

# PERCEPTIONS OF AGRICULTURAL SCIENCE TEACHERS ON THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN TEACHING AND LEARNING

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## Abstract

The study investigated the perceptions of Agricultural Science teachers on the use of Information and Communication Technology (ICT) in teaching and learning in secondary schools in Imo State. Two research hypotheses guided the study. The subjects for the study comprised one hundred and sixty (160) students and forty (40) Agricultural Science teachers from the area of study. The instrument for data collection was a questionnaire designed by the researchers which was duly validated. Mean scores, frequency and Chi-square ( $X^2$ ) were used to analyze the data. Findings of the study revealed that  $X^2$  value of the relations between the ownership of ICT and use calculated ( $X^2_{cal}$  625.21 exceeded ( $X^2_{tab}$  36.42) tabulated. This implies a positive relationship between the ICT ownership and use against the null hypothesis of no significant relationship at 0.05 level of significance. Following the findings recommendations were made.

The development of any nation depends very much on the advancement and application of science and technology, (Bajah 1983; Fariwoutan, 1997). The role of science in the development of modern societies is not in dispute more so that the influence of modern technological innovations is far reaching in every sphere of man's life (Olorundare, 2006). The Information and Communication Technology (ICT) emerged from the recent technologies which integrates Information Technology (IT) and Communication Technology (CT). The Information and

Communication Technology deals with the use of information, develop knowledge and skills, Competencies and abilities in the individuals Akintude, (2002). The emergence of ICT into teaching and learning has been known to make learning more students centered, encourage cooperative learning and stimulate increased teachers/students interaction. Innovation in teaching and learning brought about the information and communication technology occurs over a period of years as teachers become more experienced with technology. The new instructional technologies present vast new opportunities for schools to achieve the excellence and productivity they have long sought for (Longman, 2005). Teachers, especially Agricultural Science teachers have very significant role, to play in ensuring that successful computer knowledge and application become a reality in their schools. They should not only have a theoretical knowledge of ICT but must be competent in the use of computers. Umeano, (2006) noted that many educational systems in Nigeria are yet to respond effectively to use of some ICT gadgets like computers.

Studies indicate that even though computers have come into post primary schools, the teachers have not really been affected by their presence, (Yusuf, 2005; Jegede and Owolabi cited in Umeano 2006). It is discovered that the presence of these ICT gadgets like the computers are only seen in the computer pool were they are protected with dust infested covers. Otagburuagu and Eze (2006), observed the high rate of computer illiteracy among teachers and the computer awareness which is limited. To take adequate advantage of the

utilization of ICT, teachers' perception, interest and orientation need to be repositioned. The effective utilization of ICT in our secondary schools in the teaching and learning of agricultural science will make teaching no doubt more rewarding. However, children can progress at their own pace in ICT to master tasks which provides and direct immediate feedback mechanism (Ater, Tiough & Nerkar, 2005). This can afford the students the opportunity to shape their performance, facilitate a progressive effective group work and increase their social interactive learning, Watson (2001).

The success of educational innovations according to Watsons (2001) depends largely in skills and knowledge of teachers. Hence ICT education is relatively a new intervention in education, therefore the agricultural science teachers are more or less co-learners alongside with students. (Ater, Tiough and Nerkar, 2005) and Dakieh (2004) opined that the inclusion of information and communication technology in teaching by teachers who do not have certain characteristics necessary for an adequate teaching interaction or mastering the ICT may do more harm than good. Label and Hime (2006) noted that the success of teaching with digital information technology would be difficult to achieve due to lack of deep knowledge by teachers. They further maintained that majority of teachers have no access to ICT facilities and even those who have access might not really get deep enough into the usage and dynamics of these technologies and fail to acquire the necessary knowledge to integrate the technologies into their teaching.

Cuban (2001) identified the most significant barriers to successful integration and utilization of ICT transformation of learning to be agricultural science teachers lack of confidence, experience, perception and pedagogical understanding in mobilizing the

potentials of digital technologies. Abah (2006) remarked that even when agricultural science teachers desire to use them, they are not well informed about what they are, where they can find them, or how they may be used for teaching and learning in agricultural science subject and may prefer the traditional chalk and board method. Andural and Ikyumen (2006) noted that most teachers do not only lack the skills of operating the computer they in addition do not know what the computer technology provides to the world. In view of this Kareen (2004) suggested that teachers should undergo continuous training on the use of ICT to keep up date with ever changing technologies. Some of ICT components like the computers, radio, television, mobile phones, over head projectors, recorder, and videos can be utilized in the teaching and learning of agricultural science Iperen (2006). Empowering agricultural science teachers with pertinent ICT skills and knowledge will change their perceptions on its utilization, this will in turn have a positive implication in teaching and learning of agricultural science which is more or less a practical subject.

### **Statement of the Problem**

The instructional delivery of Agricultural science which is more of a practical subject is at its low ebb. The perception of teachers on the utilization of ICT facilities have not been properly accessed and recognized and this trend have adverse effect on teaching and learning of agricultural science in our post primary schools, (Pyke, Akpajiaku and Sofo, 2003). The cost of ICT gadgets and products are normally beyond the reach of rural secondary schools agricultural science teachers and where available, the teachers may not be able to use the new technology due to lack of skill and poor perception (Ekpo, 1991 and Akinseinde, 1991). Researchers have noted that there has not been maximum use of ICTS on agricultural science subject. Agricultural Science subject required the

use of ICTS from the stages of subject development to subject evaluation. The epileptic supply of electricity and inability to own a computer may no doubt add to the low perception of agricultural science teachers to the utilization of ICT in teaching which in turns affects learning.

### **Objectives of the Study**

The objectives of this study include:

1. To determine the perception of Agricultural science teachers on the relationship between ownership of ICT gadgets and utilization in teaching and learning of Agricultural science in secondary schools in Imo State.
2. To determine the problems of ICT accessibility in teaching and learning of agricultural science in secondary schools in Imo State.

### **Hypotheses**

1. There is no relationship between the perception of agricultural science teachers on ICT gadgets ownership and their utilization in the teaching and learning of agricultural science in secondary schools in Imo State.
2. There is no relationship between the agricultural teachers' perceived ICT accessibility and their utilization in the teaching and learning of agricultural science in Secondary schools in Imo State.

### **Method**

The study adopted a simple survey design. It was carried out in secondary schools in Okigwe and Owerri Educational Zones of Imo State. Through simple random sampling techniques two secondary schools were sampled from the ten local government Areas in the zones. Finally through the same technique, eight students and two teachers were selected from each of the twenty selected secondary schools. Making a sample size of two hundred (160 students and 40 teachers). The researchers used questionnaire for data collection. The instrument consists of two sections. Section (A) deals with personal characteristics of the respondents while section (B) deals with questions on the perception of ICT utilization and accessibility to both students and teachers in the study area. It was a 4 point measuring scale of Strongly Agree (SA), Agree (A), Disagree (DA) and Strongly Disagree (SD). The instrument was validated by experts in Psychology and Measurement and Evaluation in the College of Agricultural and Science Education Umudike. Reliability test was also done using Cronbach Alpha yielding a value of 0.83. The data was analyzed using frequency and chi-square statistics.

### **Results**

**HO<sub>1</sub>:** There is no significant relationship between the agricultural science teachers perception on ICT gadgets ownership and there utilization in teaching agriculture in secondary school in Imo State.

**Table 1: The Distribution of Respondents on the Agriculture Science Teachers' Perception on the Relationship between the ICT Ownership and Utilization in Teaching and Learning Agriculture in Secondary Schools.**

S/N	Teachers Perception on Ownership and Utilization of ICT	SA	AG	DA	SDA	Total	$\frac{\Sigma(0-E)^2}{E} = X^2$
1	Majority of the Agricultural Science teachers own GSM phones	112 (66.33)	44 (46.1)	26 (42.33)	16 (43.22)	200	<b>65.59</b>
2	Majority of the agricultural science teachers own personal computers	8 (66.33)	36 (46.1)	60 (44.33)	96 (43.22)	200	<b>125.33</b>
3	Most of the agricultural Science teachers own calculators	90 (66.33)	66 (46.1)	36 (42.33)	8 (43.22)	200	<b>46.49</b>
4	Almost all the teachers own radio tape recorders and T.V sets.	128 (66.33)	72 (46.1)	- (42.33)	- (43.22)	200	<b>73.89</b>
5	The agricultural science teachers do not use ICT gadget such as power points, projectors and slides for teaching and learning agriculture.	133 (66.33)	67 (46.1)	- (42.33)	- (43.22)	200	<b>78.49</b>
6	Agricultural science teachers know very well how to use some ICT gadget such as computer, video and TV, tape and radio in teaching	36 (66.33)	18 (46.1)	63 (42.33)	81 (43.22)	200	<b>74.11</b>
7	The agricultural science teachers often visit internet houses to down load information used for teaching	40 (66.33)	32 (46.1)	60 (42.33)	68 (43.22)	200	<b>84.46</b>
8	There is school management arrangement to train & retrain teachers on the use of ICT gadgets for teaching and learning	24 (66.33)	42 (46.1)	68 (42.33)	66 (43.22)	200	<b>54.94</b>
9	Most teachers know very well how to use gadgets such as films, slides, computer, power point etc to teach	26 (66.33)	38 (46.1)	66 (42.33)	70 (43.22)	200	<b>56.12</b>
<b>Total</b>		597	415	381	389	1800	<b><math>\Sigma x^2 625.21</math></b>

**$X^2$  tab. 36.42, df 24 @ 0.05;  $X^2$  Cal. 625.21.**

Table 1, shows that the calculated value  $X^2$  625.21 exceeds the critical value 36.42 of df 24 at 0.05. Hence we rejected the null hypothesis. This implies that the teachers of agricultural science ICT gadgets utilization in teaching is dependent on their ownership of ICT gadgets. There is indication showing a positive relationship between ICT gadgets ownership by teachers and their utilization in teaching and learning agricultural science in the secondary schools.

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**H<sub>02</sub>:** There is no significant relationship between ICT gadgets received accessibility problems and their utilization by the agricultural science teachers in teaching and learning in secondary schools in Imo State.

**Table 2. Distribution of Respondents on Agricultural Science Teachers Perception on ICT Gadgets Accessibility, Problems and Utilization by the Agricultural Science Teachers in Teaching and Learning in Secondary Schools**

S/N	Teachers Perception accessibility Problems	ICT	SA	AG	DA	SDA	Total	$\frac{\Sigma(0-E)^2}{E} = X^2$
1	The teachers have easy access to ICT gadget for teaching and learning agriculture in schools		25 (39.67)	37 (37.78)	67 (54.44)	71 (66.78)	200	8.61
2	The schools have enough ICT gadgets like computers and other accessories for teaching and learning agriculture		24 (39.67)	28 (37.78)	68 (54.44)	80 (66.78)	200	14.72
3	There is management arrangement to help teachers purchase ICT gadgets to enhance teaching and learning agriculture		24 (39.67)	36 (37.78)	40 (54.44)	100 (66.78)	200	26.62
4	The electricity supply is always available for easy access and use of ICT gadgets		35 (39.67)	42 (37.78)	58 (54.44)	65 (66.78)	200	1.28
5	The agricultural science teachers do not use ICT gadgets such as power points, projectors and slides for teaching and learning agriculture		133 (39.67)	67 (37.78)	- (45.44)	- (66.78)	200	363.39
6	Agricultural Science teachers know very well how to use some ICT gadgets such as computers slides videos and TV, tapes and radios for teaching.		36 (36.67)	18 (37.78)	63 (54.44)	81 (66.78)	200	15.08
7	The agricultural Science teachers often visit to down load information used for teaching.		40 (39.67)	32 (37.78)	60 (54.44)	68 (66.78)	200	1.47
8	There is school management arrangements to train and retain agricultural Sc. Teachers on the use of ICT gadgets in teaching and learning		24 (39.67)	42 (37.78)	68 (54.44)	66 (66.78)	200	10.05
9	Most teachers know very well how to use slides, films, power point, projectors etc to teach.		26 (39.67)	38 (37.78)	66 (54.44)	70 (66.78)	200	7.32
<b>Total</b>			357	240	490	601	1800	448.50

**X<sup>2</sup> tab. 36.42, @ 0.50 df 24 & X<sup>2</sup>cal 443.50.**

Table 2 revealed that the calculated  $X^2$  values 443.50 exceed the critical value table 36.42 df @ 0.05. This implies that ICT utilization is dependent on accessibility problems. Then we observe that there is a relationship between the ICT accessibility problems and the agricultural science teachers utilization in teaching and learning agricultural science. The null hypothesis is therefore rejected.

### **Discussion**

The results of the investigation from table 1 indicates teachers' inability to own ICT gadgets resulting in their not being knowledgeable in the use of information and communication technology in teaching of agricultural science. The table yield results thus the calculated value  $X^2$  625.21 exceeds the critical value of 36.42 at 0.05 level of significance which rejects the null hypothesis of no significance difference. This implies that there is a relationship between ICT ownership and utilization in teaching of agricultural science.

This finding is in agreement with Abah (2006) who observed that the success of teaching with digital information technology would be difficult to achieve due to lack of deep knowledge of these technologies by the teachers. Otagburuagu and Eze (2006) observed that greater use are not placed on the use of ICT because of poverty, high illiteracy rate and erratic power supply coupled with both teachers and students to embrace change. Olorundare (2006) observed that attitudes and competence of teachers have influence in teacher's utilization of ICT. Olorundare, (2006) noted that teachers are not yet properly educated and trained in the utilization of ICT in teaching and learning. He said that with the use of ICT in the classroom the teacher no longer acts as knowledge dispenser but as a facilitator of

learning a guide and a collaborator in the teaching learning enterprise. Cox, Preston and Cox, in Olurundare (2006) found out that unwillingness to make use of ICT in teaching and learning inadequate computer availability, little or no time to successfully integrate technology into the curriculum and poor dwindling support and avoidance are among teacher factors in the utilization of ICT in the classroom. Hypothesis two which states that there is no relationship between the accessibility problems of ICT and the utilization of it in the teaching and learning of agricultural science Table 2 shows that the calculated  $X^2$  values of 443.50 exceeds the critical value table of 36.42 at 0.05 level of significance. Hence the null hypothesis of no significant relationship was rejected and concluded that there was a positive significant relationship between ICT accessibility problems and their utilization.

The in accessibility of ICT facilities pose a problem to both teachers and students of agriculture. This study found out that the cost of acquisition and maintenance of ICT gadgets and accessories posed a serious problem to agricultural science teachers.

Andural and Ikymen (2006) found out that the Nigerian educational institutions are traditionally resource poor considering the current level of funding for education. On the other hand the researchers found out that students in these areas especially those in the rural areas were not given any financial support to aid them purchase ICT facilities like computers to enhance their learning. Also the findings include that there are not enough ICT facilities like computers and projectors in the secondary schools used by the researchers, that there was pronounced inaccessibility of the gadgets by the teachers and in most cases the teachers were not all that perturbed by this trend because of their perception of ICT

### **Conclusion**

Information and Communication Technology (ICT) in recent times has become an indispensable tool in educational development especially in the teaching of agricultural science that not withstanding secondary schools in Imo State lack adequate ICT infrastructure coupled with poor perception of teachers in the utilization of ICT facilities in the teaching and learning enterprise. The access of these facilities among teachers and students are still not adequate.

### **Recommendations**

Following the findings these recommendations were made:

1. The provision of significant ICT facilities by the government in schools will ameliorate teacher resistance.
2. Training and retraining by the Ministry of Education in the use of the need technology will help tenure Technophobia among teachers and students.
3. The government and school administrators should find a way of changing poor perception of teachers and students towards the use of ICT.
4. There should be unrestricted access of teachers and students such as ICT to encourage maximum benefits of the facility.
5. The alternative power supply should be made available through private sector partnership in collaboration with school administrators and Parents Teachers Association to complement the efforts of the Power Holdings PLC of Nigeria to ensure availability of power while using ICT gadgets in teaching agricultural science in schools.

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