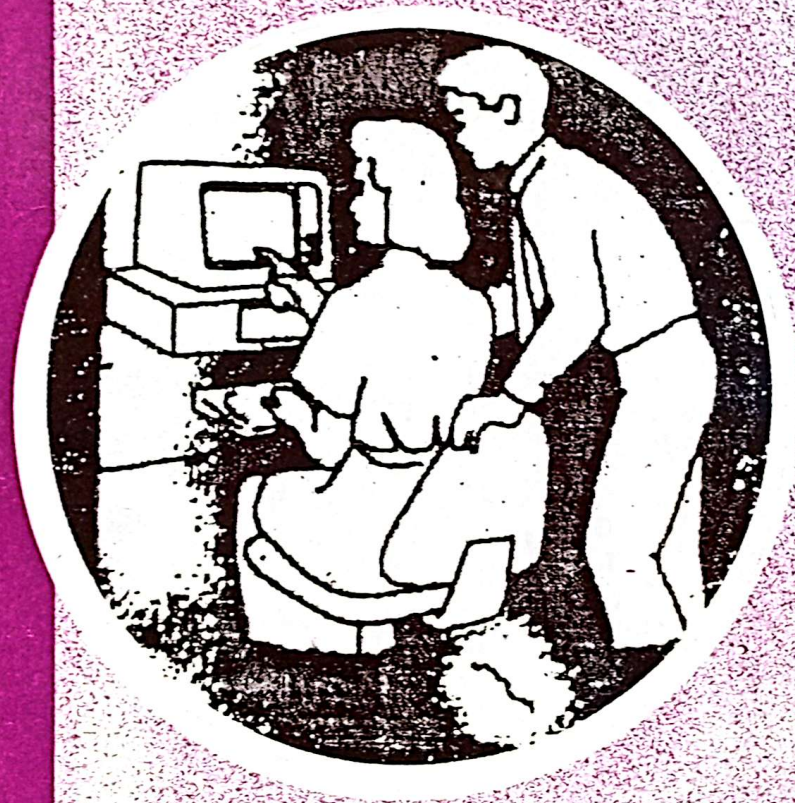


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PREFACE

The Editorial Board of this Journal is happy to publish this Volume 14 of NJCL, this volume of the journal is another attempt of bringing the works of scholars into light. Keeping to the promise of the publisher NJCL is committed to promoting ICTs in education and training. This volume has contributed to the discourse on ICTs on teaching and learning, the internet, globalization and e-learning in education. This edition covers a wide range of issues from influence of leadership style orientation and contingency of resources in students' moral and character development in Secondary Schools, user-related factors as predictors of undergraduates' satisfaction with University of Ibadan web Portal, Computer simulation instructional package and Secondary School Students' Achievement and Retention of Biology Concepts, Reading habit and School Library resource as determinants of Achievement in Mathematics, ICT learning tools and students performance in Basic Science, Management of information systems facilities and administration of private secondary schools in the federal capital territory, Abuja, Nigeria to Teacher perception of the use of Information Communication Technology for Biology instruction.

I wish to thank all our contributors for their continued interest in NJCL and we look forward to your future contributions. Also, I want to thank our Editorial Board and reviewers for their invaluable services to this journal.

Finally, I like to thank all that have contributed in one way or the other to make this edition a reality particularly typist that formatted all the manuscripts.

Thank you all.

Prof. Alice M. Olagunju/ Dr A. Tella

NIGERIA JOURNAL OF COMPUTER LITERACY (NJCL)

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It is accessible to researchers from any part of the world who have interest in having their papers published in it, It is now published once in a year.

Those wishing to submit papers for inclusion in any volume of the journal are expected to note the following guidelines carefully and allow them to guide the style and format of their papers.

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TEACHERS' PERCEPTIONS OF THE USE OF INFORMATION COMMUNICATION TECHNOLOGY FOR BIOLOGY INSTRUCTION

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Abstract

This study investigated teachers' perception of ICT use for biology instruction in Oyo State, Nigeria. The objectives of the study were to examine: (i) the utilization; (ii) the perceived usefulness; (iii) the perceived ease of use; (iv) gender differences on usefulness; and (v) gender difference on perceived ease of use of ICT for teaching by biology teachers. The survey research design was employed. The sample size included 45 biology teachers across nine local government areas in Oyo State from the three Senatorial Districts through purposive sampling technique. Data was collected through a validated researchers-designed questionnaire with a reliability value of 0.92. Percentage (<50%>), mean and rank order (<2.50>) were employed to answer the research questions, while, hypotheses were tested using t-test and Analysis of Variance at 0.05 level of significance. Biology teachers utilized ICT (54.7%>50%); the perceived usefulness of ICT was positive ($x=3.08$); the perceived ease of use of ICT was positive ($x=2.89$); no significant difference existed between male and female biology teachers' perceived ease of use and (v) no significant difference existed between male and female Biology teachers' perceived usefulness of ICT for teaching. The study concluded that the effectiveness of ICT was determined not by its mere presence in the classroom but by teachers' use, perceived ease of use and perceived usefulness. This study recommended that ICT-based biology instructional processes should be made open, accessible and interactive for secondary school teachers' use.

Key words: Teachers perception, Information communication technology, Biology instruction

Introduction

The development and maintenance of a democratic nation where the citizenry would be knowledgeable enough to intelligently participate in decision making on public issues and transform the national woes into blessings must be a scientific and technological literate society. In relation to developing country, Abimbola (2013), Abanikannda and Ajani (2019) explained that countries all over the world, including Nigeria, are still striving hard to develop technologically, now that all proper functioning of lives depend greatly on technology which is the product of science.

The importance of science and technology in the achievement of national goals, aspirations and economic buoyancy is evident. Realistically, the philosophy of science had made present-day scientists to realize its activities and challenge its concepts and theories with a view to providing for the requirements of rapid technological advancement. Thus, its integration into the educational system as a subject to be learnt. The role of science education in the socio-economic development of any nation hardly needs any arguments.

Olorundare (2014) submitted that in the modern society, no citizen can be said to be

literate until he/she possesses a basic understanding and appreciation of science and its work and method of generating knowledge and product. Abimbola (2013) noted that a substantial development in the socio-economic status of a country cannot rise above its level of scientific and technological education. On this note, it is safe to posit that obviously, science education is a powerful tool in achieving economic growth and development. Based on this realization, nations across the globe adopted the integration of science education in their educational system (Adegboye, Ganiyu, & Abimbola, 2017).

Similarly, Adegboye, Ganiyu and Abimbola (2017) posited that the ultimate application of science in reality is related to development of theory formulation based on scientific knowledge. Science education plays key roles in the scientific, technological and industrial development of a country hence, the achievement of the vision 20:2020 could be made easily realistic. Science education does not solely focus on developing the understanding of science concepts among students, but also on the understanding of the basic nature of science (FRN, 2013). Garba (2009) described science education as those aspects of education which lead to acquisition of practical and applied skills as well as basic scientific knowledge. Science education is expected to prepare as well as train learners with skills that will make them self-reliant and train them to enter into jobs and advance in them.

Kola (2013) described science education as an important element for the development of any nation. The FRN (2013) had made some frantic efforts in the area of policies as well as resources to engineer the teaching of science education effectively in the school. Evidence for the implementation of the policies is the school-wide teaching of science-focused subjects in all levels of education in Nigeria. Presently in the Nigerian schools, science is taught at both primary and secondary levels as general science for all students. This is compulsory because science teaches about man and his environment and everyone should have basic knowledge of their environment.

Umar (2011) stated that Biology is a natural science which deals with the living world. It explains the structure, function, development and existence of living things, while also providing justifications for their reactions with the environment within which they exist. Peter (2015) declared that the study of Biology provides an ideal preparation for a list of careers ranging from basic science to engineering. Biology as a branch of science and a pre-requisite subject for many fields of learning contributes immensely to the scientific and technological growth of a nation. The study of Biology at all educational levels can equip learners with beneficial concepts, principles and theories that will enable them lead a peaceful life (Ahmad, Abubakar & Yau, 2018).

Biology is a subject of instructions at secondary to tertiary level. It is one of the core subjects at senior secondary school certificate examination (SSCE) which is very relevant to man's successful living (Akindele, Nwagbo, Nsewi, & Ajewole, 2009). Hence, Biology occupies a unique position in the school curriculum and it is the most popular subject among all the sciences. Besides, Biology being central to many science-related courses such as biochemistry, medicine, pharmacy, nursing, microbiology adds to its popularity. It is obvious that no students intending to study these courses can do so without a credit in Biology is a basic prerequisite (Yusuf & Afolabi, 2010).

The compulsory subject nature and the numerous benefits associated with Biology could be the reason for its high enrolment in the senior school certificate examination (SSCE) (West Africa Examination Council Report, 2018). Contrarily, students' performance in the subject has been below average despite inputs from concerned stakeholders. Over the years, studies such as

Ogunleye (2006), Abimbola (2013), and Abanikannda (2018) have continued to draw attention to the grave consequences of the constant decline in the performance of students in science subjects including biology. The study of Abimbola (2013) revealed that the performance level for Biology did not show any significant rise for a 20 years period (1991 – 2011) and the researcher confirmed that candidates' performance in Biology over those years never rose above 50%.

In general, the importance of learning Biology to humanity can be outlined as follows: helps to have knowledge about the earth; helps to understand changes in the environment and the factors affecting these changes in order to know how human needs are influenced; helps mankind to find effective ways of preventing, treating and curing diseases and home management techniques such as better methods of food preservation, efficient food preparation and care of the family (Olagunju, 2012).

Akinola (2006), Amedu (2015), and Abanikannda (2018) claimed that in spite of all efforts to improve students' performance in Biology, it has been observed that of mass failure of students in the subject includes teacher's methodology, structure of the curriculum, the concentration of examination questions on few topics, the inability of students to perform enough practical before the examination and lack of technological tools such as information and communication technology (ICT) and its integration to Biology instructional process.

Other researchers such as Ayanda, Abimbola and Ahmed (2012) claimed that the cause of the poor performance in Biology could be attributed to the theoretical approach employed in teaching and learning of concepts in the subject. Given that some of the concepts taught in Biology are abstract, students find it difficult to conceptualize when taught theoretically. This has made learners to develop a negative attitude and perception towards the subject leading to poor performance. The trend of these poor performances may change positively if topics and concepts in Biology are taught with ICT devices to enhance instructional strategies.

Information Communication Technology (ICT) is the processing and maintenance of information and the use of all forms of computer, communication, network and mobile technologies to mediate information. Communication technology includes all media employed in transmitting audio, videos, data or multimedia such as cable, satellite, fibre optics wireless (radio, Bluetooth, infrared, Wi-Fi), interactive electronic boards, multimedia projectors, and continuously emerging state of the art PCs. Network technologies include personal area network (PAN), campus area network (CAN), intranets, extranets, CANs, WANs, WMANs, and WLANs and the internet (Iloanusi & Osagwu 2010).

In order to promote an effective instructional process in Biology, the need for innovative methods coupled with ICT for Biology instruction is necessary. Adedokun-Shittu, Ajani, Nuhu, and Shiitu (2020) opined that ICT is indispensable and very important for instructional processes in Science teaching and learning. Adedokun-Shittu et al., (2020) and Eze (2012) noted that education in whatever form is not complete without effective use of ICT and that the significance of ICT in education includes: access to variety of learning resources; immediacy of information; anytime anywhere learning; collaborative learning; multimedia approach to education; authentic and up-to-date information; access to online libraries; distance learning; individualization of instruction; reduced time on many routine tasks access to the source of information; and others made the teaching of science uninteresting enterprise.

The use of ICT has become an integral part of education in many parts of the globe including Nigeria, as ICT is gradually finding its way into the educational system. The FRN (2013), and with particular reference to science and technology, considered ICT as an important

tool for laying a solid foundation of Science, Technology, Engineering and Mathematics (STEM) education at all levels of Nigerian education system. Despite the limitations brought about by economic consequences, it is observed that the influence of ICT on education is to enhance the learners' ability to generate, access, adopt and apply knowledge to solve complex problems (Adedokun-Shittu, Ajani, Nuhu, & Shittu, 2020).

Agommuoh (2015) further observed that the use of ICT in teaching science subjects will make learning more real, relevant and experimental as large amount of data and materials on any topic can be brought to the classroom from all over the world. Thereby, facilitating the acquisition and absorption of knowledge and offering students unprecedented opportunities to enhance their learning. From the foregoing, ICT has rapidly transformed the teaching field into a global village and Biology is one of the beneficiaries of this global revolution in teaching and learning process.

In line with competitiveness and emphasis on the use of ICT in teaching and learning, government at various levels and non-governmental organisations have continued to intensify efforts to supply ICT facilities to schools in Nigeria. Evidence in literature tends to show that the available ICT facilities in schools are underutilized (Ojaleye, 2002; Ugwu, 2006; Nzewi, 2010; Adeyemo, 2010; Kola, 2013; Okoye, 2014). In the same vein, Nwagbo and Ugwanyi (2012) argued that the afore-mentioned impact of ICT in teaching and learning science, effective utilization of it is being impeded by some challenges accredited to different stakeholders, in particular students and teachers. These challenges include: lack of confidence by both students and teachers, resistance to change by the teachers, negative attitudes and perception exhibited by both the teachers and students, lack of technical support, insufficiency in the school timetable, among others.

Research on ICT integration in teaching and learning situation that has been conducted over the past 20 years sheds some light on why ICT is not used more (Ogunlade, 2015). ICT integration is a slow and complex process and is influenced by many factors. These include organizational factors, factors associated with the technology itself, and users' factors (Adeyanju, 2015). Teachers' perception towards ICT adoption have been identified as key factors associated with ICT use in the classroom (McNair & Green, 2016).

Teachers need to hold a positive perception towards technology in order to use it effectively for instructional purposes. Moreover, teachers' pedagogical beliefs and existing teaching practices will shape how they incorporate ICT in the classroom (Yang, 2015). In order to use ICT effectively for educational purposes, the teachers must not only be familiar with how to operate equipment, but also understand how these tools are effectively used in the subjects they teach, and how to incorporate ICT resources into classroom activities that accomplish important learning goals (Adedokun-Shittu, Olasehinde-Williams, Obielodan, & Salawu, 2017).

According to Danmole (2011), Kolawole (2011), Uzowulu and Egbuama (2015) effective teaching is so crucial to learning that the products of teaching such as knowledge, attitude and skills acquisition are much dependent on teachers' effectiveness. Teaching is said to be enhanced when the approach used brings about a desirable change in the life and behaviour of the student. If learning strategies and performance fail to improve, then the students have to be introduced to more effective, efficient and appropriate teaching strategies in the classroom. This can be achieved when research studies are carried out to enhance the teaching and learning of biology in schools.

Studies such as Adetunla, (2016) have revealed critical factors that affect teachers' use of ICT which include; perceived usefulness of computer knowledge; early exposure to computer training; rich home computing environment; and cognitive and affective factors. It is however important to understand that ICT is technology dependent, hence, the adoption of Technology Acceptance Model (TAM) becomes imperative. The model by Davis (1986) theorized the acceptability and usage of technological tool via the prediction of two constructs such as perceived ease of use and perceived usefulness.

This study found interest in these two constructs because it has been argued in literature such as Oyelekan (2008) and Oladosu, Adedokun-Shittu, Sanni and Ajani (2020) that difficulty of use can discourage adoption of a useful technological resources, no amount of usefulness can compensate for resources that do not give ease of function. Perceived ease of use is an important factor of user acceptance and should not be ignored by those attempting to design or implement successful electronic information system (Davis, 1986). The perceived ease of use refers to the degree to which the user expects the target system to be free of effort. ICT resources will be perceived easy to use by teachers and students if it becomes easy to teach or learn with, if interaction with it becomes clear and understandable, if it's flexible to interact with and however, teachers and students must be able to become skilful at using it (Adetunla, 2016).

Teachers' personal factors have brought about digital divide and mixed feelings about the ease of use of ICT. Adetunla, (2016) asserted that users' perception of an information system can be explained by several factors some of which are personal factors such as teachers' perception towards computer, years of experience, gender, area of specialization, teachers location, among others. Following the major role that teachers' play in the classroom, especially in the use of ICT innovations, their perception must be considered as a major factor while integrating ICT for classroom purposes. In order to better understand teachers' perception towards ICT in teaching senior secondary schools Biology in Oyo state, Nigeria, this study was therefore embarked upon.

Methodology

The study population comprised all Biology teachers in secondary schools in Oyo State, while, the target population included senior public secondary schools. The sample size was through a multistage sampling technique: the first stage included a stratification along the Senatorial District in Oyo State; the next stage included simple randomly sample of three Local Government Areas (LGAs) in the three Senatorial Districts, making a total of nine LGAs; the next stage employed a proportionate sampling technique of 2:1 to select six LGAs that are more urban-dominated and three LGAs that are more-rural dominated; the next stage advanced on a purposive sampling technique to select senior secondary schools where ICT resources were available. From each of the nine LGAs, a total of 33 schools were sampled in the urban area, while 12 schools were sampled in the rural area. A sum total of 45 schools were sampled for the study; and lastly all the Biology teachers were enumerated.

For this study, a researcher-designed questionnaire was employed. The questionnaire was tagged "Questionnaire on Teachers' Perception of the Use of Information and Communication Technology for Biology Instruction (QTPUICTBI)" The questionnaire was designed to examine the teachers perceived ease of use and usefulness of ICT for teaching Biology. The questionnaire was segregated into four sections (A, B, C and D). The Section A elicited information on the demography of the respondents; Section B consisted of 10 items to examine Biology teachers' utilization of ICT for teaching in secondary schools; Section C

consisted of 10 items to examine the perceived ease of use of ICT for teaching Biology, while, Section D consisted of 10 items to examine the perceived usefulness of ICT for teaching Biology. Both Sections C and D were rated on a four-point Likert scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) using a benchmark of 2.5.

Three lecturers in the Department of Science Education, University of Ilorin, validated the questionnaire. This was done to determine the effectiveness and the appropriateness of the instruments and to ascertain their face and content validity. The validator's corrections and modifications were used to improve the quality of the instrument. The reliability of the researchers-designed questionnaire was determined after conducting a trial-testing on 12 teachers from one of the secondary schools in Kwara state who were not part of the main study. The reliability coefficient of the questionnaire was determined through test-retest method. Thereafter, the data collected were subjected to statistical analysis using Cronbach alpha at 0.05 level of significance, and the instrument yielded a reliability index of 0.92.

Results

Research Question One: Do Biology teachers utilize ICT for teaching in secondary schools in Oyo state?

Table 1: Biology Teachers Utilisation of ICT for Teaching in Secondary Schools

S/N	ICT Resources for Biology Teaching	Yes		No		Rank Order
		Freq.	%	Freq.	%	
1.	I use projector to project my lesson contents for my students in the classroom.	34	75.6	11	24.4	1 st
2.	I use audio, visual, and audio-visual materials such as recorded voice notes, podcast, television and so on to teach my students	31	68.9	14	31.1	2 nd
3.	I use computer in my classroom to surf the internet	29	64.4	16	35.6	4 th
4.	I surf the internet to generate lesson contents for my students	30	66.7	15	33.3	3 rd
5.	I use the public address system (PAS) in my classroom to teach a larger population	19	42.2	26	57.8	8 th
6.	I use computer to typeset the exams, grade the scripts, and generate result.	21	46.7	24	53.3	7 th
7.	I use computer to transfer files, video clips, images and so on to my students	27	60.0	18	40.0	6 th
8.	I create learning channels and groups for my students through ICT devices like mobile phones	29	64.4	16	35.6	4 th
9.	I use teleconferencing and videoconferencing to communicate with my students	14	31.1	31	68.9	9 th
10.	I send lesson contents to my students through email	12	26.7	33	73.3	10 th
TOTAL		246	54.7	204	45.3	

Table 1 revealed the utilization of ICT for teaching Biology in secondary schools in Oyo state. The table indicated that majority 75.6% of the teachers utilized projector to project their lesson contents; 68.9% used audio, visual, and audio-visual materials such as recorded voice notes, podcast, television and so on to teach their students; 66.7% surf the internet to generate lesson contents for their students; 64.4% create learning channels and groups for their students through ICT devices like mobile phones and use computer in their classroom to surf the internet and 60.0% use computer to transfer files, video clips, images and so on to their students.

On the other hand, majority (46.7%) claimed that they did not use computer to typeset their examinations, grade the scripts, and generate result; 42.2% use the PAS to teach a larger population; 31.1% used teleconferencing and videoconferencing to communicate with their students and 26.7% sent lesson contents to their students through email. In summative, the result indicated that 54.7% teachers utilized ICT for teaching against 45.3% which indicated that they did not use ICT in teaching Biology.

Research Question Two: What is the perceived ease of use of ICT for teaching among Biology teachers in secondary schools in Oyo State?

Table 2 : Perceived Ease of Use of ICT for Teaching among Biology Teachers in Secondary Schools

S/N	Perceived Ease of Use of ICT for Teaching Biology	Mean	Rank Order
1.	Moderate technical skills is needed to operate an ICT gadget such as computer and projector in order to be used in teaching Biology	3.09	2 nd
2.	Regular power supply is needed in order to use ICT in teaching Biology	2.83	6 th
3.	Navigation on the web spaces that are designed for teaching Biology is easy	2.91	5 th
4.	The instructional contents on the Internet are not ambiguous but easy to understand	2.69	10 th
5.	Not much of internet connectivity is necessary to surf the internet in order to generate content for my lessons	3.13	1 st
6.	The web interface of webpages for learning/teaching Biology online is not clumsy. Hence, locating needed materials are easy to come by.	2.97	4 th
7.	Interacting on some of the ICT resources such as videoconferencing and teleconferencing is flexible and easy to use	2.99	3 rd
8.	The location of the ICT resources is convenient for me to access and use for my teaching.	2.75	8 th
9.	The E-books are structured in an easy way. Thus, I find it easy to move around in different units.	2.84	7 th
10.	Creating/joining channels and groups for teaching is easy when I use social media platforms through the computer.	2.70	9 th
Grand Mean		2.89	

In Table 2, Biology teachers were solicited to determine the perceived ease of use of ICT for teaching Biology in secondary schools in Oyo State. The mean responses generated were all above the benchmark of 2.5, indicating that Biology teachers claimed that most of the Items were favourable factors contributing to perceived ease of use of ICT for teaching Biology. Majorly, most of the respondents claimed that not much internet connectivity was needed to surf the internet in order to generate content for their lessons; the second ranking mean revealed that Biology teachers perceived that to operate ICT gadget, medium technical skill was needed; while teachers perceived that interacting on some of the ICT resources such as video conferencing and teleconferencing was flexible and easy to use.

The 4th highest ranking indicated that the web interface of webpages for teaching Biology online was not clumsy. Hence, needed materials were easy to come by; The navigation on the web spaces that were designed for teaching/learning biology was easy and regular power supply was perceived to be a factor contributing to the perceived ease of use of ICT for teaching Biology was ranked 6th with the e-books available for biology teaching were structured and found easy to move around in different units was ranked 7th.

The location of the ICT resources for biology teaching was convenient for use in teaching ranked 8th, while creating channels and groups for teaching was easy when social media platforms through the computer was use; and the instructional contents on the internet were not ambiguous but easy to understand for Biology teachers ranked 9th and 10th respectively. The grand mean of 2.89 depicted favourable perceived ease of use of ICT for teaching biology.

Research Question Three: What is the perceived usefulness of ICT for teaching among Biology teachers in secondary schools in Oyo state?

Table 3: Perceived Usefulness of ICT for Teaching among Biology Teachers in Secondary Schools

S/N	Perceived Usefulness of ICT for Teaching Biology	Mean	Rank Order
1.	ICT resources are a very good resource where expansive instructional materials can be used to enhance my teaching	3.18	4 th
2.	The use of ICT for Biology teaching has the potential of providing personalised learning through self-experienced presentation.	3.23	1 st
3.	The e-resources that are present on the Internet can enhance learning better than hardcopies of materials that are made available for my teaching.	3.11	5 th
4.	The sharing and upload of instructional resources to the Internet by teachers can reduce the work load and time spent in the classroom in order to engage in other productive responsibilities.	3.02	8 th
5.	Using ICT can help in keeping Biology students abreast with latest development in the subject	3.10	6 th
6.	The use of ICT resources can help Biology teachers in providing relevant material for teaching and research purpose.	3.21	2 nd
7.	ICT in Biology teaching is a great educational tool by bridging the gap among learners	3.20	3 rd
8.	Using ICT in Biology teaching can make the instructional process relevant to all learners irrespective of individual characteristics	3.05	7 th
9.	Instructional resources that are available through the ICT for Biology teaching is more convenient to use than the traditional resources	2.98	9 th
10.	Resources for Biology teaching can be easily accessible at all time when needed than the traditional system	2.67	10 th
Grand Mean		3.07	

Table 3 examined the perceived usefulness of ICT for teaching among Biology teachers. The table revealed that all the items were responded to positively base on the benchmark of 2.5. Biology teachers claimed that their perceived usefulness of ICT includes: the potential of providing personalized learning through self-experienced presentation (3.23); help Biology teachers in providing relevant material for teaching and research purpose (3.21); bridging the gap among learners (3.20); a very good resource where expansive instructional materials can be used to enhance Biology teaching (3.18); enhancing learning better than hardcopies of materials that are made available for Biology teaching (3.11); help in keeping Biology students abreast with latest development in the subject (3.10); make the instructional process relevant to all learners irrespective of individual characteristics (3.05). Sharing and upload of instructional resources to the Internet by teachers can reduce the work load and time spent in the classroom in order to engage in other productive responsibilities (3.02); convenience of use of instructional resources that are available through the ICT for Biology teaching (2.98); and easy access to resources for Biology teaching than the traditional system (2.67). Cumulatively, the grand mean

of 3.08 indicated that the perceived usefulness of ICT for teaching among Biology teachers was positive.

Hypotheses One

H₀₁: There is no significant difference between male and female Biology teachers' perceived ease of use of ICT for teaching in secondary schools in Oyo State

Table 4: *t*-test Analysis of Male and Female Biology Teachers Perceived Ease of Use of ICT for Teaching

Gender	N	$\bar{X}$	SD	df	t	Sig. (2-tailed)	Remark
Male	26	3.60	.27	43	.018	.986	Not rejected
Female	19	3.60	.24				

From Table 4, it can be deduced that there was no significant difference between male and female Biology teachers' perceived ease of use of ICT for teaching. This was reflected in the findings of the hypotheses tested df (43), $t = .018$, $p > 0.05$. Thus, the hypothesis which states that "there is no significant difference between male and female Biology teachers' perceived ease of use of ICT for teaching was not rejected.

Hypothesis Two

H₀₂: There is no significant difference between male and female Biology teachers' perceived usefulness of ICT for teaching.

Table 5

***t*-test Analysis of Male and Female Biology Teachers Perceived Usefulness of ICT for Teaching**

Gender	N	$\bar{X}$	SD	df	t	Sig. (2-tailed)	Remark
Male	26	3.59	.27	43	.232	.818	Not rejected
Female	19	3.61	.24				

From Table 5, it can be deduced that there was no significant difference between male and female Biology teachers' perceived usefulness of ICT for teaching. This was reflected in the findings of the hypotheses tested df (43), $t = .232$, $p > 0.05$. Thus, the hypothesis which states that "there is no significant difference between male and female Biology teachers' perceived usefulness of ICT for teaching was not rejected.

Discussions

This study examined teachers' perception towards ICT for teaching, placing particular emphasis on perceived ease of use and perceived usefulness of ICT. The study revealed that biology teachers utilised ICT for teaching. This revelation is in line with the assertion of Deaney,

et al., (2006), and Balanskat, et al., (2006) that teachers' use of ICT is based on the fact that education in whatever form is not complete without the effective use of ICT. The researchers claimed that the important role of ICT in education has necessitated governments all over the world to provide ICT for classroom and teachers are now harnessing the rich potentials of ICT in their respective teachings.

The findings of this study also revealed that the teachers had a positive disposition to perceived ease of use and usefulness of ICT for teaching Biology. This finding is in support of the study of Akinde and Adetimirin, (2017) who claimed that the effectiveness of ICT is determined not by its mere presence in the classroom but by teachers' perceived ease of use and usefulness of it. This assertion revealed that in order for ICT to be integrated for teaching, teachers' perceived ease of use and usefulness are major factors and this might be the reason for its utilisation among teachers.

This study also indicated that the personal trait of teachers such as gender is a critical factor to be considered in ICT integration for teaching. This study indicated that there is no gender difference among teachers' perceived ease of use and usefulness of ICT for teaching. This is against the claims of Femi-Adeoye (2004), Ayodeyi (2010), Akiri and Ugborugbo (2008) who claimed that gender difference is a major dichotomous factor that influences teachers' perception towards ICT use in the classroom. Supporting the claim of the researchers, this study however revealed that gender differences do exist among students' perceived usefulness of ICT for teaching.

Conclusion

Information and communication technology is one of the globally acknowledged learning and teaching space today as well as one of the key propellants of globalization. Development in ICT has vastly transformed every sphere of life and permeated all human actions and endeavors. The use of ICT for instructional purposes is not, and never will it be, transformative on its own if educators who are supposed to integrate it into their teaching are not utilizing it. Based on this, it is clear that ICT cannot replace teachers since they are the key to whether ICT is used appropriately and effectively.

The effectiveness of ICT is determined therefore, not by its mere presence in the classroom but by teachers' perceived ease of use and perceived usefulness. This assertion revealed that teachers' role is really critical as they are the ones who have to decide whether or not to use the available ICT resources in schools. The appreciable characteristics of ICT integration for teaching may be informed and gained by teachers when their perceived ease of use and perceived usefulness of ICT is positive, then will the purpose of its integration be achieved. This purpose among others include contribution to the promotion and enhancement of the teaching and learning process. This study has provided empirical evidence towards the above stated findings.

Recommendations

Based on the research findings the following recommendations were made:

1. Biology instructional processes should be made open, accessible and interactive to the teachers, so as to improve teachers' use of ICT and enable their capability towards achieving instructional objectives.
2. The use of ICT should be encouraged among teachers. This will provide avenue for teachers to have a better perception towards ICT use for Biology instruction.

3. School administrators should embrace and provide ICT resources to their schools. Such provision will enhance teachers' perception towards ICT use for Biology instruction.

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