

COMPUTER COMPETENCIES OF UNDERGRADUATE STUDENTS IN EDUCATIONAL TECHNOLOGY IN NORTH CENTRAL NIGERIA

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ABSTRACT

The study was on computer competencies of undergraduate students in Educational Technology in North Central Nigeria. Two research questions were asked from a sample of 324 undergraduate students in Educational Technology, taken from a population of 2,075 Educational Technology undergraduate students in public universities in North Central, Nigeria using was Computer Competencies Rating Scale (CCRS) through a descriptive survey design. Data collected were analyzed using frequency count, mean and percentages. Results of the Finding showed that showed that the level of computer competencies among Educational Technology undergraduate students in public Universities in North Central Nigeria are very low, as none of the Educational Technology undergraduate students in public Universities in North Central Nigeria was able to operate at National Economic Empowerment and Development Strategies goals and as most students moved from one academic level to the other, they also shifted in their level of computer competencies. The study recommended that in the process of admission into the university education to study Educational Technology, a minimum of proficient or regular level of computer competencies for applicants should be considered for admission and that a vocational guidance and counseling periodical session that will encourage gender equality drive for computer skills and competencies among undergraduate students in Educational Technology should carried out among others

Keyword: Competency, Educational Technology.

INTRODUCTION

Educational Technology (ET) is viewed as the combined use of computer software, hardware, educational theories and practices to facilitate learning (Robinson, Molenda & Rezabek, 2016). ET utilizes various forms of media whether in the written or audio-visual forms, and includes diverse technology applications, like web-based learning and computer-based learning among others. In other words, it is the design, development of instructional materials based on educational learning theories and the use of modern technologies like computer, to facilitate learning. Computer, being the hub of Educational Technology has been defined by National ICT Policy in Education (NP-ICT, 2019) as any electronic, magnetic, optical or other high speed data processing device or system which performs logical, arithmetic and memory functions by manipulations of electronic, magnetic or optical impulses, and includes all input, output processing, storage, software and communication facilities which are connected or related as a system or network. Therefore, in order to effectively carry out these basic functions on computer system, computer skills and related competencies are required. This is in line with Bristol's (2014) view that computer skills and competencies are needed by undergraduate students to retrieve information from online resources and various computer related technologies.

In the words of Gusen (2019), computer skill was defined as the knowledge and ability to use computer and related technologies, with a range of skills covering levels from elementary use to programming and advanced problem solving. These computer skills can be demonstrated under three basic categorization of computer outfits, which are internet facilities or exploration skills, computer peripheral equipment skills and computer application software skills. However, computer competency is the level of expertise of an individual with regards to computer. The ranges of

computer competencies cover competency in presentation software, computer programming, keyboarding, graphic designing, computer communication, database management, fixing software conflicts and repairing computer hardware among others.

Government at various levels had made significant efforts in establishing infrastructures that enable computer skills acquisition and the promotion of computer competencies. This was stressed in NP-ICT (2019) that government of Nigeria at all level should carry out the following: Introduction of schemes which are targeted at the provision of computers to government staff at all levels of education at preferential rates; establishment of ICT laboratories in schools and Centres of Excellence in the tertiary institutions; introduction of e-learning, application of ICT to Distance Education and Open Learning at all levels; the construction of e-libraries and virtual libraries for universities; the development and periodic review of the curricula for ICT Education at all levels of education and the sustenance of common ICT infrastructure.

Despite the efforts made by the government at all levels, the situational analysis expressed in NP-ICT (2019) established that the ICT infrastructures are still relatively scarce in the universities and had adversely affected the acquisition of computer skills and competencies among undergraduate Educational Technology students, especially in North Central, Nigeria. Several studies also revealed that undergraduate students in Educational Technology find it difficult to access and manipulate productive information through the internet on their own, while some were unemployed for a very long period after graduation (Uzoечи, 2015). This is because there is difference between the computer skills and competencies needed by employers on the job and those possessed and displayed by Educational Technology undergraduate students in the universities, especially in North Central, Nigeria. The students' weak commitment to acquire the computer skills and related competencies are obvious in the consequences of its absence.

This is not unconnected to the fact that there are no prerequisites or institutional requirements for Educational Technology undergraduate students to have basic computer skills and competencies before admission for degree programmes or certificate completion. Similarly, evidences from literatures also pointed out that gender, students' academic level and perceived relevance of computer skills and competencies of Educational Technology undergraduate students also affect the acquisition of computer skills and competencies (Huseyin, Mehmet & Jafar, 2015). However, computer skills should be learnt and developed with respect to modernization and technological advancement, through constant use and manipulation of computer system and other digital technologies so as to enhance digital innovation in educational processes, especially in public universities in North Central, Nigeria.

North Central, Nigeria; has many Federal and State Universities. Out of these Universities, only two Federal universities (University of Ilorin, Kwara State and Federal University of Technology, Minna, Niger State) offer Educational Technology as a programme of study at undergraduate level, while others are hoping to start soonest. This available but limited opportunity for studying Educational Technology in the public Universities in North Central, Nigeria and the deficiencies in computer skills and competencies of the privileged undergraduate Educational Technology students who are the future-primary agents of the ICT driven educational innovation in public universities in North Central Nigeria were the issues of concern to the researcher. The researcher, therefore looked with intense concern at the deficiencies in computer skills and competencies of undergraduate Educational Technology students with the view of addressing these deficiencies in public universities in North Central Nigeria

STATEMENT OF THE PROBLEM

Teaching and learning across the globe are tending towards ICT driven education. This ICT driven education depends on the computer skills and competencies of the Educational Technology undergraduate students, who are the future-primary agents of ICT driven education. Therefore, it became mandatory for undergraduate students in Educational Technology to possess adequate computer skills and competencies in the three basic areas of computer skills; which are computer

application software skills, peripheral equipment skills and internet exploration skills. The computer skills and competencies will aid optimal performance in educational processes and consequently result to national development.

However, in practice, the computer skills and competencies possessed by these Educational Technology undergraduate students are not adequate for the ICT driven education. This was observed by Uzoechi (2015), who established that Educational Technology undergraduate students expressed inability to manipulate essential software, internet facilities and physical components of computer. This situation explained the difficulties ET undergraduate students experienced with the computer application software, internet facilities and computer peripheral equipment for academic purposes. The consequences of these computer skills deficiencies have resulted to the failure of the ICT driven education in the universities, especially in North Central, Nigeria.

Similarly, it has led to mass failure in the university Computer Based Test (CBT), reduced academic confidence, projected gender digital divide, which had led to socio-economic inequalities among undergraduate Educational Technology students, weakened student ability to provide solutions to assignments and limit access to online learning. In order to avert these consequences, the researcher therefore, sought to assess the current situation of computer competencies among Educational Technology undergraduate students in public Universities in North Central, Nigeria.

RESEARCH QUESTIONS

The Study was guided by the following research questions:

1. What are the levels of computer competencies developed by Educational Technology undergraduate students in public Universities in North Central, Nigeria?
2. To what extent do computer competencies of Educational Technology undergraduate students vary according to their academic levels in Public Universities in North Central, Nigeria?

LITERATURE REVIEW

Literatures revealed that the computer competencies of computer users, especially undergraduate students depend on the perception of the students about computer devices. The perception of undergraduate students especially those in Educational Technology towards computer skills varied from literatures in terms of gender, age, anxiety, location, student mobility, special needs, interest and technical skills. Competence is not static knowledge, but the application of knowledge, skills or attitudes in specific situations (Ibáñez-Etxeberria, Kortabitarte, De Castro & Gillate, 2019). Computer competencies of Educational Technology undergraduate students were based on some basic factors such as enjoyment, enhancing skills, building confidence and active involvement of students among others (Sudha, 2021) and these were the basic factor of competencies in the 21st century. They were included as transversal competencies (González, Román & Prendes, 2018). Currently, with the advent of the Internet, mobile technology, digital technological infrastructures are found in our daily life in the society, and the belief that their correct acquisition is necessary for true equality of opportunities and social inclusion, requires working on new computer skills that go beyond the fact of being a regular undergraduate Educational Technology user (Gillate, Ibáñez-Etxeberria & Cuenca, 2018).

Digitalisation is accelerating the pace and the pursuit of globalized economy, helping organizations increase their competitiveness. As a result, undergraduate Educational Technology students require a range of computer skills and competencies which should be acquired and developed in order to effectively participate and be productive in modern society. Studies conducted by Arntz (2016) noted that the Organization for Economic Cooperation and Development (OECD) projected that less than 10% of workers, on average in the OECD area, are in jobs that are at risk of being replaced by machines, but 25% are in jobs where a high percentage of tasks are available, 50-70% could be automated. This underlines the need for flexible skills that allow workers to shift to new tasks that are difficult to automate.

In the same vein, most Nigerian workers could be replaced with machines. In order not to be replaced by an electronic system, like Robots and Artificial Intelligence (AI), the acquisition of computer skills and competencies that will enhance content creation activities in tertiary institution's curriculum are hereby necessary. The university curriculum should be reconsidered, taking into account computer skills and competencies in order to meet the requirements for digital exploration in the 21st century. The integration of technology into learning has been highlighted as a priority in the current generation of learners, in which undergraduate students in Educational Technology in North-Central are inclusive. In other words, undergraduate students in Educational Technology from public universities in North Central Nigeria should possess adequate computer skills and competencies which will enhance their performance in Educational Technology during their academic training period in the university.

This is in-line with the opinion of Gusen (2019) who noted that students can use and innovate with digital technology more effectively if they understand and possesses the required computer skill and competencies to make it work. Lecturers' skillfulness in computer are also vital to students' computer skills acquisition and competencies (Aslan & Zhu, 2015; Gisbert & Lázaro, 2015; Woodruff, Martin, & O'Brien 2015). Gusen (2019) also explained that display of computer skill while using technology during lesson presentation helps lecturers to simplify their lessons, manage their time and enrich their teaching and learning task; but stressed that over-dependence on technology in the classroom should be avoided as technology does not automatically bring about new forms of teaching and learning.

METHOD AND PROCEDURES

The research design adopted for the study was Descriptive Survey Design of the questioning technique because it is the method of research that looks with intense accuracy at the phenomena of the moment and then describes precisely what the researcher sees. The population of the study is all 2,075 Educational Technology undergraduate students, which was made up of students of two Public Universities in the North Central Nigeria who offered the course at undergraduate level in the zone. The population of undergraduate Educational Technology students from university A is 1,578, while population of Educational Technology students in university B is 497. The sample size was 324, derived by interpolation from R.V Krejcie and D.W Morgan Table extract of computed sample sizes in research activities

The instrument used to elicit response from the respondents was Computer Competencies Rating Scale (CCRS). In this study, the Computer Competencies Rating Scale (CCRS) was made up of 60 items. It was grouped into six (6) sections to address the six computer competencies scope of the study which are competencies in Keyboarding skills, data management skills, presentation software skills, graphic designing skills, computer programming procedural skills and computer communication skills, with ten (10) items in each section. The responses to the Rating Scale were rated on the five rating scale of computer competencies as follows: **EL** - Excellent Level (90%-100% or at least every three hours the student performs the operation), **ML** – Master Level (75%-89% or twice a day the student performs the operation), **RL** – Regular Level (60%-74% or twice a week the student performs the operation), **AB** – Advanced Beginner (40%-59% or twice a month the student performs the operation), **NL** – Novice Level (0% - 39% or once in two months the student performs the operation).

The instrument was scored on 5 points rating scale. The scale scoring was as follows: Excellent Level (EL) was scored (5 point), Master level (ML) was scored (4 point), Regular Level (RL) was scored (3 point), Advance Beginner's Level (AB) was scored (2 point) and Novice Level (NL) was scored (1 point).

METHOD OF DATA ANALYSIS

Data collected was subjected to descriptive statistics and percentages. The research questions were analyzed using frequency count, mean and percentages. The criteria for acceptance of competencies measured using CCRS instrument was 80% on Competency Rating Scale.

Results

Research Question | One

What are the levels of computer competencies of Educational Technology undergraduate students in Public Universities in North Central Geo-Political Zone of Nigeria?

The key to understand table 1 to 6 were explained as follows: Expected Rating Column Responses (ERCR) is the total number responses if all students responded to all item in a rating column, which is the Sample size (324), multiplied by Number of items (10) in a rating column, that is, 324×10 equals 3240 per column, meaning that the capacity of each Rating Column is 3240. Actual Response (AR) is the summation of frequency count in a column, that is, total number of responses in a rating column. Average of Actual response (AR) is the ratio of the summation of Actual response to the numbers of the rating scale points, which five. Therefore, the key to measure the percentage (%) competency of a particular skills from table 13 to 18 is the ratio of the average of Actual response (AR) to the ERCR, multiplied by 100

Table 1

Computer competencies in keyboarding skills

Keyboarding skills	Rating column				
	EL	ML	RL	AB	NL
1. Use touch typing	6	8	12	94	204
2. Use keyboard short cut	6	12	182	42	82
3. Look at the keyboard while typing	0	26	42	52	204
4. Cross your fingers while typing	16	0	0	124	184
5. Type three letter word in two seconds	12	44	42	44	182
6. Use the thumb to space words in typing	0	16	44	140	124
7. Use function keys	14	28	62	22	198
8. Type a page with punctuation marks error	8	12	16	94	194
9. Type a page with grammatical error	6	16	38	72	192
10. Use or have been able to use the above keyboarding before gaining admission to study Educational Technology	4	4	4	16	296
Actual Response (AR is the totality of a column)	72	166	442	776	1860
Average of Actual response (summation of AR/5)	663.20				
(%) competency in keyboarding skills	20.50%				

Table 1 shows the computer competencies in keyboarding skills. The responses show that 72 undergraduate Educational Technology undergraduate students in public universities in North Central, Nigeria operate at Excellent level, 166 of them operate on Master level, 442 of them operate on Regular Level, 776 of the operate on Advanced Beginner's level and 1,860 undergraduate Educational Technology undergraduate students in public universities in North Central, Nigeria on Novice level. The percentage (%) competency in keyboarding skills was 20.50%.

Table 2
Computer competencies in Data management skills

Data management skills	Rating column				
	EL	ML	RL	AB	NL
1. Locate books in school electronic library	82	62	62	10	108
2. Develop student					
3. m problem-solving and higher order skills	0	0	18	104	202
4. Estimate achievement in a given period	6	50	62	104	102
5. Learn about researches online	16	42	62	44	160
6. Learn about particular content area by searching database	10	40	41	87	146
7. Manipulate and use digital information for educational purposes	14	24	22	62	202
8. Keep Records	24	32	32	36	200
9. Create charts and graphs for clarity in lesson presentation among peers	1	4	6	11	302
10. Perform other activities not mentioned above	0	0	0	14	310
11. Use or have been able to use the above data management skills before gaining admission to study Educational Technology					
Actual Response (AR is the totality of a column)	153	254	305	472	1732
Average of Actual response (summation of AR/5)	583.20				
(%) competency in Data Management skills	18.00%				

Table 2 shows the computer competencies in Data Management skills. The responses show that 153 undergraduate Educational Technology undergraduate students in public universities in North Central, Nigeria operate at Excellent level, 254 of them operate on Master level, 305 of them operate on Regular Level, 472 of the operate on Advanced Beginner's level and 1,742 undergraduate Educational Technology undergraduate students in public universities in North Central, Nigeria on Novice level. The percentage (%) competency in Data Management skills was 18.00%

Table 3
Computer competencies in Presentation software skills

Presentation software skills	Rating column				
	EL	ML	RL	AB	NL
1. Make in-class presentation or reports with presentation software	62	60	94	46	62
2. Insert media into presentation	82	82	22	36	102
3. Create, open power point and use animation in your presentations	42	62	82	82	56
4. Store and display electronic portfolios	14	24	22	62	202
5. Transferring work to other media like photograph	22	36	62	102	102
6. Switch from one media to another in your presentation	22	40	80	82	100
7. Use correct and relevant template in your presentation	16	22	22	62	202
8. Use presentation software effect when necessary in your presentation	22	42	56	82	122
9. Play narration in presentation	6	12	82	82	142
10. Use or have been able to use the above Presentation software skills before gaining	0	0	8	11	302

Admission to study Educational Technology					
Actual Response (AR is the totality of a column)	153	380	530	647	1392
Average of Actual response (summation of AR/5)	647.40				
(%) competency in Presentation software skills	20.00%				

Table 3 shows the computer competencies in Presentation software skills. The responses show that 153 undergraduate Educational Technology undergraduate students in public universities in North Central, Nigeria operate at Excellent level, 380 of them operate on Master level, 530 of them operate on Regular Level, 647 of the operate on Advanced Beginner's level and 1,392 undergraduate Educational Technology undergraduate students in public universities in North Central, Nigeria on Novice level. The percentage (%) competency in Presentation software skills was 20.00%

Table 4
Computer competencies in Graphic designing skills

Graphic designing skills	Rating column				
	EL	ML	RL	AB	NL
1. Design Photograph and Charts	14	24	24	60	202
2. Create drawings-cutting and drawing programme	22	36	84	84	98
3. Illustrate work using and drawing or clip art to illustrate	0	0	0	24	300
4. Insert pictures	16	22	42	42	202
5. Locate the designing tools in the internet	6	12	22	44	240
6. Use graphic software in seminar presentation	0	20	12	10	282
7. Search internet for graphics	20	18	20	32	234
8. Manipulate graphic template to suit your purpose	0	18	18	100	188
9. Collaborate with other students on graphic work	0	0	0	12	312
10. Use or have been able to use the above					
Graphic designing skills before gaining admission to study Educational Technology	18	18	26	98	164
Actual Response (AR is the totality of a column)	96	158	248	506	2222
Average of Actual response (summation of AR/5)	646.00				
(%) competency in Graphic designing skills skills	20.00%				

Table 4 shows the computer competencies in Graphic designing skills. The responses show that 96 undergraduate Educational Technology undergraduate students in public universities in North Central, Nigeria operate at Excellent level, 158 of them operate on Master level, 248 of them operate on Regular Level, 506 of the operate on Advanced Beginner's level and 2,222 undergraduate Educational Technology undergraduate students in public universities in North Central, Nigeria on Novice level. The percentage (%) competency in Graphic designing skills was 20.00%

Table 5
Computer competencies in Computer Programming skills

Computer Programming skills	Rating column				
	EL	ML	RL	AB	NL
1. Choose the right website builder	12	12	16	28	256
2. Sign up for a plan that suit your needs and budget	8	10	14	16	278
3. Choose a unique and relevant domain name	8	10	14	16	276
4. Pick a design template you love	8	12	18	20	266
5. Customize your template design	8	10	16	26	268
6. Upload and format your own content	6	6	6	22	284

7. Choose and download relevant app	6	10	16	16	276
8. Preview and test your website	4	4	4	4	308
9. Share your website online	10	10	10	12	282
10. Use or have been able to use the above Computer Programming skills before gaining admission to study Educational Technology	0	0	0	12	312
Actual Response (AR is the totality of a column)	70	84	112	172	2806
Average of Actual response (summation of AR/5)	648.80				
(%) competency in Computer Programming skills	20.00%				

Table 5 shows the computer competencies in Computer Programming skills. The responses show that 70 undergraduate Educational Technology undergraduate students in public universities in North Central, Nigeria operate at Excellent level, 84 of them operate on Master level, 112 of them operate on Regular Level, 172 of the operate on Advanced Beginner's level and 2,806 undergraduate Educational Technology undergraduate students in public universities in North Central, Nigeria on Novice level. The percentage (%) competency in Presentation software skills was 20.00%

Table 6
Computer competencies in Computer Communication skills

Computer Programming skills	Rating column				
	EL	ML	RL	AB	NL
1. Proof Hub	0	0	2	7	7
2. Tiny lettert	0	0	5	6	9
3. Skype	0	0	4	7	9
4. Flow dock	0	0	6	5	9
5. Dropbox	0	0	4	5	7
6. Hip chart	0	0	3	6	7
7. Go To Meeting	0	0	5	4	7
8. Google Docs	0	0	5	5	8
9. Big marker	0	0	5	7	8
10. Use or have been able to use the above Computer Communication skills before gaining admission to study Educational Technology	0	0	1	1	9
Actual Response (AR is the totality of a column)	0	0	40	53	80
Average of Actual response (summation of AR/5)	34.60				
(%) competency in Computer Communication skills	01.10%				

Table 6 shows the computer competencies in Computer Communication skills. The responses show that no undergraduate Educational Technology undergraduate students in public universities in North Central, Nigeria operates at Excellent level, none of them operates on Master level, 40 of them operate on Regular Level, 53 of the operate on Advanced Beginner's level and 80 undergraduate Educational Technology undergraduate students in public universities in North Central, Nigeria on Novice level. The percentage (%) competency in Presentation software skills was 01.10%

Table 7
Computer Competencies Level

	Computer competencies	% measure of Computer competencies
1.	Keyboarding skills	20.50%
2.	Data management skills	18.00%
3.	Presentation Software skills	20.00%
4.	Graphic design skills	20.00%
5.	Computer Programming Skills	20.00%
6.	Computer communication tools skills	01.10%

From table 7, the computer competencies of students in Keyboarding skills were 20.50%, Data management skills was 18.00%, Presentation Software skills was 20.00%, Graphic design skills was 20.00%, Computer Programming Skills was 20.00%, and Computer communication tools skills 01.10%

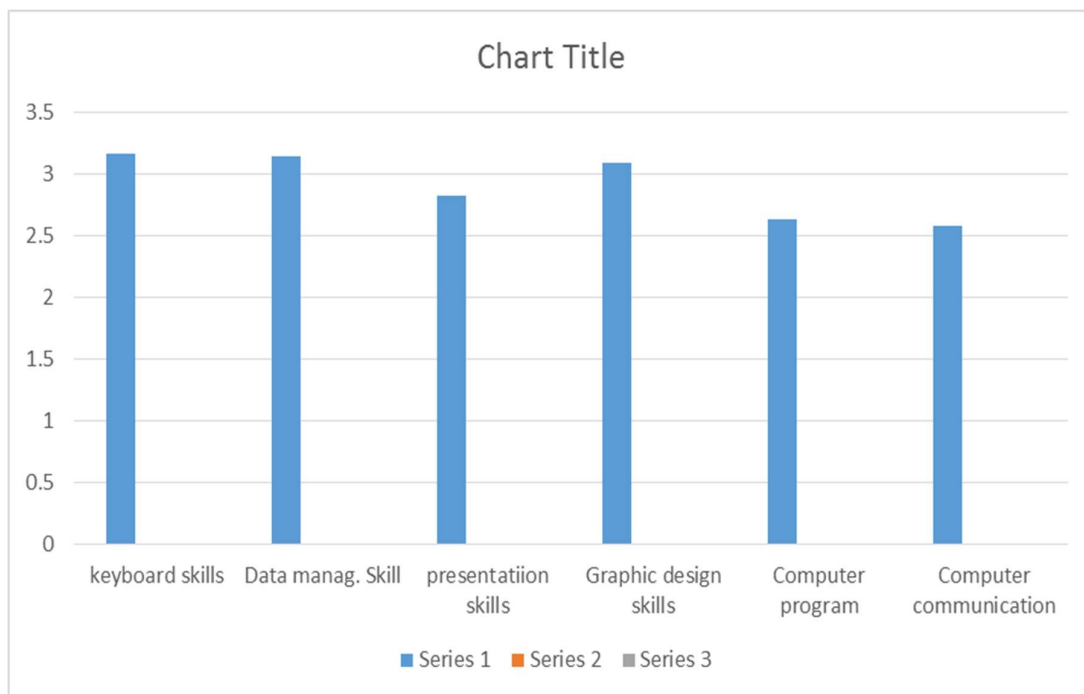


Chart 1: Graphical representation of Computer Competencies Level

Chart 1 shows the graphical representation of Computer Competencies Level of undergraduate students in Educational Technology in public Universities in North Central Nigeria. The computer competency of students in Keyboarding skills was 20.50%, Data management skills was 18.00%, Presentation Software skills was 20.00%, Graphic design skills was 20.00%, Computer Programming Skills was 20.00%, and Computer communication tools skills 01.10%

Research Question Two

To what extent do computer competencies of Educational Technology undergraduate students vary according to their academic levels in Public Universities in North Central Nigeria?

Key to understand table 20: Range R or r is difference between Excellent and Novice level(EL – NL), signifying the closeness or farness of students' computer competencies within specific competency or academic levels. The r^2 is the square of ranges within level to remove negative sign, while R^2 is

the square of Actual Response Range for a specific competency. The percentage (%) measure of closeness or farness of students' computer competencies within level (%CC) is the ratio of r^2 to R^2 , multiplied by 100. VC signified Very Close (0-25%), C signified Close (26%-50%), F signified Far (51%-75%) and VF signified Very Far (76%-100%)

Table 8
Computer competencies according to academic levels

Computer Competencies	EL	ML	RL	AB	NL	R ² or R r ²		% CC	Remark
1. Keyboarding skills									
AR (For All Levels)	72	166	442	776	1860	-1788	3196944		
100 Level	6	12	36	402	1002	-996	992016	31.0%	C
200 Level	12	22	102	202	454	-442	195364	6.1%	VC
300 Level	26	52	168	106	220	-194	37636	1.2%	VC
400 Level	28	80	136	66	184	-156	24336	0.8%	VC
2 Data management skills									
AR (For All Levels)	153	254	305	472	1732	-1579	2493241		
100 Level	11	32	22	220	700	-689	474721	19.0%	VC
200 Level	12	70	102	112	601	-589	346921	13.9%	VC
300 Level	50	62	101	100	400	-350	122500	4.9%	VC
400 Level	80	90	80	40	31	49	2401	0.1%	VC
3 Presentation Software skills									
AR (for All Levels)	288	380	530	647	1392	-1104	1218816		
100 Level	22	28	25	236	710	-688	473344	38.8%	C
200 Level	70	92	108	240	650	-580	336400	27.6%	VC
300 Level	94	120	122	100	20	74	5476	0.5%	VC
400 Level	102	140	275	71	12	90	8100	0.7%	VC
4 Graphic designing skills									
AR (For All Levels)	96	158	248	506	2222	-2126	4519876		
100 Level	12	22	40	100	1412	-1400	1960000	43.4%	C
200 Level	12	32	48	342	422	-410	168100	3.7%	VC
300 Level	32	48	60	52	204	-172	29584	0.7%	VC
400 Level	40	56	100	12	184	-144	20736	0.4%	VC
5 Computer Programming Skills									
AR (For All Levels)	70	84	112	172	2806	-2736	7485696		
100 Level	0	0	12	20	2004	-2004	4016016	53.7%	F
200 Level	0	0	12	70	606	-606	367236	4.9%	VC
300 Level	13	25	38	46	124	-111	12321	0.2%	VC
400 Level	57	59	50	36	72	-15	225	0.0%	VC
6 Computer communication tools skills									
AR (For All Levels)	0	0	40	53	80	-80	6400		
100 Level	0	0	0	0	67	-67	4489	70.1	F
200 Level	0	0	0	0	5	-5	25	0.4%	VC
300 Level	0	0	7	23	5	-5	25	0.4%	VC
400 Level	0	0	33	30	3	-3	9	0.1%	VC

From table 8, the percentage measure of closeness and farness of students' computer competencies within their academic levels in Keyboarding skills shows that 100 level students were 31.0% close, 200 level students were 6.1 % closer, meaning some students had left the novice level and other levels of computer competencies and move closer to higher levels. Similarly, 300 level students' percentage of closeness were 1.2%, while that 400 level students were 0.8%, signifying students' movement from one level to another of computer competencies as a result of students' academic level. Similarly, the percentage measure of closeness and farness of students' computer competencies within their academic levels in Data management skills shows that 100 level students were 19.0% close, 200 level students were 13.9 % closer, meaning some students had left the novice level and other levels of computer competencies and move closer to higher levels. Similarly, 300 level students' percentage of closeness were 4.9%, while that 400 level students were 0.1%, signifying students' movement from one level to another of computer competencies as a result of students' academic level

Likewise, the percentage measure of closeness and farness of students' computer competencies within their academic levels in presentation software skills shows that 100 level students were 38.8% close, 200 level students were 27.6 % closer, meaning some students had left the novice level and other levels of computer competencies and move closer to higher levels. Similarly, 300 level students' percentage of closeness were 0.5%, while that 400 level students were 0.7%, signifying students' movement from one level to another of computer competencies as a result of students' academic level. The percentage measure of closeness and farness of students' computer competencies within their academic levels in Graphic designing skills shows that 100 level students were 43.4% close, 200 level students were 3.7 % closer, meaning some students had left the novice level and other levels of computer competencies and move closer to higher levels. Similarly, 300 level students' percentage of closeness were 0.7%, while that 400 level students were 0.4%, signifying students' movement from one level to another of computer competencies as a result of students' academic level

Similarly, the percentage measure of closeness and farness of students' computer competencies within their academic levels in computer programming skills shows that 100 level students were 53.7% close, 200 level students were 4.9% closer, meaning some students had left the novice level and other levels of computer competencies and move closer to higher levels. Similarly, 300 level students' percentage of closeness were 0.2%, while that 400 level students were 0.0%, signifying students' movement from one level to another of computer competencies as a result of students' academic level. Likewise, the percentage measure of closeness and farness of students' computer competencies within their academic levels in computer communication tools skills shows that 100 level students were 70.1% close, 200 level students were 0.4 % closer, meaning some students had left the novice level and other levels of computer competencies and move closer to higher levels. Similarly, 300 level students' percentage of closeness were 0.4%, while that 400 level students were 0.1%, signifying students' movement from one level to another of computer competencies as a result of students' academic level.

Discussion of Findings

The responses to research question one showed that the level of computer competencies among Educational Technology undergraduate students in public Universities in North Central Nigeria are very low, as none of the Educational Technology undergraduate students in public Universities in North Central Nigeria was able to operate at National Economic Empowerment and Development Strategies (NEEDS, 2005) goals, which is minimum of 80% on computer competencies rating scale which justifies the assertion made by Alberto, Karen, Chester, and John (2019) that there were low level of computer competencies among undergraduate students especially those in Educational Technology field of study.

A closer examination of responses to research question two indicated that, as most students moved from one academic level to the other, they also shifted in their level of computer

competencies; implying that students' academic level affects the level of computer competencies among Educational Technology undergraduate students. This was obvious, because they exhibited some improvement that showed there were shifts from advanced beginner levels to regular or proficient computer competencies levels in some basic computer competencies after they were admitted and trained in the Department of Educational Technology, just as Ogbuiyi (2015) also affirmed that the computer competencies of undergraduate students, especially those in Educational technology varied with respect to their academic levels in the use of Microsoft word. Similarly, the findings were also supported by Manu, Owusu-Ansah and Dzamesi (2019) study on the first-year students' desktop computer literacy skill in Windows Management, Power Point Presentation, and Emailing at a public university in Ghana, that there were significant improvements in undergraduate students' computer competencies level with respect to their academic level, especially those in Educational Technology field of study in the universities.

RECOMMENDATION AND CONCLUSION

Base on the findings of the study that there were low levels of computer competencies as a result of weak commitment to its development among Educational Technology undergraduate students in public universities in North Central Nigeria, the following recommendations were made:

The study recommended among others that in the process of admission into the university education to study Educational Technology, a minimum of proficient or regular level of computer competencies for applicants should be considered for admission. This will help to minimize the computer skills and competencies deficiencies of undergraduate students in Educational Technology, especially in public universities in North Central Nigeria. The study also recommended a curriculum modification approach among others, in order to strengthen the commitment of undergraduate students in Educational Technology, especially in public universities in North Central Nigeria. The curriculum for Educational Technology undergraduate students should emphasis more of psychomotor objectives, which emphasized the mastery of skills than cognitive objectives, which emphasized the acquisition of knowledge, so as to imbibe the culture of skills development in Educational Technology undergraduate students, especially those in public universities in North Central Nigeria.

A vocational guidance and counseling periodical session that will encourage gender equality drive for computer skills and competencies among undergraduate students in Educational Technology, especially those in public universities in North Central Nigeria and eradicate gender digital divides should be established. This will help to equalize gender participation in the exploration of computer base equipment that were available and accessible in the public universities to Educational Technology undergraduate students in North Central Nigeria, so that teaching and learning protocols that were unethical for a particular gender can be facilitated by the other gender, which possesses the ethical characteristics. Based on the findings, the study also recommended that the establishment and regular funding of Educational Technology Centre through the use of Tertiary Education Trust Fund (TETFUND) should be encouraged in all Educational Institutes, especially those in public universities in North Central Nigeria. This will help to enhance acquisition of computer skills and display of competencies through regular access to the equipped Educational Technology Centre with equipment that cannot be personally owned because of high cost of the equipment

Similarly, the study also recommended that the Federal Government should help by subsidizing or reducing the tariffs on importation of ICT facilities so that individual student in Educational Technology, especially those in public universities in North Central Nigeria can afford the purchase of the ICT facilities and accessories for personal training outside the campus since the price will be lower. This will help to boost the acquisition of computer skills and display of competencies. Likewise, the study also recommended among others, that the Government and University administrators should ensure regular power supply, for effective use of ICT facilities that will enhance the acquisition of computer skills and display of competencies among Educational Technology undergraduate students, especially those in public universities in North Central Nigeria.

Electric power is necessary for the optimal functioning of the ICT facilities, it is therefore necessary to provide a standby generator when there is power failure from the Power Holding Company of Nigeria (PHCN).

Based on the findings, the study also recommended that the Government and University administrators should ensure uninterrupted campus internet service, especially the Campus Area Network (CAN) in order to provide opportunity for internet exploration skills among Educational Technology undergraduate students, especially those in public universities in North Central Nigeria. Through this, the Educational Technology undergraduate students will be able to connect with colleagues and update their computer skills, learn better and be familiar with the latest information.

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