

Towards Effective Use of Information and Communication Technology (ICT) for Teaching in Nigerian Colleges of Education

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Abstract: This study examines the use of ICT for teaching in Colleges of Education in South West Nigeria. Five general questions and 5 hypotheses were raised. A descriptive research design of the survey type was adopted in the study. The sample consisted of 300 lecturers selected from 6 Colleges of Education using stratified and simple random sampling techniques. A self designed questionnaire was used to collect data for the study. The data collected was analyzed using frequency counts, percentage scores and t-test statistic. All the hypotheses were tested at 0.05 significance. The study revealed that ICT facilities such as internet, electronic notice boards and projectors were not available in some of the colleges and ICT facilities were not adequately used for teaching in the Colleges. It was also found that the capacity for the use of ICT for teaching was low. The major problems of using ICT for teaching include epileptic supply of electricity, inadequate ICT facilities and lecturers incompetence in the use of ICT facilities. The study also revealed that Federal and State Colleges of Education were not significantly different in terms of availability and use of ICT facilities for teaching. Based on the findings, recommendations were made on how to ensure effective use of ICT for teaching in the Colleges.

Key words: Information and communication technology, teaching in Nigeria, education, college

INTRODUCTION

The entire universe has been transformed to a global village through Information and Communication Technology (ICT). Countries all over the world are at different stages of integrating ICT into everyday practices including teaching and learning. There is urgent need in the developing countries to liberate teacher training programme from the old media and methods by embracing new teaching and learning technology. Gone are the days of hypodermic needle method of teaching when teachers and academic practitioners saw themselves as knowledge oracles and sage of the stage, delivering data, information, knowledge to eager students whose minds are empty vessels wanting to be filled (Ajayi, 2001). Teaching and learning the world over has gone beyond the teacher standing in front of a group of pupils and disseminating information to them without their adequate participation. With the aid of ICT, teachers can take students beyond traditional classroom limits, ensure their adequate participation in teaching and learning process and create virtual environments to experiment and explore.

The use of ICT offers a wide array of choices and innovative ways that is now mostly absent in the traditional classrooms (Bahrudin *et al.*, 2001). The new

Information and Communication Technology is having a revolutionary impact on educational methodology globally (Ololube, 2006). To this end, Nigeria cannot afford to lack behind in the integration of Information and Communication Technology (ICT) into her teacher education in the country need to be ICT compliant. One way of achieving this is to provide the enabling environment for ICT based teacher education programmes of her colleges of Education and Universities.

Casual observation has shown that many lecturers in Nigerian colleges of Education still rely much on traditional methods of teaching. Some of them are fond of using chalk and talk method in their teaching rather than using ICT. If there are many lecturers who do not embrace the use of ICT for teaching, there is high tendency for their students (teacher trainees) to be denied the opportunities which ICT offers for teaching-learning activities during their training. When such students graduate from the colleges and become practicing teachers they may find it difficult to use ICT for teaching.

Various ICT facilities are used in teaching-learning process. Some of these facilities identified by Bryers (2004), Bandele (2006) and Ajayi (2007) include radio, television, optical fibres, satellite equipment, computers, digital multimedia, internet, overhead projector, videos,

fax, CD-ROM, electronic notice board, slides among others. In a similar vein, categorises ICT into three major groups: information technology e.g. computer; telecommunication technology e.g., radio, television, telephone, etc. and networking technology e.g. internet, audio conferencing. It appears some of the ICT facilities are not sufficiently provided for teaching-learning process in the Colleges of Education. Perhaps this is the reason why some lecturers do not use some of the facilities in teaching.

The use of ICT facilities for teaching involves various methods which include systematised feedback system, computer based operation/network, video conferencing and audio conferencing, internet/worldwide websites, Compact Discs with Read Only Memory (CD-ROM), camcoders and digital camera, multimedia, computer assisted instruction (Dede, 1998; Digest, 1996; Umeifekwan, 2005). Similarly, Bandele (2006) indicates that computer applications in the classroom can take the following forms: Computer Aided Instruction (CAI), Computer Assisted Learning (CAL), Computer Managed Learning (CML), simulations, tutorial, demonstrations, drills and practices, computer games and classroom application programmes. However, it must be stressed that the effective use of the various methods of ICT in teaching will to a large extent depends on the availability of the ICT facilities and teachers' competence in using them.

The importance of ICT in teaching are numerous. Apart from the fact that ICT enhances unrestricted access of teachers to relevant information and development in subject areas, it provides teachers with efficient and effective tools to take care of student individual differences (Olorundare, 2006). ICT also makes lessons interesting, easier and more fun, improves presentation of materials and allows greater access to computers for personal use. Other importance also include making teachers' administration more efficient and providing professional support through the internet (Coxe *et al.*, 1999) According to Ibeh *et al.* (2007) ICT also makes classroom a more inclusive environment, it stimulates interaction and discourage passivity, liberates teaching and learning from the constraints of the linear curriculum and provides a bridge between learning at school and learning outside.

Studies have shown various problems which militate against the effective use of ICT for teaching. These problems include inadequate training, resistance to change, computer phobia (Selwyn, 1997; Cox *et al.*, 1999; Mumtaz, 2001); anxiety, inadequate knowledge and lack of competence (Laner and Timberlake, 1995; Russell and Bradley, 1997; Abolade and Yusuf, 2004). Other problems

are poor infrastructures and poverty (AAU, 2001; Ayodele and Ojo, 2007); inadequate fund (Ogunmilade, 1988) among others.

Purpose of the study: The purpose of the study was to find out the use if ICT teaching in the Colleges of Education in South West Nigeria. The study investigated the availability and use of ICT facilities, methods of using ICT facilities for teaching, the capacity for ICT use, the perceived benefits and problems of using ICT for teaching. The study also investigated whether Federal and State Colleges of Education differed in terms of availability and methods of using ICT facilities for teaching.

MATERIALS AND METHODS

A descriptive research design of the survey type was used in the study. The population of the study consisted of all the lecturers in the Colleges of Education in South West Nigeria. The sample consisted of 300 lecturers selected from 6 Colleges of Education using stratified and simple random sampling techniques. Six Colleges of Education (three Federal Colleges and three State Colleges) were selected using stratified random sampling technique and 50 lecturers were randomly selected from each College. A self-designed questionnaire was used to collect data for the study. The questionnaire was validated and thereafter pretested, yielding a reliability coefficient of 0.72. Frequency counts, percentage scores and t-test statistic were used in data analysis. All the hypotheses formulated were tested at 0.05 level of significance.

RESULTS

The results of the study were presented in two stages namely the descriptive analysis and the testing of hypotheses.

Descriptive analysis: As shown in Table 1, majority of the respondents indicated that ICT facilities such as computers, television sets, bulletin boards, radio, record player and disc player were available for teaching, while majority of the respondents also indicated that some ICT facilities such as internet, projectors, electronic mail, electronic notice board were not available for teaching.

Table 2 shows that most of the lecturers were not using the various methods involved in the usage of ICT facilities for teaching. On the average, only 23% of the lecturers indicated that they used various methods of ICT for teaching. This is an indication that ICT facilities were not adequately used in teaching.

Table 1: Availability of ICT Facilities for Teaching in the Colleges of Education

S/N	Items	Frequency		Percentage	
		Available	Not available	Available	Not available
1.	Computers	280	20	93	7
2.	Projectors	116	184	39	61
3.	Television sets	266	34	89	11
4.	Electronic mail	144	156	48	52
5.	Bulletin boards	234	66	78	22
6.	Electronic notice boards	28	172	9	91
7.	Internet	104	196	35	65
8.	Radio	236	64	79	21
9.	Record player	212	88	71	29
10.	Tape recorder	244	56	81	19
11.	Disc player	154	146	51	49

Table 2: Methods of using ICT Facilities for Teaching in the Colleges

S/N	Items	Frequency		Percentage	
		Yes	No	Yes	No
1.	Video conferencing	74	226	25	75
2.	Computer assisted instruction	137	163	46	54
3.	Simulation	62	238	21	79
4.	Data conferencing	48	252	16	84
5.	Demonstration	52	248	17	83
6.	Tutorials	43	257	14	86
7.	Computer games	31	269	10	90
8.	Drills and practices	28	272	9	91
9.	Power-point presentation	134	166	45	55

Table 3: Capacity for using ICT for Teaching in the Colleges

S/N	Items	Frequency		Percentage	
		Yes	No	Yes	No
1.	There are functional internet facilities owned by the College	154	146	51	49
2.	Academic staff are exposed to the use of ICT in teaching	134	166	45	55
3.	There are ICT materials to teach students	112	188	37	63
4.	Academic staff are knowledgeable in the use of ICT	174	126	58	42
5.	Students are knowledgeable in the use of ICT	86	214	29	71
6.	Periodic training is organised for staff on the use of ICT	112	188	37	63
7.	Periodic training is organised for students on the use of ICT	48	252	16	84
8.	Academic staff are knowledgeable in the use of computer	243	57	81	19

Table 4: Perceived Problems of using ICT for Teaching in the Colleges

S/N	Items	Frequency		Percentage	
		Agree	Disagree	Agree	Disagree
1.	Epileptic supply of electricity	230	70	77	23
2.	Lecturers not trained in the use of ICT facilities	206	94	69	31
3.	Lecturers not competent in using ICT facilities in imparting instruction	158	142	53	47
4.	No support for the integration of ICT in teaching	232	68	77	23
5.	No in-service training for lecturers on the use of ICT	200	100	67	33
6.	ICT materials not adequate	226	74	75	25
7.	Lack of Information Technology centre	186	114	62	38
8.	Lack of computer in the classrooms	234	66	78	22
9.	Lack of internet outlet in the classrooms	230	70	77	23
10.	Expensive nature of Information and Communication Technology	226	74	75	25
11.	Staff reluctant to adapt to the use of ICT	108	192	36	64
12.	Students' reluctant to adapt to the use of ICT	112	188	37	63

Table 5: t-test analysis of the differences between Federal and State Colleges of Education in ICT for teaching

Variable	Institution	Mean	Sd	N	df	t _{cal}	t _{crit}
Availability of ICT Facilities	Federal	70.5	7.08	150	298	1.43	1.96
	State	69.9	6.15	150			
Methods of Using ICT for Teaching	Federal	31.4	6.47	150	298	1.72	1.96
	State	30.9	6.25	150			

As shown in Table 3, the capacity for using ICT for teaching in the Colleges was low. Particularly in the areas of academic staff exposure to the use of ICT for teaching (45%), availability of ICT materials to teach students (37%), students' knowledge in the use of ICT (29%), periodic training for staff on the use of ICT (37%) and periodic training for students on the use of ICT (16%). On the average, only 46% of the respondents had a favourable response to various measures put in place regarding the capacity for using ICT for teaching (Table 4).

Table 5 shows the perceived problems of using ICT for teaching. Prominent among these problems are epileptic supply of electricity (77%), lack of support for the integration of ICT in teaching (77%), inadequate ICT materials (75%), lack of computer in the classrooms (78%), lack of internet outlet in the classrooms (77%) and expensive nature of ICT (75%).

DISCUSSION

As shown in the study, majority of the respondents indicated that ICT facilities such as internet, projectors, electronic mail, electronic notice boards were not available for teaching in the Colleges. This could be as a result of inadequate funding of the Colleges. Inasmuch as the lecturers might be willing to use ICT for teaching in the Colleges, the non-availability of the ICT facilities will hinder them. It was also found in the study that ICT facilities were not adequately used for teaching in the Colleges going by the methods employed by the lecturers in using the facilities. This might be as a result of inadequate ICT facilities and the lecturers' incompetence in using the facilities.

The study also revealed that the capacity for using ICT for teaching in the Colleges was low. This is an indication of low level of preparedness of the Colleges for ICT-based teaching-learning process in terms of availability of ICT facilities, training of staff and staff exposure to the use of ICT.

The major problems of using ICT for teaching as perceived by the lecturers include epileptic supply of electricity, lack of support for the integration of ICT in teaching, inadequate ICT materials, lack of internet outlet in the classrooms and expensive nature of ICT. If these problems are not properly addressed, the adequate and effective use of ICT for teaching in the Colleges will continue to be a mirage. As revealed in the study, Federal and State Colleges of Education were not significantly different in terms of availability of ICT facilities and methods of using ICT facilities. This shows that there is no dichotomy between the Colleges regarding the development of ICT for teaching-learning process.

CONCLUSION AND RECOMMENDATIONS

The effective use of ICT for teaching in Nigerian Colleges of Education is hindered by shortage of some ICT facilities, inadequate use of ICT facilities, low capacity for use of ICT, infrastructural problem and expensive nature of ICT. It is therefore recommended that more funds should be allocated to the Colleges for provision of ICT facilities while there should be increased capacity building for the use of ICT for teaching. Moreover, there should be provision of adequate infrastructures in the Colleges to enhance effective use of ICT for teaching.

REFERENCES

- Abolade, A.O. and M.O. Yusuf, 2004. Information and Communication Technology and the Nigerian Teacher Education Programme. Department of Science Education, University of Ilorin.
- Ajayi, J.A., 2007. The Concept of Innovations, Diffusions, Relevance and Implementation of ICT in Nigeria Schools and Colleges. *Ikere J. Edu. Special Edition on ICT*, pp: 40-50.
- Ajayi, O., 2001. Highlights of Best Practices in IT-Assisted Teachers' Training. In: Isyaku, K., C.M. Anikweze, A.A. Maiyanga and M. Olokun (Eds.). *Teacher Education in the Information Technology Age*. Abuja: National Commission for Colleges of Education.
- Association of African Universities (AAU), 2001. *Core Programme of Activities 2001-2004: Themes and Sub-Themes*.
- Ayodele, Z.A. and O.O. Ojo, 2007. Information and Communication Technology (ICT) and Adult Learning: A Poser for Outreach Programmes in Nigeria. *Ikere J. Edu. Special Edition on ICT*, pp: 145-152.
- Bahrudin, A., B. Mohamad and K.B. Muhammad, 2001. *Pembelajaran fizik Secara Kolaboratif menggunakan laman web dan internet*. *Virtec J.*, pp: 1-1.
- Bande, S.O., 2006. Development, Service and Application of ICT in Education In: Bande, S.O., E.A. Ibijola, S.A. Olorunsola and E.A. Okunade (Eds.) *Information and Communication Technology (ICT) and Computer Applications*. Abuja: General Studies Unit, University of Ado-Ekiti, Nigeria.
- Bryers, A.P., 2004. Psychological Evaluation by Means of an On-Line Computer. *Behav. Res. Method and Instruction*, 13: 585-587.
- Cox, M.J., C. Preston and K. Cox, 1999. What Motivates Teachers to Use ICT. Paper presented at the Br. Edu. Res. Assoc. Conf. Brighton, pp: 2-5.

- Dede, E., 1998. Technology in Comprehensive Health Education, Physical Education Curriculum Framework. New Jersey: Macmillan.
- Digest, E., 1996. Use of Computer-Based Technology. In: Health Physical Education Recreation and Dance.
- Ibeh, A.E., B. Adamu and A.A. Owoseni, 2007. Innovations in the Teaching and Learning of Adults: The Changing Role of the Teachers of Adults in a Connected Learning Environment. *Ikere J. Edu. Special Edition on ICT*, pp: 79-87.
- Larner, D. and L. Timberlake, 1995. Teachers with Limited Computer Knowledge: Variables affecting Use and Hints to Increase Use. The Curry School of Education, University of Virginia.
- Mumtaz, S., 2000. Factors Affecting Teachers' Use of Information and Communication Technology: A Review of the Literature. *J. Inform. Technol. Teacher Edu.*, 9 (3): 319-341.
- Ogunmilade, C.A., 1988. Television for Instruction. *Television Quarterly*, 1: 7-11.
- Ololube, N.P., 2006. Appraising the Relationship between ICT Usage and Integration and the Standard of Teacher Education Programmes in a developing Economy. *Int. J. Edu. Dev. Using ICT*, Vol. 2, No. 3.
- Olorundare, A.S., 2006. Utilisation of ICT in Curriculum Development, Implementation and Evaluation. Lead paper presented at the National Conference on ICT, University of Nigeria Nsukka, pp: 15-18.
- Russell, G. and G. Bradley, 1997. Teachers' Computer Anxiety: Implications for Professional Development. *Edu. Inform. Technol.*, 2 (1): 17-30.
- Selwyn, N., 1997. Teaching Information Technology to the 'Computer shy': A Theoretical Perspective on a Practical Problem. *J. Voc. Edu. Training*, 49 (3): 395-408.
- Umeifekwen, J.E., 2005. Embracing the Current Advances in Sports Coaching Process: A Need from Awareness and Integration in the Professional Preparation and Growth of Physical Education. A paper presented at NAPHDER-SD 1st Annual Conference, Awka.