Original Research Article

Computer Word Processing Competencies and Level of Attainment of Science Teachers in Delta State Secondary Schools

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Abstract

This study, using descriptive survey design, investigated basic computer word processing competencies and level of attainment of secondary school science teachers in Delta State Capital Territory, Nigeria. The population of the study was 150 (90 male and 60 female; 110 urban and 40 rural) science teachers from 15 secondary schools in Delta State Capital territory. The sample of the study was 135 (84 male and 51 female; 104 urban and 31 rural) science teachers. Five research questions were posted. A validated and reliable instrument, computer word processing competency attainment level, was used to collect data. Mean statistic, was used to analyze the data. The results revealed that secondary school science teachers in Delta State Capital Territory, irrespective of school location and gender, have high basic computer word processing competency level. Recommendations were given to encourage sustainable high manpower training of science teachers, in basic computer word processing.
Keywords: Information and Communication Technology (ICT); Computer; word processing; word processing competency; science teachers.

INTRODUCTION

The 21st century is known as information and communication technology (ICT) era. The ICT makes globalization of the world possible. According to [1], ICT is the convergence of computer networking and telecommunications to process, store, retrieve and send information of all kinds. This definition indicates that computers are very important for the ICT to be actualized in any nation. Supporting this assertion [2], affirms that a computer network is a form of computer configuration in which two or more computers are linked together to enable them share resources like data, peripheral devices (printers, disk drives or laptops, etc) or to communicate with one another, Supporting the importance of computers in the ICT realities [3], informs that a network is formed when two or more computers are connected in a manner that facilitates information to pass from one to the other [4. Asserts that the concept of inter-connecting groups of computer systems for the purpose of sharing information among people at different locations is called networking.

Computer is an electronic system that can be instructed to accept, process, store and present data and information; it is made up of two component parts, the hardware and software [5]. According to [2], computer as a machine and its associated equipment represent the

hardware. Software, according to [2], is the programme containing instruction to the computer in a language that it can understand; the programme is developed by the programmers. Simplifying further [5], explain that the software is a general term for set of instructions that controls a computer or a communication network. According to [6], software is held either on any storage device on the computer such as hard disk, Compact Disk Read Only Memory (CD-ROM), Digital Versatile Disc (DVD) or on a diskette (Floppy disk). It is from the storage device that this set of instructions is loaded or copied into the computers Random Access Memory (RAM), when needed.

Microsoft word otherwise known as Ms Word is an application software that is used for processing of words; that is, it is designed for manipulating words or text to produce professional looking documents [7]. It contains all the features that one may ever need to create, format, edit, compose and enhance regular documents. All these are collectively called word processing [3]. Ms Word along with Ms Excel, Ms Power point, just to mention a few, are all components of Ms Office suite.

Word processing competency is knowing some basics in word processing such as typing, editing, formatting, etc. Lecturers in the university, colleges of

education and other higher institutions in Nigeria, compute students' results, prepare course outline, marking scheme, etc. What they apply in doing this is word processing otherwise known as Microsoft word. The competency level require of a teacher/lecturer in word processing according to ICT competency standards for teachers (ICT-CST) as in (i) creating and organizing computer files and folders, (ii) loading a word processing application e.g. Microsoft word (Ms word) (iii) saving a document in a word processor, (iv) using word art to shape the objects, (v) previewing and printing text from word processor, (vi) deleting files from recycling bin (vii) setting up and using tab in a document , (viii) changing text font, style and size in a document, (ix) inserting pictures and symbols into a document, (x) merging and slitting cells in a table, (xi) using input devices to enter and edit text and (xii) using devices (hard disk, compact disk, flash drive, etc) for storing and sharing computer files [8].

Secondary school science teachers are those teachers who teach science subjects at either junior school or senior school level or both; they teach basic science, biology, chemistry or physics at the secondary school level [9]. The least qualification of a science teacher in Nigeria is the National Certificate in Education (NCE) in any of the aforementioned science subjects (Federal Republic of Nigeria [10]. Most of these science teachers do not have the opportunity of undergoing a computer programme in course of their teacher education studies. Some were opportuned to have it as a semester course in General Studies (GST) which is not adequate to give the teachers the required computer word processing competency as stipulated by ICT-CST.

This study, intends to find out how far science teachers are competent in relation to ICT-CST. Therefore, the problem of this study is stated thus: what is the level of attainment of science teachers vis-à-vis the word processing competencies in secondary school in Delta State, Nigeria as prescribed by ICT-CST?

Research Questions
Five research questions were formulated to guide this study. These were:
1. What is the mean basic computer word processing competency level of secondary school Science teachers in Delta State Capital Territory, Nigeria?
2. What are the mean basic computer word processing competency attainment levels of secondary school science teachers in urban and rural areas of Delta State Capital Territory, Nigeria?
3. What are the mean basic computer word processing competency attainment levels of male and female secondary school science teachers in Delta State Capital Territory, Nigeria?
4. What is the difference in the mean basic computer word processing competency attainment level between the male and female secondary school science teachers in Delta State Capital Territory, Nigeria?
5. What is the difference in the mean basic computer word processing competency attainment level between urban and rural secondary school science teachers in Delta State Capital Territory, Nigeria?

MATERIALS AND METHODS

This study adopted a descriptive survey research design. This design was chosen because the researchers wanted to inquire into the status quo of science teachers in terms of their word processing competencies level of attainment, base on National Competency Standards for Teachers (NCST).

The population of the study was 150 (90 male and 60 female; 110 urban and 40 rural) science teachers from 15 secondary schools in the Delta State Capital Territory, Nigeria. The sample of the study was 135 (84 male and 51 female; 104 urban and 31 rural) science teachers from 15 secondary schools (9 science teacher from each school). The stratified random sampling technique was applied in the selection of 135 science teachers out of 150 science teachers from the 15 secondary schools in the Delta State Capital Territory.

The instrument for data collection, Computer Word Processing Competency Attainment Level (COWOPAL), was researchers made. It consisted of two sections, 1 and 2. Section 1 sought for the bio-data of the science teachers, while section 2 contained twelve items on computer word processing competencies which the science teachers were meant to respond to. A 4-point Likert scale approach of Highly Competent (HC), Competent (C), Incompetent (I) and Highly Incompetent (HC) of 4, 3, 2 and 1 point, respectively, was used in Section 2 of COWOPAL. Three science teachers, each from those who responded as being HC, C, I and HI, respectively, were randomly selected and subjected to basic computer knowledge operations with a life computer to authenticate their claims of responses in COWOPAL. The criterion mean of COWOPAL was 2.5.

The data collecting instrument, COWOPAL, was later subjected to content and face validities by three experts (A computer scientist, science educationist and test Evaluator) in Niger Delta University (NDU), Nigeria. The corrections and additions from these experts were included in the final draft of the COWOPAL. Cronbach Alpha was used to determine the reliability index of COWOPAL, which was 0.91, and was judged to be good enough.

Data collected from the respondents were analyzed with mean statistic. The mean statistic of item equal to 2.5 was regarded as being word processing competent (WPC), the one that is above 2.5 is said to be Highly Word Processing Competent (HWPC), while the

mean that is less than 2.5 is regarded as Word Processing Incompetent (WPI).

RESULTS AND DISCUSSION

The data collected with COWOPAL were analyzed to provide answers to research questions 1-5.

Research question 1

What is the mean basic computer word processing competency level of secondary school science teachers in Delta State Capital Territory, Nigeria?

Answer to research questions 1

The answer to research question 1 is as shown in Table-1.

Table-1: Basic Computer Word Processing Competencies Responses by Respondents

S/N	Basic Word processing competencies Items	N	HC	C	I	HI	Mean	Decision
1	Creating and organizing computer files and folders	135	70	45	5	15	3.3	HWPC
2	Loading a word processing application e.g. MS word	135	84	40	1	10	3.5	HWPC
3	Saving a document in a word processor	135	76	50	2	7	3.5	HWPC
4	Using word art to shape objects	135	24	52	50	9	2.7	HWPC
5	Previewing and printing text from word processor	135	50	46	10	7	2.7	HWPC
6	Deleting files from recycle bin	135	43	50	32	10	2.9	HWPC
7	Setting up and using tab in a document	135	60	9	60	6	2.8	HWPC
8	Changing text font and size in a document	135	39	32	30	34	2.6	HWPC
9	Inserting pictures and symbols into a document	135	36	50	20	29	2.7	HWPC
10	Merging and splitting cells in a table	135	28	40	34	33	2.5	WPC
11	Using input devices to enter and edit text	135	64	50	11	10	3.2	HWPC
12	Using storage devices (hard disk, CD, flash) for storing and sharing computer files	135	52	68	5	10	3.2	HWPC
	Grand Mean	135	53.2	43.6	21.0	15.2	3.0	HWPC

Source: From field work, 2018

From Table-1, it is clear that the science teachers of secondary schools in Delta State Capital Territory, Nigeria, attended high competency level in basic computer word processing, since they made mean above criterion mean of 2.5 in all the basic computer word processing items. This agrees with the finding of [6] that science teachers have basic computer word processing competency to help them process documents. This might have been so, probably because the science teachers might have been exposed to seminars/workshops in basic computer word processing training and that they might have had courses in basic knowledge of computer in course of their training programme in the university. In general, the grand mean of 3.0 in Table-1, showed that secondary school science teachers in Delta State Capital Territory, Nigeria, had an appreciable High Word Processing Competency level of basic word processing as in NSCT.

Research question 2:

What are mean basic computer competency attainment levels of secondary school science teachers in urban (U) and rural (R) areas in Delta State Capital Territory, Nigeria?

Answer to research question 2

The data in Table-2 provide answer to research question 2

Table-2: Basic Computer Word Processing Competencies Responses by Respondents according to School Location (SL)

S/N	Basic Word processing competencies Items	SL	N	HC	C	I	HI	Mean	Decision
1	Creating and organizing computer files and folders	U	104	64	30	4	6	3.5	HWPC
		R	31	20	6	1	4	3.4	HWPC
2	Loading a word processing application e.g. MS word	U	104	71	20	3	10	3.5	HWPC
		R	31	18	7	1	5	2.0	WPI
3	Saving a document in a word processor	U	104	73	10	6	15	3.4	HWPC
		R	31	26	3	1	1	3.7	HWPC
4	Using word art to shape objects	U	104	80	14	2	8	3.6	HWPC
		R	31	19	6	4	2	3.4	HWPC
5	Previewing and printing text from word processor	U	104	34	30	10	30	2.7	HWPC
		R	31	16	10	3	2	3.3	HWPC
6	Deleting files from recycle bin	U	104	44	20	20	20	2.8	HWPC
		R	31	18	7	2	4	3.3	HWPC
7	Setting up and using tab in a document	U	104	48	30	96	10	3.1	HWPC
		R	31	19	6	5	1	2.4	HWPC
8	Changing text font and size in a document	U	104	33	40	11	20	2.8	HWPC
		R	31	18	8	2	3	3.3	HWPC
9	Inserting pictures and symbols into a document	U	104	53	20	11	20	3.0	HWPC
		R	31	17	4	4	6	3.0	HWPC
10	Merging and splitting cells in a table	U	104	19	15	64	6	2.5	WPC
		R	31	5	2	14	10	2.1	WPI
11	Using input devices to enter and edit text	U	104	62	38	3	1	3.5	HWPC
		R	31	20	4	2	5	3.3	HWPC
12	Using storage devices (hard disk, CD, flash) for storing and sharing computer files	U	104	40	50	10	4	3.2	HWPC
		R	31	10	12	8	1	3.0	HWPC
	Grand Mean	U	104	52	26	13	12	3.1	HWPC
		R	31	17	6	4	4	3.1	HWPC

Data in Table-2 show that secondary school science teachers in urban area exhibited high basic computer word processing competency level in all basic computer word processing competency items in COWOPAL. This agrees with the findings of [2] that people in urban area are more literate in basic computer word operations than those found in rural area. This might probably be due to easy access to computers and electricity by people in the urban areas.

The finding in Table-2, also, indicated that secondary school science teachers in the rural areas showed high level attainment in basic computer word processing competency items in the COWOPAL, except in item 2 where they had mean of 2.0 which is lower than criterion mean of 2.5. This finding agrees with the finding of [6] that science education teachers in Nigeria do not have basic knowledge of computer in word processing competency like loading a word processing application e.g. Microsoft (Ms)Word. This might be, probably, because of the acute shortage of electricity, difficulty in accessing computer and non organization of seminars/workshops in the rural area. On a general note, the grand mean responses of secondary school science teachers in rural area is 3.0 indicating that they met the NCST in basic computer word processing competency.

Research question 3

What are the mean basic computer word processing competency attainment levels of male and female secondary school science teachers in Delta State Capital Territory, Nigeria?

Answer to research question 3

Answer to research question 3 is as shown in table 3. Data in table 3 show that male secondary school science teachers in Delta State Capital Territory of Nigeria attained high level of basic computer word processing competency in all the basic computer word processing competency items in COWOPAL, except in item 9 where the male score mean of 2.3. This disagrees with the findings of [6, 3] that teachers are ill-prepared in the use of computers in teaching- learning process. This disagreement might stem from the fact that teachers used in their separate studies might have, probably, been drawn from different samples. The grand mean of 3.0 indicated against the male science teachers showed that, in general, they met the NCST in basic computer word processing competency.

Table-3: Basic Computer Word Processing Competencies Responses by Respondents According To Gender

S/N	Basic Word processing competencies Items	G	N	HC	C	I	HI	Mean	Decision
1	Creating and organizing computer files and folders	M	84	50	25	5	4	3.4	HWPC
		F	51	30	11	4	6	3.3	HWPC
2	Loading a word processing application e.g. MS word	M	84	62	12	2	8	3.7	HWPC
		F	51	33	10	3	5	3.4	HPWC
3	Saving a document in a word processor	M	84	56	15	10	3	3.5	HWPC
		F	51	32	10	7	2	3.4	HWPC
4	Using word art to shape objects	M	84	15	30	30	9	2.6	HWPC
		F	51	11	15	20	5	2.6	HWPC
5	Previewing and printing text from word processor	M	84	30	34	14	6	3.0	HWPC
		F	51	21	23	6	1	3.3	HWPC
6	Deleting files from recycle bin	M	84	20	22	25	17	2.5	WPC
		F	51	12	14	15	10	2.5	WPC
7	Setting up and using tab in a document	M	84	34	30	12	8	3.1	HWPC
		F	51	22	10	9	10	2.9	HWPC
8	Changing text font and size in a document	M	84	50	10	10	14	3.1	HWPC
		F	51	36	5	6	4	3.4	HWPC
9	Inserting pictures and symbols into a document	M	84	14	20	30	20	2.3	WPI
		F	51	10	17	20	4	2.5	WPC
10	Merging and splitting cells in a table	M	84	16	26	22	20	2.5	WPC
		F	51	11	13	20	7	2.5	WPC
11	Using input devices to enter and edit text	M	84	36	28	12	8	3.1	HWPC
		F	51	23	18	4	6	3.1	HWPC
12	Using storage devices (hard disk, CD, flash) for storing and sharing computer files	M	84	24	30	15	15	2.8	HWPC
		F	51	16	17	10	8	2.8	HWPC
	Grand Mean	M	84	31	24	17	11	3.0	HWPC
		F	51	21	14	10	6	3.0	HWPC

Source: Field work, 2018

The basic computer word processing attainment level of the female secondary school science teachers in Delta State Capital Territory of Nigeria is as shown in Table-3. Data in Table-3 reveal that the female secondary school science teachers exhibited high level of attainment in basic computer word processing competency items. This finding agrees with the finding of [3] who reported that female science teachers in our contemporary schools are literate in the ICT. This might be as a result of the fact that the female science teachers on their own go for computer training. The grand mean of 3.0 from female science teachers in Table-3 shows that they have attained appreciable high basic computer word processing competency level and so, met NCST in basic computer word processing competency.

Research question 4

What is the difference in the mean basic computer word processing competency attainment level between the male and female secondary school science teachers in Delta State Capital Territory, Nigeria?

Answer to research question 4

The difference in basic computer word processing competency attainment level between the male and female secondary school science teachers in Delta State Capital Territory of Nigeria is as shown in table 3. The male secondary school science teachers had grand mean of 3.0 and their female counterparts, also,

had grand mean of 3.0. The difference in mean in basic computer word processing competency attainment level between the male and female science teachers is zero (0). This agrees with [3], who affirms that the difference in achievement between male and female if any, is minimal, if both of them are given equal opportunity. This minimal difference has arisen from the fact that the male and female secondary school science teachers were all selected from the same environment (Delta State Capital Territory, Nigeria).

Research question 5

What is the difference in the mean basic computer word processing competency attainment level between the urban and rural secondary school science teachers in Delta State Capital Territory, Nigeria?

Answer to research question 5

The answer to the research question 5 is as found in Table-2. Data in Table-2 show that the grand mean basic computer word processing competency attainment level for urban secondary schools is 3.2, while that of their counterparts in rural schools is 3.0, the grand mean difference between the two set of science teachers is 0.2 in favour of urban teachers. This agrees with the finding of [6] that teachers in urban schools have more access to computers than their counterparts in rural schools. The slight difference in the grand mean basic computer word processing competency attainment level between the science

teachers in both urban and rural schools might be based on individual interest of the teachers to be computer literate.

Conclusion

The secondary school science teachers in Delta State Capital Territory have attained high level of basic computer word processing competency as indicated by the grand mean responses of science teachers in Table-1. Also, science teachers in both urban and rural areas of Delta State Capital Territory have appreciable high level of attainment of basic computer word processing competency, having recorded grand mean responses of 3.1 and 3.0, respectively, as shown in Table-2. The male and female secondary school science teachers have grand mean responses of 3.0 each, as shown in Table-3, indicating that they have high level of attainment in basic computer word processing competency. On the basis of NCST, science teachers in secondary schools in Delta State Capital Territory of Nigeria are regarded as being highly computer word processing competent and are said to have met the basic computer word processing competency standard.

Recommendations

From the aforementioned results, the researchers recommend that all secondary school teachers in Delta State Capital Territory be exposed to basic computer word processing competency. In addition, constant basic computer literacy seminar/workshop should be organized for secondary school science teachers in Delta State to encourage sustainable high computer literacy level among teachers in the secondary schools.

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