

Zaria Journal of Liberal Arts (ZAJOLA)

Faculty of Arts, Ahmadu Bello University, Zaria

Vol. 11, No. 1, June, 2023



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Samaru Main Campus,
Zaria - Nigeria.

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ISSN:2141-3584

Published and Printed by

Ahmadu Bello University Press Limited, Zaria,
Tel: 08065949711
abupress@abu.edu.ng
info@abupress.com.ng
e-mail: abupress2013@gmail.com
Website: www.abupress.cong

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Faculty of Arts,
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Zaria Journal of Liberal Arts (ZAJOLA) is a peer-reviewed journal, published bi-annually by the Faculty of Arts, Ahmadu Bello University, Zaria, Nigeria. The journal welcomes manuscript of original articles, from scholars around the globe, in the various areas of Liberal Arts. The articles may be product of descriptive or analytical research, field research notes, reviews of publications and printed materials, drawn from, but not limited to Languages and Linguistics; Law; Environmental Sciences, Education; Management Studies; Cultural and Literally Studies; Theatre Arts; Philosophy; Religion; History and Strategic Studies; Archaeology and Heritage Studies; Developmental Studies and Social Sciences.

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EDITORIAL COMMENT

The Editorial Board of *Zaria Journal of Liberal Arts* wishes to announce the new Edition of its esteemed Journal after a short break. This Edition is made up of twelve well-researched articles drawn from seasoned colleagues and academics.

In the first article, Emmanuel Adeniyi examines the comic aspect of COVID-19 pandemic while Hauwa Mohammed Sani, in her article looks at the ethnographic study of language as a tool in resolving conflicts in Kaduna State.

Osakue Stevenson and Edorodion Agbon focus on the alternative paradigm of indigenous language film in Nigeria through *Agbon-Evuebo*, Muhammad Reza Suleiman examines Arts as drivers of African bilateral relations and regional integration. On their own part, Nura Lawal and Muhammad Rabiul Tahir (co-authors) and Isa Umar Al Musawi concentrate on the study of Hausa Proverbs and Hausa/Ganda burial rites respectively.

Participatory approach and sustainable development of world heritage sites in Nigeria retains the attention of Olufemi Adetunji while in their article, Abdulrasaq Oladimeji and Oluwaseun Yusuf Afolabi look at the teachers' perception of the integration of information and communication technology in public and private secondary schools with special focus on Kwara-Central Senatorial District of Nigeria.

In the area of French studies, Peter Akongfeh Agwu, Diana-Mary Tiku Nsan, Ashabua and Derick Achu carry out an evaluation of the influence of Africa in the poetic works of Charles Baudelaire. In a similar way, Babalola Jacob Olaniyi and Adelowo Kayode Olubukola study the contrastive linguistic divergence of nominal verbs in French and Yoruba languages.

Jamiu Saadullah Abdulkareem takes interest in the Arabic novel. In this article, Jamiu brings out the ideational dimensions and stylistic features of Abdul-Aziz Abdulkarim Burhanuddin's novel titled *Jamilah*. To round this Edition up, Nasiruddeen Ibrahim Ahmed studies the pragmatics of deixis in the poem "Independence of exploitation" of Salihu Alagolo.

It is important to note that the view and opinions presented in these articles are solely those of the authors. It is the hope of the Editorial Board that this Edition will enrich your curiosity.

Prof. Abubakar Sule Sani

Editor-in-Chief

31st May, 2023

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Teachers' Perceptions of the Integration of Information and Communication Technology in Secondary Schools in Kwara, Nigeria

Abdulrasaq Oladimeji Akanbi & Oluwaseun Yusuf Afolabi

Abstract

The study investigated teachers' perceptions of the integration of ICT facilities for teaching secondary physics in Kwara-Central Senatorial District of Nigeria. The population comprised all teachers in public and private schools in Kwara-Central. 175 (male 122, female 53) physics teachers make up the sample size of the study. A questionnaire titled "Questionnaire on Teachers' Perception of the Integration of ICT Facilities in Teaching Secondary Physics" (QTPIIFTSP) was used. Research questions were answered descriptively using statistics by frequency and percentage. t-test and analysis of variance (ANOVA) were employed to test the hypothesis at a significance level of .05. Findings revealed that physics teachers have positive perceptions of the integration of ICT in the teaching of secondary physics. It was concluded that teachers can make a significant impact on the quality of physics education, leading to improved learning outcomes and enhanced teachers' professional development, and recommendations were made.

Introduction

The concept of Information and Communication Technology (ICT) encompasses a category of technological tools that facilitate various activities related to information, including the collection, manipulation, retention, and presentation of data (Nwafor et al., 2022). In an educational context, ICT may be employed for several purposes, including the storage of data such as financial records and transactions as well as instructional delivery. According to Laabidi (2022), ICT encompasses a range of technologies that facilitate the acquisition and dissemination of information through various communication devices, such as computers, scanners, printers, and internet connectivity. Similarly, Fidelis and Onyango (2021) opine that ICT encompasses several components, such as internet connectivity, cable data transfer, and computer hardware. According to Fidelis and Onyango (2021), the term "technology" encompasses many communication devices and applications, such as cellular phones, television, radio, computers, and network hardware and software.

ICT has significantly facilitated the field of education by leveraging electronic media, the internet, and other related technologies. Husain (2019) asserts that the

integration of calculators and computers into educational institutions globally has facilitated the streamlining of instructional processes, thereby fostering national stability and economic sustainability. Nevertheless, the effective application of ICT necessitates meticulous strategic planning and substantial government backing in terms of financial resources and policy formulation.

Secondary education is the stage of formal education that follows primary education and precedes higher education. It is typically offered to students between the ages of 14 and 18, although the specific age range may vary depending on the educational system and country. The purpose of secondary education is to provide students with a well-rounded education that prepares them for higher education or the workforce. It aims to develop their intellectual, social, and emotional skills while also fostering critical thinking, creativity, and independence.

ICT can significantly impact student learning when teachers are digitally literate and understand how to integrate it into the curriculum. Schools use a diverse set of ICT tools to communicate, create, disseminate, store, and manage information (Eniekebi, 2021). However, the implementation of ICT in secondary schools varies greatly. In some countries, ICT has become integral to the teaching-learning interaction, replacing chalkboards with interactive digital whiteboards, using students' own smartphones or other devices for learning during class time, and even changing the organisation of education by personalising the learning process (Hogenbirk, 2020).

However, the integration of ICT in secondary schools is not without challenges. In Nigeria, for example, the Federal Government has made efforts to integrate ICTs into the secondary schools' curriculum, but the projects have not really taken off beyond the distribution and installation of school computers (Darelle et al., 2021). Access to ICT facilities is a major challenge facing Nigerian schools. While some schools are at a maturity level of awareness and understanding, they have not reached the stage where ICT readiness and the use of digital technologies are entrenched in their schools and the learning and teaching processes. These challenges present a problem that needs to be addressed to ensure that all students have equal access to the benefits of ICT in education.

The significance of ICT in Nigerian secondary schools cannot be overstated. The necessity for ongoing reforms within the Nigerian education system is imperative in order to enhance its competitiveness in relation to other developed nations.

This is particularly important as it seeks to move away from the educational framework established by colonial powers, which was primarily intended to serve the interests of Nigeria. As aptly noted by Shodiyev (2021), the previous education systems in numerous African countries were not designed to empower the continent. This assertion posits that there is a pressing imperative for the implementation of educational reforms in Nigeria. The utilisation of ICTs in the educational process may be classified into two overarching categories: ICT for education and ICT in education. The concept of ICT for education pertains to the creation and advancement of ICT tools and resources that are explicitly designed to facilitate teaching and learning activities. On the other hand, ICT in education encompasses the broader utilisation of ICT components in the whole teaching and learning process.

According to Duker (2018), the integration of ICT into the school curriculum is contingent upon the role of the teacher as the facilitator of ICT-based instruction for students. It is imperative that teachers possess the capacity to integrate ICT into the instructional process. According to Alt (2018), the utilisation of ICT in the realm of education enhances the appeal, efficacy, and efficiency of instructional practices. Given the current phenomenon of the admission boom in secondary schools and the significant role of education in nation-building, the integration of ICT in the teaching-learning process becomes indispensable. This assertion has validity since the integration of this approach by teachers has the potential to augment pedagogical efficacy through several means, including improved course structuring, enhanced classroom control, optimised content development, self-evaluation, collaborative learning, and task-focused activities.

The integration of ICT in educational settings within underdeveloped nations has not received the necessary emphasis from teachers and school administrators, leading to subpar academic achievements among students in the field of physics. The integration of certain teaching approaches in the instruction of physics has been recognised as a significant contributor to students' subpar academic performance, alongside several other elements (Sezer, 2018). Teachers are recommended to embrace many methodologies and tactics in response to the evolving nature of pedagogy since traditional didactic instruction no longer suffices and a singular, universally applicable approach to teaching remains elusive. Therefore, the incorporation of ICT in the educational process holds significant relevance to pedagogical practices and the academic success of students.

The use of ICT in the instructional process of physics has been seen to facilitate students' understanding of the intricate and abstract concepts inherent in the subject. According to Adepeko (2021), students tend to consider physics a subject that is characterised by its abstract nature and difficulty, mostly attributed to the extensive amount of computation required, the emphasis on theoretical concepts and rules, as well as its practical orientation. The use of ICT in the teaching of physics has the potential to effectively address these aforementioned issues.

According to Gwamna (2020), the integration of ICT in educational settings has the potential to enhance students' engagement, motivation, self-assurance, and attentiveness. The pedagogical approach to instructing physics using ICT encompasses several methods, such as PowerPoint presentations, tutorials, problem-solving exercises, simulations, active learning strategies, and demonstrations with 2- or 3-dimensional objects. The role of the teacher in utilising ICT during instructional delivery undergoes a transformation compared to the traditional teaching approach. The individual assumes the role of a facilitator while employing ICT in the context of education. As a result, the teachers were compelled to employ a student-centred teaching strategy. This aligns with the perspectives put forth by Ezeano and Ugwu (2021), who assert that teachers serve as facilitators of learning, directing students through a sequence of activities and problem-solving within a student-centred and activity-based instructional approach. In this regard, students are actively involved in learning activities facilitated by their teachers. According to Kim (2021), students assume the role of knowledge seekers, acquiring information, abilities, and attitudes in the field of physics under the guidance of their teachers.

This enables teachers to integrate the various functionalities of ICT at their disposal. In order for teachers to effectively achieve the objectives of their lesson through the use of ICT, it is imperative that they possess a comprehensive understanding of the subject, pedagogy, and technology. In order to get insight into the use of ICT in educational instruction, it is necessary for teachers to meet certain criteria, including the presence of a perceived object, a sensory device or receptor, and focused attention.

Ali (2021) posits that the studies conducted over the past 20 years on ICT for teaching purposes have shed some light on why ICT is not used more. One of the major reasons attributed to it is the technology itself and the users' factors (teachers). Researchers such as Pérez et al. (2021) and Ankamah et al. (2022) claimed that users' (teachers) factors, such as perception towards ICT, are the

primary identified key factors associated with ICT integration in the classroom. Also, the potential influence of various teacher personal factors, such as gender, school type, academic qualification, and years of teaching experience, on the integration of ICT in teaching is a topic that has not been extensively researched. Al-Muomen and Abdulla (2016) have acknowledged the need for further investigation into these teacher-personal factors. Therefore, it is crucial to ascertain the teachers' perceptions of the integration of ICT facilities in teaching secondary physics. In addition, the researcher aims to examine the impact of several intervening variables, such as gender, school type, teacher qualifications, and years of teaching experience, on teachers' integration of ICT facilities for teaching secondary physics in Kwara-Central, Nigeria.

Objectives of the Study

The main objectives of this study were to investigate teachers' perceptions of the integration of ICT facilities in teaching public and private secondary school physics in Kwara-Central Senatorial District, Nigeria. Specifically, the study:

1. investigated teachers' perceptions of the integration of ICT facilities in teaching secondary physics in Kwara-Central Senatorial District, Nigeria.
2. determined the influence of gender on teachers' perceptions of the integration of ICT facilities in teaching secondary physics in Kwara-Central Senatorial District, Nigeria.
3. determined the influence of school type on teachers' perceptions of the integration of ICT facilities in teaching secondary physics in Kwara-Central Senatorial District, Nigeria.
4. examined the influence of academic qualifications on teachers' perceptions of the integration of ICT facilities in teaching secondary physics in Kwara-Central Senatorial District, Nigeria.
5. determined the influence of years of teaching experience on teachers' perceptions of the integration of ICT facilities in teaching secondary physics in Kwara-Central Senatorial District, Nigeria.

Research Question

The research question raised and answered in this study is:

What is teachers' perception of the integration of ICT facilities in teaching secondary physics in Kwara-Central Senatorial District, Nigeria?

Research Hypotheses

The following hypotheses were tested at the 0.05 level of significance in this study:

H01: There is no significant difference in the perceptions of male and female teachers on the integration of ICT facilities in teaching secondary physics in Kwara-Central Senatorial District, Nigeria.

H02: There is no significant difference in the perceptions of private and public-school teachers on the integration of ICT facilities in teaching secondary physics.

H03: There is no significant difference in the perceptions of qualified and unqualified physics teachers on the integration of ICT facilities in teaching secondary physics.

H04: There is no significant difference in the perceptions of highly experienced, moderately experienced, and less experienced teachers on the integration of ICT facilities in teaching secondary physics.

Methodology

This study employed a descriptive survey of research types. The aim of the researcher was to pick a sample that would accurately reflect the target population and provide a report of the finding as it is. The population comprised all physics teachers in senior secondary schools within the geographical area of Kwara State.

A multi-stage sampling procedure comprising stratified, purposive, and convenient sampling techniques was employed for the effective selection of teachers in the study. A stratified sampling technique was used to categorise schools in Kwara-Central Senatorial District into public and private secondary schools, which therefore brought about 114 public secondary schools and 112 private schools (Kwara State Ministry of Education and Human Capital Development, 2023). A purposeful sampling technique was used to select 105 public secondary schools and 70 private schools, making a total of 175 senior secondary schools. In addition, convenient sampling techniques were used to select all the physics teachers in the schools visited by the researchers. Convenient sampling techniques were used because the researchers involved all the physics teachers in each of the schools visited.

Research Instrument

A researcher-designed questionnaire was used, termed "Questionnaire on Teachers' Perception of the Integration of ICT Facilities in Teaching Senior

Secondary School Physics" (QTPIIFTSSP). The QTPIIFTSSP consists of two sections, A and B. Section A includes the demographic information of the participants, such as their gender, type of school, academic qualifications, and teaching experience. Section B has 20 items that are assessed using a four-point Likert scale, ranging from strongly agree (SA), agree (A), disagree (D), and strongly disagree (SD).

Items 1–20 on the QTPIIFTSSP are positively phrased, with scores ranging from Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1. This means that higher scores on the SA and A continuums of the 20 questions on the scale indicated a positive perception of ICT integration in physics instruction, whereas lower values on the D and SD continuums suggested a negative perception.

In order to establish face and content validity, the instruments were validated by three physics professors from the Department of Science Education, University of Ilorin, in terms of the appropriateness of the vocabulary used, the quality of the items on the questionnaire, and the clarity of the options given. The instrument's content index validity of 0.82 was obtained. To determine the reliability of the instrument, the researchers conducted a pilot test on 20 teachers that were outside the participating teachers for this study using a Cronbach's alpha at a significance level of 0.05, and a reliability coefficient of 0.72 was obtained for the instrument.

The instrument was administered to the senior secondary school physics teachers in order to obtain their perceptions of the integration of ICT facilities in teaching physics. Ethical norms were taken into consideration with the approval of the schools and consent of the participating teachers, and participation was optional. Also, the confidentiality and security of the data collected in the study were ensured by the researchers.

RESULTS

The demographic profiles of the respondents were presented using the descriptive statistics of frequency and percentage in Table 1.

Table 1: Percentage Distribution of Respondents' Demographic Characteristics

S/N	Gender	Male
		Female
		Total
	School Type	Private
		Public
		Total
	Educational Qualification	NCE
		B.Sc. Ed.
		PGDE
		M.Ed
		B.Sc
		M.Sc
		HND
		Total
	Teaching Experience	0-4 years
		5-10 years

S / N	The integration of ICT in teaching	SA (%)	A (%)	D (%)	S	D (%)
1	facilitates teachers' presentation of instruction in physics	86(49.1)	80(45.7)	3 (1 . 7)	6 (3 . 4)	
2	arouses students' interest in physics learning.	98(56.0)	75(42.9)	2 (1 . 1)	0 (0 . 0)	
3	helps students' retain knowledge of physics	93(53.1)	77(44.0)	3 (1 . 7)	2 (1 . 1)	
4	assists in the sequential arrangement of physics contents for effective teaching to take place.	87(49.7)	86(49.1)	2 (1 . 1)	0 (0 . 0)	
5	enables teachers to present physics materials in such a way as to cater for individual differences.	61(34.9)	103(58.9)	9 (5 . 1)	2 (1 . 1)	
6	familiarises teachers with information literacy in ICT and other media, which improves the teaching of physics.	124(70.9)	49 (28.0)	2 (1 . 1)	0 (0 . 0)	
7	widens teachers' pedagogical scope in terms of experience and method.	69 (39.4)	94 (53.7)	1 0 (5 . 7)	2 (1 . 1)	
8	It increases the level of creativity of the teacher.	91 (52.0)	69 (39.4)	1 2 (6 . 9)	3 (1 . 7)	
9	enhances the teacher's psychomotor domain in the handling of ICT facilities in the teaching of physics	65 (37.1)	90 (51.4)	1 2 (6 . 9)	8 (4 . 6)	
1	0 makes teaching more difficult.	89 (50.9)	8 0 (4 5 . 7)	0 (0 . 0)	6 (3 . 4)	
1	1 limits the content of my lessons	69 (39.4)	100(57.1)	0 (0 . 0)	6 (3 . 4)	
1	2 consumes the teacher's time in the presentation of instruction in physics.	46 (26.3)	126(72.0)	0 (0 . 0)	3 (1 . 7)	
1	3 It makes it more difficult to control the class.	59 (33.7)	111(63.4)	0 (0 . 0)	5 (2 . 9)	
1	4 has a negative effect on the physics teaching-learning process.	66 (37.7)	107(61.1)	2 (1 . 1)	0 (0 . 0)	
1	5 takes too much of my personal time during lessons.	51 (29.1)	120(68.6)	0 (0 . 0)	4 (2 . 3)	
1	6 is not feasible because of a lack of supporting facilities.	6 (3 . 4)	148(84.6)	2 1 (1 2 . 0)	0 (0 . 0)	
1	7 Is not possible because it is too expensive to purchase.	13 (7 . 4)	139(79.4)	2 3 (1 3 . 1)	0 (0 . 0)	
1	8 is not proper because it diverts students' attention from the teachers.	38 (21.7)	126(72.0)	1 1 (6 . 3)	0 (0 . 0)	
1	9 makes the preparation of lessons quicker.	0 (0 . 0)	123(70.3)	0 (0 . 0)	5 2 (2 9 . 7)	
2	0 is a very demanding task for physics teachers.	18 (10.3)	136(77.7)	2 1 (1 2 . 0)	0 (0 . 0)	

According to Table 1, 122 (69.7%) of the 175 physics teachers that took part in the survey were males, while 53 (30.3%) were females. This suggests that the study included more male physics teachers than female physics teachers.

The educational qualifications of the teachers revealed that 7 (4.0%) were NCE holders, 33 (18.9%) had a B.Sc. (Ed), 33 (18.9%) had a PGDE, 5 (2.9%) had an M.Ed. certificate, 76 (43.4%) had a B.Sc., and 11 (6.3%) had an HND certificate. This means that 78 (44.6%) of the teachers were qualified (teachers with a certificate in education), whereas 97 (55.4%) were unqualified (no certificate in education).

Based on teaching experience, 34 (19.4%) of respondents have been teaching for 0–4 years, 76 (43.4%) have been teaching for 5–10 years, and 65 (37.1%) have been teaching for 11 years or more. This means that moderately experienced physics teachers were more common than both less experienced and experienced teachers in this study.

Research Question 1: What is the teachers' perception of the integration of ICT facilities in teaching senior secondary school physics in Kwara-Central Senatorial District, Nigeria?

Table 2: Perception of Teachers on the Integration of ICT Facilities in Teaching Senior Secondary School Physics in Kwara-Central of Kwara State

Table 2 depicts the percentage distribution of respondents' perceptions about the integration of ICT facilities in senior secondary school physics teaching. According to the table, from items 1 to 20, respondents' replies skewed to the left continuum (that is, within SA and A) with the highest percentages of 98.9%, 98.8%, and 98.9%, as demonstrated by items 2, 4, and 6. This investigation concludes that physics teachers in Kwara-Central had a positive perception of the integration of ICT in senior secondary school physics instruction.

Testing of Hypotheses

H₀₁: There is no significant difference between male and female teachers' perceptions of the integration of ICT facilities in teaching senior secondary school physics.

Table 3: Independent t-test Comparing Male and Female Teachers' Perceptions of ICT Integration in Teaching Physics

Gender	N	Mean	SD	Df	Cal. t	p-value	Remark
Male	12	258.066	7.7				
				173	2.85	*0.005	Rejected
Female	5	355.114	8.5				

* Sig. at $p < .05$

Table 3 presents the independent t-test results on the difference between male and female teachers' perceptions of ICT facility integration in teaching senior secondary school physics. The table shows that at a degree of freedom (df) of 173, the hypothesis is statistically significant (Cal. $t = 2.85$; $p = .005 < .05$); hence, the hypothesis is rejected. Therefore, there is a significant difference between male and female teachers' perceptions of the integration of ICT facilities in teaching senior secondary school physics in Kwara-Central Senatorial District, Nigeria.

H₀₂: There is no significant difference between private and public secondary school teachers' perceptions of the integration of ICT facilities in teaching senior secondary school physics.

Table 4: Independent t-test Comparing Teachers' Perceptions from Private and Public Secondary Schools on ICT Facility Integration in Teaching Senior Secondary Schools Physics

School Type	N	Mean	SD	Df	Cal. t	p-value	Remark
Private	7	57.037	2.0				
				173	0.23	0.817	Accepted
Public	10	55.7	3.5				

Table 4 presents the independent t-test results on the difference between private and public teachers' perceptions of ICT facility integration in teaching senior secondary school physics. The table shows that at a Degree of Freedom (df) of 173, the hypothesis is not statistically significant (Cal. $t = .23$; $p = .817 > .05$); hence, the hypothesis is accepted. Therefore, there is no significant difference in

private and public secondary school teachers' perceptions of the integration of ICT facilities in teaching senior secondary school physics.

H₀₃: There is no significant difference between qualified and unqualified physics teachers' perceptions of the integration of ICT facilities in teaching senior secondary school physics.

Table 5: One-Way ANOVA Comparing Teachers' Perceptions of ICT Integration in Teaching Physics Based on Teaching Qualification

S o u r c e s	Sum of Squares	d f	Mean Square	Cal. <i>F</i>	p-value	Remark
Between Groups	9 8 7 . 3 9 8 6	1 6 4	. 5 6 6 4 . 5 2	*	0 . 0 0 0	Rejected
Within Groups	6 1 1 2 . 7 9 6 1	6 8 3 6	. 3 8 6			
T o t a l	7 1 0 0 . 1 9 4 1	7 4				

* Sig. at $p < .05$

Table 5 presents the ANOVA results on the difference between qualified and unqualified teachers' perceptions of ICT facility integration in teaching senior secondary school physics. The table shows that at degrees of freedom (df) of 6 against 168, the hypothesis is statistically significant (Cal. $F = 4.52$; $p = .000 < .05$); hence, the hypothesis is rejected. Therefore, there is a significant difference between qualified and unqualified teachers' perceptions of the integration of ICT facilities in teaching senior secondary school physics. The Sheffe post-hoc test is thus applied (in Table 6) to determine the qualification category of teachers that contributes to the difference observed in their perception of ICT integration in teaching physics.

Table 6: Sheffe Post-Hoc to Determine the Teachers' Qualifications that Contribute to the Observed Difference in Perception of ICT Integration in Teaching Physics

Qualification N	S u b s e t f o r a l p h a = . 0 5				
	1				2
N C E 7	5	2	.	0	0
B.Sc. Ed. 3	3 5	5	.	1	5
B . S c 7	6 5	6	.	8	7
M. Ed. 5	5	7	.	2	0
PGDE 3	3 5	7	.	8	5
M. Sc. 1	0				59.30
H N D 1	1				64.55
S i g .	.	2		1	5 . 1 6 3

The Sheffe post-hoc homogeneous subsets table shows which groups of the respondents' qualifications have the same mean and which ones have a different mean. Table 6 shows that NCE, B.Sc. Ed., B.Sc., M.Ed., and PGDE groups are in subset 1, and M.Sc. and HND groups are in subset 2. Within a subset, there is no significant difference, while between subsets, there is a significant difference. There is no significant difference between the M.Sc. and HND groups, while both of these groups are significantly different from the groups in subset 1. Hence, physics teachers with HND and M.Sc. (unqualified teachers) contributed to the observed difference in the respondents' perceptions of the integration of ICT facilities in teaching senior secondary school physics.

H04: There is no significant difference among highly experienced, moderately experienced, and less experienced teachers' perceptions of the integration of ICT facilities in teaching senior secondary school physics.

Table 7: One-Way ANOVA Comparing Teachers' Perceptions of ICT Integration in Teaching Physics Based on Teaching Experience

S o u r c e s	Sum of Squares	d f	Mean Square	Cal. F	p - v a l u e	Remark
Between Groups	291.7202	2	145.860	3.68*	0.027	Rejected
Within Groups	6808.4741	172	39.584			
T o t a l	7100.1941	174				

* Sig. at $p < .05$

Table 7 presents the ANOVA results on the difference among teachers' perceptions of ICT facility integration in teaching senior secondary school physics based on teaching experience. The table shows that at degrees of freedom (df) of 2 against 172, the hypothesis is statistically significant (Cal. $F = 3.68$; $p = .027 < .05$); hence, the hypothesis is rejected. Therefore, there is a significant difference in highly experienced, moderately experienced, and less experienced teachers' perceptions of the integration of ICT facilities in teaching senior secondary school physics. The Sheffe post-hoc test is thus performed (in Table 8) to determine the teachers' categories of experience that contribute to the difference observed in their perception of ICT integration in teaching physics.

Table 8: Sheffe Post-Hoc to Determine the Teachers' Category of Teaching Experience that Contributes to the Observed Difference in Their Perception of ICT Integration in Teaching Physics

Teaching Experience	Subset for alpha =.05	
	1	2
11 years & above	65	5
5-10 years	76	5
0-4 years	34	5
S i g .	.534	.202

The Sheffe post-hoc homogeneous subsets table shows which groups of the respondents' qualifications have the same mean and which ones have a different mean. Table 8 shows that experienced (11 years and above) and moderately experienced (5–10 years) groups are in subset 1, and less experienced (0–4 years)

groups are in subset 2. Within a subset, there is no significant difference, while between subsets, there is a significant difference. There is no significant difference between the experienced and moderately experienced groups, while both of these groups are significantly different from the groups in subset 2. Hence, physics teachers with less teaching experience contributed to the observed difference in the respondents' perception of the integration of ICT facilities in teaching senior secondary school physics.

Discussion

Physics teachers in the Kwara-Central region exhibit favourable attitudes towards the incorporation of ICT in the teaching of senior secondary school physics. The discovery represents a positive advancement, as teachers demonstrate a favourable perception towards the integration of ICT in the teaching of physics. The aforementioned findings suggest that teachers are integrating this practice into their physics teaching, as the integration of ICT in the field of education has gained increasing recognition and acceptance in recent times. The present study's results are consistent with prior research conducted by (Gebremedhin & Fenta, 2015; Qasem & Viswanathappa, 2016; Rosa, 2016; Silviyanti & Yusuf, 2015; Kusuma, 2022). These studies collectively demonstrate that instructors have a good and favourable perspective towards the use of ICT in the teaching of physics to students. The present discovery aligns with other studies, maybe due to the use of comparable methodologies and the inclusion of respondents with similar demographic characteristics. In contrast, Otemuyiwa and Attah (2020) conducted research that revealed teachers' unfavourable attitudes regarding the incorporation of ICT in the process of delivering education. The discrepancy between the previous study and the present findings may be attributed to variations in the demographic characteristics of the participants and the geographical context in which the study was conducted.

The results indicate a statistically significant disparity between male and female teachers' perspectives on the incorporation of ICT resources in the instruction of senior secondary school physics. This indicates that the participants hold varying perspectives towards the incorporation of ICT in the instruction of physics. The present study's findings align with previous research conducted by (Mfaume 2019; Alao & Brink, 2020; Okkan & Aydin, 2022). These studies have provided empirical data that supports the existence of a notable disparity between male and female instructors regarding the integration of ICT in the context of teaching and learning. The consistency of this conclusion with the prior study may be attributed

to the similarity in demographic factors among the respondents and the utilisation of the same research technique. On the contrary, Okocha's (2021) study yielded a negative outcome that contradicts the findings of the present investigation. The disparate findings of the studies may be attributed to the fact that they were conducted in different locations. Hence, this discovery implies that male educators exhibit a higher propensity to utilise ICT in their instructional practices within the domain of physics education.

The findings also indicated that there is not a statistically significant disparity in the perception of ICT facility integration in the teaching of senior secondary school physics between private and public secondary school instructors in Kwara-Central, Nigeria. The implications of this study's findings suggest that regardless of the type of school in which they teach, the respondents have a similar perspective on the integration of ICT facilities in the teaching of physics. This outcome aligns with the research conducted by Bello et al. (2022), which revealed that instructors from both private and public secondary schools share similar perspectives about the incorporation of ICT facilities in the instruction of physics. Both the present study and the previous one employed a comparable approach, conducting their investigations among respondents who shared similar features and were situated in the same location. In contrast, the findings of the Mwambela et al., (2019) study have demonstrated a notable disparity in the perspectives of participants on the use of ICT in the instructional process of physics. The disparity in this context may be attributed to the fact that some private secondary schools have made substantial investments in ICT to enhance the efficacy of their instructors, in contrast to the prevailing situation in many public secondary schools in Nigeria. The present discovery, however, indicates that both instructors in public and private schools exhibit favourable attitudes towards the utilisation of ICT and may acquire proficiency in its usage when supplied with suitable resources and a conducive atmosphere.

The result yielded statistically significant findings indicating a notable disparity in the perspective of integrating ICT facilities in the instruction of senior secondary school physics between qualified and unqualified instructors. The viewpoint of certified teachers towards the integration of ICT facilities in the teaching of physics differs from that of untrained instructors. This discovery supports the conclusions drawn by Okocha (2021) and Aina (2022), who have previously demonstrated that there is a notable disparity in instructors' perspectives on the incorporation of ICT in physics instruction depending on their educational

qualifications. The similarity between this conclusion and prior research may be attributed to the observation that people with higher educational qualifications tend to possess greater knowledge regarding the efficiency of using ICT in the teaching and learning process. In contrast, the present study challenges the findings of Owan and Offu (2021), who concluded that educational degree does not significantly influence teachers' perspectives on the integration of ICT in physics instruction. The potential factors contributing to the difference between the findings might be attributed to the chosen research technique and the characteristics of the respondents. The results also indicate that individuals without formal education training, referred to as unqualified instructors, are capable of expressing positive opinions and attitudes towards the utilisation of ICT in enhancing the teaching of physics.

The result has revealed a statistically significant disparity in the perception of integrating ICT facilities in the teaching of senior secondary school physics among highly experienced, moderately experienced, and less experienced teachers. The findings of this study suggest that the respondents' experiences influenced their impression of the incorporation of ICT facilities in teaching physics. The present study builds upon prior research conducted by (Aina 2022; Okkan & Aydin 2022; Suhail 2022), which has provided evidence that informs the current findings. These studies have demonstrated that teachers' attitudes towards the use of ICT in teaching physics vary depending on their level of teaching experience. The alignment of this discovery with previous empirical findings may be attributed to the similarity in demographic characteristics among the group of instructors included in the study. Similarly, this discovery contradicts the conclusions drawn by Mfaume (2019) and Kandoli (2022), who found no substantial variation in teachers' perspectives on the utilisation of ICT for teaching physics. It is possible that this discrepancy arises from the fact that these studies were conducted in different locations. However, the findings of this study have demonstrated that teachers with more experience tend to have a greater inclination towards embracing the integration of ICT in the context of teaching physics.

Conclusion

It was concluded that physics teachers have positive perceptions of the integration of ICT facilities in teaching senior secondary school physics. Demographic variables play a significant role in the respondents' perceptions of ICT integration in teaching physics. Hence, teachers (of different demographic features) can make

a significant impact on the quality of physics education, leading to improved learning outcomes and enhanced teachers' professional development.

Recommendations

The following recommendations were made:

The school authority should enhance the positive perception of teachers about ICT integration into the teaching of physics by developing a deeper understanding of physics concepts, improving their digital literacy skills, and becoming more engaged in the learning process.

Education policy-makers and school authorities should narrow the gender gap in the perception of ICT integration in teaching physics by fostering a more inclusive and equal environment for both male and female teachers.

Education policy-makers, the government, school administrators, and relevant stakeholders should adapt collaboration opportunities between private and public secondary school teachers to share best practices and experiences on ICT integration in teaching physics through workshops, conferences, and on-line platforms where teachers can exchange ideas and resources.

The school authority and education policy-makers should pair unqualified teachers with experienced and qualified teachers who have successfully integrated ICT into their physics teachings.

School authorities and education policy-makers should provide opportunities for teachers to observe one another's use of ICT in physics lessons and to provide constructive feedback.

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