Secondary School Teachers' Awareness and Utilization of Information and Communication Technology (ICT) Skills for Teaching in Anambra State

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ABSTRACT
The study investigated the awareness and use of ICT skills for teaching by secondary school teachers in Anambra state. Six research questions and four null hypotheses guided the study. The study adopted the descriptive survey design. The population of the study was 6,193 senior secondary school teachers in Anambra state. A sample of 620 senior secondary school teachers in Anambra state were involved in the study. The instruments for data collection were Teachers' Awareness of ICT Skills Questionnaire (TAISQ) and Teachers' Usage of ICT skills in Teaching Questionnaire (TUISTQ) validated by three experts. The reliability of TAISQ was established using Kuder-Richardson Formula 21 which yielded a coefficient of 0.80 and TUISTQ using Cronbach Alpha which yielded a coefficient of 0.76. The data obtained were analyzed using percentage, frequency count and item mean. The findings of the study revealed among others 94% of secondary school teachers were aware of ICT skills for teaching. Secondary school teachers also used ICT skills for teaching often. It was therefore recommended that educational stakeholders should organize frequent professional ICT skills development training for secondary school teachers to acquaint them with more recent educational technologies for effective performance of their teaching jobs.

KEYWORD: *ICT, Teachers, Awareness, Utilization, Skills*

Introduction

Information and Communication Technology (ICT) are electronic technologies used for information storage and retrieval. The progress of any nation is often relatively dependent on their capacity to establish a synergistic interaction between technological innovation and human values. This is because, the level of influence of ICT in the global practices cannot be tamed again since it is a common denominator to every sphere of life in the 21st century. One fundamental question educationists and employers ask about graduates, whether that of secondary school level or university level is: Do they possess the digital literacy skills embedded in ICT or did it elude them unwittingly? This question notwithstanding, one wonders if the secondary school teachers who teach these students employ these ICT skills during instructions (teaching and learning).

ICT skills according to Reiso-glu and Cebi (2020) are abilities that help one understands and operates a wide range of technology software. This can include helping users with tasks on computers, such as making video calls, searching on the internet or using a mobile device like a tablet or phone. ICT skills can also include any direct interaction with technology, including turning on a computer, using hardware to print and copy documents and using digital cameras

to capture photographs or video footage (Van-Deursen and Mossberger, 2018). Van-Deursen and Mossberger further noted that ICT core skills encompasses seven skills namely; technical, information, communication, collaboration, critical thinking, creative and problem-solving skills. These skills are an essential requirement for the majority of job roles. Having these skills according to Ministry of Education (2019) will help teachers to organize their workload, streamline processes and access digital information. Thus, the need for ICT skills is not different for secondary school teachers in Anambra state. This assertion is true because there is a unanimous claim among researchers that at the core of all reviewed frameworks on 21st century skills were ICT skills and that these skills were associated with important competencies, such as managing, evaluating, and producing information in digital contexts; many of which require the cognitive abilities to think and reason. ICT skills in this study therefore, refer to the skills that are needed in today's digitized society in relation to information and communication technology.

When ICT is integrated into lessons, students become more engaged in their study. This is because technology provides different opportunities to make it more fun and enjoyable in terms of teaching the same things in different ways. ICT in education improves engagement and knowledge retention. Nwangwu as cited in Adoni and kpangban (2010) argued that the rapid rate at which ICTs have evolved since the mid-20th century and the convergence and pervasiveness of ICTs has given them a strong role in the educational systems. For international standard to become our culture in Anambra state therefore, the entire educational stakeholders must see that both teachers and students are thoroughly equipped with state–of-the-art ICT facilities. This would not be complete if teachers themselves do not master the usage of ICT Skills or have restricted access in teaching, guiding and evaluating students with such facilities.

In educational contexts, ICT skills can be seen as understanding and applying a range of computer programmes, software and other applications in teaching and learning. Some of these applications include: word processing, spreadsheets, databases, power points, electronic resources/databases and search tools. According to Veselinovska and Kirova (2016), to be able to use these applications, the secondary school teachers must possess such ICT skills as online research skills, data management and queries skills, e-mail management and set-up skills, online collaboration skills, probability and statistics skills, desktop publishing skills, basic operation of ICT hardware skills, document creation skills, internet/website skills and social media management skills.

Teaching today requires that teachers are aware of the advancements in technology and employ them in the education system. However, many of the teachers in Anambra state do not appear to be aware of many novel technologies that can be applied in the classroom or used for teaching and learning outside the classroom. In Anambra State, while it is not arguable that ICT is used as a means of teaching and learning, specifically in the public secondary schools in the state, the question is can it be affirmed that ICTs has much more than ordinary means of classroom exercise?

According to United Nations Educational, Scientific and Cultural Organization (UNESCO) in Dhital (2018), ICT in education has multiplier effect throughout education system, by enhancing learning and providing teachers and students with new set of skills; by reaching students with poor or no access (especially those in rural and remote regions); by facilitating and improving the training of teachers; and by minimizing costs associated with traditional instruction. Despite the importance of ICT, secondary school teachers do not appear to have high level awareness of these skills nor utilize the few ones that they have learnt through professional developments and personal endavours.

Many secondary school teachers in Anambra state, do not use powerpoint in their teaching. Many of them do not even know how to operate the machine and plan the lesson with them. A lot many of them do not make use of the opportunity available in the internet to update their lesson notes and just rely on the textbooks only. Notwithstanding the digital fiesta which was organized by ministry of Basic Education, in collaboration with ministry of youth Entrepnuership and creative Economy in conjunction with non-governmental organization "Bring it on Africa" September, 2019 for Anambra teachers, with these avenues of development like workshops, can the teachers become aware of the recent developments in ICTs that are applicable in education settings. This question suggests the need to investigate the awareness and use of ICT skills among secondary school teachers for their teaching job in Anambra State.

Improvement in teaching job with regards to ICT relates to how individuals perform in their job duties in terms of expected quantity and quality of their jobs and it has been defined as the overall expected value from employees' behaviours carried out over the course of a set period of time. According to Abubakar and Salmanu (2018), it implies the manner in which an employee (teachers in this case) performs a position of employment and includes an analysis of the employee's attendance at work, attitudes, effort, knowledge, behaviours, and skills. Campbell as cited in Motowidlo and Harrison (2012) describes this improvement as an individual-level variable, or something a single person does with effectiveness. Thus, teachers could be said to improve their teaching job with ICT when the level to which they successfully fulfils the factors included in the job description is high. It assesses whether a teacher performs a job well.

Teachers' job ability to carry out the teaching job effectively is the measurement of the quality of instruction given to learners by teachers in the school which is the rightly intended accomplishment of the school goals and that of education in general. One of such measures is skilful teaching. Skillful teaching includes anything a teacher does that impacts the probability of intended learning. Thus, it includes a wide array of skills such as: Communicating their belief in students' capabilities, motivating and engaging students. A teacher may not be able to effectively accomplish a skill teaching if he/she lacks the necessary ICT skills needed for such teaching exercise. Again, some teachers may possess these skills but may not use them for some reasons that are either school or student related. Yet some teachers use these skills even without being aware of them. There is need therefore to determine their level of awareness of these ICT tools that can be employed to make teaching interesting and learning easier for students.

Awareness is the state or ability to perceive, to feel, or to be conscious of, objects, or events sensory patterns. Awareness changes the perspective of human thinking regarding situation. Opeke and Odunlade (2011) define awareness as a knowledge of something which exists or understanding of a particular situation based on experience or information. It can be seen as a state wherein a person is cognizant of some information when that information is directly available (Reinhard, Mletzko, Sloep and Drachsler, 2012). Awareness of ICT skills for teaching therefore, is the knowledge secondary school teachers have, of certain abilities that are needed for effective use of ICT in teaching and learning. Awareness is the state or ability to perceive, to feel, or to be conscious of eventful development in ICT for teaching and the skills needed to employ them and use them in the classroom or outside the classroom.

Usage refers to habitual or customary practices or procedures. It is the degree to which something is used or the way in which it is used. In order to make adequate use of these online resources, literacy in ICT or information is needed. Nikitakis as cited in Basil *et al.* (2020) referred to ICT skill as the ability to totally comprehend and acquire a whole lot of capacities,

which include recognizing, spotting, evaluating information as well as making effective use of it. The problem of usage of ICT skills in teaching and learning arises out of the fact that teachers may be aware of some of the basic skills due to the effort of the government so far, but, they may lack the necessary skills to use them in their job activities. It is important that educational stakeholders know the level of awareness that secondary school teachers have and their usage of such tools which could be affected by teachers academic qualification, given that the benefits of ICT in teaching and learning cannot be over-emphasized.

Purpose of the Study

The purpose of this study is to investigate the awareness and use of ICT skills for teaching by secondary school teachers in Anambra State. Specifically, the study investigated:

1. The awareness of various ICT skills (online search, data management and queries, e-mail management and set up, online collaboration, probability statistics, desktop publishing, basic operation of ICT hardware, document creation, website and social media management skills) for teaching by secondary school teachers in Anambra state.
2. The level of use of ICT skills for teaching by secondary school teachers in Anambra state.

Research Questions

The following research questions guided the study:

1. What is the level of awareness of various ICT skills (online search, data management and queries, e-mail management and set up, online collaboration, probability statistics, desktop publishing, basic operation of ICT hardware, document creation, website and social media management skills) for teaching by secondary school teachers in Anambra State?
2. What is the level of use of ICT skills for teaching by secondary school teachers in Anambra State?

Method

This study was conducted in the public Senior Secondary Schools in Anambra State. The population of this study comprised of 6, 919 public secondary school teachers in Anambra state. The population comprises of 5, 715 female teachers and 1, 204 male teachers. The sample size of the study comprised of 620 secondary school teachers in Government owned Secondary schools in Anambra State. The sample is made up of 417 females and 203 males secondary school teachers. The sample was selected using multistage sampling Procedure. The procedure for selection was as follows: first, four education zones were selected from the six education zones in Anambra State through simple random sampling (balloting with replacement). The zones are Nnewi, Aguata, Onitsha, and Ogidi zone. Secondly, from each sample education zone, two local Government Areas (L.G.A.s) were selected to obtain 8 LGAs through simple random sample. The local Government Areas are: Nnewi North, Nnewi South, Orumba North, Orumba South, Onitsha North, Ogbaru, Idemili North, and Oyi. Thirdly, from each L.G.A sampled, four secondary schools were selected through at random giving a total of 32 schools. Finally, in each secondary school, random sampling method was used to pick a minimum of 15 secondary school teachers from each school. This is because some schools have more than 15 teachers teaching in secondary school classes.

The instruments for data collection are: Teachers' Awareness of ICT Skills Questionnaire (TAISQ) and Teachers' Usage of ICT skills in Teaching Questionnaire (TUISTQ) that were validated by three experts, one from the Department of Science Education, one from Computer Science Department and one other from Department of Educational

Foundations (measurement and evaluation), all from Nnamdi Azikiwe University Awka. Awareness questionnaire reliability was established using Kuder-Richardson formula 21 (KR-21) to be 0.81 whereas Cronbach Alpha method was used to establish the internal consistency of Teachers usage questionnaire (TUISTQ) which yield an index of 0.76.

The instruments were administered to the respondents by the researcher with the help of five research assistants (who are teachers in some of the secondary schools) who were briefed on how to collect the data. The instrument was administered via google form survey which is an online survey development cloud-based software that functions as a service application, providing free, customizable surveys, as well as a suite of freeback-end programs that include data analysis, sample selection, bias elimination and data representation tools. It allowed the teachers to submit their response to each questionnaire and those who did not completely fill the questionnaire would be unable to submit it except they go back and fill the particular items they missed out. After submitting a completely filled questionnaire, the application collated and sent the response pattern and summated scores of each teachers' response to the researcher's default e-mail address automatically at no cost. The hyperlink was sent to the whatsapp platform of secondary school teachers in selected education zones. Frequency count, percentage, and mean ratings was used to answer research questions.

Results

Research Questions 1: What is the of awareness of various ICT skills (online search, data management and queries, e-mail management and set up, online collaboration, probability statistics, desktop publishing, basic operation of ICT hardware, document creation, website and social media management skills) for teaching by secondary school teachers in Anambra State?

Table 1: Secondary School Teachers' Awareness of ICT Skills for Teaching

S/N	ICT SKILLS	Aware	Not Aware
1	Online research	610 (98.4%)	10 (1.1%)
2	Data management and queries	550 (88.7%)	70 (11.3%)
3	E-mail management and set up	604 (97.4%)	16 (2.6%)
4	Online collaboration	612 (98.7%)	8 (1.3%)
5	Probability statistics	530 (85.5%)	90 (14.5%)
6	Desktop publishing	590 (95.2%)	30 (4.8%)
7	Basic operation of ICT hardware	573 (92.4%)	47 (7.6%)
8	Document creation	563 (90.8%)	57 (9.2%)
9	Website	614 (99.0%)	6 (1.0%)
10	Social media management	602 (97.1%)	18 (2.9%)
	Total	585 (94%)	35 (6%)

Table 1 shows 98.4% of the teachers are aware of online research, 88.7% of data management and queries, 97.4% of E-mail management and set up, 98.7% of online collaboration, 85.5% of probability statistics, 95.2% of desktop publishing, 92.4% of basic operation of ICT hardware, 90.8% of document creation, 99.0% of website and 97.1% of social media management. Table 1 implies that a greater percentage (94%) of the secondary school teachers in Anambra state are aware of the various ICT skills for teaching.

Research Questions 2: What is the level of use of ICT skills for teaching by secondary school teachers in Anambra State?

Table 2: Level of Use of ICT Skills for Teaching by Teachers

S/N	ICT Skills	$\bar{x}$	SD	Decision
1.	Safe internet usage.	3.30	0.71	
2.	Shift through all the information online to find what you need (Browsing)	3.37	0.71	
3.	Checking source of any downloaded file	3.35	0.71	
4.	Crediting sources of any file.	3.21	0.76	
5.	Search Engine research	3.28	0.78	
	A. Online research skills	3.30	0.68	Often
6.	Develop and manage data using spreadsheet	3.18	0.73	
7.	Algorithm- analyze data and recognize trends and patterns.	3.04	0.84	
8.	Fluency in program like Microsoft Excel	3.25	0.73	
9.	Structured query language (SQL)	3.08	0.81	
	B. Data management and Queries skills	3.14	0.67	often
10.	Creating an online e-mail account	3.32	0.73	
11.	Opening and deleting messages	3.44	0.71	
12.	Effectively and successfully communicating via e-mail.	3.40	0.71	
	C. E-mail management and set-up skills	3.38	0.65	often
13.	Share information with fellow students online	3.54	0.7	
14.	Video conferencing software.	3.38	0.71	
15.	Instant meeting online.	3.35	0.71	
16.	Attending meeting using Skype, zoom, Google Docs, etc.	3.37	0.71	
	D. **Online collaboration skills**	3.41	0.64	often
17.	Collecting data.	2.92	0.83	
18.	Analyzing data.	3.01	0.81	
19.	Interpreting data	3.00	0.81	
20.	Presenting data	3.13	0.79	
	E. Probability and statistics skills	3.02	0.59	often
21.	Using MS publisher	3.13	0.78	
22.	Creating a newsletters	3.17	0.78	
23.	Brochures	3.12	0.8	
24.	Creating Fliers	3.15	0.79	
26.	Print setting	3.19	0.77	
	F. Desktop publishing skills	3.18	0.66	often
27.	Printing of Documents	3.20	0.76	
28.	Scanning of Documents	3.16	0.77	
29.	Photocopying of Documents	3.16	0.78	
30.	Making use of Tablets	3.16	0.78	
31.	Making use of Projectors	2.98	0.82	
32.	Using Smartphones	3.08	0.8	
	G. Basic operation of ICT hardware skills	3.12	0.62	Often
33.	Word processing, adobe creative.	3.21	0.75	
34.	Produce professional documents like letters, memos, posters, agenda, minutes of the meeting and leaflets.	3.18	0.76	
35.	PowerPoint presentation.	3.19	0.76	
36.	Add and format slides.	3.17	0.77	

	H. Document creation skills	3.19	0.68	often
37.	Opening a web page	3.20	0.76	
38.	Navigating web links	3.21	0.75	
39.	Saving favourite web pages.	3.20	0.76	
	I. Website skills	3.20	0.69	often
40.	Managing and updating in social media	3.15	0.78	
41.	Online social groups	3.23	0.75	
43	Facebook	3.22	0.75	
45.	LinkedIn	3.20	0.75	
46.	Instagram	3.22	0.74	
47.	WhatsApp	3.16	0.77	
48	Skype	3.20	0.77	
49	Zoom	3.19	0.76	
50	Twitter	3.16	0.77	
	J. Social media and management skills	3.19	0.65	often
Total (Mean of all clusters)		3.21	0.65	often

Table 2 shows the level of use of ICT skills for teaching by secondary school teachers. Data in Table 2 shows that the mean of all the items lies within the range of values which indicate that the level of use is often. Table 2 shows that secondary school teachers in Anambra state use all the underlisted ICT skills often. The grand mean of 3.21 lies within the range of values which indicates the level of use is often. Generally, Table 3 implies that secondary school teachers use ICT skills often for teaching.

Discussion

The findings of the study showed that a greater percentage of secondary school teachers are aware of the various ICT skills for teaching. This observed finding of the study may be attributed to the fact that, technological advancements in the 21st century is glaring to all and therefore, teachers often worry that their knowledge level must match and go beyond that of their 'digitally native' students. This compels and attracts them to one of the main advantages of ICT skills for teachers, being able to facilitate lessons more effectively using digital technologies. Many teachers are convinced today, of the benefits ICT can bring to their teaching. Classroom teachers are therefore, increasingly moving away from lecturing students to a more collaborative project based model and digital technology plays a fundamental role in this.

Again, utilizing technology and such ICTs as interactive whiteboards, collaborative software, and other digital resources, teachers can create engaging and stimulating learning experiences for students. Additionally, these technologies can help make more complex topics easier to understand by providing visuals and audio feedback. Technology can be used in both the classroom and remotely to enhance student collaboration, comprehension, and communication. Thus, the quest to realize these feats are the dreams of every well-meaning teacher and they avail themselves any opportunities provided either by government, educational stakeholders or professional organisations to improve on their awareness and knowledge of updated ICT skills for teaching.

More so, with great paradigm shifts in education arising out of security challenges, health challenges of the world like the pandemic, and the need to meet educational millennium development goals, secondary schools teacher became all the more abreast with ICT skills to be able to fit in as teachers. E-learning and blended learning were introduced in so many

secondary schools to enable students prepare for external examinations like West African Senior School Certificate Examination (WASSCE) during the pandemic. Teachers at that time had not option than to acquaint themselves with the necessary ICT skills to accomplish the new drives introduced into education and through these avenues, they became more aware of the ICT skills needed for teaching in secondary schools.

The findings of the study are in collaboration with the findings of Buhari and Nwoji (2015) that the level ICT penetrating Sokoto state secondary school teachers was growing rapidly leading to a more increasing awareness of ICT skills among teachers. The findings of the study are also in line with the findings of Aroob and Wasay (2021) and Yadav (2015) that most of the high school teachers have average level of awareness towards ICT. The findings of the study contradict the findings of Warlick (2016) that teachers have low awareness of ICT skills.

The findings of the study revealed that secondary school teacher's level of use of various ICT skills for teaching is 'often'. The presence of ICT in education allows for new ways of learning for students and makes the teaching job a lot easier for the teachers. E-learning or online learning is becoming increasingly popular and with various unprecedented events taking place in our lives, this does not only open opportunities for schools to ensure that students have access to curriculum materials whilst in the classroom but also allows them to ensure students outside the classroom such as at home. For instance, secondary school teachers now download lesson materials online and integrate them in various formats into their teaching materials. They employ the use of video tutorials and online lectures to improve their knowledge of the topic contents and with their understanding, accumulate for the students various ICT-oriented materials like videos, simulations and animated materials. The level of ICT needed in teaching for a teacher to become successful is increasing every day and any teacher that must meet up with the requisite ICT skills needed to use them must not only acquire the skills which are online and free, but must use often as their benefits are inevitable.

One of the key skills for the 21st century teachers which includes evaluating instructional objectives, planning better learning experiences, monitoring academic progress, and reflecting ways to improve lessons to name a few. The effective use of ICT in education makes the use of these 1st century skills easily attainable. Teachers just have to put a laptop, iPad or computer in the classroom to understand if the teaching job must be accomplished. When ICT is integrated into lessons, students become more engaged in their work. This is because technology provides different opportunities to make it more fun and enjoyable in terms of teaching the same things in different ways. As a consequence of this increased engagement, it is said that they will be able to retain knowledge more effectively and efficiently. Thus, teachers have not excuse but to ensure that they use the ICT skills necessary to achieve these aim as often as possible.

The findings of Nidup (2022) that, teachers possess basic ICT skills and knowledge which are necessary for them and that teachers are using ICT in their daily teaching and learning, collaborate with the findings of the present study. The findings of the study are in line with the findings of Yadav (2015) that teachers are quite aware of ICT tools but are moderately using ICT for professional purposes. The findings of the study support the findings of Taiwo, Ogunsakin, and Shogbesan (2021) that usage of ICT facilities in the teaching of computer studies in secondary schools in Ife central LGA is "high". The findings of the study are not in collaboration with the findings of Ugwu and Okeke (2018) that ICT was not used effectively by teachers in lesson preparation, instructional delivery, individualized learning and collaborative learning of computer studies in public secondary schools.

Conclusion

It can be concluded from the findings of the study that secondary school teachers in Anambra state are aware of the ICT skills for teaching. However, secondary school teachers with postgraduate degrees are significantly more aware of the ICT skills for teaching than teachers holding other degrees and 1st degree holders and significantly more aware of ICT skills for teaching more than the NCE/OND holders.

Recommendations

The following recommendations are made based on the findings of the study:

1. Educational stakeholders should organize frequent professional ICT skills development training for secondary school teachers to acquaint them with more recent educational technologies for effective implementation of their teaching jobs.
2. The ministry of education should collaborate with ICT and technology companies to provide and train secondary school teachers on how to effectively integrate the company's educational technologies into the remote secondary school classrooms in Anambra state. This will be with the aim to advance and enhance the ICT skills that the secondary school teachers already possess.

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