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**BASIC SCIENCE TEACHERS COMPLIANCE AND COMPETENCE LEVEL (CCL) IN INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN JALINGO METROPOLIS TARABA STATE, NIGERIA.**

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**Abstract:**

The study investigated Basic Science Teachers Compliance and Competence level (CCL) in Information and Communication Technology (ICT) in Jalingo Metropolis Taraba State, Nigeria. A cross sectional survey design was employed for the study. The population comprised all 3,600 Basic Science and Technology teachers in Jalingo metropolis. The sample consisted of 256 teachers randomly selected in both government and private secondary schools in the study area. Basic Science Teachers Compliance and Competence Inventory (BSTCCI) was used for data collection. The instrument was validated by three experts, two in Science Education and one in Test and Measurement. The reliability coefficient of the instrument was determined using Cronbach alpha and internal consistency of instrument was obtained as 0.86. The data collected was analyzed using mean and standard deviation (SD). While the three null hypotheses were tested at 0.05 level of significance using independent t-test. The findings of the study revealed that Basic Science teachers ICT compliance level in GSS and PSS is to a moderate extent. Basic Science teachers' competence level in GSS and PSS is discovered to be low as teachers can only browse the internet, use projectors during lessons, and use online curriculum in both schools to a lesser extent. Gender has a significant influence on Basic Science teachers' use of ICT, as female Basic Science teachers operate personal computers and android or iPhones and browse the internet to a great extent compared to their male counterparts who operate to a moderate extent. It was recommended based on the findings that; the government through the Taraba State Ministry of Education (MOE) and State Universal Basic Education Boards (SUBEB) together with the Association of private school owners should ensure that: Basic Science teachers in both GSS and PSS should comply with ICT multimedia tools in the process of teaching the subject to a great extent. Basic Science teachers' competence level in both GSS and PSS should be raised to a great extent, so that they can be able to browse the internet, use projectors during lessons, use online curriculum effectively. Both male and female Basic Science teachers should use ICT multimedia tools effectively during lessons.

**Keywords:** ICT, compliance, Competence, Science & Teachers

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### **Introduction**

Teaching and learning science in the 21st century with the aid of Information and Communication Technology (ICT) requires a high level of compliance and competence in using multimedia devices especially on the part of the instructors. To effectively employ ICT to boost instruction particularly at the Basic Education level means, the teachers have the capacity to combine specific skills, content knowledge, expertise and literacy with innovative support systems in order to help the students' master ICT multidimensional abilities. In the last few decades technology has drastically changed human life through the digital revolution. All the sectors of human endeavour are completely taken over by technology including education. Educational technology development has made teaching and learning enjoyable and interesting thus, connecting people all over the world. This globalization and the incorporation of Information and Communication Technology (ICT) in all spheres of life have created a society which is motivated by knowledge and driven by technology, where compliance and competence is highly needed.

According to Zurich (2013) teachers who are ICT compliant and competent work more sustainably: saving energy and materials resources by creating more value from less physical input, increasing quality of life and motivating the learners without compromising the future generation ability to meet their needs. Thus, ICT is the range of technologies that are applied in the process of collecting, storing, editing, retrieving, and transfer of information in various forms (Olakulehin, 2007). The potential and role of ICT as a tool for contributing to sustainable development cannot be overemphasized. Abobakar (2010) asserts that ICT supports the neural system of complex society and can benefit various fields of development. Information and Communication Technology (ICT) refers to technological tools and resources which are employed to communicate, create, disseminate and manage information (Nordin, Hamzah, Yunus & Embi, 2010). This implies that ICT is simply the modern technologies that are applied in the process of collecting, storing, editing, retrieving, and transfer of information in various forms (Olakulehin, 2007). ICT is a computer based tool used by people to work with information and communication processing needs of an organization (Yusuf & Balogun, 2011). ICT is often perceived as a catalyst for change, change in teaching styles, and change in learning approaches and in access to information (Watson, 2005). That is ICT encompassing all equipment and tools (inclusive of traditional technologies of radio, video, and television to the newer technologies of computers, hardware, firm-ware and others as well as the methods, practices, processes, procedures, concepts, and principles that come into play in the conduct of the ICT activities.

The ICT Compliance level of a teacher can refer to his/her ability to possess or access modern communication technologies such as computers, tablet, android/iPhone, iPod, internet, projectors, digital cameras, software and others. According to Uwabueze and Ozioko (2011) the teacher can be ICT compliant with the set of tools that helps work with information and perform tasks related to information processes that can enhance students participation and understanding. Ayannuga (2009) opined that teachers ICT compliance is the marriage that exists between computer system and communication which can be described as the use of computer based technology and internet to make information and communication meaningful in the teaching and learning process. ICT has improved the value of education by providing access to a great variety of educational resources and by enabling participatory pedagogies. It also improves the management of education through more efficient administrative processes, including human resource management, monitoring and evaluation, and resource sharing (Unwin, 2004). The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2013) stated that ICT can contribute to universal access to education, equity in education, the delivery of quality learning and teaching, teachers' professional development, efficient management, governance and administration.

The ICT competency level is the teachers' capability to apply or use a set of related knowledge, skills, and abilities required to successfully perform critical work functions or tasks on the modern communication technologies such as computers, tablet, android/iPhone, iPod, internet among others. Competency serves as the basis for skill standards that specify the level of knowledge, skills, and abilities required for success in the workplace as well as potential measurement criteria for assessing competency attainment (Dave, Krathwohl & Masia 2010). Competency is a set of attributes covering knowledge, skills and attitudes for enabling one to effectively perform the activities of a given occupation or function to the standards expected in employment (Majumdar, 2005). According to Yusuf (2005) teachers' competence is of concern when new subjects or media are integrated into the school system. This is because teachers' capability and competence will form the root of their ability to implement the innovation in schools. UNESCO (2005) defines competency as a set of qualities covering knowledge, abilities and attitudes for aiding one to effectively achieve the activities of a given career or function to the morals anticipated in employment. The idea of competence with regard to the use of ICT in education is broader than the technical skills needed to use ICT. The type of ICT competence needed by teachers is a collection of knowledge, skills and attitudes that are inseparably bound up with the framework and pedagogy. Competence needs to be entrenched in teacher practices. A number of countries have established national or regional ICT competency ethics including Australia, Canada, Peoples' Republic of China, India, New Zealand, United Kingdom and the United States. Competency ethics, therefore, are often closely tied to local ethics for students, so that

expected student outcome in a particular field of study implies a set of competencies with ICT that their teachers should possess (UNESCO, 2005).

ICT as a tool of development affects every aspect of human activities because ICT is concerned with the knowledge, skills, tools and systems for locating facts, developing ideas, receiving and giving information as well as for modifying communication strategies. ICT increases access to and promotes equity in education by providing educational opportunities to a greater number of people of all ages, including the traditionally underserved, for example those in rural and remote areas, women and girls, and persons with disabilities (Unwin, 2004). Thus, ICT literacy is the ability of individuals to use Information and Communication Technology appropriately to access, manage, integrate and evaluate information, develop new understandings, and communicate with others in order to participate effectively in society.

Science for educational purposes will enable students and teachers to build a new educational environment by using tools that not only process information but also allow the learner to investigate, manipulate, test and extend knowledge (Njoku, 2011). Basic Science which was previously known as Integrated Science was structured to assist learners to develop interest in the core science (Chemistry, Physics, Biology etc). It is a subject offered in Upper Basic Schools in Nigeria which introduces students to the basic rudiment of science (Nigerian Educational Research and Development Council, 2014). It is one of the core subjects to be offered by all students as stated in the curriculum for Upper Basic Schools in Nigeria. Basic Science is regarded as one of the subjects through which the pivot of significance of all developed nations rotates (Bamiro & Akuru, 2010). According to Akande, (2013), gender is a powerful influencer on the use of electronic information resources and ICT, which is widely identified by many scholars. Steinerova & Susol (2007) noted that research on gender differences still remains open. A better understanding of the concept of gender could be gained in social psychological literature where the physical, mental and social differences of men and women have been discussed. Similarly, Steinerova and Susol (2007) asserted that gender as a cultural and social construction of a personality can be manifested in qualities and behaviour of men and women. Lending credibility to this claim, they have reported that women use ICT slightly less than men; they show higher proportion of rare use and nonuse of ICT and a lower proportion of frequent use.

Enochsson (2005) is of the opinion that gender differences in the use of ICT observed between male and female also reflect in the use of computer technology. The author maintained that the socio – cultural background of gender still leaves women with more computer anxiety and feelings of lower self-efficiency. In line with these findings, Tella and Mutulu (2008) noted that one of the recurring themes in underutilization of ICT is the lack of relevant competences with females often cited as more affected than males. Scholars are of the opinion that male teachers used more ICT in their teaching and learning processes than their female colleagues. Markauskaite (2006), examined gender

differences in self-reported ICT experience and ICT literacy among first year graduate trainee teachers. The study revealed significant differences between males and females in technical ICT capabilities, and situational and longitudinal sustainability. Males' scores were higher.

Ukpong (2016) investigated how teachers' Compliance and Utilization of ICT impact on their curriculum delivery in Akwa Ibom State, Nigeria. Findings revealed that social studies teachers show noncompliance attitudes towards ICT, measured in terms of acceptance of ICT training, and accessing ICT resources. The study revealed that teachers make less use of ICT in terms of frequency in the use of ICT in lesson preparations, teaching and learning. Osawalu (2021) examined the state of ICT utilization and its efficiency in private universities in Edo state Nigeria. Major findings showed a high level of ICT compliance in administrative processes and handling of students records, as well as other functions such as computer based examinations, storage of information among others. Obunadike (2009) investigated the effective implementation of ICT in the new nine years UBE curriculum in Anambra state, Nigeria. Findings revealed that the schools did not have ICT course outlines specifying the progressive topics to be learnt by primary and Secondary school students, science based subjects which require the use of ICT for its effective teaching/learning are not being used. Opie and Oko-Ngaji (2021) examined the influence of Information and Communication Technology (ICT) competence on science teachers' classroom instructional effectiveness using teachers in secondary schools in Northern Cross River State, Nigeria. The results of the study revealed that the level of ICT competence among the science teachers was significantly below the expected minimum competency level. Majority of the teachers were not competent in ICT. Male science teachers were significantly higher in their mean ICT competence than their female counterparts while science teachers, who are ICT competent, were significantly more effective in their classroom instructional effectiveness than those who were not ICT competent.

### **Statement of the Problem**

Globally, the move for rapid innovations in the teaching and learning of science around the world is unprecedented especially in developing countries including Nigeria. However, there is a decline in the academic performance in Basic Science which is the foundation for core sciences (Biology, Chemistry, Physics and so on) This poor performance has been recorded for some years by the examination bodies of Basic Education Certificate Examination (BECE), as well as school promotion examinations and the qualifying examinations conducted by the State Ministry of Education(SOME). The poor performance is attributed to teachers' pedagogical issues which are linked to lack of compliance and competence levels in ICT multimedia tools for effective teaching of the subject.

Also, many scholars such as Obunadike (2009), Ukpong (2016), Opie and Oko (2021) reported that the level of ICT competence among the science teachers was significantly below the expected minimum competency level. Majority of the teachers were not competent in ICT. Thus, this study is set to investigate the compliance and competence level of Basic Science teachers in ICT in Government Secondary Schools (GSS) and Private Secondary Schools (PSS) in Jalingo metropolis Taraba State, North East Nigeria.

### **Purpose of the Study**

The general purpose of this study was to find out the compliance and competence level of Basic Science teachers in ICT in Government Secondary Schools (GSS) and Private Secondary Schools (PSS) in Jalingo metropolis Taraba State, Nigeria. Specifically, the study is aim to:

- i. ascertain the extent of Basic Science teachers ICT compliance level in GSS and PSS
- ii. determine the extent of Basic Science teachers ICT competence level in GSS and PSS
- iii. determine the extent gender influence Basic Science teachers' use of ICT in GSS and PSS

### **Research Questions**

In line with the research purposes, the following research questions were answered in this study.

- i. What is the extent of Basic Science teachers ICT compliance level in GSS and PSS?
- ii. What is the extent of Basic Science teachers ICT Competence level in GSS and PSS?
- iii. What is the extent that gender influences Basic Science teachers ICT use in GSS and PSS?

### **Research Hypotheses**

Based on the research questions, the following hypotheses were tested at 0.05 level of significance

- H<sub>01</sub>:** There is no significant difference between Basic Science teachers ICT compliance level in GSS and PSS.
- H<sub>02</sub>:** There is no significance difference between Basic Science teachers ICT competence level in GSS and PSS
- H<sub>03</sub>:** There is no significance difference between male and female Basic Science teachers use of ICT multimedia tools.

### **Methodology**

The study employed a cross sectional survey design on the extent of compliance and competence level of Basic Science teachers in ICT in Government Secondary Schools

(GSS) and Private Secondary Schools (PSS) in Jalingo metropolis Taraba State, Nigeria. The population comprised all 3,600 Basic Science and Technology teachers in the Jalingo metropolis. The sample consisted of 256 teachers randomly selected in both government and private secondary schools in the study area. Basic Science Teachers Compliance and Competence Inventory (BSTCCI) was used for data collection. The instrument was validated by three experts, two in Science Education and one in Test and Measurement. The reliability coefficient of the instrument was determined using Cronbach alpha and internal consistency of instrument was obtained as 0.86. The instrument which contained four sections A, B,C and D was developed on a modified Likert-type four point rating scale of 4, 3, 2, and 1 as follows: each item in the three sections of the instrument has; Great Extent (GE) = 4points = 3.50 – 4.00, Moderate Extent (ME) = 3 points = 2.50 – 3.49, Less Extent (LE) = 2points = 1.50 – 2.49, No Extent (NE) = 1point= 0.50 – 1.49. Meanwhile, any item with the mean of 2.50 and above was accepted to a great extent while items with the mean of 2.49 and below were considered to a lesser extent. The instrument was administered to the respondents by the researcher alongside one trained research assistant. The data collected was analyzed using mean and standard deviation (SD). While the three null hypotheses were tested at 0.05 level of significance using independent t-test.

## Results

The presentation of the data for this study is done according to the research questions and research hypotheses.

**Research Question 1.** What is the extent of Basic Science teachers ICT compliance level in GSS and PSS?

**Table 1. The extent of Basic Science teachers ICT compliance level in GSS and PSS**

s/n	Teacher Related Constraints	GSS			PSS		
		Mean	SD	Dec	Mean	SD	Dec
1	Basic science teachers have personal computers	3.33	1.21	ME	3.42	1.33	ME
2	Basic science teachers have access to internet	2.00	1.17	LE	2.10	1.18	LE
3	All basic science lessons are done via projectors	2.56	1.31	LE	2.30	1.21	LE
4	Basic science teachers have android or iPhones	3.40	1.71	ME	3.30	1.31	ME
5	Basic science curriculum is online for teachers	2.50	1.10	LE	2.51	1.17	LE
<b>Composite Mean</b>		<b>2.76</b>			<b>2.73</b>		

Key: BST = Basic Science and Technology

GSS = Government Secondary Schools

PSS = Private Secondary Schools

GE = Great Extent, ME = Moderate Extent, LE = Less Extent & NE = No Extent

The result in Table 1 of research question 1 shows that Basic Science teachers ICT compliance level in GSS and PSS is to a moderate extent with the composite means of 2.76 and 2.72 respectively. However, the result on individual items surveyed revealed that, the Basic Science teachers in both schools have access to the internet to a lesser extent, present lessons via projectors to a lesser extent and also have less Basic Science curriculum online for consultation. Even personal computers and android/iPhones results indicated that Basic Science teachers own them just to a moderate extent.

**Question 2.** What is the extent of Basic Science teachers' Competence level in GSS and PSS?

**Table 2. The extent of Basic Science Teachers Competence level in GSS and PSS**

s/n	Teacher Related Constraints	GSS		PSS			
		Mean	SD	Dec	Mean	SD	Dec
1	Basic science teachers operates personal computers	3.19	1.11	ME	3.40	1.20	ME
2	Basic science teachers browse the internet	2.40	1.27	LE	2.22	1.19	LE
3	Basic Science teachers can effectively use the projectors during lessons	2.23	1.01	LE	2.42	1.00	LE
4	Basic science operates android or iPhones	3.47	1.41	ME	3.45	1.22	ME
5	Basic science teachers can effectively consult the curriculum online	2.20	1.00	LE	2.17	1.14	LE
<b>Composite Mean</b>		<b>2.70</b>			<b>2.73</b>		

Key: BST = Basic Science and Technology

GSS = Government Secondary Schools

PSS = Private Secondary Schools

GE = Great Extent, ME = Moderate Extent, LE = Less Extent & NE = No Extent

The result in Table 2 of research question 2 presents the extent of Basic Science teachers competence level in GSS and PSS. The result showed that, Basic Science teachers can browse the internet, use projectors during lessons, use online curriculum in both schools



to a less extent. On the whole, the result revealed Basic Science competence level of 2.70 and 2.73 respectively in both GSS and PSS.

**Question 3.** What is the extent that gender influences Basic Science teachers ICT use in GSS and PSS?

**Table 3. The extent that gender influence Basic Science teachers ICT use in GSS and PSS**

s/n	Teacher Related Constraints	Male			Female		
		Mean	SD	Dec	Mean	SD	Dec
1	Basic science teachers operates personal computers	3.34	1.21	ME	4.20	1.31	GE
2	Basic science teachers browse the internet	2.30	1.67	LE	3.56	1.21	GE
3	Basic Science teachers can effectively use the projectors during lessons	2.31	1.44	LE	2.37	1.33	LE
4	Basic science operates android or iPhones	2.58	1.11	ME	4.80	1.00	GE
5	Basic science teachers can effectively consult the curriculum online	2.30	1.20	LE	2.60	1.11	ME
<b>Composite Mean</b>		<b>2.57</b>			<b>3.31</b>		

Key: BST = Basic Science and Technology

GSS = Government Secondary Schools

PSS = Private Secondary Schools

GE = Great Extent, ME = Moderate Extent, LE = Less Extent & NE = No Extent

The result in Table 3 of research question 3 presents the extent that gender influence Basic Science teachers ICT use in GSS and PSS. The result showed that female Basic Science teachers operate personal computers and android or iPhones and browse the internet to a great extent compared to their male counterparts who operate to a moderate extent. The result also revealed female Basic Science teachers consult the curriculum online to a moderate extent compared to males who consult to a lesser extent. Generally, the result indicated a high composite mean of 3.31 for the female teachers on all the items surveyed compared to male teachers with a composite mean of 2.57 respectively.

### Hypothesis one (H01)

There is no significant difference between Basic Science teachers ICT compliance level in GSS and PSS.

**Table 4. t-test of independent sample of the difference in the mean rating scores of teachers on the extent of Basic Science teachers ICT compliance level in GSS and PSS**

Variables	N	Mean	SD	T	Df	P	Level of Sig	Dec
GSS	128	2.6710	0.5331	0.055	56	0.061	0.05	N
PSS	128	2.6530	0.5400					

The t-test of independent sample of the difference in the mean rating scores of teachers on the extent of Basic Science teachers ICT compliance level in GSS and PSS recorded t-test value of 0.055 with a p-value of 0.061 which is greater than 0.05 level of significance ( $p=0.061>0.05$ ). Therefore, the null hypothesis is not rejected. This implies that, there is no significant difference on the extent of Basic Science teachers ICT compliance level in GSS and PSS

#### **Hypothesis two (H02)**

There is no significance difference between Basic Science teachers ICT competence level in GSS and PSS

**Table 5. t-test of independent sample of the difference in the mean rating scores of teachers on the extent of Basic Science teachers ICT competence level in GSS and PSS.**

Variables	N	Mean	SD	T	Df	P	Level of Sig	Dec
GSS	128	2.8733	0.5121	0.055	56	0.060	0.05	N
PSS	128	2.8333	0.5020					

The t-test of independent sample of the difference in the mean rating scores of teachers on the extent Basic Science teachers ICT competence level in GSS and PSS recorded t-test value of 0.055 with a p-value of 0.079 which is less than 0.05 level of significance ( $p=0.060>0.05$ ). Therefore, the null hypothesis is not rejected. This means that, there is no significant difference on the extent of Basic Science teachers ICT competence level in GSS and PSS.

#### **Hypothesis two (H03)**

There is no significant difference between male and female Basic Science teachers' use of ICT multimedia tools.

**Table 6. t-test of independent samples of the difference in the mean rating scores of teachers to the extent male and female Basic Science teachers use ICT multimedia tools.**

Variables	N	Mean	SD	T	Df	P	Level of Sig	Dec
Male	128	2.1183	0.5632	0.055	56	0.041	0.05	R
Female	128	3.6666	0.5112					

The t-test of independent sample of the difference in the mean rating scores of teachers on the extent to which male and female Basic Science teachers use of ICT multimedia tools in GSS and PSS recorded t-test value of 0.055 with a p-value of 0.041 which is less than 0.05 level of significance ( $p=0.041<0.05$ ). Therefore, the null hypothesis is rejected. This shows that, there is significant difference on the extent to which male and female Basic Science teachers' use of ICT multimedia tools.

### Discussion

The result in Table 1 of research question 1 shows that Basic Science teachers ICT compliance level in GSS and PSS is to a moderate extent with the composite means of 2.76 and 2.72 respectively. However, the result on individual items surveyed revealed that, the Basic Science teachers in both schools have access to the internet to a lesser extent, present lessons via projectors to a lesser extent and also have less of the Basic Science curriculum online for consultation. Even personal computers and android/iPhones results indicated that Basic Science teachers own them just to a moderate extent. The t-test of independent sample of the difference in the mean rating scores of teachers on the extent of Basic Science teachers ICT compliance level in GSS and PSS recorded t-test value of 0.055 with a p-value of 0.061 which is greater than 0.05 level of significance ( $p=0.061>0.05$ ). Therefore, the null hypothesis is not rejected. This implies that, there is no significant difference on the extent of Basic Science teachers ICT compliance level in GSS and PSS. The result is in consonant with Ukpong (2016) who reported that social studies teachers show noncompliance attitudes towards ICT, measured in terms of acceptance of ICT training, and accessing ICT resources.

The result in Table 2 of research question 2 presents the extent of Basic Science teachers' ICT competence level in GSS and PSS. The result showed that Basic Science teachers can browse the internet, use projectors during lessons, and use online curriculum in both schools to a lesser extent. On the whole, the result revealed Basic Science competence level of 2.70 and 2.73 respectively in both GSS and PSS. The t-test of independent sample of the difference in the mean rating scores of teachers on the extent Basic Science teachers ICT competence level in GSS and PSS recorded t-test value of 0.055 with a p-value of 0.079 which is less than 0.05 level of significance ( $p=0.060>0.05$ ). Therefore, the null hypothesis is not rejected. This means that, there is no significant difference on the extent of Basic Science teachers ICT competence level in GSS and PSS. The findings is in agreement with Opie and Oko-Ngaji (2021) who discovered that the level of ICT competence among the science teachers was significantly below the expected minimum competency level

The result in Table 3 of research question 3 presents the extent that gender influence Basic Science teachers ICT use in GSS and PSS. The result showed that female Basic

Science teachers operate personal computers and android or iPhones and browse the internet to a great extent compared to their male counterparts who operate to a moderate extent. The result also revealed female Basic Science teachers consult the curriculum online to a moderate extent compared to males who consult to a lesser extent. Generally, the result indicated a high composite mean of 3.31 for the female teachers on all the items surveyed compared to male teachers with a composite mean of 2.57 respectively. The t-test of independent sample of the difference in the mean rating scores of teachers on the extent to which male and female Basic Science teachers use of ICT multimedia tools in GSS and PSS recorded t-test value of 0.055 with a p-value of 0.041 which is less than 0.05 level of significance ( $p=0.041<0.05$ ). Therefore, the null hypothesis is rejected. This shows that, there is significant difference on the extent to which male and female Basic Science teachers' use of ICT multimedia tools. The is in disagreement with Opie and Oko-Ngaji (2021) who reported that male science teachers were significantly higher in their mean ICT competence than their female counterparts.

### **Conclusion**

It is concluded based on the findings that Basic Science teachers ICT compliance level in GSS and PSS is to a moderate extent. Basic Science teachers' competence level in GSS and PSS is discovered to be low. Teachers can only browse the internet, use projectors during lessons, and use online curriculum in both schools to a lesser extent. Gender has significant influence on Basic Science teachers' use of ICT, as female Basic Science teachers operate personal computers and android or iPhones and browse the internet to a great extent compare to their male counterpart who operate to a moderate extent

### **Recommendations**

It was recommended based on the findings that; the government through the Taraba State Ministry of Education (MOE) and State Universal Basic Education Boards (SUBEB) together with the Association of private school owners should ensure that:

1. Basic Science teachers in both GSS and PSS should comply with ICT multimedia tools in the process of teaching the subject to a great extent.
2. Basic Science teachers' competence level in both GSS and PSS is raised to a great extent, so that they can be able to browse the internet, use projectors during lessons, and use online curriculum effectively.
3. Both male and female Basic Science teachers use ICT multimedia tools effectively during lessons.

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