APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN CURRICULUM INSTRUCTION IN PUBLIC SECONDARY SCHOOLS IN THE FCT, ABUJA, NIGERIA: CONTEMPORARY ISSUES

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Abstract
This study investigated the contemporary issues raised by the application of information and communication technology (ICT) in curriculum instruction in public secondary schools in the FCT, Abuja. In regard to this, two research questions and two null hypotheses were designed to guide the study. The study adopted a descriptive survey design. The population of the study comprised all 1650 teachers in 85 public secondary schools in the Federal Capital Territory, Abuja. Using the Taro Yamen Sampling technique as a yardstick for determining the sample minimum limit, a sample size of 350 respondents made up of 160 males and 190 females; 210 urban and 140 rural teachers were randomly selected from 14 public secondary schools in Abuja Municipal and Gwagwalada Area Councils of the Federal Capital Territory, Abuja. The instrument for data collection was a questionnaire code-named "Contemporary Issues in Application of Information and Communication Technology Questionnaire" (CIAICTQ). The face and content-validated instrument were subjected to a reliability test using the Cronbach coefficient formula, which yielded a reliability coefficient index of 0.81. Mean and standard deviation was used to answer the research questions, while a t-test was used to test the null hypotheses. The study found that there is no significant difference between the mean ratings of male and female teachers on the extent teachers' lack of digital culture and literacy constitutes a contemporary issue in the application of information and communication technology (ICT) in curriculum instruction in public secondary schools in the FCT, Abuja and there is no significant difference between the mean ratings of the urban and rural teachers on the extent the teachers' lack of the knowledge of the ICT efficiency values in promoting curriculum instruction constitutes a contemporary issue in public secondary schools in the Federal Capital Territory (FCT), Abuja. The study recommended as follows: the Government of Federal Capital Territory (FCT) through its relevant educational body should, as a matter of urgency, prioritize the integration of the use of ICT into the mainstream of secondary education, provide adequate ICT-enabling teaching facilities and equipment and train and retrain teachers periodically on their use in teaching and learning and teachers should be enlightened through training on how the use of ICT can add efficiency values in teaching and learning.

Keywords: Curriculum Instruction, Information and Communication Technology, Contemporary Issues, Teaching and Learning

Introduction

Every nation of the world has needs to meet and challenges to overcome. Education, no doubt, provide a variety of means through which all our societal needs can be met and challenges

overcome. In other words, every society usually designs and develops its curriculum to take care of its needs and challenges. Societal needs may be social, economic, political, psychological, legal, physiological/medical, or agricultural. If there is a need for engineers, lawyers, doctors, scientists, technologists, etc, in society, such society is expected to develop a curriculum and lodge its needs into the contents of that curriculum. That is to say, for a given society to take care of all its major needs, it has to design its educational policy, and through such policy, develop its model of the curriculum in which all its needs will be accommodated.

Gbamanja (2015) defined a school curriculum as the totality of experiences or knowledge to which the learners within an educational system are exposed. What Gbamanja is suggesting is that a school curriculum is an embodiment of all knowledge, skills, and experiences to which pupils or students are introduced within a given educational system. It alludes to the fact that different curriculum contents can be found in different parts of the world at different times. For instance, in Nigeria, the curriculum contents of the old 9-5-4 system gave way to the curriculum contents of the 6-3-3-4 system which was slightly modified by the promulgation of the universal basic education in 2002 under the former Nigerian President, Gen (rtd) Olusegun Obasanjo. Flake (2017) noted that changes in the curriculum also coincide with paradigm shifts in knowledge and the necessity of knowledge. For example, learning shorthand is no longer a skill that is necessary at this age. Such programs are removed from the curriculum that was once considered standard decades ago. Environmental changes have also sparked curriculum such as "Green Education" in schools around the world. "Peace Education" is a curriculum standard in Japan (Flake, 2017).

In all, the curriculum holds all the contents of what the teacher is to teach or what the learner is to learn. From primary education to secondary, and finally, to tertiary education, there are a set of contents of experiences or knowledge designed and developed to suit the learners found in each phase of the educational process. The contents of experiences or knowledge have to be conveyed to the learners. The means by which a school curriculum is conveyed to the learners is called "instruction or teaching" and the teacher is the vehicle conveying the curriculum.

According to the National Research Council (2007), curriculum refers to the knowledge and practices in subject matter areas that teachers teach and that students are supposed to learn, while instruction is the method of teaching and the learning activities used to help students master the content and objectives specified by a curriculum. It encompasses the activities of both teachers and students. A curriculum generally consists of a scope, or breadth of content, in a given subject area and of a sequence of concepts and activities for learning. While standards typically outline the goals of learning, a curriculum sets forth the more specific means, materials, tasks, discussions, and representations, to be used to achieve those goals. On the hand, instruction can be carried out by a variety of pedagogical techniques, sequences of activities, and ordering of topics. What is then curriculum instruction?

Etymologically, the term "instruction" is derived from the late Middle English *"instruccioun"* meaning to provide structure and direction (Random, 2016), while the word "curriculum" is derived from the Latin word "*currere"* which is associated with the idea of running a racetrack or racecourse (Hlebowitsh, 2006). Just as it is in running an open track with a direction or goal in mind, that is the meaning a curriculum suggests. Thus, such implies that curriculum is the act of

preparing or designing the right track or direction that can be followed in achieving educational goals or objectives. Educational goals are usually achieved through the act of instruction or teaching and learning. Wiles, Bondi, & Sowell (2002) see curriculum as what is taught in schools, instruction is how the curriculum is delivered. Thus, curriculum instruction means how what is taught in schools is delivered. What is usually taught in schools is known and called the contents of the school curriculum. Furthermore, the curriculum is the content of what is being taught and instruction is the implementation of teaching according to academic curriculum (Wiles, Bondi, & Sowell (2002). Therefore, curriculum instruction may be defined as teaching the learners all that is in the contents of the school curriculum to achieve educational goals or objectives. It involves teaching the pupils or students those things found in the contents of the school curriculum, or simply, teaching the pupils or students from the contents of the school curriculum. At primary and secondary education levels in Nigeria, the contents of the school curriculum are usually reduced to syllabus, from syllabus, they are further reduced into a scheme of work and finally to lesson notes. At the tertiary education level, the contents of the curriculum are usually reduced from session course outlines to semester course outlines, and from semester course outlines to textbooks. However, all are usually done to support and ease the instructional process and promote a better understanding of the instructional contents by the pupils or students.

For the sake of easy implementation, understanding and promotion of specialization in teaching, the contents of what are to be taught have been grouped into certain school subjects or courses. At the primary education level, we find subjects such as English language, indigenous languages, mathematics, basic science, basic technology, civic education, business studies, home economics, fine arts, agricultural science, computer studies, etc. At the secondary education level, there are subjects such as English language, indigenous languages, mathematics, integrated science, physics, chemistry, biology, introductory technology, civic education, business studies, home economics, fine arts, agricultural science, computer studies, etc. At the tertiary education level, there are streams of courses such as English Studies, Mathematics, Legal Studies, Medicine and Surgery, Accounting, Physics, Chemistry, Geography, Economics, Political Science, and other numerous courses.

Technology (ICT) has a direct influence on curriculum instruction and curriculum trends and development generally (Bondi, & Sowell, 2002). There is gainsaying that the contents of the school curriculum are bound to change in response to changes in the needs and challenges of society. For instance, in recent times, the teaching of computer studies was introduced into the school curriculum in Nigeria due to the 21st Century innovative world driven by computers in particular and by information and communication technology (ICT) in general. Consequently, the 21st Century ICT-driven innovations have raised contemporary issues not only in education generally but also in curriculum instruction specifically. In other words, there are several contemporary issues that the current ICT-driven era raised concerning the teaching and learning process of what is contained in the school curriculum. The first is the contemporary issue of digital culture and digital literacy among teachers with the ICT application in teaching. The second contemporary issue bothers on how to adopt ICT to help teachers perform their instructional functions very well. Such instructional functions of teachers include teaching

students or lesson presentations, effective communication in the course of teaching, giving the

students class exercises and take-home assignments or projects and marking and scoring them, among others. Finally, the third contemporary issue relates to how to apply ICT to make teaching and learning of the contents of the school curriculum more effective and efficient or more productive. These three contemporary issues will be adequately treated in the next paragraph. As succinctly put by Wiles, Bondi and Sowell (2002), social forces have a profound influence on curriculum instruction and curriculum instruction closely flows or is imposed to counteract the influence of the changes. Changes alter conventional wisdom as new fields of knowledge are constantly being developed. Information and communication technology (ICT) is an example of such changes.

Information and communication

Gunton (2010) defined information and communication technology (ICT) as any electronic platform or gadget for the collection, processing, storage and retrieval of information. Information and Communications Technology (ICT) can impact student learning when teachers are digitally literate and understand how to integrate it into curriculum instruction. Schools use a diverse set of ICT tools to communicate, create, disseminate, store, and manage information. In some contexts, ICT has also become integral to the teaching-learning interaction, through such approaches as replacing chalkboards with interactive digital whiteboards, using students' smartphones or other devices for learning during class time, and the "flipped classroom" model where students watch lectures at home on the computer and use classroom time for more interactive exercises (UNESCO, 2021). Having understood what Information and communication technology (ICT) is and what is all about, attention is shifted to treating the contemporary issues identified above in curriculum instruction.

The first contemporary issue raised talks about the teachers' digital culture and the level of their digital literacy. The issue of digital culture alludes to the fact that majority of teachers in Nigeria are yet to imbibe the culture of using computers or ICT in the curriculum process. They still prefer the analogue ways of curriculum instruction to digital approaches (Obikwelu, 2019). This is suggesting that most secondary school teachers, especially those in public schools, seem to be proving resistant to change to using in curriculum instruction processes. However, teachers' resistance to digital culture like ICT can be broken if the schools in which the teachers are employed encourage ICT culture, provide adequate ICT facilities and equipment and train teachers on how to use them. But, unfortunately, there is lack of ICT culture among the public secondary schools in Nigeria as many of them lack functional computer facilities (Obikwelu, 2019). Consequently, their teachers lack ICT training and have poor computer skills and negative assumptions about ICT. They are not provided with personal computers and as such are not digitally or computer literate and friendly. As a result of lack of computer facilities, the students have to take their turn or have to wait if they want to use computers and get de-motivated as a result. In a few schools where there are some computer facilities, there is no proper maintenance of the existing computers and there is also a case of not having any central database and the signal of the internet is not consistent (Albrini, 2006). When teachers are digitally literate and trained to use ICT, these approaches can lead to higher-order thinking skills, provide creative and individualized options for students to express their understandings, and leave students better prepared to deal with ongoing technological change in the society and

workplace (Suryani, 2010).

The second contemporary issue raised bothers on how teachers can apply ICT facilities and equipment in performing their instructional functions. As highlighted earlier, teachers carry out certain instructional functions which may include the teaching of students or lesson presentation, effective communication in the course of teaching, giving the students class exercises and take-home assignments or projects and marking and scoring them, conducting continuous assessment and setting examinations for the students and marking and scoring them, preparing the students' results and releasing the results and passing relevant notices or information to the students. ICT can help teachers, in no small measure, in discharging each instructional function with ease, accuracy and speed. It helps teachers to effectively establish and run virtual or electronic classrooms. According to Chaffey (2008) and Marakas (2014), ICT tools such as groupware software packages called electronic meeting systems (EMS), can be used to establish a comprehensive virtual classroom which offers the full range of voice, data, and interactive videos for teaching and learning. Virtual classrooms are classrooms where teaching is carried out entirely or primarily through online or digital methods. It provides the opportunity for students to receive direct instruction from a qualified teacher in a digitally-driven environment. Students have direct and immediate access to their teachers for instant feedback and directives. It also provides a structured schedule of classes and a social environment that closely replicates the traditional "bricks and mortar classroom" (Chaffey (2008) & Marakas 2014).

The third contemporary issue raised touches on how to apply ICT in curriculum instruction (i.e. in teaching and learning) to make it more effective and efficient or more productive. We can say that teaching and learning the contents of the school curriculum are efficient or productive when efforts or energy are saved when cost or money is saved when time is not wasted when a teacher can teach anytime and anywhere and students can learn anytime and anywhere, and when teachers perform their functions with ease. As reported by Samuel and Bakar (2006), there are some benefits of using ICT to support curriculum instruction. Firstly, it can increase students' grades. This is because the students can work collaboratively, and they can help each other. They are more motivated to learn and find that learning is interesting since they can access interesting quizzes from the web. Secondly, learning is not limited by time and space since the students can access materials anytime. Thirdly, the students can learn more independently.
From the above contemporary issues this study, therefore, wishes to determine the extent to which senior secondary teachers lack the knowledge of the ICT efficiency values in promoting curriculum instruction,

Literature Review

A lot of studies have been conducted on contemporary issues and challenges surrounding the application of ICT tools or facilities in the instruction process and for enhancing efficiency or increased productivity in the instructional process.

A study by Enfield, Smith and Grueber (2007) found that resistance to computer culture and high levels of ICT illiteracy constitute the contemporary issue and challenges facing the application of ICT in teaching and learning in third-world countries.
Obikwelu (2019) found that the availability and application can add a great level of efficiency values to teaching and learning in secondary school education in Enugu State. However, many secondary school teachers in Nigeria are yet to come to reality with this. Indeed, the issue of

how ICT can be employed in ensuring effectiveness, efficiency or increased productivity in school instructional processes has become a burning contemporary issue for quite some time now and this study is designed to make a meaningful contribution in that respect.

Computer technologies and other aspects of digital culture have changed the ways people live, work, play, and learn, impacting the construction and distribution of knowledge and power around the world. This has, no doubt, infiltrated the ways teachers carry out their primary function of teaching. Teachers' digital culture and literacy account for a successful application of ICT in the curriculum instructional process and high-efficiency values in teaching and learning. But it is quite unfortunate that most of today's public secondary school teachers in Nigeria, particularly those in the Federal Capital Territory, Abuja, still lack these two important capabilities (digital culture and literacy), which has become a contemporary burning issue today. Consequently, the researcher intends to investigate the contemporary issues raised by the application of information and communication technology (ICT) in curriculum instruction in public secondary schools in the FCT, Abuja.

Aim and Objectives of the Study

This study aims to investigate the contemporary issues raised by the application of information and communication technology (ICT) in curriculum instruction in public secondary schools in the FCT, Abuja. Particularly, this study sought to actualize the following objectives:

1. To examine the extent teachers' lack of digital culture and literacy constitutes a contemporary issue in the application of information and communication technology (ICT) in curriculum instruction in public secondary schools in the FCT, Abuja.
2. To find out the extent the teachers' lack of knowledge of the ICT efficiency values in promoting curriculum instruction constitutes a contemporary issue in public secondary schools in the FCT, Abuja.

Research Questions

The following research questions guided the conduct of this study:

1. To what extent do teachers' lack of digital culture and literacy constitute a contemporary issue in the application of information and communication technology (ICT) in curriculum instruction in public secondary schools in the FCT, Abuja?
2. To what extent does teachers' lack of knowledge of ICT efficiency values in promoting curriculum instruction constitute a contemporary issue in public secondary schools in the FCT, Abuja?

Hypotheses

The following null hypotheses tested at 0.05 alpha level of significance were formulated to guide the study:

Ho_1: There is no significant difference between the mean ratings of the male and female teachers on the extent teachers' lack of digital culture and literacy constitutes a contemporary issue in the application of information and communication technology (ICT) in curriculum instruction in public secondary schools in the FCT, Abuja

Ho_2: There is no significant difference between the mean ratings of the urban and rural teachers on the extent the teachers' lack of knowledge of the ICT efficiency values in promoting curriculum instruction constitutes a contemporary issue in public secondary schools in

the FCT, Abuja

Methods

The study adopted a descriptive survey design. The population of the study comprised all 1650 teachers in 85 public secondary schools in the Federal Capital Territory, Abuja. Using the Taro Yamen Sampling technique, $n = \frac{N}{(1+N(e)^2)}$, as a yardstick for determining the sample minimum limit, a sample size of 350 respondents made up of 160 male and 190 female, 210 urban and 140 rural teachers were randomly selected from 14 public secondary schools in Abuja Municipal and Gwagwalada Area Councils of the Federal Capital Territory, Abuja. The instrument for data collection was a questionnaire code-named "Contemporary Issues in Application of Information and Communication Technology Questionnaire" (CIAICTQ) with a modified 4-Likert Scale of Strongly Agree (SD), Agree (A), Disagree (D), Strongly Disagree (SD) which was scaled on points of 4, 3, 2, and 1 respectively. The face and content-validated instrument were subjected to a reliability test using the Cronbach coefficient formula, which yielded a reliability coefficient index of 0.81. Mean and standard deviation was used to answer the research questions, while a t-test was used to test the null hypotheses.

Results

The following results emerged from the data analyzed as presented below.

Research Question 1: To what extent do teachers' lack of digital culture and literacy constitute a contemporary issue in the application of information and communication technology (ICT) in curriculum instruction in public secondary schools in the FCT, Abuja?

Table 5: Mean and Standard Deviation Analysis on the Extent of Teachers' Lack of Digital Culture and Literacy constitute a Contemporary Issue in the Application of Information and Communication Technology in Curriculum Instruction

S/n	Items	Male = 160			Female = 190		
		$\bar{X}$	SD	Remark	$\bar{X}$	SD	Remark
1.	I never used any ICT tools in my teaching.				2.80	0 .98	Agree
	2.77 1.00 Agree						
2.	I don't like anything ICT tools nor will I like to use them	2.64	0.92	Agree			2.70
	0.90 Agree						
	because I still like my analogue teaching.						
3.	ICT facilities are very hard to use in teaching and learning.				3.00	0.87	Agree
	2.88 0.75 Agree						
4.	My school do not have any functional ICT facilities and				3.12	0.85	Agree
	3.14 0.84 Agree						
	equipment that can be used in teaching and learning.						
5.	I do not have a laptop computer.				2.61	0.99	Agree
	2.56 0.97 Agree						
6.	I do not know how to use a computer at all, nor know	2.71	0.96	Agree			2.69
	0.98 Agree						
	to use it in preparing my exam papers and students' results						
7.	I cannot operate a computer and will not be able to use it to				3.55	0.74	Agree
	3.60 0.88 Agree						

present lessons.

8.	I never heard about electronic bulletin boards and I do not know how it can be used in teaching and learning.	3.74	0.68	Agree	3.72	0.73	Agree
9.	I do know how to use computer-overhead projects and whiteboard to present lessons.	3.80	0.70	Agree	3.73	0.77	Agree
10.	I never apply my cellphone to teach and learning.	3.76	0.86	Agree	3.75	0.79	Agree
	Weighted Grand Mean ($\overline{X}$ $\overline{X}$)	**3.17**	**0.86**		**3.15**	**0.86**	

Table 1 shows that all the items had their weighted mean scores above the criterion mean of 2.50. This result, therefore, indicates teachers' lack of digital culture and literacy, to a large extent, constitutes a contemporary issue in the application of information and communication technology (ICT) in curriculum instruction in public secondary schools in the FCT, Abuja. This result is further affirmed by the calculated grand mean for both male and female teachers ($\overline{X}$ $\overline{X}$ =3.17 and $\overline{X}$ $\overline{X}$ =3.15) which fell above the criterion mean of 2.50. The result shows that the lack of digital culture and literacy in applying ICT in curriculum instruction is still high among public secondary school teachers in the Federal Capital Territory, Abuja and as such constitutes a crucial issue that required to be looked into.

Hypothesis 1: There is no significant difference between the mean ratings of the male and female teachers on the extent teachers' Table 1 shows that all the items had their calculated mean values above the criterion mean of 2.50. lack of digital culture and literacy constitutes a contemporary issue in the application of information and communication technology (ICT) in curriculum instruction in public secondary schools in the FCT, Abuja.

Table 6: T-test of Difference between the Mean Ratings of Male and Female Teachers on the Extent Teachers' Lack of Digital Culture and Literacy constitute a Contemporary Issue in the Application of Information and Communication Technology in Curriculum Instruction

Variables	N	$\overline{X}$	SD	Df	Z-Cal.	Z-Crit.	Remark
Male	160	3.17	0.86				Not Significant
Female	190	3.15	0.86	348	0.22	1.96	Ho_1 Accepted

Alpha Level = 0.05

Table 2 shows that the t-calculated is 0.22, while the t-critical is 1.96 at 0.05 alpha level of significance. The degree of freedom is 348. Since the t-calculated is less than t-critical (i.e., 0.22<1.96), the null hypothesis is accepted and the alternative hypothesis is rejected. Therefore, there is no significant difference between the mean ratings of male and female teachers on the extent teachers' lack of digital culture and literacy constitutes a contemporary issue in the application of information and communication technology (ICT) in curriculum instruction in public secondary schools in the FCT, Abuja.

Research Question 2: To what extent does teachers' lack of knowledge of the ICT efficiency values in promoting curriculum instruction constitute a contemporary issue in public secondary schools in the FCT, Abuja?

Table 6: Mean and Standard Deviation Analysis on the Extent of Teachers' Lack of Knowledge of the ICT Efficiency Values in Promoting Curriculum Instruction constitutes a Contemporary Issue

S/n	Items	Urban = 210			Rural =140		
		$\bar{X}$	SD	Remark	$\bar{X}$	SD	Remark
1.	I don't think that using ICT tools and equipment can save my time and effort in teaching students.	3.14	0.79	Agree	3.19	0.82	Agree
2.	In my view, using ICT tools and equipment cannot make my teaching easy instead it can make it even more difficult.	3.35	0.81	Agree	3.27	0.93	Agree
3.	I do not think using ICT tools and equipment can encourage the students to work collaboratively and help each other.	3.76	0.72	Agree	3.66	0.80	Agree
4.	I do not think it will cost me less teaching with ICT tools and equipment.	3.45	0.86	Agree	3.42	0.95	Agree
5.	Using ICT tools and equipment in teaching does not make any flexible and as such face-to-face way of teaching is still the best.	3.70	0.69	Agree	3.65	0.83	Agree
6.	Using ICT tools and equipment in teaching cannot make it faster and more accurate than face-to-face way of teaching can make it.	3.38	0.92	Agree	3.33	0.85	Agree
7.	I do not think using ICT tools and equipment will enable students learn at their own convenient time thereby making learning very much pleasurable.	2.80	0.96	Agree	2.84	0.94	Agree
8.	Using ICT tools and equipment cannot make students access their teacher more easily for academic help or support than being at school can do.	2.65	0.93	Agree	2.52	0.97	Agree
Weighted Grand Mean ($\bar{X}$ $\bar{X}$)		**3.28**	**0.84**		**3.24**	**0.89**	

Table 4 shows that all the items had their weighted mean scores above the criterion mean of 2.50. This result, therefore, indicates the teachers' lack of knowledge of the ICT efficiency values in promoting curriculum instruction, to a very large extent, constitutes a contemporary issue in public secondary schools in the FCT, Abuja. This result is further corroborated by the calculated grand mean for both male and female teachers ($\bar{X}$ $\bar{X}$ =3.28 and $\bar{X}$ $\bar{X}$ =3.24) which fell above the criterion mean of 2.50. The result shows teachers in public secondary schools in the FCT lack the knowledge of the ICT efficiency values in promoting curriculum instruction and as such constitutes a contemporary issue that has to be addressed.

Hypothesis 2: There is no significant difference between the mean ratings of the urban and rural teachers on the extent the teachers' lack of knowledge of the ICT efficiency values in promoting curriculum instruction constitutes a contemporary issue in public secondary schools in the FCT, Abuja

Table 7: T-test of Difference between the Mean Ratings of Urban and Rural Teachers on the Extent Teachers' Inability to apply Information and Communication Technology in Curriculum Instruction constitute a Contemporary Issue

Variables	N	$\bar{X}$	SD	Df	Z-Cal.	Z-Crit.	Remark
Urban	210	3.28	0.84				Not Significant
Rural	140	3.24	0.89	348	0.42	1.96	Ho_1 Accepted

Alpha Level = 0.05

Table 4 reveals that the t-calculated is 0.42, while the t-critical is 1.96 at 0.05 alpha level of significance. The degree of freedom is 348. Since the t-calculated is less than t-critical (i.e., 0.42<1.96), the null hypothesis is accepted and the alternative hypothesis is rejected. Therefore, there is no significant difference between the mean ratings of the urban and rural teachers on the extent the teachers' lack of knowledge of the ICT efficiency values in promoting curriculum instruction constitutes a contemporary issue in public secondary schools in the FCT, Abuja

Discussion of the Results

The discussion of the results is presented below.

Extent Teachers' Lack of Digital Culture and Literacy constitute a Contemporary Issue in the Application of Information and Communication Technology in Curriculum Instruction

The result showed that there is no significant difference between the mean ratings of male and female teachers on the extent teachers' lack of digital culture and literacy constitutes a contemporary issue in the application of information and communication technology (ICT) in curriculum instruction in public secondary schools in the FCT, Abuja. 0.02 (i.e., 3.17-3.15=0.02) is the mean difference between male and female teachers as shown in Table 2 and such is very insignificant. As revealed in Table 1, the majority of the teachers submitted that they have never used any ICT tools in their teaching, still prefer analogue tools or materials for teaching to electronic ones, still have the mentality that ICT facilities are very hard to use in teaching and learning, they teach in schools that do not have functional ICT facilities and equipment which can be used in teaching and learning, do not have personal computers and do not know how to use computers at all nor know how to use them in preparing their exam papers and students' results. It was further revealed that the majority of teachers cannot operate computers and will not be able to use them to present lessons, never heard about electronic bulletin boards and do not know how they can be used in teaching and learning, do know how to use computer-overhead project and white-board to present lessons and never apply their cellphone for teaching and learning. This result implied that teachers in public secondary schools in the Federal Capital Territory, Abuja lack digital culture and literacy which, no doubt, constitutes a contemporary issue that has to be addressed. This result is in agreement with the study of Enfield, Smith and Grueber (2007) which found that resistance to computer culture and high levels of ICT illiteracy constitute the contemporary issue and challenges facing the application of ICT in teaching and

learning in third-world countries such as Nigeria.

The extent of Teachers' Inability to apply Information and Communication Technology in Curriculum Instruction constitute a Contemporary Issue

It was found that there is no significant difference between the mean ratings of the urban and rural teachers on the extent the teachers' lack of knowledge of the ICT efficiency values in promoting curriculum instruction constitutes a contemporary issue in public secondary schools in the Federal Capital Territory (FCT), Abuja. As could be seen in Table 4, the mean difference between the urban and rural teachers is 0.04 (i.e., 3.28-3.24=0.04); thus the mean difference is very insignificant. It was also found that secondary school teachers lack that knowledge of the ICT efficiency values in promoting curriculum instruction in that they have the belief that using ICT tools and equipment cannot save their time and efforts in teaching students, cannot make their teaching easy but rather more difficult, do not believe that using ICT tools and equipment can encourage the students to work collaboratively and help each other, think that it will not cost them less teaching with ICT tools and equipment, they also believe that using ICT tools and equipment in teaching does not make teaching any flexible and as such face-to-face way of teaching is still the best, believe that ICT tools and equipment cannot make teaching faster and accurate than the face-to-face way of teaching could make it, do not think that using ICT tools and equipment will enable students learn on their own convenient time thereby making learning very much pleasurable and believe that using ICT tools and equipment cannot make students access their teachers more easily for academic help or support than being at school can do. This could be deduced to mean that the majority of teachers in urban and rural public secondary schools in the FCT lack the knowledge of the ICT efficiency values in promoting curriculum instruction and as such constitutes a contemporary issue that has to be addressed. This finding conforms with the study of Obikwelu (2019) which found that availability and application can add a great level of efficiency values to teaching and learning, but many secondary school teachers in Nigeria are yet to come to reality with this.

Conclusion

On the strength of the results of this study, it was concluded that there is no significant difference between the mean ratings of male and female teachers on the extent teachers' lack of digital culture and literacy constitutes a contemporary issue in the application of information and communication technology (ICT) in curriculum instruction in public secondary schools in the FCT, Abuja and there is no significant difference between the mean ratings of the urban and rural teachers on the extent the teachers' lack of the knowledge of the ICT efficiency values in promoting curriculum instruction constitutes a contemporary issue in public secondary schools in the Federal Capital Territory (FCT), Abuja.

Recommendations

Based on the results of this study, the following recommendations were made:

1. The Government of Federal Capital Territory (FCT) through its relevant educational body should, as a matter of urgency, prioritize the integration of the use of ICT into the mainstream of secondary education, provide adequate ICT-enabling teaching facilities and equipment and train and retrain teachers periodically on their use in teaching and learning.
2. As part of their periodical training and retraining, teachers should be enlightened on how the use of ICT can add efficiency values in teaching and learning.

References

Albrini, A. (2006). Cultural perceptions: The missing element in the implementation of ICT in developing countries. *International Journal of Education and Development Using Information and Communication Technology, 2 (1), 49-65*.

Chaffey, D. (2008). Groupware, workflow and intranet. Digital. Adi S

Enfield, M., Smith, E.L., and Grueber, D. (2007). "A sketch is like a sentence": Curriculum structures that support teaching epistemic practices of science. *Science Education, 92*(4), 608-630.

Flake, H.L. (2017). Looking at the relationship between curriculum and instruction and the art and science of teaching. *Asian Journal of Education and Training, Vol. 3, No. 2, 82-85.*

Hlebowitsh, P.S., (2005). Designing the school curriculum. 1st Edn., Boston, MA: Pearson Custom Publishing.

Gbamanja, S. T. (2015). Essentials of Curriculum Studies. PortHarcourt: Pam-Unique Publishers.

Gunton, T. (2010). Inside Information and Communication Technology: A practical guide to management issues. Hemel Hempstead: Prentice Hall.

National Research Council. 2012. A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas. Washington, DC: *The National Academies Press*. doi: 10.17226/13165.

National Research Council. (2007). *Taking Science to School: Learning and Teaching Science in Grades K-8*. Committee on Science Learning, Kindergarten Through Eighth Grade. R.A. Duschl, H.A. Schweingruber, and A.W. Shouse (Eds.). Board on Science Education, Center for Education. Division of Behavioral and Social Sciences and Education. Washington, DC: *The National Academies Press.*

Marakas, G. M. (2014). Decision support systems in the 21st century. New Jersey: Prentice Hall Obikwelu, E.A. (2019). Instructional efficiency and ICT availability and application in

secondary school education in Enugu State: Contemporary Issues and Challenges. *An unpublished Master's Degree Thesis, Faculty of Education, University of Nigeria, Nsukka.*

Random, H., (2016). Random house unabridged dictionary. Retrieved on 30th April,2021 from http://dictionary.reference.com/browse/instruction

Samuel, R., S. & Bakar, Z., A. (2006). The utilization and integration of ICT trends in promoting English language teaching and learning: Reflections from English option teachers in Kuala Langat District, Malaysia. *International Journal of Education and Development Using Information and Communication Technology, 2 (2), 4-14.*

Smith, D. C. (2019). *Introduction to curriculum and instruction*. Pennsylvania: Pennsylvania State University Press

Suryani, A. (2010). ICT in education: Its benefits, difficulties and organizational development issues. Journal Social and Humanities,3(2):Doi10.12962/j24433527.v3i2.643 UNECO(2021). Information and communication technology in education. Retrieved on 1st May, 2012 from earningportal.iiep.unesco.org/en/issue-briefs/improve learning/curriculum- and-materials/information-and-communication-technology- ict#:~:text=

Wiles, J., J. Bondi, D. & E.J. Sowell, 2002. *Foundations of curriculum and instruction*. Boston, MA: Pearson Custom Publishing.