



Strategies for Improving Acquisition and Integration of ICT Skills for E-learning by Agricultural Education Lecturers and Students in Colleges of Education in North East Nigeria

¹Mahmud, M., ²Jahun, U. A., ³Abubakar, I.

¹Department of Agricultural Education,
Aminu Saleh College of Education, Azare, Bauchi State, Nigeria

²Ministry of Education, Science and Technology,
Dutse, Jigawa State Nigeria

³Department of Early Childhood Care Education
Aminu Saleh College of Education, Azare, Bauchi State, Nigeria

ABSTRACT:

This study found out strategies for improving the acquisition and integration of ICT skills by Agricultural Education lecturers and students for e-learning in Colleges of Education in the North Eastern Nigeria. Related literature was reviewed to provide an in depth knowledge on the major variables of the study. A survey research design was adopted for the study. A population of 2443 Agricultural Education Students and 85 Agricultural Education Lecturers in Colleges of Education in the North Eastern Nigeria. Due to manageable size of Agricultural Education Lecturers the entire population was used for the study, while stratified random sampling technique was used to draw the sample from the population of Agricultural Education Students. Total sample was 324, structured questionnaire containing 16 items was used for data collection, 409 copies of questionnaires were returned. Grand mean was used to answer the research question and 3.50 was the cut off point for acceptance. Z-test was used to test null hypothesis at 0.05 level of significance. The null hypothesis was accepted. The findings of study revealed the strategies that were found to improve the acquisition of ICT skills for teaching and learning of Agricultural Education in Colleges of Education, the strategies include: Establishment of ICT centres in Colleges can enhance acquisition of ICT skills and Participation in certified computer programmes, conferences and workshops. This research recommended among others, that the College of Education Authorities should assist teachers and students to have access to technologies and opportunities to acquire the needed skills through sponsorship of their attendance to workshops and conferences.

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INTRODUCTION

Information and Communication Technology (ICT) has become a major tool in promoting teaching and learning globally. It

has been identified as an indispensable instrument for development of quality teaching and learning in educational delivery. It is a fundamental aspect in



preparation of students for future challenges of technological innovations in the global arena (Ololube, 2006) Pulkkinen (2007) stated that the application of ICT in education has dramatically reshaped teaching and learning processes in higher education. Application of ICT in higher institutions in 21st century triggers a change in learning environment. The use of ICT offers a conducive environment and has the potential of transforming teaching and learning process so that students can deal with knowledge in an active, self-directed and constructive way (Volman and Van Eck, 2001).

For effective utilization of ICT in teaching and learning, a vast array of competencies are needed such as: creativity, flexibility and logistic skills for assessing work and study places, grouping students, skills for project work, administrative and organizational skills for project work, administrative and organizational skills and collaborative skills among others. Resta (2002) identified the following as the common core of integrated skills and knowledge needed to accommodate and appropriate current and future generations of technology:

- i. Sustained reasoning: Defining and clarifying problems, followed by sustained attempts at formulating solutions.
- ii. Managing complexity: Involving a number of tasks including planning a project, designing a solution integrating components, responding to unexpected interactions and diagnosing what is needed for each task.
- iii. Solution testing: Determining whether a proposed solution meets the design goals and identifying likely cause of failure.
- iv. Managing faulty solution: Ability to detect, diagnose and correct problems and faults.

- v. Collaboration: Skills for collaborating include a strategy for decision of tasks.
- vi. Organizing and evaluating information: Finding and evaluating information at different levels and structuring information to make it useful.
- vii. Communication to other audience: Understanding different audience needs and backgrounds and structuring and presenting information appropriately for the non-expert.
- viii. Expecting the unexpected: The flexibility to be responsive and adoptable, to mitigate and exploit unforeseen circumstances.
- ix. Anticipating changes in technology: Being adaptable to new technologies.
- x. Abstract thinking about Information and Communication Technology: The ability to reflect on the use of learning technologies, identifying characteristics and commonalities that cut across technology experiences and how they relate and affect policy issues.

Based on the aforementioned skills that are needed to be acquired, it is important for educational institutions to recognize the need for continues professional development of the ICT professionals. This may take many different forms such as participating in certified programmes, conferences and workshops. This is due to the rapid changes in digital technologies and growing complexity of networked environment.

Smith (2004) also identified skills that need to be possessed for the successful utilization of ICT in teaching and learning as follows:

1. Technical know-how:- Encompassing the depth, scope and integration of technical skills in applying technology.
2. Critical thinking skills: Involving recognizing and solving problems, reasoning, making judgments, organizing resources and information, applying creative thinking and knowing



- how to obtain and apply new knowledge.
3. Interactive skills: Involving listening to and communicating with others verbally or in writing and working with others individually or in teams or in a leadership capacity.
 4. Pedagogical know-how: Encompassing an understanding of learning and of relevant approaches to instructional design.

Similarly, Idialo (2007) stressed that technically competent teachers should possess the following ICT skills:

- a) Operate computers and use basic software for word processing, spread sheets, emails etc.
- b) Evaluate and use computers and related ICT tools for instructions
- c) Apply current instructional principles, research and appropriate assignment practices to the use of ICT
- d) Evaluate educational software such as CAD/Cam, arch cad, CorelDraw, multism and ultiboard electrical and electronic work bench.
- e) Create effective computer based presentation such as using of power point
- f) Search the internet for resources
- g) Integrate ICT tools in to students' learning activities across the curriculum.
- h) Create multimedia document to support instruction
- i) Create hypertext document to support instruction
- j) Demonstrate knowledge of ethics and quality issues related to technology
- k) Keep up to date as per educational technology is concerned.

Akano (2014) revealed that it is important to acquire several ICT skills, as it is in mobility where heterogeneity carries the day, so it is people with multiple ICT skills, where they win over people with one specialized skills, the reason being that previous ICT skills is becoming obsolete at

the speed of light, so one will have no space in the space of technology. He further identified 10 ICT skills which include: Software development, mobile application development, web development, IT security, Network management, service management, virtualization, Data base management, Business skills and finishing.

It is not certain whether management of Colleges of Education do organize regular in-service trainings for these lecturers who initially did not possess ICT literacy on employment to develop the skills and competencies needed for teaching with ICT. The so called capacity building workshops occasionally organized for teacher educators most often lack proper planning and adequate follow up activities to make the learned materials practicable and useful to both the teacher educator and the teacher education institution. Most of these programmes apparently are mere jamborees aimed at certificating teacher educators already in the system. This is perceived so because ICT literacy has been made a prerequisite for their continued stay in service by Nigeria Commission for Colleges of Education (NCCE), the teacher education regulating body (Owolabi, Oyewole and Oke, 2013).

Okebukola (1997) observed that computers, smart board, data projector, digital camera, etc are not adequately available and are being much less utilized, therefore they are not part of classroom technology in most tertiary institutions in Nigeria, thus, the lecture method and course materials/ hand-out continue to dominate classroom activities. This is an indication that the students are still lagging behind in the trend of changes in the world of ICTs. This presupposes that there is the tendency for the students and teachers to be denied the opportunities which ICT offers in the teaching-learning activities. It is high time to replace the traditional pedagogical practices



that still underpin the educational system in this country.

Despite the obvious and enormous advantages associated with using ICT in teaching and learning, Torruam (2012) observed with great concern that several tertiary institutions in Nigeria are finding it difficult to effectively integrate ICT in teaching and learning. Among the difficulties are: inadequate qualified staff to support and implement e-learning systems, low motivation for lecturers to blend e-learning in face to face lectures, insufficient funds for the acquisition of ICT infrastructure, inadequate band width to support e-learning system, increased moral degradation coupled with increasing students' population.

Purpose of the Study

1. To strategize on improving the acquisition of ICT skills by Agricultural Education lecturers and students in Colleges of Education.

Research Question

The following research question was asked in this study:

1. What are the strategies of improving the acquisition of ICT skills by Agricultural Education lecturers and students in Colleges of Education?

Hypothesis

The following null hypothesis was formulated and tested at 0.05 level of significance:

- H₀₁ There is no significant difference between the mean responses of lecturers and students on the strategies of increasing the acquisition of ICT skills in teaching and learning of Agricultural Education.

METHODOLOGY

The research design adopted for the study was survey research design.

According to Sambo (2005) surveys are usually designed to find out the opinion of the people in a given area towards an issue of interest to the generality of the populace in that area. The population comprises of 2443 students and 85 Agricultural Education Lecturers. Due to the manageable size of the population of Agricultural Education Lecturers in the five Colleges of Education the entire population was used for the study therefore, purposive sampling technique was employed while stratified random sampling technique was used to draw the sample of 324 from the population of Agricultural Education Students due to its larger size, in order to make proportional and meaningful representation of the population. Stratified random sampling ensures that every sub-group is represented in the same proportion based on their population (Abiola, 2007)

Structured Questionnaire was used for data collection. The questionnaire named Strategy for Improving the Acquisition of ICT Skills (SIAIS) was developed by a researcher based on the consultation of literatures and experts in area to collect data from the Agricultural Education Lecturers and their students. Draft copy of instrument was subjected to face and content validation. The validation was done by three experts from School of Technology and Science Education (STSE) Modibbo Adama University, Yola. To establish the internal consistency of the instrument, trial test was carried out on 20 Agricultural Education lecturers and 50 students from Jigawa State College of Education, Gumel, The Cronbach Alpha coefficient of 0.75 was gotten for the whole sections of the questionnaire as an average. The instrument for data collection was administered by the researcher to the respondents. Data collected from the respondents were analysed using statistical tools. Therefore, the data collected on research question was answered using mean



and standard deviation, any assigned value that is greater than 3.50 is agreed and any assigned value that is less than 3.50 is disagreed while data collected for null hypothesis Z-test was used to test null hypotheses 1, if the Z-calculated is equal to or greater than Z-critical, the null hypothesis of no difference will be rejected.

RESULT

Research Question 1 What are the strategies of improving the Acquisition of ICT skills by Agricultural Education lecturers and Students in Colleges of Education?

The results in Table 1 showed the mean ratings of the responses by the respondents on the ways of improving the acquisition of ICT skills. The mean ratings for the 21 items range from 3.72 to 4.17 and grand mean was 3.93. This implies that all the respondents agreed that each of the items can serve as a strategy for improving the acquisition of ICT skills by lecturers and students. This also implied that acquisition of ICT skills is indispensable for effective e-learning

Table 1: Mean of Responses of Agricultural Education Lecturers and Students on the Strategies that would Improve the Acquisition of ICT skills n = 409

S/NO	STRATEGIES	\bar{X}	SD	RMK
1	Visiting other schools having an established ICT system in teaching and learning would broaden the knowledge and skills of lecturers and students.	4.17	0.04	A
2	Provision of opportunities for teachers to pursue ICT training at Colleges or Universities which offer in-service short service course would ensure competencies and skill acquisition.	4.08	0.01	A
3	Partnership with local Colleges or Universities helps in providing professional development opportunities for teachers and students.	3.81	0.002	A
4	Establishment of ICT centres in Colleges can enhance acquisition of ICT skills.	3.93	0.04	A
5	Continuing education can help to acquire ICT skills.	3.76	0.15	A
6	Participation in certified programmes, conferences and workshops can help to acquire new ICT skills for teaching and learning.	4.05	0.08	A
7	Creation of effective computer-based presentations can improve the teachers' and students' skill acquisition.	4.07	0.01	A
8	Establishment of skill acquisition centres for teachers and students. in the Colleges can enhance the acquisition of ICT skills	3.90	0.02	A
9	Learning basic word processing, spread sheet, presentation of software using web pages and internet can help teachers and students to acquire new ICT skills.	4.08	0.01	A
10	Constant computer operations can help to acquire more ICT skills.	4.02	0.05	A
11	Interaction with Technologists helps to acquire new ICT skills.	3.73	0.01	A
12	Reading books and articles related to ICT can improve skills acquisition.	3.96	0.05	A

Corresponding author: Mahmud, M. ✉ chinademahmud@gmail.com ✉ Department of Agricultural Education, Aminu Saleh College of Education, Azare. © 2020. Faculty of Technology Education, ATBU Bauchi. All rights reserved



S/NO	STRATEGIES	\bar{X}	SD	RMK
13	Staff and students can acquire ICT skills online.	3.72	0.11	A
14	Implementation of monitoring system can help teachers and students with minimum skills in ICT.	3.79	0.01	A
15	Inclusion of technological competence as one aspect of lecturers' evaluation enhances ICT skills acquisition.	3.78	0.05	A
16	Acquisition of computer operation skills should be made one of the major requirement for staff promotion.	3.99	0.14	A
Grand Mean		3.93	0.04	

Key : \bar{X} = Mean of the Lecturers and Students . SD = Standard Deviation. RMK = Remark. A = Agreed. D = Disagreed

Hypothesis 1

H_{01} There is no significant difference between the mean responses of Agricultural Education lecturers and students on the strategies that would improve the acquisition of ICT skill.

The result of Z-test analysis presented in Table 11 showed that calculated Z-value of

-1.81 is less than the critical value which is 1.96 at 0.05 level of significance. The null hypothesis is therefore accepted. This implies that there is no significant difference between the mean responses of Agricultural Education lecturers and students since they have all agreed on the strategies that can improve the acquisition of ICT skills in Colleges of Education.

Table 2: Z-test Analysis of Mean Responses of Agricultural Education Lecturers and Students on Strategies that would improve the Acquisition of ICT Skills.

GROUPS	N	\bar{X}	Z-cal.	Z-crit.	REMARK
Lecturers	85	3.87	1.81	1.96	Accept H_0
Students	324	3.98			

FINDINGS OF THE STUDY

The following findings were made:

1. Visiting other schools having an established ICT system in teaching and learning would broaden the knowledge and skills of lecturers and students.
2. Provision of opportunities for teachers to pursue ICT training at Colleges or Universities which offer in-service short service course would ensure competencies and skill acquisition.
3. Partnership with local Colleges or Universities helps in providing professional development opportunities for teachers and students.
4. Establishment of ICT centres in Colleges can enhance acquisition of ICT skills. Continuing education can help to acquire ICT skills.
5. Participation in certified programmes, conferences and workshops can help to acquire new ICT skills for teaching and learning.
6. Creation of effective computer-based presentations can improve the teachers' and students' skill acquisition.
7. Establishment of skill acquisition centres for Students and Teachers in the Colleges can enhance the acquisition of ICT skills. Learning basic word processing, spread sheet, presentation



- of software using web pages and internet can help teachers and students to acquire new ICT skills.
8. Constant computer operations can help to acquire more ICT skills.
 9. Interaction with Technologists helps to acquire new ICT skills. Reading books and articles related to ICT can improve skills acquisition. Staff and students can acquire ICT skills online. Implementation of monitoring system can help teachers and students with minimum skills in ICT. Inclusion of technological competence as one aspect of lecturers' evaluation enhances ICT skills acquisition.
 10. Acquisition of computer operation skills should be made to be one of the major requirement for staff promotion.

DISCUSSION OF FINDINGS

Finding of the study revealed that respondent agreed with all the sixteen items which include the strategies such as: provision of opportunities for teachers and students to pursue ICT training, continuing education, computer operation, establishment of skills acquisition centres among others. This finding is in agreement with the study of Ozioma and Azubuike (2011) who stated that strategies that could be adopted to improve the use of e-learning in teaching and learning, seminars, workshops and conference should be organized for teachers and students to acquire ICT skills. The findings also conform with the findings of Chinata, Makaza and Madzma (2008) who at the end of their study recommended that training programmes on the acquisition of ICT skills should be organized for teachers and students for the successful implementation of e-learning.

Findings of the study indicated that there was no significant difference between the mean ratings of Agricultural Education Lecturers and Students on the ways of

improving the acquisition of ICT skills. The finding revealed that proposed strategies are in line with Udafia and Udafia (2013) who stated that workshops should be organized by stakeholders in education to acquaint teachers with skills in Information and Communication Technology (ICT) for them to impact more positively on the students. This is also in line with Akano (2014) who stated that Agricultural Education Lecturers in the Colleges of Education should acquire basic concepts of computer operations such as word processing for preparing lecture notes examination questions, spread sheets for computation of students results, they should create computer based presentation using power points especially at the national and international conferences,

CONCLUSION

The study made major findings that need to be highlighted as conclusion which college authorities should consider as a matter of concern. All the respondents had agreed with the proposed strategies that would improve the acquisition of ICT skills by Agricultural Education lecturers and students to integrate e-learning. There is need to enhance the capacity of lecturers and students to acquire ICT skills

RECOMMENDATIONS

The College of Education Authorities embark on the strategies that were identified to improve the acquisition of ICT skills by Agricultural Education lecturers and students by assisting teachers and students to have access to technologies and opportunities to acquire the needed skills through sponsorship of their attendance to workshops and conferences of teacher and students that will encourage them to get the requisite skills,

REFERENCES

- Abiola, O. O. (2007). *Procedures in Educational Research*. Kaduna: Hanijam Publishers.



- Akano, T. (2014). Nigerians must acquire new ICT skills to get the best job. Retrieved from <http://www.thisdaylive.com/.../akano-nigerians-must-acquire-new-ict-skills-the-best-jobs/142132>
- Chinata, L. Makaza, D. & Madz Ma, K. (2008). The Current State of E-learning at Universities in Zimbabwe, Opportunities & Challenges. *International Journal of Education and development using ICT 4*, Retrieved from <http://www.ijedict/v4 n 2.thm>
- Idialo, E. E. (2007). Quality Assurance in teaching & Examination of Vocational Technical Education in Nigeria. *College Student Journal*, 3(4); 33-34.
- Okebukola, P. (1997). Old, New and Current Technology in Education. *UNESCO Africa*. 14(15); 7-18
- Ololube, P. N. (2006). Appraising the Relationship Between ICT Usage and Integration and the Standard of Teacher Education Programs in a Developing Economy. *International Journal of Education & Development using Information and Communication Technology, (IJEDICT) 2(3)*; 70-85
- Owolabi, T. O., Oyewole, B. K. & Oke, J. O. (2013). Teacher Education, Information and Communication Technology: Prospects and Challenges of E-Teaching Profession in Nigeria. *American Journal of Humanities and Social Sciences*, 1(2); 87-91.
- Ozioma, C. & Azubuike, S. O. (2011). Strategies for Improving the use of Electronic Teaching & Learning (e-learning) for Vocational Education in Tertiary Institutions of Anambra State Nigeria. *Mediterranean Journal of Social Sciences*, 2 (6) 123-129
- Pulkkinen, J. (2007). Cultural Globalization and Integration of ICT in Education. Finland: University of Oulu. Retrieved from <http://www.pt3.org/technology>
- Resta, P. E. (2002). *The IT Specialist*. Berlin: Springer
- Smith, C. (2004). Implementing an Institutional E-learning Centre: guiding notes and patterns. Retrieved from <http://www2.tisip.no/E-LEN/>
- Torruam, T. J. (2012). Application of E-teaching and E-learning in Nigerian Education System. *Academic Research International*, 3(1); 5-6. Retrieved from <http://www.journals.savap.org.pk>
- Udofia, N. A & Udofia, A. E. (2013). Project & E-learning Teaching Methods and Students Skills Acquisition in Electrical Installation to Works in Teaching Colleges in Akwa Ibom State. *Academic Journal of Interdisciplinary Studies*, 2 (2); Retrieved from <http://www.mcser.org/journal/index.php/ajis/article/view/368>
- Volman M. & Van Eck E. (2001). Gender Equity and Information Technology in Education: *Review of Educational Research*, 71(4); 613-634