachers are not sufficiently well trained initially to teach their subjects. However, this does not mean lack and use of ICTs. The irony in developing countries is that the very teachers that have been poorly trained and prepared are the same ones who are expected to administer media programmes.

With the above issues in mind, one can therefore see the problems that are facing the institutions of learning in developing countries. The sources of these problems are many and varied. However, the fact that lecturers are ill prepared at the training level does not mean that they cannot acquire the competencies that they lack. They can if the countries spend some money on the development of resource centers and in-service programmes for lecturers, so that this can enable them to administer instructional media programmes in respective schools, colleges and universities.

The Development of Programmes

The challenges facing the developing countries in administering media programmes is as a result of lack of media specialists. There are few existing media specialists who can guide others in the preparation and administration of the programmes. It can be argued that their lack of skills in designing the programmes could be attributed to the fact that a substantial number of educators received their education prior to the technological explosion thereby having received very little or no training in the use of new technologies (Bravik and Jones, 1993). This is unlike what happens in the developed countries whereby the specialists come together, design and develop the programmes. As Kegan (1994) says, at the end of the day, whatever is developed is good and appropriate because different people contribute towards the development but this does not, as Winters (1997) argues, solve their problems of large classes and poorly treated teachers. The situation of the teachers in these institutions is complicated by other problems. According to Brunner (1977) even the relatively well-prepared teachers do not have sufficient opportunity to learn their subjects in that special way that comes from teaching it. This is because an uphill task for these very teachers to administer media programmes properly. What most of them will be concerned with is to complete the syllabus before the examinations are done.

What Brunner makes us aware of is that in developing countries, some schools and colleges hardly have any media that can be graded. However, the teachers are still challenged to do whatever is in their power to develop the programmes that can enrich the teaching – learning process. Lack of media specialists should not be an excuse because the already trained teachers can acquire more training to enable them to develop appropriate media programmes and administer them accordingly.

The Attitudes of the Teachers

Brunner (1977:90) says that it is very difficult for somebody who does not see anything beautiful about teaching a certain subject to ignite others with a sense of intrinsic excitement of the subject. According to him, the teacher is a personal symbol of the educational process, a figure with whom students can identify with and compare themselves. Thus, when there are teachers whose attitudes towards teaching, as a profession is wrong, then there is a big problem in learning institutions. This is because a teacher is a communicator, model and can be supported by a variety of devices that can expand one's experience, clarify it and give it personal significance. It is not hard to find a PhD holder of Communication technology, yet the very individual is computer illiterate, cannot use PowerPoint to deliver education content and yet his/her life is depended on it. Simplified, some of them are afraid of technology and yet it is supposed to make their work easy. Hawkrige, et al. (1990) noted that in some schools in

developing countries, principals resisted the introduction of microcomputers. A good example is the university of Zimbabwe where a certain professor preferred to teach undergraduate who were computer illiterate.

The situation described above makes it difficult for those who would want to develop media programmes in the institutions of learning. A good example of negative attitude is found in institutions of higher learning in Kenya. The university administrators have such a negative attitudes towards the teaching-learning process that they do not see why teachers should bother with media programmes. According to them, what a teacher needs is a piece of chalk and a chalkboard. With teachers surrounded by such negativity, it is difficult for them to administer media programmes. The biggest enemies are the teachers themselves. Sometimes the negative attitudes are brought about by the teachers' incompetence. Winters (1997) cautions that care should be taken in training the teachers so that they can be confident when dealing with instructional media. Some fear technology so the author says that care should be taken to alley such fears and negative attitudes to specific instructional media. This has to be done to avoid the transfer of these attitudes to the students. Those responsible for the administration of media programmes have to try and encourage those who are negative to look at the benefits of such programmes. These are such as administrators, principals and the lecturers themselves.

Societal Support

The institutions of learning have had difficult time in trying to acquire communication technology without the support of the society. The purpose of education according to Gagne and Briggs (1979) is to achieve the goals that the society has set. The society is the supra system while education is the system. It is from the society that education gets its inputs and it's into the society that education sends back the outputs. Education as a system has to relate with the environment. This relationship enriches the system as a whole. Education in developed countries is supported by all the other sectors. These are such as industries, and churches. All are willing to put in as much as they can to improve education. In the developing countries, the society is concerned about other things than education. There are situations where institutions do not have proper buildings for schools, desks, books and other media for students. A close look at some colleges and universities will testify to these. The availability of instructional media show whether the communities support the institutions or not. Some schools have more than they need while others have very few if any.

In some countries, the communities are the ones who hinder the growth of ICT centers. Examples are given of individuals breaking into these centers to steal whatever little is available. A good example is Moi University in Kenya, computers and other instructional materials are stolen from the offices. If the community around were supportive, such things would not be stolen because there would be no ready market for them.

Examination – Oriented School Curriculum

The school systems in the developing countries are only interested in having students pass the examinations. Hawkrige et al (1990) noted that in these countries, some principals and teachers rejected the introduction of the computers in schools because they argued that these will waste time and that the students will waste their time. Consequently, they will not have enough time to study for their examinations. When examinations are done, hardly does anybody mention the relationship between the availability of institutional media programmes and good performance. The challenge is for the administrators of media programmes with what they have. Those who still are willing to continue to do their best, they can under the prevailing

circumstances ignoring the fact that examinations are not the best evaluators knowledge and skills.

Inadequate Funding

Gagne and Briggs (1979: 180) have discussed the variables to be considered in media selection including; the task variable, the learner variable, the assumed learning environment, the assumed developing environment, economy and culture, and practical aspects among others. The availability or unavailability of different type of media depends on whether the institutions have the capacity to finance the selection or the development of such media or not. Some of the factors that affect media selection include; appropriateness, technical quality, cost in terms of money and time, availability, simplicity, and flexibility among others.

Instructors are concerned about the cost of instructional media. He shows that access and use of ICT is determined by finances. The institutions in developing countries have problems with funding. More often than not the funds that run the institutions are provided by the government or donors. Such money is not enough for all the needs of the institutions. The interesting fact is that when the institutions are drawing their annual budgets, they do not include the cost of ICT. Instead what is planned for as teaching materials will include dusters, pieces of chalk and papers. Thus, because of lack of funds, the institutions of learning are pale comparisons with other institutions in the developed world. For example, the scholars doing research find themselves in problems because the literature is old knowledge. Rarely do the communities seek to see the relationship between performance of students in national examinations and availability of media programmes. The colleges and Universities that have the financial strength to buy instructional materials perform better than those that are poor. However, research needs to be done to establish this relationship, as is the case with some private universities in Kenya.

Conclusion

To sum up, the institution of learning in developing countries are facing challenges in access and use of ICT. The instructors have to work in environments that are not well equipped for the kind of jobs that they do. In essence most of the colleges and universities have few computers and television sets. This explains the perpetual complaint of the competences of these graduates from these institutions, because the available technology is not used for delivery of content. The communities around these institutions are not concerned about the financing of instructional media programmes. Worst of all is the fact that the respective governments in these countries have not drawn policies that can guide the institutions in implementation of media programmes. The budget should show clear allocation of funds for media programmes (ICT). The attitudes of the supposed users of ICT are of paramount importance because with positive attitude, they will be able to do their best in the face of intimidation odds.

Despite the named challenges, the lecturers in Africa universities have tried to do what is expected of them but this does not mean the institutions should be contented with lack of information communicating technology for the delivery of education content. The world has become a global village, so the institutions in the developing countries require and need the same facilities available to their counterparts in the developed world. Finally, information communication technology for the delivery of education content requires a collaborative effort from all. These are academicians, librarians and administrators of information technology. This will help institutions of learning grow from strength to strength in this highly technological globalized world.

Bibliography

- Bates, T. and Robinson, J (ed) (1997). Evaluating Television and Radio Milton Keynes: The Open University.
- Bravik, P. S. and Jones, D.L.C. (1993). Information Literacy. Aldelide: Australia
- Bruner, J. (1977). The Process of Education. Cambridge: Harvard University Press.
- Gagne, R. and Briggs L. J, (1979). Principles of Instructional Design. New York: Holt, Rinehart and Winston.
- Hawkridge, D., Jaworski, J., and McMalon, (1990). Computers in Third World Schools. London: Macmillan.
- Joyce, B., Showers Beverly, Weil Marsha, (1992). Models of Teaching. Boston: Allyn and Bacon.
- Kegan, D. (ed) (1994). Otto Peters on Distance Education: The Industrialization of Teaching and Learning. London: Routledge
- K.B.C. (1999). TV programme on "The African Virtual University" at Kenyatta University 25th February 1999.
- Langham, L. (1990). Teachers and Television. The IBA Educational Fellowship Scheme London: John Libbey.
- Lawal, A. (ed) (2004). Institute Journal of Studies in Education, Vol. 2 No. I, University of Ilorin.
- Lewis P.M. and Booth, J. (1990). The Invisible Medium. Washington DC: Harvard University Press.
- Macharia, J. W. and Kadenyi, M. (2004). Use of ICT in Higher Education in Kenya, Unpublished Research Report.
- Mcquail, D. and Windahl, S. (1993). Communication Models for the Study of Mass Communication: London: Longman.
- Schrage, M. (1997). "No Computers will not transform Education," in Winters, PA (ed) (1997). Computers and Society. San Diego: Green haven Press. Inc.
- Winters, P. A. (1997). Computers and Society. San Diego; Green haven Press Inc.
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