

Original Research Article

BENEFITS AND AVAILABILITY OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs) IN AGRICULTURAL TEACHING AND RESEARCH IN ENUGU STATE, NIGERIA

ABSTRACT

The study examined the benefits of Information and Communication Technologies (ICTs) in Agricultural teaching and research among agricultural lecturers and students in Enugu State, Nigeria. Almost all the respondents (lecturers 96.9%, students 90%) had acquired ICT trainings. All the listed ICT facilities were available to the respondents except facsimile (Lecturers 9.4%, Students 25%) and satellite technology (28.1%) which the lecturers indicated as not available while the students indicated it as available (51.7%). The respondents perceived ICTs to be beneficial in: helping researchers to source more information for their work, improving research and published work, accelerating, enriching, and deepening skills, motivating and engaging students in learning and saving time.

Keywords: Benefits; availability; Information; Communication; Technologies; Agriculture

INTRODUCTION

Information and communication technologies make the process of teaching and research more efficient and easier. ICTs are necessary for dissemination and storage of information in different ways. While definitions of ICTs are varied, it might be useful to accept the definition provided by United Nations Development Programme (UNDP): 'ICTs are basically information-handling tools- a varied set of goods, applications and services that are used to produce, store, process, distribute and exchange information. Also according to UNESCO (2002) ICT may be regarded to as the combination of 'Informatics technology' with other related technology, specifically communication technology. The various kinds of ICT products available and having relevance to education, such as teleconferencing, email, audio conferencing, television lessons, radio broadcasts, interactive radio counselling, interactive voice response system, videocassettes and CD ROMs among others have been used in education for different purposes (Sharma, 2003; Sanyal, 2001; Bhattacharya and Sharma, 2007). Onuma (2007) reports that ICT can be used to enhance teaching effectiveness, prepare lesson plan, collect and analyze students' achievement. Thus, curriculum contents could be enriched through search in the internet. Akpan (2008) states that ICT can improve the quality of researches and publications in our universities through the use of information and quality materials from the internet and can also facilitate record-keeping by teachers. Therefore, the importance of ICT in enhancing university lecturers' job efficacy cannot be overemphasized.

It is evident that despite the usefulness of online resources, some common problems still exist concerning how such resources are used by lecturers, in particular, and others in the academia, in general. University lecturers have various tasks to accomplish and these range from teaching, research and publications, marking of tests and examinations, supervising students' research activities, supporting students through advisory roles, attending conferences, providing community services etc. In order for them to be effective and efficient, they need to acquire an appreciable level of ICT competence. This is necessary in order to meet up with the demands of their job (Akpan, 2014). While a lecture can be extremely informative, a lecture that integrates pictures or video images can help an individual learn and retain information much more effectively (Oshinaike and Adekunmisi,

2012). One of the goals for integrating ICTs in education is to enhance teaching and learning practices thereby improving quality of education (Higgins, 2003). Teachers and students are exploring the new possibilities given by these technologies and constructing capabilities concerning learning through ICT. In Nigeria, for example, many lecturers in the higher institutions of learning still depend solely on the use of the traditional methods to impart knowledge to their students. This lack of use of ICTs to impart knowledge to students by teachers is discovered to be due to the teachers themselves being illiterates, insofar as the use of the ICT is concerned (Ajayi, 2008). Therefore this study examined the availability, competence of use and benefits of ICTs in the study area.

Objectives of the Study

1. ascertain the availability of ICT facilities in Agricultural faculties in the study area;
2. determine the level of competence in the use of Information and communication technologies (ICTs) among agricultural lecturers and students in universities in Enugu State, Nigeria;
3. ascertain the benefits of the usage of ICTs resources by agricultural lecturers and students;

METHODOLOGY

The study was carried out in Universities in Enugu state. There are various universities in Enugu State which some are privately owned and some are owned by the government (federal and state government). The two (2) major universities in Enugu State were the ones used for this study, that is, University of Nigeria, Nsukka (which has both Enugu campus and Nsukka campus) and Enugu State University of science and technology. (Which has both Enugu campus and Agbani campus). The faculty of Agriculture constitute the population of the study. These two Universities were purposively chosen because they are the two major universities in Enugu State. The departments that are under the agricultural faculty in University of Nigeria Nsukka are Agricultural Economics, Agricultural Extension, Animal science, Crop science, Food sc. and technology, Home science, nutrition and dietetics, and Soil science while the departments under Agricultural Faculty in ESUT included Agricultural Economics and extension, Animal science and fishery management, Food sc. and technology, and Agronomy. Thirty lecturers and sixty students were selected for this study giving a total of 90 respondents for the study. Data were collected through the use of structured questionnaire.

To ascertain the availability of ICTs (objective two), respondents indicated the level of ICTs availability in their institution. Respondents were provided with options of the various ICTs to tick, available (1); not available (2). ICT facilities which has more than 50% percent of the respondent's ticked 'available' were considered as most available.

To determine the level of competence in the use of Information and communication technologies (ICTs) among the respondents, a four point Likert-type scale of: high competency (3); moderate competency (2); low competency (1) and no competency (0), was used to determine the respondent's competency in the listed ICTs. The value of the Likert-type scale was added to obtain 6, which was further divided to by 4 to get a mean value of 1.5. Any response option value with a mean value of less than 1.5 was regarded as not being competent. Also, a three point Likert-type scale of: very competent (2), competent (1) and not competent (0), was used to determine the respondent's competency in general ICTs activities

usage. Any response option value with a mean value of less than 1 was regarded as not being competent.

To ascertain the benefits of the usage of ICTs by the respondents. That is, the perception of respondents concerning the degree to which they thought ICTs would be helpful to them in their various work. Options from where respondents was expected to select (as many options as will be applicable to them) was provided. A three point Likert-type scale was used in the measurement of this objective. The options provided included those that indicated that ICTs are: very useful (2), useful (1), or least useful (0). The value of the Likert-type scale was then be added to obtain 3, which was further divided to obtain a mean value of 1. Any value which the mean value was equal to or greater than 1.0 was regarded as being useful to the respondent, while a response option with a mean value of less than 1.0 was regarded as not being useful to the respondent.

RESULTS AND DISCUSSION

Availability of the ICT facilities in the institution

Data in table 1 show that each of the ICT facilities was either available or not available as indicated among the lecturers and students. Specifically, computers (lecturers 100%, Students 100%); printer (Lecturers 100%, Students 98.3%); photocopying machine (Lecturers 96.9%, students 96.7%); internet (Lecturers 93.8%, Student 96.7%); GSM (Lecturers 96.9%, students 95%); projector multimedia (Lecturers 90.6%, Students 96.7%); flash drive (Lecturers 87.5%, Students 96.7%); scanner (Lecturers 90.6%, Students 91.7%); CD-ROM (Lecturers 87.5%, Students 85.0%); E-mail (Lecturers 84.4%, students 83.3%); magazine (Lecturers 78.1%, Students 96.7%); bulletin (Lecturers 78.1%, Students 86.7%); posters (Lecturers 75.0%, students 96.7%), radio (Lecturers 62.5%, Students 93.3%); Leaflets (Lecturers 62.5%, Students 81.7%); digital camera (Lecturers 53.1%, Students 81.7%) were indicated by the respondents as readily available.

The ICT facilities that were not readily available included: facsimile (Lecturers 9.4%, Students 25%) and satellite technology (28.1%) which the lecturers indicated as not available while the students indicated as available (51.7%).

It can be deduced from the result of the study that some ICT facilities like Facsimile and satellite technology are not available possibly because of non-purchase or Non-subscription for these ICT facilities by the institution. In correspondence with the findings of this study, computers was found to be the most widely available ICT. Also printers, photocopying machine and internet were found to be readily available.

129 **Table 1: Availability of the ICT facilities in the institution**

ICTs facilities	LECTURERS (frequency)	Percentage	STUDENTS (frequency)	Percentage
CD – ROM	28	87.5*	51	85.0*
Computers	32	100*	60	100*
Facsimile	3	9.4	15	25
Internet	30	93.8*	58	96.7*
Printer	32	100*	59	98.3*
Digital camera	17	53.1*	49	81.7*
Scanner	29	90.6*	55	91.7*
Projector	29	90.6*	58	96.7*
multimedia				
GSM/Telephone	31	96.9*	57	95*
Electronic mail	27	84.4*	50	83.3*
Satellite	9	28.1	31	51.7*
technology				
Radio	20	62.5*	56	93.3*
Magazine	25	78.1*	58	96.7*
Bulletin	25	78.1*	52	86.7*
Posters	24	75.0*	58	96.7*
Leaflet	20	62.5*	49	81.7*
Flash drive	28	87.5*	58	96.7*
Newspaper	23	71.9*	51	85.0*
Photocopy	31	96.9*	58	96.7*
machine				

130 **Source: Field survey, June 2015**

(* Available)

132 **Level of Competence in ICT facilities.**

135 The data in table 2a indicate that respondents were competent in most ICT facilities
 136 including: GSM/Telephone (Lecturers M=2.88, students M=2.75), Flash drive (Lecturers
 137 M=2.71, students M= 2.58), Electronic mail (Lecturers M= 2.70, students M= 2.34); Internet
 138 (Lecturer M=2.69, Students M= 2.65), Computers (M=2.63, students M=2.50), Printer
 139 (lecturers M=2.55, Students M= 2.33), Photocopy machine (M=2.46, students M= 2.47), CD
 140 – ROM (M=2.38 , Students M=1.94), Newspaper (M=2.35, Students M= 2.42), Magazine
 141 (Lecturers M=2.33, Students M= 2.50), Bulletin (Lecturers M=2.29, Students M= 2.28),
 142 Radio (Lecturers M=2.28, Students M= 2.48), Leaflet (M=2.24, students M= 2.30), Posters
 143 (Lecturers M=2.20, Students M= 2.50), Scanner (M=2.13, Students M= 2.07); Projector
 144 multimedia (M=2.13, Students M= 1.93), Digital camera (M=1.87, Students M= 2.20). The
 145 implication of these findings is that most respondents are significantly competent in most ICT
 146 facilities. This means that they can easily access and utilize ICT facilities that can help them
 147 in their teaching and research activities. This finding is in consonance with the work of
 148 Wheeler (2000) who reported that ICT competence improves efficiency in educational
 149 process and effect changes in teaching methodology, assessment of learning, student tracking,
 150 communication and evaluation. Thus, ICT equips teachers with new skills and innovations in
 151 education and in teaching and research (Becta, 2004).

ICT facilities in which respondents **did not have any competent on** included Satellite technology (Lecturers M=1.07, Students M=1.30); and Facsimile (Lecturers M=0.83, Students M=0.54).

Table 2a: Respondent's level of competence in ICT facilities

ICTs Facilities	LECTURERS		STUDENTS	
	(M)	S.D ₁	(M)	S.D ₂
CD – ROM	2.38*	0.78	1.94*	0.94
Computers	2.63*	0.49	2.50*	0.54
Facsimile	0.83	1.01	0.54	0.87
Internet	2.69*	0.47	2.65*	0.52
Printer	2.55*	0.57	2.33*	0.73
Digital camera	1.87*	0.97	2.20*	0.73
Scanner	2.13*	0.82	2.07*	0.78
Projector multimedia	2.13*	0.83	1.93*	0.83
GSM/Telephone	2.88*	0.34	2.75*	0.60
Electronic mail	2.70*	0.53	2.34*	0.82
Satellite technology	1.07	1.11	1.30	1.01
Radio	2.28*	1.03	2.48*	0.84
Magazine	2.33*	0.80	2.50*	0.68
Bulletin	2.29*	0.90	2.28*	0.90
Posters	2.20*	0.96	2.50*	0.70
Leaflet	2.24*	0.99	2.30*	0.93
Flash drive	2.71*	0.46	2.58*	0.72
Newspaper	2.35*	0.80	2.42*	0.70
Photocopy machine	2.44*	0.62	2.47*	0.72

Source: Field survey, June 2015

(* Competent)

Table 2b shows the fundamental computer activities for which respondent's competence were measured. Majority of the respondents were competent in most of the computer skills, including saving files in personal and general directories (lecturers M=1.75, Students M= 1.77), Cutting/coping and pasting between applications (M=1.69, Students M= 1.82), Minimizing, maximizing and resizing windows (Lecturers M=1.63, Students M= 1.83), Saving and arranging files in a folder (M=1.63, Students M=1.70); Creating shortcuts to the desktop (M=1.58); Using windows explorer to manage file (Lecturers M=1.58, Students M=1.57), Recovery OF accidentally deleted files (Lecturers M=1.41, students M=1.51), Converting word document to pdf documents (Lecturers M=1.39, Students M=1.31); Downloading, installing and updating antivirus (Lecturers M=1.38, students M=1.43), Switching between applications (M=1.16, Students M= 1.51) except Defragmentation of drive C (hard disk) (Lecturers M=0.63, students M= 0.98) in which the respondents has no competency. The standard deviation of all the **variable** except Defragmentation of drive C (hard disk) is less than 1, which implies that their general competence in computer usage did not vary **very** much. The implications here is that, since majority of respondents are generally competent in the use of computers, their ability to access and make use of ICT for teaching and research purposes will be enhanced.

176 **Table 2b: Level of Competence in Computer skills.**

COMPUTER SKILLS	LECTURERS MEAN	S.D ₁	STUDENTS MEAN	S.D ₂
Using windows explorer to manage file	1.58*	0.56	1.57*	0.65
Saving files in personal and general directories	1.71*	0.46	1.77*	0.46
Recovery of accidentally deleted files	1.41*	0.76	1.51*	0.57
Cutting/coping and pasting between applications	1.69*	0.54	1.82*	0.43
Minimizing, maximizing and resizing windows	1.63*	0.61	1.83*	0.38
Saving and arranging files in a folder	1.63*	0.49	1.70*	0.53
Converting word document to PDF documents	1.39*	0.80	1.31*	0.75
Creating shortcuts to the desktop	1.50*	0.67	1.62*	0.61
Downloading, installing and updating antivirus	1.38*	0.71	1.43*	0.65
Defragmentation of drive C (hard disk)	0.63	0.71	0.98	0.75
Switching between applications	1.16*	0.69	1.51*	0.63

177 **Source: Field survey, June 2015**

(* Competent)

178
179
180 **Table 2c shows respondent's competence in internet and online resources were measured and**
181 **the result indicated that the** respondents were all competent in the use of the listed internet
182 and online resources which included: Knowing how to use search engine like Google, Yahoo,
183 Bing etc. (Lecturers M=1.84, Students M=1.88), **Knowing how to find relevant information**
184 **that may be required** (lecturers M=1.75, Students M=1.82), Connecting to the internet **using**
185 **any internet browser** (M=1.58, Students M= 1.92), Using the internet competently (M=1.61,
186 Students M=1.77), Knowing how to download, install and update **software** (M=1.50,
187 Students M= 1.67), Knowing where to put a URL in the browser to find a particular webpage
188 (Lecturers M=1.31, Students M= 1.58), Knowing how to set up default home page (Lecturer
189 M=1.06, Students M= 1.42); Knowing how to set up preferred default home page (Lecturers
190 M= 1.06, Students M=1.40). The result indicated that respondents were competent in most
191 internet and online activities. In Okiki and Asiru (2011), majority of respondents expressed
192 high confidence in their search skills and the influence it had on their use of online resources.

Table 2c: Level of Competence in Internet and Online usage

INTERNET AND ONLINE SKILLS	LECTURERS MEAN	S.D ₁	STUDENTS MEAN	S.D ₂
Connecting to the internet using any internet browser	1.58*	0.56	1.92*	0.28
Using the internet competently	1.61*	0.56	1.77*	0.43
Knowing how to set up default home page	1.06*	0.81	1.42*	0.62
Knowing how to set up preferred default home page	1.06*	0.85	1.40*	0.62
Knowing how to use search engine like Google, Yahoo, Bing etc.	1.75*	0.51	1.88*	0.32
Knowing how to find relevant information that may be required.	1.75*	0.44	1.82*	0.39
Knowing how to download, install and update software	1.50*	0.62	1.67*	0.54
Knowing where to put a URL in the browser to find a particular webpage	1.31*	0.74	1.58*	0.65

Source: Field survey, June 2015

(* Competent)

Also table 2d which shows the competence of the respondents in using **OTHER** ICT facilities were measured. They include; Knowing how to send SMS/MMS with a mobile phone (Lecturers M=1.81, Student M= 1.87), Knowing how to print a typed document from a printer (M=1.69, Students M= 1.77), Creating and sending e-mails (Lecturers M=1.66, Students M= 2.07), Adding contacts to contact list(Lecturers M=1.50, Students M= 1.80), Replying to and deleting or forwarding e-mails (M=1.59, Students M= 1.68); Backing up work to flash drive and CD (Lecturers M=1.53, Students M= 1.63), Attaching a word document or picture to an e-mail and sending as attachment (Lecturers M= 1.56, Students M=1.58); Knowing how to record a lecture using radio set (Lecturers M=1.22, Students M= 1.62); Burning of typed document/Video on a CD-ROM/DVD (M=1.44, Students M= 1.37); Know how to play a recorded video on a television (Lecturers M=1.53, Students M= 1.55); Knowing how to ON/OFF and operate the projector (Lecturers M= 1.38, Students M= 1.39); Knowing how to scan a printed document (M=1.31, Students M= 1.50). The result shows that the respondents are competent in using other ICT facilities. In conformity with the findings of this study, Google was found to be the most widely used search engine for locating information electronically (Madhusudhan, 2011; Salaam and Adegbore 2010). E-journal and e-mail were also found to have been extensively used in an earlier study by Sharma (2009), just as in the present study. The respondents were not competent in Knowing how to operate fax machine and sending facsimile (Lecturers M=0.41, Students M= 0.54). This could be possibly because of the unavailability of fax machines in Agric. faculties. This result is in consonance with Agber and Agwu, 2013 who found out that majority of Agricultural science lecturers of tertiary institutions are generally skilful in computer, internet and online activities.

231 **Table 2d: Level of Competence in Other ICTs Usage**

OTHER ICT SKILLS	LECTURERS		S.D ₁	STUDENTS	S.D ₂
	MEAN			MEAN	
Creating and sending e-mails	1.66*	0.55		2.07*	2.65
Replying to and deleting or forwarding e-mails	1.59*	0.67		1.68*	0.50
Adding contacts to contact list	1.50*	0.67		1.80*	0.48
Attaching a word document or picture to an e-mail and sending as attachment	1.56*	0.62		1.58*	0.67
Knowing how to send SMS/MMS with a mobile phone	1.81*	0.40		1.87*	0.34
Backing up work to flash drive and CD	1.53*	0.67		1.63*	0.58
Burning of typed document/Video on a CD-ROM/DVD	1.44*	0.67		1.37*	0.69
Knowing how to record a lecture using radio set	1.22*	0.75		1.62*	0.67
Know how to play a recorded video on a television	1.53*	0.62		1.55*	0.67
Knowing how to ON/OFF and operate the projector	1.38*	0.66		1.29*	0.70
Knowing how to print a typed document from a printer	1.69*	0.54		1.77*	0.53
Knowing how to scan a printed document	1.31*	0.64		1.50*	0.65
Knowing how to operate a fax machine and sending facsimile	0.41	0.67		0.54	0.81

232 Source: Field survey, June 2015

(* Competent)

234 **Perceived benefits of the use ICTs to your work as a lecturers or a student.**

235 Entries in Table 3 reveal the **benefits respondents derives from the use of ICTs**. All the listed
 236 benefits were useful to the respondents. And they included: such as Provides opportunities for
 237 connection between the school and the world (M=1.69, Students M= 1.73); Create
 238 Opportunities to collaborate on assignments with people outside or inside school (Lecturers
 239 M=1.63, Students M=1.73); Help create economic viability for tomorrow's workers (M=1.28,
 240 Students M= 1.90); Facilitating the acquisition of basic skills (Lecturers M=1.67, Students
 241 M= 1.80), Support innovation in the workflows, processes and tools used to create, share,
 242 publish, visualize, and connect the outputs of agricultural science and the people engaged in it
 243 (Lecturers M=1.50, Students M= 1.75), Higher quality lessons through greater collaboration
 244 between teachers in planning and preparing resources (Lecturers M= 1.53, Students M=1.66);
 245 Improvement of teaching conditions and enables most effective resource sharing (Lecturers
 246 M=1.59, Students M=1.63), Extend the generation and dissemination of data and information
 247 content that is widely accessible and is licensed to be easily re-used and applied (Lecturers
 248 M= 1.61, Students M=1.58); Enhancing teacher's training(M=1.59); Help relate school
 249 experiences to work practices (M=1.59, Students M= 1.59); More focused teaching, tailored

to students' strengths and weaknesses, through better analysis of attainment data (Lecturers M=1.41, Students M=1.42); Contributes to radical (excellent) changes in school (M=1.13, Students M= 1.49).

The most useful benefits to the respondents included: Helping researchers to source more information for their work (Lecturers M=1.81, Students M=1.81), Improved research and published work (Lecturers M= 1.81, Students M=1.77), Accelerate, enrich, and deepen skills (M=1.74) Motivate and engage students in learning (Lecturers M=1.77, Students M=1.73), Time saving (Lecturers M=1.69, Students M= 1.80).

The results of the study suggest that respondents generally perceived online resources to be useful in their work. The implication of this finding is that teaching and research are likely to be enhanced in an environment where there is a positive perception concerning online resources usage (Bashorun, Isah and Adisa, 2011). The study is also in conformity with the findings of Ansari and Zuberi, (2010) and Omeluzor, Madukoma, Bamidele and Ogbuiyi (2012).

The field of education has been affected by ICTs, which have undoubtedly affected teaching, learning, and research (Yusuf, 2005). A great deal of research has proven the benefits to the quality of education (Al-Ansari, 2006). ICTs have the potential to innovate, accelerate, enrich, and deepen skills, to motivate and engage students, to help relate school experience to work practices, create economic viability for tomorrow's workers, as well as strengthening teaching and helping schools change (Davis and Tearle, 1999; Lemke and Coughlin, 1998; cited by Yusuf, 2005).

Table 3: Perceived benefits of the use ICTs to your work as lecturers or students

Benefits	LECTURER	S.D	STUDENT	S.D
Accelerate, enrich, and deepen skills	1.77*	0.43	1.73*	0.49
Provides opportunities for connection between the school and the world.	1.69*	0.54	1.73*	0.45
Motivate and engage students in learning	1.75*	0.44	1.73*	0.45
Help relate school experiences to work practices	1.45*	0.62	1.52*	0.57
Help create economic viability for tomorrow's workers	1.28*	0.63	1.90*	2.70
Contributes to radical changes in school	1.13*	0.75	1.49*	0.60
Extend the generation and dissemination of data and information content that is widely accessible and is licensed to be easily re-used and applied.	1.61*	0.50	1.58*	0.59
Facilitating the acquisition of basic skills	1.44*	0.50	1.80*	1.42
Support innovation in the workflows, processes and tools used to create, share, publish, visualize, and connect the outputs of agricultural science and the people engaged in it	1.50*	0.57	1.75*	0.44
Enhancing teacher's training	1.59*	0.50	1.59*	0.59
More focused teaching, tailored to students' strengths and weaknesses, through better analysis of attainment data	1.41*	0.56	1.42*	0.56

Improved research and published work	1.81*	0.40	1.77*	0.50
Help researchers to source more information for their work.	1.81*	0.40	1.81*	0.39
Create Opportunities to collaborate on assignments with people outside or inside school.	1.63*	0.55	1.73*	0.52
Higher quality lessons through greater collaboration between teachers in planning and preparing resources.	1.53*	0.62	1.66*	0.51
Improvement of teaching conditions and enables most effective resource sharing.	1.59*	0.50	1.63*	0.52
Time saving	1.69*	0.54	1.80*	0.40

Source: Field survey, June 2015 (* Benefits)

Conclusion and implication for Agricultural Education

This study has revealed that all the listed ICT facilities were available except facsimile (Lecturers 9.4%, Students 25%) and satellite technology (28.1%) which the lecturers indicated as not available while the students indicated it as available (51.7%). But the most available, and used ICT facilities in the institution include: Computer, printer, internet, G.S.M, photocopying machine, scanner and projector. The lecturers has high competence in some facilities like GSM/Telephone, Flash drive, Electronic mail, Internet, Computers and printer. While the students has high competence in GSM/Telephone, internet, computers, flash drive, posters and magazines. But the respondents (lecturers and students has no competence in satellite technology and facsimile. All the listed benefits were useful to the respondents as their standard deviation are not far from the mean. Helping researchers to source more information for their work, improved research and published work, Accelerate, enrich, and deepen skills, Motivate and engage students in learning, Time saving as the most useful benefits to the respondents. It is therefore recommended that the university must aim to ensure accessibility, availability and reliability of ICT facilities such that every lecture room and staff offices have ICT facilities especially computers linked to Internet and have equipment appropriate for accessing a range of electronic resources, also university lecturers and students should be exposed to series of training and development skills in the use of these high technology facilities such as satellite and fax machine as they help to facilitate distant learning. Therefore, the use of Information and communication Technology is changing the face of teaching, learning and research. Therefore, constant research, evaluation, and assessment should be carried out to make sure that ICT facilities are used effectively in agricultural Faculties.

REFERENCES

- Agber, T and Agwu, A.E (2013). Assessment of Online Resources Usage by Agricultural Science Lecturers of Tertiary Institutions in Benue state, Nigeria. *American Journal of Research Communication*. Vol 1(10)
- Ajayi, F. (2008). [Thenationonline.net/web2/articles/29127/1/.../Page1.html](http://thenationonline.net/web2/articles/29127/1/.../Page1.html)
- Akpan, C. P. (2008). Lecturers' perception of the Role of ICT in the Management of University Education for Sustainable Development in Nigeria. *Nigerian Journal of Educational Administration and Planning*. 8 (1), 113-127.

- 308 Al-Ansari H (2006). The Internet use by Faculty Members of Kuit University. *Electronic*
309 *Library* 21(5):487-495.
310
- 311 Ansari, M.N and Zuberi, B. A (2010). Use of Electronic Resources among Academics at the
312 University of Karachi. *Library Philosophy and Practice*.
- 313 BECTA (2003). What the research says about using ICT in Maths. British Educational
314 Communications and Technology Agency. Retrieved December 24, 2009 from
315 http://partners.becta.org.uk/page_documents/research/wtrs_maths.pdf
- 316 Bhattacharya, I. & Sharma, K. (2007), India in the knowledge economy – an electronic
317 paradigm. *International Journal of Educational Management* **Vol.** 21 No. 6, Pp. 543-
318 568.
- 319 Madhusudhan, M (2010). Use of electronic resources by research scholars of Kurukshetra
320 University. *Electronic Library*, vol. 28(4): 492 – 506. Retrieved on 6/3/2012 from:
321 Doi: 10.1108/02640471011033684.
322
- 323 Omeluzor, S.U, Madukoma,E, Bamidele and Ogbuiyi, S. U. (2012). Use of Electronic
324 Information Resources and Research Output by Academic Staff in Private
325 Universities in Ogun State, Nigeria. *Open Journal Systems*, Vol. 8, No 3.
- 326 Onuma, N. (2007). Utilization of Information and Communication Technology in School;
327 Problems and Suggestions in J. B. Babalola, G. O. Akpa, A. O. Ayeni& S. O. Adedeji
328 (eds.). *Access, Equity and Quality in Higher Education*. NAEAP Publication.
- 329 Sanyal, B. C. (2001), 'New functions of higher education and ICT to achieve education for
330 all', Paper prepared for the Expert Roundtable on University and Technology-for-
331 Literacy and Education Partnership in Developing Countries, International Institute
332 for Educational Planning, UNESCO, September 10 to 12, Paris.
- 333 Sharma, R. (2003), 'Barriers in Using Technology for Education in Developing Countries',
334 IEEE0-7803-7724-9103.Singapore schools', *Computers & Education* Vol .41,
335 No.(1),Pp; 49--63.
- 336 UNESCO (2002) *Information and Communication Technology in Education–A Curriculum*
337 *for Schools and Programme for Teacher Development*. Paris: UNESCO.
- 338 UNESCO, (2002),'Open and Distance Learning Trends, Policy and Strategy Considerations',
339 14 UNESCO.
- 340 Wheeler, S. (2001). Information and communication technologies and the changing role of
341 the teacher. *Journal of Educational Media*, Vol. 26, No. (1), Pp; 7-17.
- 342 Yusuf, M. O. (2005). Information and Communication Technology and education: analyzing
343 the Nigerian national policy for information technology. *International Education*
344 *Journal* 6(3): 316-410.