

**ASSESSMENT OF INSTRUCTIONAL METHODS ADOPTED BY TEACHERS OF AGRICULTURAL SCIENCE IN SECONDARY SCHOOLS FOR ENHANCED SKILL ACQUISITION FOR SELF-RELIANCE IN ENUGU STATE, NIGERIA.****Aneke C. U.**Department of Technology and Vocational Education  
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**ABSTRACT:** *This paper assessed the instructional methods adopted by teachers of agricultural science in secondary schools for enhanced skill acquisition for self-reliance in Enugu State. Two research questions and two null hypotheses guided the study. A structured questionnaire made up of 28 items was used to elicit responses from 122 respondents comprising of 90 teachers of agricultural science teaching in schools located in urban and 32 teachers, teaching in schools in rural areas. The instrument was face validated by three experts. The reliability of the instrument was determined using Cronbach alpha reliability coefficient. A reliability index of 0.91 was obtained. Mean with standard deviation was used to answer the research questions, while t-test was used to test the null hypotheses at 0.05 level of significance. The results of the study showed that teachers used demonstration, action research method, individual teaching method, field experience (farm) teaching, field trip methods of teacher, etc to a great extent, for enhanced skills acquisition for self-reliance in Enugu State. It was found that teachers do not integrate modern technologies in teaching agricultural science in secondary schools in Enugu State of Nigeria. Based on the findings, it was recommended among others that; teachers should be retrained in the use of modern technologies in agricultural instructional delivery.*

**KEYWORDS:** Assessment Instructional Methods, Skills Acquisition, Self-Reliance.

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**INTRODUCTION**

The ever-increasing technological advancement, and surge of unemployed graduates in the country have necessitated the inclusion of more technology and vocational-oriented subjects into the school curriculum. Vocational oriented subjects were described by Puyate(2008) as an aspect of technology based education which involves training of men for the acquisition of salable skills. It applies both science and technical skills to practical problem solving. Vocational subjects are subjects like Home Economics, Arts, Accountancy and Agricultural science. Agricultural science trains man-power in the area of crop and animal production. It involves training given to learners to enhance their ability to competently manipulate agricultural activities in areas such as production, processing, packaging and marketing to become employed in government or private sector or be self-reliant.

Enhancement means to improve on something for better performance. Olaitan, Amusu, and Asouzuin Ifeanyieze(2010) described enhancement as ability of making something better than before. This study views enhancement as adopting better teaching methods for agricultural instructions for adequate skill acquisitions Skill is well-established habit of doing things by people. Okorie (2000) noted that to possess a skill is to demonstrate, act, think and behave in specific activity in such a way that the process becomes natural to the individual through

repetition or practice. Skills acquisition by students, make them competent to the extent of becoming self-reliance.

Self-reliance is a situation where one does not rely on paid salary or wage, rather the individual earns his living. Hornby, in Ifeanyiyeze (2010) described self-reliant as the ability to do or take decision things byones' self rather than depending on other people for help. This study views self-reliance as the ability of agricultural science students to manipulate agricultural products to create wealth for standard living, rather than depend on paid salary.

According to Okoli (2011), agriculture is the pillar of the nation welfare, and sound economic development and technological advancement. Olakunori in Aneke (2014) noted that in the early 1970 agricultural sector accounted for about 71.34% of the nation export Value and 60.61% of raw materials for gross national products. In that understanding agriculture was made a school subject and was taught at all levels in Nigerian education system, that is, at primary, secondary and tertiary institutions. At secondary level it is called agricultural science. The objective of agricultural science for secondary schools as stipulated in the National Policy of Education FRN (2013) include; to stimulate and sustain students interest in agriculture; to enable students acquire basic knowledge and practical skills in agriculture and enable them become self-reliance. These objectives could be achieved if the students are taught by competent teachers of agriculture.

A teacher of agriculture was described by Olaitan, Asogwa and Umeh (2009) as someone who has undergone a teacher preparatory programme in the area of agriculture and is charged with the responsibility of managing the learning behaviour of the students. Aneke (2012) described a teacher as somebody who teaches especially as a professional in the area of agriculture. This implies that teacher of agriculture could be a male or female who is a professional in carrying out agricultural teaching tasks to enhance learning. Being a teacher is a responsibility, and the teacher of agriculture is a pivotal figure in implementing any agricultural programme at any level of education, more especially at the secondary school level where the students' are youths who are innovative and zealous to learn. Owodunni (2010) stated that the onus of learning rest with the students, whether he learns or not depends on the teachers' effectiveness in giving instructions in the way that augments and promotes learning on the part of the students. It is therefore, paramount that any teacher of agriculture who wants the students to learn and become skillful must have good grasp of the knowledge. He is required to be well trained and equipped in the methodology to guarantee him effectiveness in instructional delivery in any location-rural or urban, he is posted to teach. The agricultural science teacher cannot promote learning if he is ignorant of what it takes to learn or to be conversant with strategy or method which can promote learning.

Teaching methods was defined by Merlot (2015) as a plan of action designed to achieve learning programme design for a learner. It could be a master plan or program procedure schedule to achieve a particular objective. Heinrich, Molende and Russel (2003) describe instructional methods as procedures of instruction, selected to assist the learner achieve the objectives of teaching. This means that instructional method could be procedure adopted by the teacher to aid students acquire knowledge, attitude and skills to manipulate agricultural produce for self-reliance. Teaching methods were categorized by Osinem (2008) into field-related and non-field related teaching methods. Field-related teaching include, teaching carried out within or outside the school setting. It may be organized trip or visit to a place of interest, experiment, in the laboratory, workshop, demonstration of concepts or any other outdoor teaching. In this method of teaching learners are actively involved, hence skill acquisition is

emphasized. Osinem (2008) noted that teachers could use the discussed agricultural instructional methods to enhance learning:

- Collaborative/cooperative learning: In this teaching strategy students' work together in small group to accomplish a common learning goal. It requires careful planning and execution and effective guidance by the teacher.
- Mobile learning: Here the students' are exposed to use information and communication technology gadgets to gather information as directed by the teacher. Jim (2015) noted that learning of such enable learners to know what is happening in their various areas of study in other parts of the world and also use of ICT can help agricultural teacher to help students' develop research skills.
- Game and Simulation: Here students' are encouraged by the teacher to solve real life problem in a safe environment using interactive tools such as; Internet
- Field trip: This is an organized visit to a place to achieve an instructional objective. Most agricultural instructions are best taught using this method (Osinem 2008)
- Demonstration: This method is used by the teachers to arrive at fundamental skills and practice in a very short time. Demonstration is use to teach manipulative skills, to develop learners understanding, etc. It could be carried out individually, in group, or in the class. Other field methods of teaching as noted by Merlot (2015) include; inquiry guided learning, inter-disciplinary teaching, community learning, teaching with cases, giving assignments to students, giving project to students, team-based learning, exhibition of agricultural produce, workshop practice, task instruction sheets among others.

The non-field teaching methods are mainly those instructions giving to the students, which involves more of theories. Osinem (2008) described the non-field teaching methods as classroom based strategies of teaching. Some of these methods include discussion, problem solving, humor in the class, team based teaching, role play, problem solving, use of textbooks. According to Ogwo & Oranu (2006) the use of text book aids the learners to get primary source of information and detail explanations covering the fundamental operations as well as other relevant information that have bearing on the subject under discussion while discussion enables the learner to understand concepts to be learnt.

Agricultural science is geared towards the development of manual skills as well as knowledge and attitude required to manage agricultural resources and this requires that the teacher plans, executes and evaluates his teaching using various methods which emphasize skill acquisition.

Skill acquisition of students could be enhanced through the teacher involving and exposing learners to constant practical activities. Kidd, in Ogwo and Oranu (2006) noted that skill acquisition proceeds habit formation. That is to say, continuous practice of a task soon becomes habit and thus leading to perfection. The teacher is required to involve the students actively in the farm, and laboratory activities, take them on field trips, give the students projects and individual portions in the farm for private practice. Okoli (2011) affirmed the importance of involvement of the students in practical exercise by stating that the training of would be farmers today is the duty of the teacher and that the teacher would make sure that the trainees (students) are fully involved in their training package and more importantly is being supervised effectively by the trainer (teacher). In other words the teacher is supposed to give close supervision to the learners to know their weak points and help them out.

The teacher of agriculture in secondary school is expected to combine the teaching methods to make the students learn. He is expected to use the modern technologies which now stems in the use of ICT. Chimezie (2009) noted that diversification of instructional methods is necessary for inculcation of knowledge, skills and attitude to the students of secondary schools to enable them meet global standard but research have shown that teachers in urban areas utilize modern teaching facilities more than those in the rural schools. This may be as a result of not possessing ICT facilities and constant power failure as noted by Aneke (2014). The economic status of the rural dwellers was noted by Aneke to be a contributing factor. If the methods highlighted above are utilized by the teacher, students' skill acquisition will be enhanced and thus competent students' and self-reliance graduates, who will be employers of labour in agricultural sectors, will be produced. For the teacher to combine these methods he is required to always update his knowledge to help him integrate new technologies such as use of information and communication technology (ICT) in the agricultural instruction. Through the internet students would get information of what is happening in agricultural sector in other parts of the country. Teaching of practical subject such as agriculture requires tools and equipment to be available and that teachers need to utilize them to make concept clear. If the school cannot afford the tools and equipment to learn, the teacher is required to improvise to make sure that he carries out his teaching task to enhance learning (Elobuike 2010). Glaseir in Aneke (2012) noted that 90% of what we use our hands to do is retained, this situation can become real when the tools are available and adequate for the students to use and learn. According to Olisa (2009), quality teaching is a professional task that takes years of preparations, careful planning and skillful execution includes; formulation of objectives, careful selection of instructional materials to match the subject topic, and methods and for ease execution, using modern equipment help to keep the learner current with the new technologies in agricultural production.

If the teachers of agriculture are competent to use the teaching methods which can promote understanding of concepts and skills acquisition for secondary schools students, most of the agricultural youth who are roaming about the street, and some who after graduation, go into other job not related to agriculture as reported by Olaitan in Okoli(2011), may be as a result of the poor teaching method adopted by the teacher, would want to remain in agriculture and profit by it, Hence, the study to determine the instructional methods adopted by teachers of agriculture science in secondary schools for enhanced skills acquisition for self-reliance in Enugu State. Specifically the study sought to determine;

The extent to which teachers of agricultural science adopt the field instructional method in secondary schools, for enhanced skills acquisition of students for self-reliance in Enugu State.

1. The extent to which teachers of agricultural science adopt non-field related instructional method in secondary schools, for enhanced skills acquisition of student for self-reliance in Enugu State.

### **Research Questions**

1. What is the extent to which teachers of agricultural science adopt the field-related instructional method in secondary schools, for enhanced skills acquisition of students for self-reliance in Enugu State?

2. What is the extent to which teachers of agricultural science adopt non-field related instructional method in secondary schools, for enhanced skills acquisition of students for self-reliance in Enugu State?

### **Hypotheses**

The following null hypotheses tested at 0.05 level of significance guided the study

- 1 There is no significant difference in the mean ratings of teachers of agricultural science in the urban and those in the rural on extent to which teachers of agricultural science adopt the field-related instructional method in secondary schools, for enhanced skills acquisition of students for self-reliance in Enugu State
- 2 There is no significant difference in the mean ratings of teachers of agricultural science in the urban and those in the rural on extent to which teachers of agricultural science adopt the non-field related instructional method in secondary schools, for enhanced skills acquisition of students for self-reliance in Enugu State

### **METHODOLOGY**

The study adopted survey research design. The study was carried out in Enugu State. Enugu State has six Education zones. Two out of the six zones, Enugu and Udi were purposively sampled and used for the study. The secondary schools in these zones have many students' who are offering agricultural science. The population for the study was 131 made up of 38 male and 93 female teacher of agriculture from the zones under study. The entire population was used for the study because it was manageable. A28- itemed questionnaire developed by the researcher was used for data collection. Two research questions and two null hypotheses tested at 0.05 level of significance guided the study. The instrument was face validated by three experts two from Department of Technology and Vocational Education ESUT and one from Ebonyi State University Abakaliki. Their suggestions helped to improve on the final copy of the questionnaire used for the study. The internal consistency of the instrument was determined using Cronbach Alpha reliability coefficient. A reliability coefficient index of 0.91 was obtained.

Mean with standard deviation was use to answer the research questions, while t-test was used to test the two null hypotheses at 0.05 level of significance. Nominal value such as 4, 3, 2, and 1 were assigned to different scaling items of the questionnaire and corresponding mean scores were interpreted using real limit of numbers.

Any item statement that had mean score of 3.50 – 4.00, was regarded as very great extent, 2.50 – 3.49, as great extent, 1.50 – 2.49 as low extent 1.00 – 1.49 as very low extent, while for the null hypotheses, it was ruled that any item whose t-calculated was less than 1.96 which was the table value and at 0.05 level of significance was upheld, otherwise the item statement was rejected.

### **RESULTS**

The data obtained were analyzed and used for answering the research questions.

## Research Questions

1. What is the extent to which teachers of agricultural science adopt the field-related instructional method in secondary schools, for enhanced skills acquisition of students for self-reliance in Enugu Stat

**Table 1: Mean rating and t-test analysis of the responses of the respondents on the extent to which teachers of agricultural science utilize field related teaching method to enhance skill acquisition of agricultural science students for self- reliance in Enugu State.**

	Items	G/M	Decision	Teachers in urban schools N-90		Teachers in rural schools N-32		t-cal	Rem
				X	SD	X	SD		
1	Laboratory teaching method	3.18	GE	3.26	0.67	3.10	0.76	1.08	NS
2	Field investigation method	3.44	GE	3.58	0,57	3.30	0.64	0.78	NS
3	E-learning-internet	2.75	GE	2.80	0.70	2.70	0.69	0.69	NS
4	Project method	3.21	GE	3.30	0.54	3.12	0.54	1.61	NS
5	Game and Simulation	2.45	LE	2.46	0.71	2.44	0.70	0.06	NS
6	Collaborative teaching method	2.47	LE	2.54	0.49	2.40	0.52	1.36	NS
7	Action Research	3.32	GE	3.33	0.69	3.32	0.66	0.07	NS
8	Inquiry Guided strategy	2.88	GE	2.95	0.66	2.81	0.71	0.90	NS
9	Field trips	3.04	GE	3.12	0.78	2.96	0.57	0.57	NS
10	Motivational method	2.34	LE	2.36	0.61	2.32	0.49	0.37	NS
11	Giving Assignment	3.45	GE	3.48	0.42	3.42	0.49	0.61	NS
12	Workshop teaching	2.00	LE	2.02	0.91	1.98	0.88	0.30	NS
13	Individual teaching method	2.44	LE	2.45	0.70	2.43	0.70	0.14	NS
14	Problem solving method	3.00	GE	3.08	0.56	2.92	0.59	1.33	NS
15	Illustration and use of examples	3.48	GE	3.52	0.56	3.44	0.61	0.05	NS
16	Demonstration method	3.36	GE	3.32	0,54	3.40	0.57	-0.56	NS
	Grand Mean	2.94	GE						

The data presented in Table 1 above indicated that items 1, 2, 3, 4, 7, 8, 9, 11, 14, 15, 16 fall within the response category of great extent, indicating that the statements on the items are instructional methods utilized by teachers of agricultural science while Items 5, 6, 10, 12, 13 had mean scores that fall within the response category of low extent. This implies that agricultural science teachers utilize the methods in items to a low extent. The t-calculated of the items are less than 1.96, at 0.05 level of significance. This is an indication that there is no significance in the mean ratings of teachers in urban schools and those in rural on the extent to which they utilize the field-related teaching methods to enhance skill acquisition of students of

agriculture in secondary schools for self-reliance in Enugu State. The null hypothesis was upheld.

### Research Questions

2. What is the extent to which teachers of agricultural science adopt the field-related instructional method in secondary schools, for enhanced skills acquisition of students for self-reliance in Enugu State?

**Table 2: Mean rating and t-test analysis of the responses of the respondents on the extent to which teachers of agricultural science utilize non-field related instructional method to enhance skill acquisition of agricultural science students for self-reliance in Enugu State.**

	Items	G/M	Decision	Teachers in urban schools N=90		Teachers in rural schools N=32		t-cal	Rem
				X	SD	X	SD		
1	Interdisciplinary teaching	2.51	GE	2.53	0.66	2.48	0.59	0.39	NS
2	Discussion	3.46	GE	3.46	0.56	3.42	0.52	0.36	Ns
3	E-learning	2.47	LE	2.42	0.49	2.41	0.51	0.48	NS
4	Use of textbook	3.27	GE	3.30	0.53	3.24	0.59	0.50	NS
5	Humor in class	2.34	LE	2.24	0.67	2.39	0.71	-1.07	S
6	Use of social media	2.45	LE	2.51	0.48	2.39	0.51+-	1.06	NS
7	Questioning	3.14	GE	3.16	0.59	3.12	0.66	0.30	NS
8	Inquiry Guided strategy	2.48	LE	2.51	0.51	2.44	0.47	0.70	NS
9	Use of ICT	2.41	LE	2.34	0.70	2.47	0.68	-0.56	S
10	Motivational strategy	2.33	LE	2.36	0.65	2.30	0.66	0.44	NS
11	Note taking	3.44	GE	3.4	0.59	3.39	0.44	1.00	NS
12	Community based teaching	3.00	GE	3.04	0.52	2.96	0.51	0.75	NS
	Grand Mean	2.77	GE						

The data presented in Table 2 above shows that items 1, 2, 4, 7, 11, and 12 fall within the response categories of great extent, indicating that the statements on the items are non-field teaching methods utilized by teachers of agricultural science for enhancing skill acquisition while Items 3, 5, 6, 8, 9 and 10 had mean scores that fall within the response category of low extent. This implies that the item statements are utilized to a low extent by teachers to enhance skill acquisition of agricultural science students of secondary schools. The null hypothesis tested shows that the t-calculated of the items are less than 1.96 at 0.05 level of significance. This is an indication that there is no significance in the mean ratings of teachers in urban schools and those in the rural on extent to which they utilize the non-field teaching methods

to enhance skill acquisition of students of agriculture in secondary schools for self-reliance in Enugu State. The null hypothesis was therefore not rejected.

## DISCUSSION

The study sought to assess the instructional methods adopted by agricultural science teachers in secondary schools for skill acquisition for self-reliance in Enugu State. Data presented in Table 1 of the study shows that, teachers adopt demonstration, farm field experience, individual teaching method, etc as instructional methods for enhancing skills acquisition in secondary schools. The present finding is in line with the statement of Ogwo and Oranu (2006) who stated that skill acquisition is enhanced when concepts are demonstrated and that it is better used for subjects which are practical oriented like agriculture. The authors stated that skill acquisition proceeds habit formation which in turn leads to perfection. The present finding is also in consonant with Okoli(2011) who also affirms that involving the students in practical exercise meant for their training and supervising them effectively by the teacher will enhance their creative ability. Demonstration methods are carried out in the farm, workshop, labouratory. Olaitan and Mama (2001) had already agreed that the use of demonstration aid in mastery of agricultural skills and that this is usually carried out in the farm which the authors described as a labouratory, but, under direct supervision of teachers. If teachers do not take the students to the school farm to demonstrate skills and practice it, they cannot acquire skills that will make them competent to be self-employed or compete with other in the labour market. Similarly, Esomonu (2012) found that field trip which was found in present study as a relevant tool for enhancing skill acquisition of agricultural science students helps students to experience various areas performing replica functions.

.Further, the study found that exposing students to field experience which is usually acquired in the school farm will enhance their effectiveness in manipulating agricultural activities. The present finding is in line with the finding of Idenyi and Owo (2011) who carried a study to determine the extent to which exposing students to utilize the school farm has help to improve their skill acquisition in farming and it was found by their study that students exposed to field experiences such as in the farm are very competent, create labour opportunities for others and highly enterprising.

The finding of the study in Table 2 shows that 10 out of 12 statements in the items are non-field instructional methods which can be used by teachers of agriculture to enhancing agricultural science instructions in secondary schools for self-reliance in Enugu State. Some of the strategies include' use of discussion, use of textbooks, team teaching, role play among others. The respondents disagreed to the use of social media and humor in the classroom as strategies that can be used to enhance agricultural science instructions in secondary schools Enugu State. The low rating of these methods of instruction by the respondents may be as a result of poor awareness of these medium of instructional delivery.

The null hypotheses tested indicated that there are significant differences on item statements such as use of social media and use of ICT in teaching agricultural science. This finding is in line with Aneke (2014) that rural teachers use conventional methods of teacher more than modern methods and this was as a result of poor power supply in the rural areas, the socio-economic status of rural dwellers and incompetency of using ICT facilities on the part of the teachers. The rest of the hypotheses had no significance difference and were therefore upheld



## CONCLUSIONS

It was concluded that even though the teachers of agricultural use conventional methods they are yet to integrate the new technologies in the teaching of agricultural science in secondary schools in Enugu State.

## RECOMMENDATION

Based on the finding, the following recommendations were made;

1. Qualified vocational agricultural science teachers should be employed to teach agriculture in secondary school in Enugu state.
2. Teachers of agricultural science should expose the students to practical activities in the farm/laboratory.
3. Teachers of agricultural science should be retrained through workshops and seminars on use of new technologies such as, use of social media, and other electronic medium in teaching agricultural science in secondary schools.
4. Teachers of agricultural science in secondary schools should integrate modern technologies in instructional delivery.

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