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# SECONDARY SCHOOL TEACHER'S CHARACTERISTICS AND THEIR ATTITUDES TOWARD THE UTILISATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN TEACHING IN KANO AND JIGAWA STATES, NIGERIA

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By

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## **Abstract**

*The purpose of this study was to investigate teachers' characteristics which included gender, educational qualifications, and years of teaching experience influence on senior secondary school teachers' attitude toward the utilization of Information and Communication Technology (ICT). An adapted version of Albirini (2005) questionnaire teachers' attitude toward the use of ICT was used to collect data from 335 teachers from Kano and Jigawa States, Nigeria. Data was analyzed using the statistical package for social; sciences (SPSS) version to obtain the inferential statistics. The findings revealed a significant positive correlation between gender and teachers' attitude where male teachers were reported to have more positive attitude. Teachers educational qualifications were also reported to influenced their attitudes toward the utilization of ICT in teaching. The paper then advocates, among others an increase access to ICT facilities for teachers, the provision of more computer and ICT related tools and equipments in schools*

The term Information and Communication Technologies (ICTs) have been described differently by different scholars and writers in the Education and oilier sectors of the economy. These attest to the dynamic nature of the concept and its' applicability to almost all fields of human endeavours. It has been described as the collection, storage, processing, disseminating and use of information (Ezekoka; 2008). Siray-Batch ford (2009) sees ICT as "anything which allows us to get information to communicate with each other or to have an effect on the environments using electronic or digital equipment". Batch ford conception of ITC is wide in scope as it seen not only as communication devices but to include anything electronic or digital that can affect the environment.

Information and Communication Technology (ICT) is a general term used to describe a range of technologies for collecting, storing, retrieving, processing, analyzing and transmitting information. As defined by Oliver et al (2000) "Is the technology which supports activities involving the creation, storage, Manipulation and communication of information (Principally computing, electronics and electronic

communications) together with their related methods, management and applications". Such an all-embracing term is open to a number of interpretations depending on which context it is used.

### **Statement of the Problem**

Teachers play invaluable roles in the development of the education system of a country, hence the saying that "no nation can rise above the quality of its teachers" is true. The knowledge and utilization of ICT for the purpose of teaching and learning, capacity building, research and other duties related to teaching and learning cannot be underestimated.

Issues about the place and purpose of information and communication technologies in education are being surfaced and investigated by various commentators and researchers. Differing opinions seem to arise in understandings and possibilities surrounding teachers' use of ICT in teaching. While several studies have addressed the relationship between teachers attitudes and effective use of ICT in the classroom ( Albirini, 2005; Samak, 2006; Carlson, 1994; Woodrow, 1992; Hardy, 1998; Koohang, 1987; Yusuf, 2005; Teo, 2008; Gilakjani & Leong,2012), many of such researches indicated a significantly positive correlation holds between teachers' attitudes towards ICT and their tendency to utilize mem in the classroom. Several studies (Razak & Eswaran, 2010; Al-Zaidiyeen, Mei, & Fork, 2010; Park, & Son, 2009; Deniz, 2007), illustrate cases in which low levels of computer integration are observed in teachers with considerably positive computer attitudes. One can ascribe the inconsistency between highly positive attitudes and low computer utilization in the classroom to a bunch of constraints including computer competences (Ubulum, Enyekit, Onuekwa,& Amaehule, 2011; Andoh, 2012, Ajayi, 2008), and access to ICT facilities (Plomp, Anderson, Law,& Quale, 2009; Yildrim, 2007). It must however, be noted that few researches have investigated this phenomenon in Nigeria, and fewer if ever still looked at teachers' attitudes based on gender, educational qualifications, and years of teaching experiences to ICT in Kano and Jigawa States, Nigeria.

### **Purpose of the Study**

The purpose of this study is to investigate the influence of secondary school teacher's characteristics on their attitudes toward the utilisation of ICT in teaching. Specifically, the study investigated:

1. The influence of gender on the attitudes of secondary school teachers on the utilization of ICT in teaching.
2. The influence of educational qualification on the attitudes secondary school teachers on the utilization of ICT in teaching.
3. The influence of years of teaching experience on the attitudes of secondary school teachers on the utilization of ICT in teaching.

### **Research Questions**

Four research questions were formulated to guide the conduct of this study

1. What is the influence of gender on teachers' attitude toward the utilization of ICT in teaching?
2. How would the mean attitude rating of teachings in the utilization of ICT in teaching differ base on academic qualification?
3. How would teachers' years of teaching experience influence their attitude toward the utilization of ICT in teaching?

### **Hypotheses**

The following null hypotheses were formulated and tested at 0.05 level of significance

1. There is no significant difference between the mean attitude ratings of male and female teachers in the utilization of ICT in teaching.
2. There is no significant difference among the mean attitude ratings of teachers in the utilization of ICT in teaching based on academic qualification.
3. There is no significant difference among the mean attitude ratings of teachers in the utilization of ICT in teaching based on years of experience.

### **Review of Related Literature**

Attitudes refer to one's perception of an object favorably or unfavorably. Attitudes represent mental evaluations about an object based on one's proximity or distance of it (Panagiotis, George, Nikos & Ioannis, 2005). Teacher attitudes towards ICT then stand for teachers' evaluation and perceptions of self-regarding, how they feel about utilizing ICT in their own teaching practices. Addressing teacher attitudes is essential because teachers take on a major role in deciding on the extent to which ICT use is allowed or hindered in the classroom. Teo (2008) contends that teachers hold a sound potential to pass their own beliefs on students, and thus, their attitudes towards ICT may in one way or other determine students' future computer use. That is why Teo (2008) lays extensive emphasis on studying teacher attitudes towards ICTs. Furthermore, Gilakjani & Leong (2012) concur that if any success is to be expected from integrating ICT into the classroom, it is a must that negative teacher attitudes be identified and refined as well as fostering the positive ones.

Much research (Kim, 2002; Teo, 2006), however, indicate that a significantly positive con-elation holds between teachers' attitudes towards ICT and their tendency to utilize them in the classroom. In other words, the more positive attitudes teachers have towards ICT, the more likely they are to use ICT in the classroom. In a study drilling into users' perceptions about ICT and World Wide Web, Liaw (2002) purports that the success of ICT use heavily depends on positive user attitudes towards it. Similarly, Kim (2002) reiterates that teachers' attitudes significantly influence their use of ICT in the classroom. Nevertheless, previous studies report several factors affecting teachers' attitudes towards ICT. Several studies (Egbert, et.al. 2002; Yildirim, 2000) reveal that teachers' participation in training programs and the extent to which they transfer their knowledge into their classroom strongly correlate with their attitudes towards ICT. Likewise, much research

(Liaw, 2002) highlights that the teacher's personal experience with ICT is a significant predictor of his/her attitudes. Furthermore, several studies (Deniz, 2007; Yuen & Ma, 2001) indicate that teachers' computer competence plays a key role in developing positive attitudes towards ICT. On the other hand, Yildirim (2000) posits that computer anxiety and liking significantly affect teacher attitudes. That is teachers with low levels of computer anxiety and high levels of computer liking are identified with more positive attitudes. Also, many researchers (Teo, Luan, & Sing, 2008) maintain that perceived ease of use and usefulness are crucial factors affecting teachers' attitudes towards ICT. Besides, Gilakjani & Leong (2012) stress that whether computer programs to be used are appropriately suited to teachers' own needs and their students' needs plays a major role in teachers' attitudes towards using them. Still, one should notice that merely positive attitudes on the part of teachers can in no way ensure enhanced use of ICT in the classroom. Several studies (Razak & Eswaran, 2010) illustrate cases in which low levels of computer integration are observed in teachers with considerably positive computer attitudes. In a study of this sort, Al-Zaidiyeen, Mei & Fook (2010) propose that their participants make minimal use of ICT despite reporting highly positive attitudes. One can ascribe the inconsistency between highly positive attitudes and low computer utilization in the classroom to a bunch of constraints including lack of time (Park, & Son, 2009), administrative and curricular restrictions (Egbert, et.al. 2002) insufficient numbers of ICT (Razak & Eswaran, 2010; Deniz, 2007), lack of materials appropriated to computer use (Lam, 2000). As for the teacher characteristics, major of study (Liaw, 2002), age (Sahin-Kizil, 2011) and gender (North, & Noyes, 2002) are frequently reported to have an impact on teacher attitudes. However, recent findings on the relationship between gender and computer attitudes have made the proposition of previous research redundant. Although earlier research (Kadijevich, 2000) suggested that males had more positive attitudes towards ICT, more recent studies (Ayres, 2002) have revealed that the difference in computer attitudes stemming from gender is disappearing. Teo (2006) concludes that the more widespread use of ICT by almost every member of the society has made the differences.

In another study on teachers skills, perceptions, and practices about ICT in Secondary Schools in Ghana, Buabeng Andoh (2012), discovered a positive correlation between ICT use and teachers competence. Further teachers perceptions in terms of using ICT were found to be positive but not statistically significant. The study also revealed inverse correlation among ICT use, age, and teaching experience. The descriptive results indicated that teachers' knowledge in basic ICT Applications as well as integrating ICT into teaching and learning processes was low.

### **Data gathering Instrument**

The instrument used in this study was a questionnaire adopted from a recent study of teachers' attitudes and use of Information and Communication Technology in Syria by Albirini (2004, 2005).

The Instrument (Teachers Attitude towards the Use of ICT in Teaching) was adopted for three main reasons. First, the Instrument had established validity and

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reliability, secondly; the Instrument reflected recent researches on the use of Information and Communication Technology (ICT) in teaching and learning; and thirdly Albirini (2004, 2005) study had similar focus with this research.

#### **Population and sampled**

Population in this study refers to the persons, objects and organizations that form the focus of this study. There are a total of 352 senior secondary schools in Kano and Jigawa States. This comprise 187 senior secondary School from Kano state; and 127 from Jigawa State. In addition, there are 7525 senior secondary school teachers in the two states comprising 5380 from Kano State and 2145 from Jigawa State (Nigerian Educational Statistic Digest, 2010). The population is characterized by Gender ( Male and Female), various educational qualifications mostly, B. A. (Ed). BSc. (Ed) B. Ed, BS..C, B.A., HND, and N.C.E., as well as varied years of teaching experiences ranging from 0-5 years, 6-10 years, and few 11 years and above.

A total of three hundred and eighty six (386) teachers were selected for this study comprising one hundred and fourty five (145) from Jigawa State, two hundred and eighty six (241) from Kano State. Thirty five (35) Senior Secondary schools were randomly selected as the focus schools. This comprise of twenty from Kano state, fifteen from Jigawa State. However, only 335 questionnaire were duly filed and returned

#### **Data Analysis and Findings**

##### **Research Question 1**

What is the influence of gender on teachers' attitude toward the utilization of ICT in teaching?

**Table 1: Mean attitude ratings of teachers' utilization of ICT in teaching based on gender**

Teachers' Gender	N	Mean	Std. Deviation
Male Teachers	246	2.85	0.62
Female Teachers	89	2.67	0.67
Mean Difference		0.18	

Table 1 presents the mean attitude ratings of teachers' utilization of ICT in teaching based on gender. The table reveals that there were 246 male teachers with a mean attitude rating of  $2.85 \pm 0.62$  and 89 female teachers with mean attitude rating of  $2.67 \pm 0.67$ . The difference in the mean attitude rating between gender was 0.18.

**Research Question 2**

How would the mean attitude rating of teachings in the utilization of ICT in teaching differ across academic qualification?

**Table 2: Mean attitude ratings of teachers' utilization of ICT in teaching based on Academic Qualification**

Teachers' Academic Qualification	N	Mean	Std. Deviation
Degree in Education	107	3.19	0.50'
HXD and Degrees outside Education	74	2.4]	0.52
XCE	122	2.96	0.41
Diploma	34	1.80	0.36

Table 2 presents the mean attitude ratings of teachers' utilization of ICT in teaching based on academic qualification. The table reveals that 107 teachers with a Degree in Education had mean attitude rating of  $3.19 \pm 0.50$  and 74 teachers with HND and Degrees which were not in Education had mean attitude rating of  $2.41 \pm 0.52$ . Table 2 further reveals that 122 teachers with XCE had a mean attitude rating of  $2.96 \pm 0.41$  while 34 teachers with Diploma certificate had a mean attitude rating of  $1.80 \pm 0.36$ .

**Research Question 3**

How would teachers' years of teaching experience influence their attitude toward the utilization of ICT in teaching?

**Table 3: Mean attitude ratings of teachers' utilization of ICT in teaching based on Teaching Experience**

Teachers' Years of Experience	N	Mean	Std. Deviation
0-5 Years Experience in Teaching	121	2.53	0.70
6-10 Years Experience in Teaching	134	2.93	0.52
11 and above Years in Teaching	82	2.97	0.58

Table 3 presents the mean attitude ratings of teachers' utilization of ICT in teaching based on their years of teaching experience. The table reveals that 121 teachers with 5 years of teaching experience or less, had a mean attitude rating of  $2.53 \pm 0.70$  while those with between 6 - 10 years and those with 11 and above years of experience had means as  $2.93 \pm 0.52$  and  $2.97 \pm 0.58$  respectively.

**Hypothesis 1**

There is no significant difference between the mean attitude ratings of male and female teachers in the utilization of ICT in teaching.

Factor	t	df	Sig. (2-tailed)
Teacher's Attitude to the use of ICT in Teaching	2.26	333	0.03

Table 4 presents independent sample t-test on male and female teachers' utilization of ICT in teaching. The table reveals that  $t = 2.26$  and  $p = 0.03$ . Since  $p < 0.05$  (0.05 is the level of significance of the study), the study found that the test statistic is significant therefore the null hypothesis which states that there is no significant difference between the mean attitude ratings of male and female teachers in the utilization of ICT in teaching was rejected. This implies that, the difference in the mean attitude ratings of male and female teacher as shown in Table 1 was significant. The study thus concludes that male teachers significantly demonstrated more positive attitude towards the utilization of ICT in teaching.

**Hypothesis 2**

There is no significant difference among the mean attitude ratings of teachers in the utilization of ICT in teaching based on academic qualification.

**Table 5: One-way ANOVA on academic qualification and teachers' attitude to utilization of ICT in teaching**

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	64.37	3	21.46	99.90	0.00
Within Groups	71.53	333	0.22		
Total	135.90	336			

Table 5 presents one-way ANOVA on influence of academic qualification on teachers' attitude to utilization of ICT in teaching. The table reveals that  $F_{(3,333)} = 99.90$  and  $p = 0.00$ . With  $p < 0.05$ , the test statistic is considered significant. The null hypothesis which states that there is no significant difference among the mean attitude ratings of teachers in the utilization of ICT in teaching based on academic qualification was rejected. This mean there was a significant difference among teachers' qualifications with respect to their utilization of ICT in teaching. To determine the group that demonstrated the most positive attitude, a post hoc test was conducted and reported in Table 6.

**Table 6: Post Hoc test on significance of differences among teachers' teaching experience and their attitude to utilization of ICT in teaching**

(I) Teachers' Qualification	(J) Teachers' Qualification	Mean Difference (I-J)	Sig.
Degree in Education	HND and Degrees outside Education	0.78	0.00
Degree in Education	NCE	0.23	0.00
Degree in Education	Diploma	1.39	0.00
HND and Degrees outside Education	NCE	-0.55	0.00
HND and Degrees outside Education	Diploma	0.61	0.00
NCE	Diploma	1.16	0.00

Table 6 presents a post hoc test on significance of the differences among teachers' academic qualification in respect to their attitude to utilization of ICT in teaching. The table reveals the difference between the mean attitude ratings of teachers with Degree in Education and HND/ Degrees outside Education as 0.78 with  $p = 0.00 < 0.05$ . This indicates that teachers with Degree in Education significantly demonstrated positive attitude to using ICT in teaching than those with HND/ Degrees outside Education.

Table 6 also reveals the difference between the mean attitude ratings of teachers with Degree in Education and NCE as 0.23 with  $p = 0.00 < 0.05$ . This indicates that teachers with Degree in Education significantly demonstrated more positive attitude than teachers with NCE.

Results from Table 6 further reveals that the difference between the attitude ratings of teachers with Degree in Education and Diploma was 1.39 with  $p = 0.00 < 0.05$ . This also indicated the supremacy of Degree in Education as compared to Diploma certificate.

The results also compared the mean attitude ratings of teachers with HND/ Degrees outside Education with NCE and Diploma and reveal their mean differences as -0.55 and 0.61 respectively with both indicating  $p = 0.00 < 0.05$ . This shows that teachers with NCE significantly attained higher mean attitude ratings than those with HND/ Degrees outside Education while those with HND/ Degrees outside Education significantly attained higher mean ratings than those with Diploma.

The table lastly revealed the difference in mean attitude rating of teachers with NCE and Diploma as 1.16 with  $p = 0.00$ . This confirms that teachers with NCE significantly demonstrated more positive attitude to the use of ICT in teaching than their counterparts with Diploma.

### **Hypothesis 3**

There is no significant difference among the mean attitude ratings of teachers in the utilization of ICT in teaching based on years of experience.



**Table 7: One-way ANOVA on academic qualification and teachers' attitude to utilization of ICT in teaching**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	13.61	2	6.80	18.58	0.00
Within Groups	122.29	334	0.37		
Total	135.90	336			

Table 7 presents one-way ANOVA on influence of teaching experience on teachers' attitude to utilization of ICT in teaching. The table reveals that  $F(2,334) = 18.58$  and  $p = 0.00$ . Since  $p < 0.05$ , the test statistic is considered significant. The null hypothesis which states that there is no significant difference among the mean attitude ratings of teachers in the utilization of ICT in teaching based on years of experience was rejected. This implies that there was a significant difference among teachers from the categorized years of teaching experience. A post hoc test was conducted to determine the group that demonstrated the most positive attitude.

**Table 8: Post Hoc test on significance of differences among educational qualification of teachers' and their attitude to utilization of ICT in teaching**

Teachers' Teaching Experience (I)	Teachers' Teaching Experience (J)	Mean Difference (I-J)	Sig.
0-5 Years Experience in Teaching	6-10 Years Experience in Teaching	-0.40	0.00
0-5 Years Experience in Teaching	11 and above Years in Teaching	-0.44	0.00
6-10 Years Experience in Teaching	11 and above Years in Teaching	-0.04	0.62

Table 8 presents a post hoc test on significance of the differences among teachers' teaching experience in respect to their attitude to utilization of ICT in teaching. The table reveals the difference between the mean attitude ratings of teachers with 0-5 years and 6-10 year of experience as -0.40 with  $p = 0.00 < 0.05$ . This indicates that teachers with 6-10 years of teaching experience significantly attained higher mean attitude ratings than those with 0-5 years of experience.

Results from Table 8 further reveals that the difference between the attitude ratings of teachers with 0-5 and 11 and above years of experience was -0.44 with  $p = 0.00 < 0.05$  while that of 6-10 years and 11 and above was -0.04 with  $p = 0.62$  respectively. This indicates that teachers with 6-10 years of experience significantly demonstrated more positive attitude in utilization of ICT in teaching while there those with 11 and above years of experience mean attitude rating did not significantly differ from those with 6-10 years of experience.

### **Discussion of Findings**

The research findings showed that male teachers significantly demonstrated more positive attitude towards the utilization of ICT in teaching. This is in agreement with the findings of Kadjevich, (2000) that male teachers have positive attitude than their female counterpart. However, they study disagree with Ayres, (2002) that differences in ICT attitude stemming from gender is past disappearing

The findings from this study showed that teachers' qualifications significantly influenced their utilization of ICT in teaching. The higher educational qualification the more positive attitude teachers are toward the utilization of ICT in teaching. This disagreed with the findings of Andoh (2012) that inverse correlation exist among ICT attitude, use, age and teaching experience

Years of teaching experience significantly influenced teachers' utilization of ICT in teaching. Teachers with more years of teaching experience have more positive attitude toward the utilization of ICT in teaching.

### **Conclusion.**

Addressing teacher attitudes is essential because teachers take on a major role in deciding on the extent to which computer use is allowed or hindered in the classroom. Teachers hold a sound potential to pass their own beliefs on students, and thus, their attitudes towards ICT may in one way or other determine students' future computer use. That is why the paper lays emphasis on studying teacher attitudes towards ICTs if any success is to be expected from integrating computers into the classroom, it is a must that negative teacher attitudes be identified and refined as well as fostering the positive ones.

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