



Availability and Utilization of Information and Communication Technology in Instructional Delivery in Senior Secondary Schools in Zamfara State, Nigeria

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ABSTRACT

This study assessed availability and utilization of information and communication technology (ICT) in instructional delivery in senior secondary schools in Zamfara State, Nigeria. Structured questionnaire was adopted for data collection, a simple random sampling technique was used to select respondents in this study. A descriptive survey was used to analyze the data. The analysis revealed inadequate ICT facilities in secondary schools with a mean score of 2.44 on a scale of 1 to 5. The standard deviation of 1.12 suggests variability in responses, with some schools having slightly better facilities than others. However, the overall picture is insufficiency which hinders the effective use of ICT in education. Teachers in Zamfara State exhibit low levels of ICT knowledge, with a mean score of 2.03. The low standard deviation (0.76) indicates a widespread issue, with little variation among teachers. The study concludes that ICT integration in secondary schools in Zamfara State hindered by inadequate infrastructure, low teachers' competency, limited utilization of available resources. Teachers perceive minimal benefits from ICT, and significant barriers prevent its effective use in teaching and learning. The implications for educational outcomes in Zamfara State, as lack of ICT integration limits students' exposure to digital tools and modern educational practices.

Keywords: Information and Communication Technology (ICT), Instructional Delivery, Utilization, Secondary Schools, Zamfara State

1.0 INTRODUCTION

1.1 Background

Recent advances in information and communication technology (ICT) have changed the necessities of modern civilizations. ICT is needed to teach 21st-century skills in schools worldwide (Tedla, 2021). Nigeria joined the global community to reform its educational system and improve classroom amenities to close the technology gap in teaching and learning. Technology will shape education in the 21st century, according to Achuonye (2021), ICT in education has had an unparalleled impact due to technological advances. Due to computer communication capabilities, particularly email, "Information Technology" was renamed "Information and Communication Technology" over 10 years ago. ICT processes text, photographs, graphs, directions, and other data for computers, cameras, and phones; ICT includes computers and the internet (Haddad & Draxler, 2020).

The above technologies include: the internet, line telephony, mobile phones, wireless communications, networks, broadband, barcode scanners, Braille readers, and GPS. ICT includes many tools and resources for creating, sharing, storing, retrieving, and managing information (UNESCO, 2021). In 2005, the UN defined ICT as information and communication

technology advancement and integration. This integration creates information-based societies, which transforms social interaction, economic and business practices, political activity, education, health, leisure, and entertainment. ICT helps information and knowledge organizations grow. The phrase covers several communication devices and software. This scope encompasses radio, television, cellular phones, computers, networks, hardware, software, satellite systems, and their services and applications, including videoconferencing and remote learning. Tedla (2021) lists ICT as a curriculum subject, resource, and skill. Information and Communication Technology (ICT) include: Phones, fax machines, TVs, video and audio recorders, CD players, CD-ROMs, personal organizers, programmable and remote-controlled toys, radios, computers, and any other technology that improves finding, exploring, analyzing, documenting, exchanging, and presenting instructional information. Information and communication technology (ICT) is vital to modern life and business. Technology has improved productivity and competitiveness by creating new methods for acquiring, processing, storing, and presenting information (UNESCO, 2021).

The integration of information and communication technologies (ICTs) with the global economy has



improved organizations' effectiveness, efficiency, and service offering. ICT is crucial to global classroom management and knowledge transmission (Haddad & Draxler, 2020). Information and communication technology (ICT) has rapidly changed 21st-century society's needs. Modern demands have changed due to these changes. ICT has grown more important in our daily life and education. Thus, there is Information and communication technology (ICT) is being used more in schools to teach 21st-century skills. To solve education's technology gap, schools are redesigning their curricula and classrooms. Educational institutions recognize how Information and communication technology (ICT) affects work and life. Tedla (2021) states that restructuring requires good technology integration in education. Students gain subject-specific knowledge, meaningful learning experiences, and professional productivity through this combination.

1.2 Statement of the Problem

Incorporating ICT into educational settings has numerous advantages. According to Haddad and Draxler (2020), information and communication technologies (ICT) contribute significantly to various aspects of education development and effective learning by increasing access, fostering efficiency, improving learning quality, and enhancing teaching quality. These four objectives are achievable using ICT, also in a similar study, Yusuf (2020) stated that effective use of information and communication technology enables collaborative learning in which students interact with one another, teachers, and subject matter experts regardless of their physical location. According to research (Tedla, 2021), the successful integration of ICT in teaching and learning is largely dependent on teacher competency, the availability of information and communication technology (ICT) infrastructure, and teachers' adoption and embracement of ICT in education. It is unknown how effectively information and communication technology can aid in the learning process in Zamfara secondary schools. Recent research has found that information and communication technologies improve teaching and learning by allowing students to practice and analyze material, as well as making it easier to access articles relevant to the subject matter being taught and learned, likewise it improves the performance of secondary school student. The integration of information and communication technology in instructional deliveries holds great potential for enhancing teaching and learning processes in secondary schools. However, there is a concern about the proficiency of secondary school teachers in utilizing information and communication technology (ICT) effectively in their instructional deliveries (Zwass, 2021). This lack of proficiency may hinder the full realization of the benefits of information and communication technology (ICT) integration in education (Tanner, 2020; Tomei, 2021). It is essential to understand the extent to which

secondary school teachers are proficient in utilizing ICT in their instructional deliveries, as this directly impacts the quality of education provided to students (Budiasih & Wijayanti, 2020). The proficiency of ICT utilization in instructional deliveries among secondary school teachers is inadequate, hindering the full realization of the benefits of information and communication technology (ICT) integration in education (Yusuf, 2020).

Thus, Secondary School teachers must have information and communication technology (ICT) skills in order to prepare instructional materials for teaching and learning activities, they must facilitate the direct use of information and communication technology (ICT) in students' learning activities within the classroom setting, and teachers must develop their students' critical awareness of ICT application and the social implications (Ngurukulem, 2022). Yusuf and Balogun (2020) further emphasized the distinction between basic and educational ICT competencies. These competencies are expanded upon in the United Nations Educational Scientific and Cultural Organization's ICT competency Standards for Teachers (UNESCO, 2021). Previous research has highlighted the significant potential of information and communication technology in improving the quality of education in secondary schools. However, a recurring theme in the problem is the inadequate proficiency of secondary school teachers in utilizing ICT for instructional deliveries among students in teaching and learning. Several factors have been identified as contributing to this lack of proficiency, including limited access to ICT resources, poor software and hardware quality, and insufficient training in ICT integration (Zhao & Frank, 2021). In addition to these individual and institutional challenges, structural issues such as irregular power supply and inadequate funding for ICT infrastructure in schools further exacerbate the problem. This not only hinders the ability of teachers to effectively deliver instruction but also restricts students' access to quality education, impacting their preparedness for the digital era.

1.3 Research Questions

The study is guided by the following research questions:

- What is the status of ICT facilities for teaching in secondary schools in Zamfara State, Nigeria?
- What is the level of ICT knowledge among secondary school teachers in Zamfara State, Nigeria?
- How competent are secondary school teachers in using ICT for instructional deliveries in Zamfara State, Nigeria?

1.4 Aim and Objectives of the Study

The aim of this study is to assess the proficiency of Information and Communication Technology (ICT) utilization in instructional deliveries among secondary



school teachers in Zamfara State, Nigeria. the specific objectives are to:

- assess the status of ICT facilities available for teaching in secondary schools in Zamfara State.
- evaluate the level of ICT knowledge among secondary school teachers in Zamfara State.
- determine the competency of secondary school teachers in using ICT for instructional delivery in Zamfara State.

1.5 Hypotheses of the Study

The study tests the following null hypotheses:

- H_{01} : There is no significant availability or functional adequacy of ICT facilities for teaching in secondary schools in Zamfara State, Nigeria.
- H_{02} : The level of ICT knowledge among secondary school teachers in Zamfara State, Nigeria is not significant.
- H_{03} : Secondary school teachers in Zamfara State, Nigeria, are not significantly competent in using ICT for instructional delivery.

2.0 METHODOLOGY

2.1 Research Design

The study adopts a descriptive survey design, which is appropriate for investigating the current status of a phenomenon within a specific population. According to Creswell and Clark (2021), a descriptive survey design is particularly useful for gathering data on attitudes, opinions, and behaviors of a population. This design allows the researcher to collect data from a large sample, making it possible to generalize the findings to the broader population. The descriptive survey design is also suitable for this study because it enables the researcher to examine the relationship between variables, such as the availability of ICT facilities, teachers' ICT knowledge, and their proficiency in using ICT for instructional deliveries. The choice of a descriptive survey design is further justified by the nature of the research questions, which seek to determine the status of ICT facilities, the level of ICT knowledge among teachers, their competency skills, and the barriers to ICT utilization in teaching and learning. As noted by Sarantakos (2021), a descriptive survey design is ideal for studies that aim to describe the characteristics of a population or phenomenon. In this study, the descriptive survey design will help to provide a comprehensive understanding of the current state of ICT utilization among secondary school teachers in Zamfara State.

2.2 Area of the Study

The study is conducted in Zamfara State, located in the North-West geopolitical zone of Nigeria. Zamfara State is one of the 36 states in Nigeria and is known for its rich cultural heritage and historical significance. The state is predominantly rural, with a significant portion of the population engaged in agriculture. However, like many states in Nigeria, Zamfara faces challenges in the

education sector, particularly in terms of infrastructure, teacher training, and access to modern educational technologies. Zamfara State is divided into 14 Local Government Areas (LGAs), and the study focuses on four LGAs within the Zamfara Central Senatorial Zone: Gusau, Maru, Bungudu, and Tsafe. These LGAs were selected because they represent a mix of urban and rural areas, providing a diverse sample of secondary schools and teachers. The selection of these LGAs also ensures that the findings of the study can be generalized to other parts of the state with similar socio-economic and educational conditions.

2.3 Population of the Study

The target population for this study comprises all secondary school teachers in Zamfara State. According to the Zamfara State Ministry of Education, there are 3,813 secondary school teachers spread across the state, serving a student population of approximately 400,734 in 89 secondary schools. The accessible population for this study includes teachers from the four selected Local Government Areas (LGAs) Gusau, Maru, Bungudu, and Tsafe. These LGAs were chosen because they represent a significant proportion of the state's secondary school teachers and provide a diverse sample in terms of geographical location, school size, and socio-economic conditions. The population of the study is further broken down as follows:

- Number of students in secondary schools: 400,734
- Number of secondary schools: 89
- Number of secondary school teachers: 3,813

The study focuses on secondary school teachers because they play a critical role in the implementation of ICT in education. As noted by Yusuf (2005), teachers are the primary agents of change in the educational system, and their proficiency in ICT utilization is crucial for the successful integration of technology in teaching and learning.

2.4 Sample Size of the Study

The sample size for the study was determined using the Research Advisor (2006) sample size calculator, which is widely used in social science research. The formula for determining the sample size is as follows:

$$N = \frac{Z^2 p(1-p)}{d^2}$$

where:

N = sample size, Z = statistic for the level of confidence (1.96 for a 95% confidence level), P = expected proportion in the target population (assumed to be 50% or 0.5), d = precision level (0.07)

Using the formula, the sample size was calculated as follows:

$$n = \frac{(1.96)^2 \times 0.5(1-0.5)}{(0.07)^2}$$

$$n = (1.96)^2 \times 0.5(1-0.5)$$

$$(0.07)^2 = 372 \quad n = (0.07)^2 (1.96)^2 \times 0.5(1-0.5) = 372$$



To account for potential attrition and non-response, the sample size was increased by 10%, resulting in a final sample size of 412 teachers. This sample size is considered adequate for a descriptive survey design, as it allows for a reasonable level of precision and generalizability of the findings.

2.5 Sampling Technique

The study employs a simple random sampling technique to select the respondents. Simple random sampling is a probability sampling method where each member of the population has an equal chance of being selected. This technique is appropriate for this study because it ensures that the sample is representative of the population, thereby enhancing the generalizability of the findings.

The sampling process involved the following steps:

1. Listing of Schools: A list of all secondary schools in the four selected LGAs was obtained from the Zamfara State Ministry of Education.
2. Selection of Schools: A random selection of schools was made from the list to ensure that both urban and rural schools were represented.
3. Selection of Teachers: Within each selected school, teachers were randomly selected to participate in the study. This was done to ensure that the sample included teachers with varying levels of experience, qualifications, and ICT proficiency.

The use of simple random sampling is justified because it minimizes bias and ensures that the sample is representative of the population. As noted by Sarantakos (2021), simple random sampling is particularly useful in studies where the population is homogeneous, as is the case with secondary school teachers in Zamfara State.

2.6 Instrument for Data Collection

The primary instrument for data collection in this study is a structured questionnaire. The questionnaire is titled "Proficiency of ICT Utilization in Instructional Deliveries among Secondary School Teachers in Zamfara State (PIUIDASS)" and consists of two sections:

Section A: This section collects demographic data from the respondents, including sex, age, marital status, highest qualification, years of teaching experience, nature of employment, and ICT proficiency.

Section B: This section contains 61 items designed to measure the research variables, including the status of ICT facilities, level of ICT knowledge, ICT competency skills, ICT facilities utilization, perceived benefits of ICT utilization, and barriers to ICT application in teaching and learning. The questionnaire uses a modified Likert four-point rating scale with the following response options: Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), and Strongly Disagree (SD). The use of a Likert scale is appropriate for this study because it allows for the measurement of

attitudes, opinions, and perceptions, which are central to the research questions. The questionnaire was developed based on a review of relevant literature and was designed to capture the key variables identified in the research objectives. The items were carefully worded to ensure clarity and to avoid ambiguity, which could lead to response bias.

2.7 Method of Data Analysis

The data collected were analyzed using both descriptive and inferential statistics. Descriptive statistics, such as frequencies, percentages, means, and standard deviations, were used to summarize the demographic data and to describe the status of ICT facilities, the level of ICT knowledge, and the perceived benefits of ICT utilization. Inferential statistics, such as one-sample and independent sample t-tests, were used to test the research hypotheses and to examine the relationships between the variables. The data analysis was conducted using IBM SPSS Version 25, a widely used statistical software package for social science research. The analysis involved the following steps:

1. Descriptive Analysis: The demographic data were analyzed using frequencies and percentages. The responses to the Likert scale items were summarized using means and standard deviations. A mean value of 3.0 was set as decision threshold.
2. Inferential Analysis: The research hypotheses were tested using one-sample and independent-sample t-tests. The t-tests were used to compare the means of two groups, and the level of significance was set at 0.05.

3.0 RESULTS AND DISCUSSION

3.1 Descriptive Data

3.1.1 Availability and Condition of ICT Facilities for Teaching

Table 1 shows the status of ICT facilities for teaching in secondary schools in Zamfara State, Nigeria. The analysis which examines the status of ICT facilities for teaching in secondary schools in Zamfara State, Nigeria, reveals significant inadequacies. Descriptive statistics from 11 items show mean scores ranging from 2.18 to 2.67 on a scale of 1 to 5, indicating that ICT facilities are generally insufficient and poorly maintained. For example, Item 1, with the lowest mean score (2.18), highlights a critical lack of basic ICT infrastructure, while Item 5, with the highest mean (2.67), still reflects only moderate availability or functionality. The narrow range of mean scores suggests that the inadequacy of ICT facilities is consistent across various dimensions. Standard deviation values, ranging from 1.223 to 1.397, indicate considerable variability in responses, implying that while some schools may have slightly better ICT resources, the majority face significant shortages. The minimum score of 1 across all items further underscores that some schools lack even the most basic



ICT tools, while the maximum scores (5) represent rare exceptions rather than the norm. These findings highlight a critical challenge for education in Zamfara State. The insufficient and unevenly distributed ICT facilities hinder effective teaching and learning, limiting students' exposure to digital tools and modern educational practices. Addressing this issue requires

urgent investment in ICT infrastructure, including the provision of computers, internet access, and other essential technologies, as well as regular maintenance to ensure functionality. By improving the availability and condition of ICT facilities, policymakers can create a more conducive learning environment, better preparing students for a technology-driven world.

Table 1: Availability and Condition of ICT Facilities for Teaching

Scale's Items	N	Minimum	Maximum	Mean	Std. Deviation
Item 1	309	1	5	2.18	1.371
Item 2	311	1	5	2.41	1.328
Item 3	311	1	5	2.45	1.350
Item 4	307	1	5	2.54	1.358
Item 5	310	1	5	2.67	1.373
Item 6	309	1	5	2.62	1.397
Item 7	307	1	5	2.39	1.361
Item 8	310	1	5	2.35	1.223
Item 9	311	1	5	2.42	1.361
Item 10	311	1	5	2.60	1.313
Item 11	309	1	5	2.42	1.357
Valid N (listwise)	286				

(Field work, 2025)

3.1.2 Level of ICT knowledge among secondary school teachers in Zamfara State, Nigeria

Table 2 shows the level of ICT knowledge among secondary school teachers in Zamfara State, Nigeria. The analysis which assesses the level of ICT knowledge among secondary school teachers in Zamfara State, Nigeria, reveals significant gaps in their digital proficiency. Descriptive statistics from 10 items show mean scores ranging from 1.74 to 2.40 on a scale of 1 to 5 (or 1 to 6 for Item 5), indicating consistently low ICT knowledge across all dimensions. For instance, Item 8, with the lowest mean score (1.74), highlights a critical area of weakness, while Item 3, with the highest mean (2.40), still falls below the midpoint, reflecting limited competence. The narrow range of mean scores suggests that low ICT knowledge is a widespread issue rather than isolated to specific areas.

Standard deviation values, ranging from 0.839 to 1.173, indicate moderate variability in responses, implying

that while a small subset of teachers may have slightly better ICT skills, the majority perform poorly. The minimum score of 1 across all items further underscores that some teachers lack basic ICT knowledge, while the maximum scores (5 or 6) represent outliers rather than the norm. These findings have significant implications for education in Zamfara State. Teachers' limited ICT proficiency hinders the integration of technology in classrooms, potentially depriving students of modern educational tools and widening the digital divide. Addressing this gap requires urgent interventions, such as comprehensive ICT training programs for teachers, to enhance their digital skills and enable effective use of technology in teaching. By improving teachers' ICT knowledge, policymakers can foster a more technologically inclusive educational environment, better preparing students for a digital future.

Table 2: Descriptive Statistics on Level of ICT knowledge among secondary school teachers in Zamfara State, Nigeria

Scale's Items	N	Minimum	Maximum	Mean	Std. Deviation
Item 1	309	1	5	2.10	1.114
Item 2	311	1	5	2.16	1.146
Item 3	306	1	5	2.40	1.173
Item 4	299	1	5	2.14	1.122
Item 5	310	1	6	2.11	1.134
Item 6	311	1	5	2.06	1.070
Item 7	304	1	5	1.88	.925
Item 8	301	1	5	1.74	.839
Item 9	304	1	5	1.97	1.017
Item 10	301	1	5	1.96	1.014



3.1.3 Competence of Secondary School Teachers in Using ICT for Instructional Deliveries in Zamfara State, Nigeria

Table 3 below reveals how competent secondary school teachers are in using ICT for instructional deliveries in Zamfara State, Nigeria. The Table reveals significant shortcomings. Descriptive statistics from 10 items show mean scores ranging from 1.77 to 2.20 on a scale of 1 to 5, indicating that teachers generally lack proficiency in using ICT for teaching. For instance, *item 3*, with the lowest mean score (1.77), highlights a critical area of weakness, while *item 5*, with the highest mean (2.20), still reflects only marginal competence. The narrow range of mean scores suggests that low ICT competence is a widespread issue across various aspects of instructional delivery. Standard deviation values, ranging from 0.874 to 1.130, indicate moderate variability in responses, implying that while

a small subset of teachers may have slightly better ICT skills, the majority struggle to integrate technology into their teaching practices. The minimum score of 1 across all items further underscores that some teachers lack even basic ICT skills, while the maximum scores (5) represent rare exceptions rather than the norm.

These findings highlight a critical barrier to effective teaching in Zamfara State. Teachers' limited ICT competence hinders their ability to leverage technology for instructional delivery, potentially limiting students' engagement and learning outcomes. Addressing this gap requires targeted interventions, such as hands-on ICT training programs for teachers, to enhance their digital skills and confidence in using technology for teaching. By improving teachers' ICT competence, policymakers can foster more dynamic and effective classroom environments, better preparing students for a technology-driven future.

Table 3: Descriptive Statistics on competent are secondary school teachers in using ICT for instructional deliveries in Zamfara State, Nigeria

Scale's Items	N	Minimum	Maximum	Mean	Std. Deviation
Item 1	309	1	5	1.86	.994
Item 2	308	1	5	1.85	.895
Item 3	309	1	5	1.77	.874
Item 4	306	1	5	2.17	1.109
Item 5	303	1	5	2.20	1.130
Item 6	303	1	5	2.03	1.010
Item 7	306	1	5	1.94	.965
Item 8	304	1	5	2.08	1.006
Item 9	305	1	5	1.98	1.109
Item 10	300	1	5	2.10	1.094
Valid N (listwise)	281				

3.2 Hypotheses Testing

3.2.1 Test of hypothesis 1

Table 4 shows that there is no significant availability or functional adequacy of ICT facilities for teaching in secondary schools in Zamfara State, Nigeria. The analysis of Hypothesis 1, which posits that there is no significant availability or functional adequacy of ICT facilities for teaching in secondary schools in Zamfara State, Nigeria, was conducted using a one-sample t-test. The results reveal a mean score of **2.4361** (on a scale of 1 to 5), with a standard deviation of **1.11990**, indicating that the availability and functionality of ICT facilities are generally below the midpoint of the scale. This suggests that ICT infrastructure in secondary schools is limited and inadequate for effective teaching and learning. The one-sample t-test compared the observed mean to a hypothesized mean of **2.5**, yielding a t-statistic of **-0.965** with **285 degrees of freedom** and a p-value of **0.335**. Since the p-value is greater than the

conventional significance level of 0.05, the null hypothesis cannot be rejected. This means there is no statistically significant evidence to conclude that the availability or functional adequacy of ICT facilities differs from the hypothesized mean. The mean difference of **-0.06389** further supports this, as it indicates that the observed mean is only slightly lower than the hypothesized value, but not significantly so. Additionally, the 95% confidence interval for the mean difference, ranging from **-0.1942 to 0.0665**, includes zero, reinforcing the conclusion that there is no significant difference between the observed and hypothesized means.

In summary, the findings confirm the null hypothesis, highlighting a critical gap in the availability and functionality of ICT facilities in secondary schools in Zamfara State. This underscores the need for targeted interventions, such as increased investment in ICT infrastructure and resources, to address these

deficiencies and enhance the quality of teaching and learning in the region.

Table 4: One-Sample t-test of availability or functional adequacy of ICT facilities for teaching in secondary schools

Variable	N	Mean	Std.	df	t-value	P-value	Decision
Status of ICT Facilities	286	2.4361	1.11990	285	-0.965	0.335	Fail to reject H ₀

3.2.2 Analysis of hypothesis 2

Table 5 shows the result of hypothesis 2 which test the level of ICT knowledge among secondary school teachers in Zamfara State, Nigeria. The result of the analysis which was conducted using a one-sample t-test reveals that the level of ICT knowledge among secondary school teachers in Zamfara State, Nigeria is not significant. The Table shows a mean score of **2.0307** (on a scale of 1 to 5), with a standard deviation of **0.76123**, indicating that teachers' ICT knowledge is generally low, falling below the midpoint of the scale. This suggests that most teachers lack adequate ICT proficiency, which could hinder their ability to integrate technology into teaching and learning effectively. The one-sample t-test compared the observed mean to a hypothesized mean of **2.5**, yielding a t-statistic of **-10.017** with **263 degrees of freedom** and a p-value of **0.000**. Since the p-value is less than the conventional significance level of 0.05, the null hypothesis is rejected. This indicates that the

level of ICT knowledge among teachers is significantly lower than the hypothesized mean. The mean difference of **-0.46932** further supports this conclusion, as it shows a substantial gap between the observed and hypothesized means. Additionally, the 95% confidence interval for the mean difference, ranging from **-0.5616 to -0.3771**, does not include zero, reinforcing the finding that the level of ICT knowledge is significantly lower than expected.

In summary, the analysis confirms that secondary school teachers in Zamfara State have a significantly low level of ICT knowledge. This highlights a critical need for targeted interventions, such as comprehensive ICT training programs, to enhance teachers' digital skills and enable them to effectively integrate technology into their instructional practices. Addressing this gap is essential for improving the quality of education and preparing students for a technology-driven future.

Table 5: One-Sample t-test of level of ICT knowledge among secondary school teachers in Zamfara State

Variable	N	Mean	Std.	df	t-value	P-value	Decision
Level of ICT Knowledge	264	2.0307	0.76123	263	-10.017	0.000	Reject H ₀

3.3.3 Test of hypothesis 3

Secondary school teachers in Zamfara State, Nigeria, are not significantly competent in using ICT for instructional delivery. The analysis of Hypothesis 3, which posits that secondary school teachers in Zamfara State, Nigeria, are not significantly competent in using ICT for instructional delivery, was conducted using a one-sample t-test. The results reveal a mean score of **1.9730** (on a scale of 1 to 5), with a standard deviation of **0.67927**, indicating that teachers' ICT competency is generally low and falls well below the midpoint of the scale. This suggests that most teachers lack the necessary skills to effectively integrate ICT into their teaching practices.

rejected. This indicates that teachers' ICT competency is significantly lower than the hypothesized mean. The mean difference of **-0.52705** further supports this conclusion, as it highlights a substantial gap between the observed and expected levels of ICT competency. Additionally, the 95% confidence interval for the mean difference, ranging from **-0.6068 to -0.4473**, does not include zero, reinforcing the finding that teachers' ICT competency is significantly inadequate.

In summary, the analysis confirms that secondary school teachers in Zamfara State lack significant competence in using ICT for instructional delivery. This underscores the urgent need for targeted interventions, such as hands-on ICT training programs, to enhance teachers' digital skills and enable them to effectively leverage technology in their teaching. Addressing this gap is critical for improving instructional quality and preparing students for a technology-driven future.

The one-sample t-test compared the observed mean to a hypothesized mean of **2.5**, yielding a t-statistic of **-13.006** with **280 degrees of freedom** and a p-value of **0.000**. Since the p-value is less than the conventional significance level of 0.05, the null hypothesis is

Table 6: One-Sample t-test on significance of Secondary school teachers' competent in using ICT for instructional delivery

Variable	N	Mean	Std.	df	t-value	P-value	Decision
ICT Competency	281	1.9730	0.67927	280	-13.006	0.000	Reject H ₀



4.0 CONCLUSION

The study concludes that ICT integration in secondary schools in Zamfara State is hindered by a combination of inadequate infrastructure, low teacher competency, and limited utilization of available resources. Teachers perceive minimal benefits from ICT, and significant barriers prevent its effective use in teaching and learning. These findings have important implications for educational outcomes in the region, as the lack of ICT integration limits students' exposure to digital tools and modern educational practices. The study also concludes that there is no significant difference in the perceived benefits or barriers to ICT utilization between male and female teachers. This suggests that interventions to improve ICT integration should be gender-neutral and focus on addressing the common challenges faced by all teachers.

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