



# A Study of ICT Training Programmes on Teaching Effectiveness of Secondary School Teachers in Kano State, Nigeria

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## Abstract

This study investigates the impact of ICT (Information and Communication Technology) training programmes on the teaching effectiveness of secondary school teachers in Kano State, Nigeria. The growing integration of technology into education has made ICT competency a critical aspect of teacher performance. The study adopted a descriptive survey design involving 200 secondary school teachers across public and private institutions in the state. Data were collected using a structured questionnaire and analyzed using descriptive statistics and inferential analysis (t-test and correlation). Findings revealed that teachers who underwent formal ICT training reported higher levels of teaching effectiveness, including improved lesson planning, classroom engagement, and assessment techniques. The study concludes that ICT training enhances pedagogical competence and recommends that education authorities in Kano State should mandate regular ICT training programmes and provide infrastructure support to ensure successful integration of technology into classroom practices.

**Keywords:** CT, Teaching Effectiveness, Secondary School Teachers, Training Programmes, Nigeria, Educational Technology.

## 1. Introduction

In the digital age, Information and Communication Technology (ICT) has become a vital component of education systems worldwide. The use of ICT tools—such as computers, projectors, the internet, and e-learning platforms—has revolutionized the teaching-learning process. In Nigeria, and particularly in Kano State, there has been a growing emphasis on teacher training to enhance ICT competence. However, the actual impact of these training programmes on teaching effectiveness remains under-researched. This study seeks to explore whether ICT training programmes have a measurable impact on the teaching effectiveness of secondary school teachers in Kano State.

## 2. Objectives of the Study

- To compare the teaching effectiveness of male and female secondary school teachers who have undergone ICT training programmes.
- To examine the difference in teaching effectiveness between ICT-trained teachers from government and private secondary schools.

## 3. Research Questions

- What is the level of participation of teachers in ICT training programmes in Kano State?
- How does the teaching effectiveness of ICT-trained teachers differ from that of untrained teachers?

- Is there a significant relationship between ICT training and teaching effectiveness?

## 4. Hypotheses

**H<sub>01</sub>:** There is no significant difference in the teaching effectiveness of male and female secondary school teachers who have undergone ICT training programmes.

**H<sub>02</sub>:** There is no significant difference in the teaching effectiveness of ICT-trained teachers from government and private secondary schools.

## 5. Methodology

- Research Design:** This study adopted a descriptive survey research design to investigate the influence of ICT training programmes on the teaching effectiveness of secondary school teachers in Kano State, Nigeria. This design was chosen to enable the researcher to collect factual information from a large sample and analyze their responses systematically without manipulating any variables.
- Population of the Study:** The population of the study consisted of all secondary school teachers in public and private schools across Kano State, Nigeria.
- Sample and Sampling Technique:** A total of 200 secondary school teachers were selected using a stratified random sampling technique, ensuring representation based on gender (male and female) and type of institution.

(government and private schools). From this sample:

- 100 teachers were selected from government schools (50 male, 50 female),
- 100 teachers from private schools (50 male, 50 female).

#### iv). Instrument for Data Collection

A self-designed questionnaire titled “ICT Training and Teaching Effectiveness Questionnaire (ICTTEQ)” was used for data collection. The questionnaire consisted of two parts:

- **Part A:** Demographic information (gender, school type, training exposure).
- **Part B:** 20 items related to various aspects of teaching effectiveness (lesson delivery, student engagement, use of ICT tools, and assessment techniques).

Responses were recorded on a 5-point Likert scale ranging from Strongly Agree (5) to Strongly Disagree (1).

#### v). Validity and Reliability of the Instrument

The instrument was reviewed by three experts in educational research and ICT education to ensure content and face validity. A pilot study was conducted on 30 teachers outside the main sample, and the instrument yielded a Cronbach’s Alpha reliability coefficient of 0.81, indicating high internal consistency.

#### vi). Data Collection Procedure

Permission was obtained from school authorities prior to administration. The researcher personally administered the questionnaires to the respondents during school hours, ensuring confidentiality and voluntary participation.

#### vii). Method of Data Analysis

Data collected were analyzed using both descriptive and

inferential statistics.

- Descriptive statistics (mean, standard deviation) were used to summarize responses.
- Independent samples t-tests were used to test the null hypotheses regarding differences in teaching effectiveness based on gender and school type, at a 0.05 significance level.

## 6. Results and Discussion

This section presents the findings from the data collected and analyzed using descriptive and inferential statistics, based on the two stated null hypotheses.

### i). Hypothesis 1

**H<sub>01</sub>:** There is no significant difference in the teaching effectiveness of male and female secondary school teachers who have undergone ICT training programmes.

An independent samples t-test was conducted to compare the teaching effectiveness scores of male and female teachers who received ICT training.

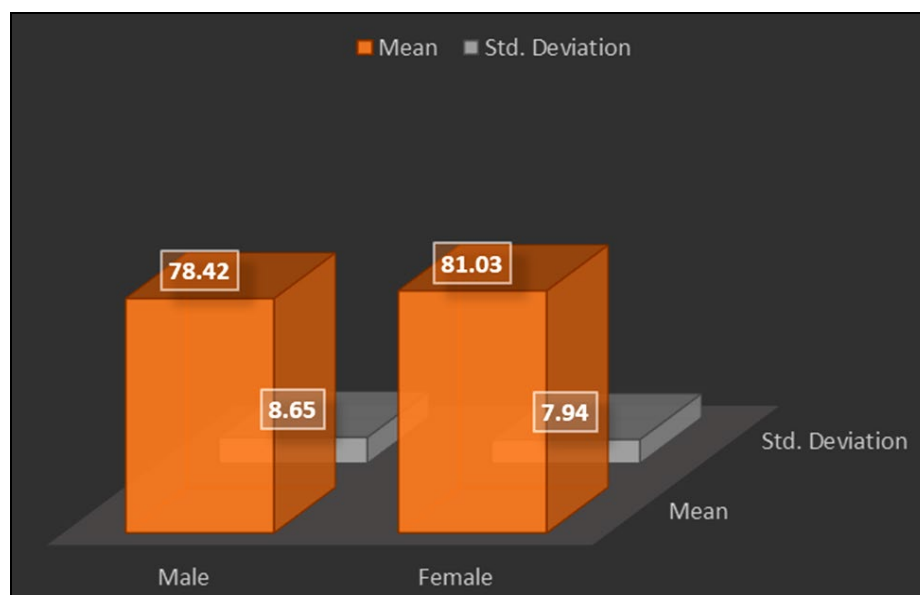
**Table 1:** Teaching effectiveness scores of male and female teachers.

Gender	N	Mean	Std. Deviation
Male	100	78.42	8.65
Female	100	81.03	7.94

$t(198) = -2.27, p = 0.024$

### Interpretation

The p-value (0.024) is less than 0.05, indicating a statistically significant difference in teaching effectiveness between male and female teachers. Female teachers showed higher effectiveness scores compared to their male counterparts. This suggests that gender plays a role in how ICT training is translated into classroom teaching performance.



**Fig 1:** Graphical presentation of effectiveness scores of male and female teachers.

### ii). Hypothesis 2

**H<sub>02</sub>:** There is no significant difference in the teaching effectiveness of ICT-trained teachers from government and private secondary schools.

Another independent samples t-test was conducted to compare the teaching effectiveness of teachers from government and private schools.

**Table 2:** Teaching effectiveness of teachers from government and private schools.

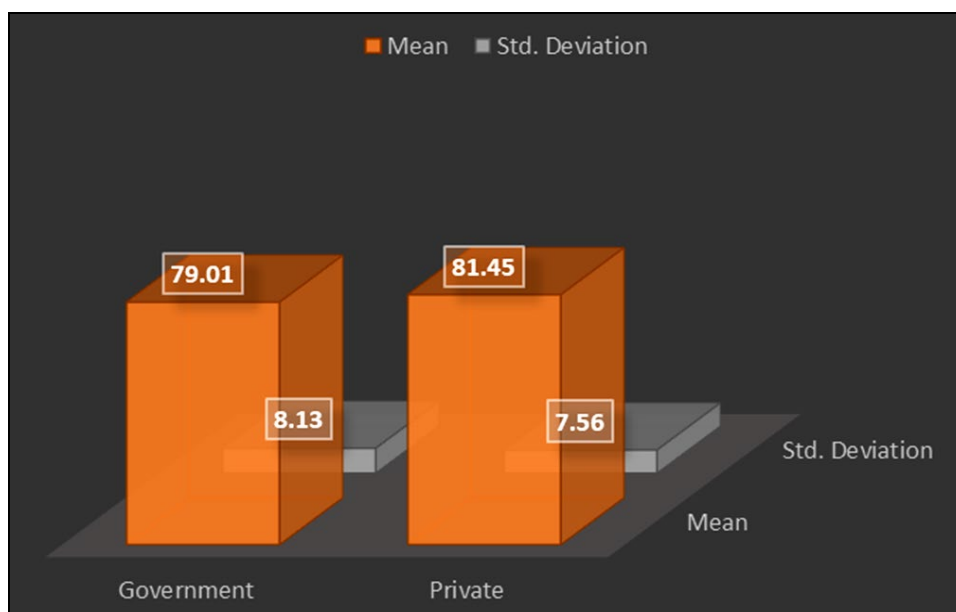
School Type	N	Mean	Std. Deviation
Government	100	79.01	8.13
Private	100	81.45	7.56

$t(198) = -2.16, p = 0.032$

### Interpretation

The p-value (0.032) is also less than 0.05, indicating a significant difference in teaching effectiveness between government and private school teachers. Private school

teachers scored higher on the teaching effectiveness scale, suggesting they may benefit more from ICT training—possibly due to better access to ICT infrastructure and support within private institutions.



**Fig 2:** Graphical presentation of effectiveness of teachers from government and private schools.

### Discussion

The findings of this study reveal that gender and type of institution significantly influence the teaching effectiveness of ICT-trained secondary school teachers in Kano State. Female teachers, on average, showed greater effectiveness than males, which may be due to higher motivation or better adaptability to new teaching methods involving technology.

Moreover, private school teachers performed better than government school teachers, likely due to more frequent exposure to ICT tools and a stronger emphasis on modern teaching practices. This aligns with previous studies (e.g., Yusuf, 2005; Ololube, 2006), which found that institutional support and teacher attitude are crucial for the successful integration of ICT in education. These findings underscore the need for equity in ICT training and resources, especially in government schools, and the importance of addressing gender-specific challenges and strengths in professional development programmes.

### 7. Implications and Recommendations

Based on the findings, the following recommendations are proposed:

- i). **Mandatory Training:** Government and educational authorities should make ICT training compulsory for all secondary school teachers in Kano State.
- ii). **Infrastructure Support:** Schools must be equipped with functional ICT tools like projectors, interactive whiteboards, and reliable internet.
- iii). **Continuous Professional Development:** Regular workshops and refresher courses should be organized to keep teachers updated on emerging technologies.
- iv). **Inclusion in Teacher Evaluation:** ICT usage should be included as a parameter in teacher performance appraisals.

### 8. Conclusion

This study confirms that ICT training significantly enhances the teaching effectiveness of secondary school teachers. As

Nigeria continues to pursue digital literacy and 21st-century education goals, equipping teachers with ICT skills is not just an option but a necessity. Kano State can take the lead by institutionalizing robust ICT training policies and infrastructure in all its secondary schools.

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