



# **Teachers' Attitude Towards The Application of ICT Tools for Assessment of Learning Outcome in Secondary Schools in Port Harcourt metropolis**

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## **ABSTRACT**

The research x-rayed teachers' attitude towards the application of ICT tools for assessment of learning outcome in secondary schools in Port Harcourt metropolis. The study employed a cross sectional survey research design and 164 teachers using a random sampling technique which constituted the sample size for the study. The study was guided by three research questions and three hypotheses were tested at 0.05 level of significance. Data collected using a questionnaire tagged "Teachers Attitude on ICT Application for Assessment of Learning Outcome" (TAICTAL) with a reliability index of 0.87 were analyzed using frequency count, mean, standard deviation, t-test and Analysis of Variance (ANOVA). The findings of the study showed that teachers have negative attitude towards the application of ICT tools for assessment of learning outcome and factors such as lack of ICT skills, technical support and professional development among others act as constraints towards the application of ICT tools for the purpose of assessment of learning outcome. Strategies in improving these constraints were further highlighted such as participation in refresher course like seminars, conference and workshop, availability of technical support, participation in self-professional development programmes among others.

**Keywords:** Information and Communication Technology (ICT), Teacher, Attitude, Assessment.

## **INTRODUCTION**

There has been tremendous transition in the teaching-learning process as it concerns the application of technology in assisting educational process towards achieving the desired objectives. From the era of hieroglyphics during the old Egyptian civilization to the present day application of Information Communication Technology (ICT) tools, several experts in the field of education has posited that this transition could be associated based on expedient demand for quality education. There is no doubt that the 21<sup>st</sup> century requirement for effective, functional and quality education cannot be divorced from the applications of Information Communication Technology (ICT) tools. Information and Communication Technologies have undoubtedly gained groundswell of interest.

It is no gainsaying that technological developments lead to changes in work and changes in the organization of work which requires special competencies. The nature of ICT applications has highly changed the face of education of the most recent couple of decades. The Organization for Economic Co-operation and Development (OECD) in 2001 stated three importance rationales for the integration of ICT in education. The first aspect was for the improvement in the economy. The white paper considered explicitly posited that 21<sup>st</sup> century employer focus more on a worker with ICT skills than those with little or no skills. On this note, it is imperative that both teachers and students should acquire and be vast with ICT skills so as to be relevant in their future aspiration. Secondly, ICT is now a requirement for social participation which can serve as literacy and numeracy in foundational learning. Lastly, ICT plays significant roles in broadening and enriching teaching and learning which

is considered as the pedagogical aspect. Recently, there have been increase productions of potent technological tools that serve all areas of educational process. From the ICT tools and software that serve school admission process like the Computer Management System (CMS), to the Computer Based Test (CBT) for Tertiary examinations, Virtual Learning platforms, e-learning among others have tremendously changed the traditional system of education to a more advanced structure.

However, Agbo (2015) noted that the proliferation of technologies has complicated the teaching-learning process and finding the best ways of integrating technology into classroom practices is one of the challenges the 21st century teachers face. There is no doubt that the integration of ICT in education is associated with a paradigm shift which moved from the teacher-centered to the student centered approach. Teachers evidently are major stakeholders in this paradigm shift. They must understand the potential role of technology in education. Unarguably, education constitutes the most important aspect for every nation because it breeds good citizens and develop the required human capital needed for development. The great Africa leader, Nelson Mandela (n.d) reiterated that education is the most powerful weapon which can use to change the world. Therefore, it can be stated that quality education when considering the cognitive, affective and psychomotor dimensions must rest on the quality of the test item developed for these dimensions and the mode or processes of assessing them. In most nations of the world, progress in academic exercise is reliant on the extent a testee performs in a given test he or she is subjected to. Prometric (2019) noting the importance of test development and assessment stated that;

*“Behind every exam that measures whether a doctor is qualified, whether an architect has the right knowledge or whether an engineer is skilled, a rigorous test development and assessment process is used. Your tests are a promise, an assurance that those granted licensure or accreditation have met important standards. There is no shortcut to creating tests that are valid, reliable and fair and as well ensuring right assessment procedure”*

Assessment in education as defined by Nitko and Brookhart (2011) is the process of information gathering, collation and analysis based on the curriculum, program implementation and general educational policies uniquely designed for decision making. Ealy (2003) stated that assessment is a process designed to identify, collect and interpret information on the knowledge, skills and attitudes achieved by the students. Assessment is the systematic collection, analysis, interpretation and use of information about learning outcome. Mogeey and Watt (2009) explained that assessment consists of taking samples of behaviour at a given point in time and estimating the worth of those behaviours. Thus the underlying assumption of assessment is that it provides a representative sample of behaviour of the person being assessed. On the basis of the kind of sample taken inferences are made about a person’s achievements, potential, aptitudes, intelligence, attitudes and motivations. All forms of assessment provide estimates of the person’s current status. Council for the Curriculum, Examinations and Assessment (2019) noted that assessment aids teachers to discover if learning as taken place during a sequence of instruction. It provide teachers a better awareness of what students know and understand, what their learning experiences enable them to do and the level of their skills and personal capabilities.

The concept of assessment have undergone several evolutionary explanations such as being the last phase of learning activity of mark allocation to a more systematic and continuous process in all phases of educational activities. In line with the above, Marina (2016) noted that assessment can be conducted in many forms and in an ongoing process. Asuru (2015) noted that there are important principles that must ensure quality assessment procedure which denotes that the assessment should be valid and reliable, complementary and supportive of learning activities, enhances teachers professional decision and appropriate and unique.

**Diagnostic assessment:** This assessment procedure is also referred to as pre-assessment. It is employed to determine learners’ weakness and strength in terms of knowledge and skills before the commencement of instruction. It is a backward type of assessment rather than forward.

**Formative assessment:** Formative assessment is concerned with both formal and informal means used by the teachers during the actual instructional process so as to assess the learners’ performance. It provides immediate feedback mechanism during classroom interaction. It also provide an indicator for the next line of action for teachers during instruction.

**Summative assessment:** Summative assessment is usually done at the end of the instruction. It is used to acknowledge record and provide report on a learners' achievement. Summative assessment captures a record of learning at the end of a period of study. One highpoint of summative assessment is that it provides information from both formative and diagnostic value.

**Dynamic assessment:** Dynamic assessment has to do with assessment that is based on learners' achievement when taught certain concepts in an unfamiliar field or subject area.

**Synoptic assessment:** In synoptic assessment, students integrate other elements of knowledge to show their understanding of a particular subject area. It can help to test a student's capability of applying the knowledge and understanding gained in one part of a programme to increase their understanding in other parts of the programme, or across the programme as a whole.

The role of the teacher towards the integration of ICT tools for the purpose of assessment cannot be overemphasized. Cuban (2000) noted in a paper presented at the Annual Technology Leadership Conference in Washington, USA explained that every educational reform effort should take into consideration teachers' knowledge and skills in using ICT for classroom assessment. Ihechu and Ugwuoji (2017) submitted that the application of ICT in continuous assessment can be defined as a formative or summative assessment of an educational programme using the ICT resources like computer and computer applications. They further expressed that in order to effectively integrate ICT resource in order to ascertain more valid assessment of the learners in terms of knowledge, performance and skills, teachers should acquire positive attitude, flexibility and innovativeness. The teachers as curriculum implementers have always been the central agents in the utilization of any reform-based innovation in education. Arslan (2003) cited in Rana (2012) noted that a school with an adequate technological base may not succeed to provide technology supported education if teachers are not willing to do so and do not carry a positive attitude toward using technology in their teaching.

Rana (2012) noted that one important initiative for technological implementation in any educational programme depends mostly on the attitude and support of the teachers. It is worthy of note that the success of any initiatives to implement technology in an educational programme depends strongly upon the support and attitudes of teacher educators involved. Yildirim (2000) suggested that when teachers perceived or believed that any proposed ICT application is likely to cause extra effort in fulfilling the teaching-learning process, they are not likely to attempt to introduce technology into their teaching and learning. There are various dimensions that constitute the concept "attitude". This includes computer confidence, knowledge of computer, anxiety, confidence and passion, training, gender among others (Tsitouridou and Vryzas, 2003).

Some studies highlight how the teachers' attitudes play an essential role when teaching curricular contents and assessment of learners' outcome through ICT. Sadik (2006) in his study in Egypt reported that the more positive teachers' attitudes were toward technology the more likely they were to integrate it in classroom. In the study of Mooij (2014) in which 116 teachers were involved, it was revealed that the attitude of the teachers towards the implementation and application of ICT tools for curriculum content coverage and assessment were mostly positive. However, it was mentioned that not all teachers feel prepared to use some specific technologies. Teachers who participated in Cerrillo, Esteban and Paredes' study (2014) indicate that although the use of ICT in schools does not necessarily change the strategies of education, it favours self-regulation learning and immediate feedback to students due to assessment. In light of the above, this study intends to investigate teachers' attitude towards the application of ICT tools for assessment of learning outcome in secondary schools in Port Harcourt metropolis.

#### **Aim and Objectives of the study**

The aim of the study is to investigate teachers' attitude towards the application of ICT tools for assessment of learning outcome in secondary schools in Port Harcourt metropolis. Specifically, the objectives of the study are to:

1. Ascertain the attitude of teachers' towards the application of ICT tools for assessment of learning outcome in secondary schools.
2. Determine the constraints towards the application of ICT tools for assessment of learning outcome in secondary schools.
3. Investigate strategies that will improve teachers' attitude towards the application of ICT tools for assessment of learning outcome in secondary schools.

**Research questions**

1. What is the attitude of teachers’ towards the application of ICT tools for assessment of learning outcome in secondary schools?
2. What are the constraints towards the application of ICT tools for assessment of learning outcome in secondary schools?
3. What are the strategies that will improve teachers’ attitude towards the application of ICT tools for assessment of learning outcome in secondary schools?

**Hypotheses**

- Ho<sub>1</sub>:** There is no significant effect on the mean response of teachers’ attitude towards the application of ICT tools for assessment of learning outcome in secondary schools based on gender.
- Ho<sub>2</sub>:** There is no significant effect on the mean response of teachers’ on the constraints towards the application of ICT tools for assessment of learning outcome in secondary schools based on years of experience.
- Ho<sub>3</sub>:** There is no significant effect on the mean response of teachers’ on the strategies that will improve teachers’ attitude towards the application of ICT tools for assessment of learning outcome in secondary schools based on qualification.

**METHODOLOGY**

The research design that was employed for the study was a cross sectional survey research design. The population of the study consists of all public secondary school teachers in Port Harcourt metropolis. Using a random sampling technique, 164 teachers were employed for the study. The chart below shows the distribution of the teachers according to gender, educational qualification and years of experience

Fig i: Distribution according to qualification  
gender

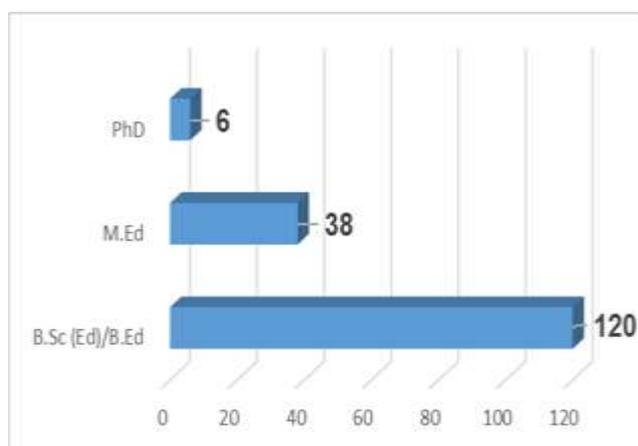


Fig ii: Distribution according to gender

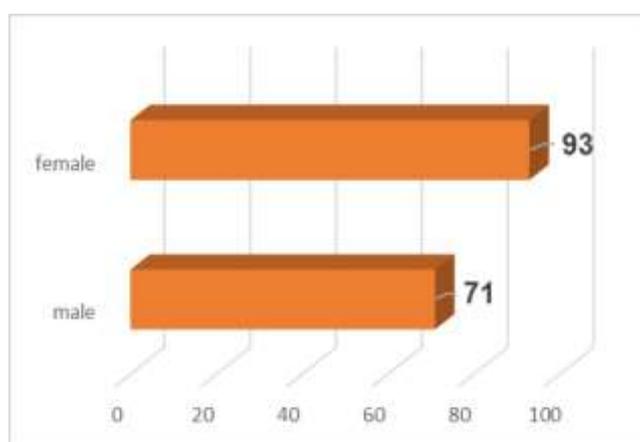
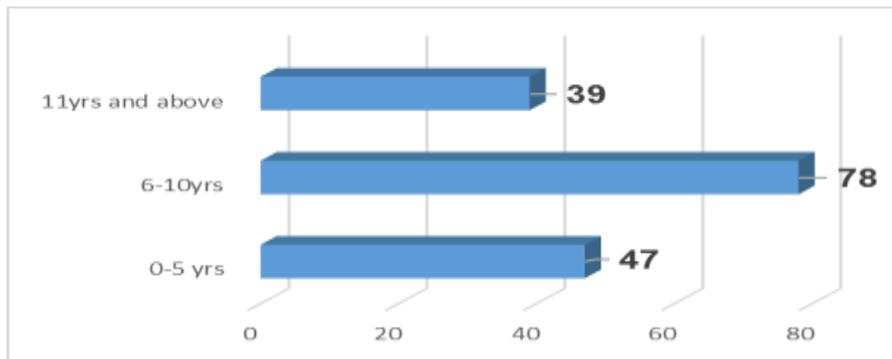


Fig iii: Distribution according to years of experience



The instrument form data collection that was used for the study was titled “Questionnaire Teachers Attitude on ICT Application for Assessment of Learning Outcome” (TAICTAL). The instrument consists of two sections which are section I and II. Section I was specifically concerned with the demographic presentations such as gender, academic qualification and years of experience. Section II consisted of 20 item revised 4 point Likert scale that were posited to address each of the research question generated for the study. The instrument was validated in terms of face and content by two experts of measurement and evaluation and two from educational technology, all of Ignatius Ajuru University of Education, Rivers State. The research instrument was further subjected to a pilot study that was given to 30 secondary school teachers that were not used for the main study.

A test retest method of an interval of one week was administered on these basics and both responses were correlated using the Person Product Moment Correlation Statistics and a reliability index of 0.82 making the instrument 82% reliable. Data that was obtained for the study were analyzed using the frequency count, mean and standard deviation, t-test and Analysis of Variance at 0.05 level of significance. In taking decision, calculated mean that is equal to or greater than the criterion mean (2.50) was considered positive/accepted, while calculated mean that is less than the criterion mean (2.50) was considered negative/rejected.

**RESULTS**

**Research question 1.** *What is the attitude of teachers' towards the application of ICT tools for assessment of learning outcome in secondary schools?*

**Table 2: showing the mean and standard deviation values of teachers' attitude on the application of ICT tools for assessment of learning outcome.**

s/no	Item statement	SA	A	D	SD	Mean	Stdev	Decision
1	I get more interested while developing assessment template for my learners using the ICT tools.	21	31	35	77	1.97	1.08	Negative
2	I believe that using ICT tools for the assessment process will enhance my work.	36	50	34	44	2.46	1.11	Negative
3	I feel that using spreadsheet programme (excel) provide accuracy during assessment process.	24	29	68	43	2.20	0.99	Negative
4	I prefer using word processing programme (MS word) in profiling names of students during assessment process.	20	26	57	61	2.03	1.01	Negative
5	I appreciate using ICT tools for assessment process as it compensates for large amount of time that will be spent using the manual procedure.	27	23	43	71	2.04	1.11	Negative
6	I feel comfortable using the SPSS 22® during the assessment process.	18	21	57	68	1.93	0.99	Negative
7	I like using idea from YouTube videos to facilitate my work during assessment process.	17	24	62	61	1.98	0.97	Negative
8	ICT tools application for assessment though impressive but cannot provide substantially contribute to teachers' productivity	38	41	39	46	2.42	1.13	Negative
9	I do not believe that application of ICT tools for assessment will significantly affect my professional development.	28	22	51	63	2.09	1.09	Negative
10	I hesitate to use ICT tools for assessment because it requires extra effort.	20	22	74	48	2.09	0.96	Negative
Aggregate mean and standard deviation values						<b>2.12</b>	<b>1.14</b>	<b>Negative</b>

Source: Researcher's fieldwork, 2019.

Table 2 above showed the mean and standard deviation values of teachers' attitude on the application of ICT tools for assessment of learning outcome. The decision revealed on the table showed that all the item statements 1-10 were "negative". This also collaborated with the final aggregate calculated values of the mean [2.12] and standard deviations [1.14] which depicts that secondary school teachers have negative attitude towards the application of ICT tools for assessment of learning outcome.

**Hypotheses 1:** There is no significant effect on the mean response of teachers' attitude towards the application of ICT tools for assessment of learning outcome in secondary schools based on gender

**Table 3: t-test computation based on gender.**

		Levene's Test for Equality of Variances		t-test for Equality of Means				95% Confidence Interval of the Difference		
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Score	Equal variances assumed	.554	.458	2.469	162	<b>.075</b>	2.94866	1.19440	.59006	5.30726
	Equal variances not assumed			2.449	146.058	.076	2.94866	1.20393	.56929	5.32803

Source: Researcher's fieldwork, 2019.

Table 3 showed the t-test inferential statistics between male and female teachers mean values. Since the significance P value is above 0.05 which is 0.458, then the data does assume equal variances. The calculated t value is given as 0.075 at a degree of freedom of 162 at 0.05 level of significance. Since the P value is 0.075 which is above the level of significance of 0.05, therefore, there is no significant effect on the mean response of teachers' attitude towards the application of ICT tools for assessment of learning outcome in secondary schools based on gender.

**Research question 2.** *What are the constraints towards the application of ICT tools for assessment of learning outcome in secondary schools?*

**Table 4: showing the mean and standard deviation values of teachers' responses constraints towards the application of ICT tools for assessment**

s/no	Item statement	SA	A	D	SD	Mean	Stdve	Decision
1	Lack of skills required for the operation of ICT tools affects my ability to use them.	41	47	29	47	2.50	1.15	Accepted
2	I feel that there is no technical support that can aid my usage of ICT tools for assessment purpose.	33	59	31	41	2.51	1.08	Accepted
3	Opportunities for professional development in the application of ICT tools for the purpose of assessment are imperative.	56	65	23	20	2.96	0.99	Accepted
4	Application of ICT tools for assessment process is time consuming and expensive.	26	31	44	64	2.12	1.10	Accepted
5	Inaccessibility of ICT resources such as laptops, smartphones, web-cam among other affects my usage for the purpose of assessment.	51	57	33	23	2.83	1.02	Accepted
<b>Aggregate mean and standard deviation values</b>						<b>2.58</b>	<b>1.07</b>	<b>Accepted</b>

Source: Researcher's fieldwork, 2019.

Table 4 considered the constraints responsible for the inability of teachers applying ICT tools for the purpose of assessment of students' academic activities. Several statements were posited that were obvious constraints which the teachers accepted as shown by the aggregate mean [2.58] and standard deviation [1.07] values. The findings of the study therefore indicated that lack of skills, technical support and professional development among others act as constraints towards the application of ICT tools for the purpose of assessment of learning outcome.

**Hypotheses 2:** There is no significant effect on the mean response of teachers' on the constraints toward the application of ICT tools for assessment of learning outcome in secondary schools based on years of experience.

**Table 5: Analysis of Variance One-way ANOVA analysis of teachers’ response on integration of ICT tools for assessment based on years of experience**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9.290	2	4.645	.123	ns
Within Groups	6071.899	161	37.714		
Total	6081.189	163			

Source: Researcher’s fieldwork, 2019.

The analyzed data of the F-distribution table indicates that  $F_{(2,161)}$  degree of freedom at 0.05 level of significance is 3.040 [ $F_{(2,147)} = 3.040, P < 0.05$ ]. Since the calculated  $F_{value}$  of 0.123 is less than the critical table value [ $F_{cv} 0.123 < F_{CT} 3.040$ ] the null hypothesis is retained. Therefore, there is no significant effect on the mean response of teachers’ on the constraints towards the application of ICT tools for assessment of learning outcome in secondary schools based on years of experience.

**Research question 3.** *What are the strategies that will improve teachers’ attitude towards the application of ICT tools for assessment of learning outcome in secondary schools?*

**Table 6: showing the mean and standard deviation values of strategies towards the improvement of teachers’ attitude on the application of ICT tools for assessment.**

s/no	Item statement	SA	A	D	SD	Mean	Stdev	Decision
1	Participation in refresher courses in seminar, conferences and workshops are imperative for the development of proficiencies required in operating ICT tools that are needed for assessment of learning outcome.	56	64	31	13	2.99	0.92	Accepted
2	Just-in-time technical support, assistance and maintenance are essential for the enhancement of ICT usage for the purpose of assessment.	44	57	39	24	2.74	1.01	Accepted
3	Provision of reward strategies by Government and school administrators are imperative for teachers’ development in the use of ICT tools.	38	55	48	23	2.66	0.99	Accepted
4	Provision and accessibility of ICT tools by Government and school administrators for teachers are essential towards assessment of learning outcome.	41	69	32	22	2.73	1.05	Accepted
5	Teachers should also participate in self-professional development required in strengthening their commitment towards the use of ICT tools for assessment purpose.	52	64	33	15	2.93	0.94	Accepted
<b>Aggregate mean and standard deviation values</b>						<b>2.81</b>	<b>0.98</b>	<b>Accepted</b>

Source: Researcher’s fieldwork, 2019.

Analysis on Table 6 showed the result of teachers’ response on the strategies that can be adopted for the improvement of teachers’ attitude towards the application of ICT tools for assessment of their students learning activities. All the stated item statements were accepted by the teachers which collaborate with the values of the aggregate mean [2.81] and the standard deviation [0.94]. The findings of the study therefore revealed that teachers should participate in refresher course like seminars, conference and workshop, availability of technical support, participation in self-professional development programmes among other are possible strategies to improve of teachers’ attitude towards the application of ICT tools for assessment of their students learning activities.

**Hypotheses 3:** There is no significant effect on the mean response of teachers’ on the strategies that will improve teachers’ attitude towards the application of ICT tools for assessment of learning outcome in secondary schools based on qualification.

**Table 7: Analysis of Variance One-way ANOVA analysis of teachers' response on integration of ICT tools for assessment based on qualification**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	76.231	2	38.115	3.007	ns
Within Groups	1578.909	161	9.807		
Total	1655.140	163			

Source: Researchers' fieldwork, 2019.

The analyzed data of the F-distribution table of Table 7 indicates that  $F_{(2,161)}$  degree of freedom at 0.05 level of significance is 3.040 [ $F_{(2,147)} = 3.040, P < 0.05$ ]. Since the calculated  $F_{\text{value}}$  of 3.007 is less than the critical table value [ $F_{\text{cv}} 3.007 < F_{\text{Cr}} 3.040$ ] the null hypothesis is retained. Therefore, there is no significant effect on the mean response of teachers' on the constraints towards the application of ICT tools for assessment of learning outcome in secondary schools based on academic qualification.

### DISCUSSION OF FINDINGS

The study was concerned to investigate teachers' attitude towards the application of ICT tools for assessment of learning outcome in secondary schools in Port Harcourt metropolis. The findings of research question revealed that secondary school teachers showed negative attitude towards the application of ICT for the purpose of assessment of students learning outcome. The findings of this study also collaborates with the result obtained by Adomi And Kpangban (2010) that teachers poor perception of ICT which implies negative attitudes towards ICT is one of the major factors challenging the adoption of ICT in Nigerian secondary schools. Sabzian and Gilakjani (2013) assert that whether teachers attitude towards integration of ICT in enhancing quality education is positive or negative, the important issues is that their attitude foretell how they react to ICT use and their competencies. Choa (2015) noted that development in ICT has become a crucial factor to cater the demand of changing education system. It is that note that Oduma and Ile (2014) suggested that ICT tools supports the teaching-learning process to a great extent and important provide solution to all contenting challenges even in the aspect of assessment. Nwosu, Daud and Kamaruddin, (2018) puts it that if teachers application of technology is to change, it is imperative that their perception or belief about technology must change.

The findings of the study also indicated that teachers lack skills, technical support and professional development among others impede the application of ICT tools for the purpose of assessment of learning outcome in secondary schools. The result is in agreement with the report of Nwoke and Ikwuanusi (2016) were they revealed that lack of teachers' confidence and competence, negative attitude among teachers, inadequate ICT personnel for technical support, time of integration act as a major barrier to their application for classroom assessment. Similar to the findings of this study is that of Buabeng-Andoh (2012) were it was mentioned that professional development has a significant influence on how well ICT is embraced by teachers.

The study viewed several strategies that could enhance teachers' application of ICT tools for assessment purpose in secondary schools. It was revealed that teachers should participate in refresher course like seminars, conference and workshop and also self-professional development programmes, there should also be availability of technical support, so as to improve teachers' attitude towards the application of ICT tools for assessment of their students learning activities. Olatunu and Stephen (2016) reiterated that government should ensure that ICT policy statements are translated into reality. An ICT policy implementation commission should be created for education in Nigeria. This commission should be funded and given the power to provide ICT facilities and developmental programmes for teachers.

### CONCLUSION

The role of ICT in the 21<sup>st</sup> century education system is over whelming especially when applied for assessment purpose. The resistance or reluctance of teachers to move with continuous and dynamic change in technology have over the years hamper effectiveness and efficiency in the teaching professional. Teachers as major stakeholders in the educational system should make every effort in ensuring that proper assessment of learners using ICT tools should be employed in schools.

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