

Analysis of Strategies Used By Lecturers in Teaching Agricultural Education in Higher Institutions in Rivers State, Nigeria

*Amadi, N. S. & EKEZIE, A. I. A.

* Department of Vocational/Technology Education
Faculty of Technical and Science Education
Rivers State University of Science and Technology,
Port Harcourt

Abstract

The study analyzed the teaching strategies used by lecturers in teaching agricultural education in higher institutions in Rivers State. The specific objectives focused on the demographic characteristics of the lecturers, conventional teaching strategies used by lecturers, contemporary teaching strategies used and the challenges of the teaching strategies in agricultural education. The study adopted a descriptive survey design. The sample size for the study was forty lecturers. Data was collected using a well structured questionnaire designed in four-point rating scale of agreement. Data collected were analyzed using mean and standard deviation with acceptance mean score of ≥ 2.50 . T-test was used to test the hypotheses at 0.05% level of significance. The study revealed that majority of the respondents agreed that discussion, demonstration, problem-solving, project and lecture strategies respectively were some of the most outstanding conventional strategies used in teaching agricultural education courses. The study also revealed that the contemporary strategies used included E-learning, video conference, power point presentation, internet, digital presentation and computer. Lack of relevant materials, lack of farm tools, lack of demonstration farm among others were some of the challenges of teaching strategies in agricultural education in higher institutions in Rivers State. The result revealed that the three hypotheses were all accepted. Meaning that there is no difference in the response of RSUST lecturers and that of FCET lecturers on the concept. The study therefore recommends that adequate and appropriate teaching strategies should be used at all times by the lecturers to allow practical involvement by students for effective teaching and learning process.

Keywords: Teaching strategies; Agricultural education; Analysis and Lecturers

Introduction

Teaching has never had a single strategy to achieving set out goals in education. This has put lecturers on their toes to adopt various strategies in order to adequately and effectively impart knowledge and skills to the learner. Agricultural education programme in the higher institutions is not left out as lecturers seek the best approach for effective teaching. Egbule (2004) defined agricultural education as the process of training learners in the process of agricultural productivity as well as the techniques for teaching of agriculture. Agricultural education according to Okorie (2000) encompasses farming and agro-allied business organizations which includes services and sales in agriculture. Agricultural education was inculcated into the school curriculum for learners to acquire knowledge and skills as to meet the basic food production needs of the society as well as production of raw materials for industrial use (Federal Republic of Nigeria, 2004). Auwal (2013) noted that lecturers' aim is to teach both present and prospective farmers for proficiency in farming. This education was given both in functional and practical manner which leads to social responsibility, skill acquisition, self-reliance, sound work ethics, spiritual and moral values on the aspect of individuals who partake in the education or learning process. Efficient and effective teaching is the dream of every lecturer as no one individual (lecturer) will want to waste effort without achieving the desired result. Lecturers tend to employ every possible strategy to achieving a success in every time give to teaching. Teaching method according to Ahiakwo (2005) is all the actions put together by a lecturer to influence the students' behaviour and ultimately their learning. Heinrich, and Russel (2003) noted that it is the procedure of instruction, selected by a lecturer to assist learners achieve the set objective in the process of teaching.

In the course of running these programme, institutions and lecturers began to employ different strategies to effectively teach agriculture as to match its status in the society. This was to maintain the learning and relevance of agriculture in the society and production of crops such as cocoa, cotton, timbers, rubber, groundnut, hides and skins that were in high demand by agro-based industries around the world majorly in Europe (Osinem, 2008 & Tibi, 2012). To this effect, lecturers selected and used a wide variety of teaching strategies in order to actualize those targets. Some of the courses taught in Agricultural Education Programme in higher institutions include; Principles of Agricultural Education, Agricultural Communication, Field Crops, Vocational Agricultural Mathematics, Farm Animal Production, Introduction to Agricultural Occupation, Agricultural Ecosystem, Adult Education in Agriculture, Field Crops Utilization, Methodology in Agricultural Education, aimed among others. Each of these courses has its teaching strategies that could draw the learners' attention and interests, and also

help in achieving the outlined objectives.

The conventional teaching strategies used in teaching agricultural education courses include discussion, demonstration, problem-solving, project and lecture strategies. As part of educational course, agricultural education teaching are aimed at using different strategies including problem-solving method, inquiring method, lecture method, project method, mastery learning, experimental learning, discussion method, field trip method, result demonstration method, role-playing, workshop training, model-lead-test strategies among others (Ahiakwo, 2005 & Joseph, 2015). These are some of the teaching techniques used in education therefore some must be found worthy to be used by agricultural education lecturers for the effective teaching of the course. Dyer & Osborne (1996) asserted that research on learning and teaching styles can serve as a basis for the selection of sustainable techniques for the teaching of Agricultural Education in higher institution.

To this end, research works carried out by Modebelu and Nwakpadolu (2013) suggested a learner-centered method of teaching as learners should be the focal point and occupy a prominent position in the teaching and learning of agriculture. Auwal (2013) on the effects of teaching method on retention of agricultural science knowledge in Senior Secondary Schools revealed that discussion and demonstration method of teaching have significant effect on the retention of agricultural knowledge. Achor et al (2009) noted that some of the method of teaching as mentioned above are completely out of phase with background and Local environments of the learners especially those in Nigeria and has no bearing whatsoever with the culture. With the discussion and demonstration method students tend to benefit by knowing how to execute a strategy. Know how it works, as well as where it works. Auwal (2013) maintained that lecturing method remains one of the most popular method for transmitting information and ideas to learners by the lecturer. This method has been faulted by many researchers including Deekor & Nnodim (2006) and Veselinovska (2011) that it result to misunderstanding, boring, a one-way communication, do not permit fulfill participation by the students as they remain passive most especially agricultural education which is vocational course that has to do with hand, heart and head which must be done practically on the field as to be skillful by using their hands for production.

Nowak *et al*, (2004) in line with Auwal (2013) asserted that discussion and demonstration method are most effective ways in teaching science subjects and also vocational education courses, agricultural education inclusive due to reason that it can be very effective for illustrating concepts in class. Phipps & Osborne (1988) and Binkley & Tulloch (1981) reported that agricultural educators recommended that discussion and demonstration technique as the most suitable because it promotes interaction and full participation by the learner.

Some argued that selection of teaching techniques depend on the learning styles of the students not definitely based on the subject taught (Joyce & Weil, 1986; Dunkin & Biddle, 1974). Despite elaborating on this, many other researchers has faulted that teaching must not depend on the learning style of the learner.

The contemporary strategies used in teaching Agricultural Education courses include E-learning, video conference, power point presentation, internet, digital presentation and computer. Some researchers argued that as a result of changing world of technology, the use of computer base teaching is now the best strategy for teaching/learning agricultural education in the higher institution. Agbulu & Ademu (2010) stressed that introducing technology into teaching and learning has been shown to make more student centered which encourages cooperative learning, stimulate and increases lecturer and student interaction. Due to the rapid development of computer agricultural education lecturers have even fancy the use of computer (e-learning) as the best way of teaching agricultural education instead on the job method. Puyate (2011) describe vocational oriented subject including agriculture as a technological based education which involve the training of men for the acquisition of sailable skill. Aneke (2015) stated that this training involves giving the learner an opportunity to enhance their ability to competently manipulate agricultural activities in areas of production, processing, packaging, and marketing to become employed in government or private sector or become self-reliant.

Some of the challenges of teaching strategies in agricultural education in higher institutions in Rivers State include lack of relevant materials, lack of farm tools, lack of demonstration farm among others. Egun (2009) noted that agricultural science is being taught in the classroom theoretically without practical work and the use of relevant instructional materials despite the standard and things to be learnt by the students. Abass, Adekomi & Ojo (2012) emphasis that it is as a result of poor method of teaching which makes students see the course as a very difficult one which could not allow them develop or even master skills. The teaching of agriculture using several other techniques has being faulted in that Ssekamwa (2009) pointed out that the real approach to teaching of agriculture was discouraging, as it is still being taught theoretically and has failed to make an

impression on the society since the lecturers are only actors while the students are spectators.

Consequently, there are some common problems that affects the effective use of appropriate teaching method by lecturers in agriculture this according to Amuah (2009) include inadequate facilities such as computer and internet facilities capable of making the teaching and learning more interactive, low professional and efficiency levels of lecturers in the usage of computer assisted instructions, poor attitudes of teachers, school administrators and parents towards agricultural education and political lapses. Egun (2009) maintained that lack of relevant materials and test books, wide coverage of the subject, shortage of professionally trained lecturers, inability of lecturers to explain some concepts with local examples, lack of agricultural science laboratory, too much work load on lecturers and lack of in service training for older lecturers are among some of the factors affecting the upgrading of teaching in using appropriate teaching technique in the delivering of agricultural education.

In cognizance with the above argument the study focused on the analysis of strategies used by lecturers in teaching agricultural education in higher institutions in Rivers State, Nigeria.

Purposes of the study

The main purposes of the study was to analyze the teaching strategies in agricultural education.

Specifically, this study sought to:

1. determine the demographic characteristics of lecturers teaching agricultural education,
2. identify conventional teaching strategies used in teaching agricultural education courses,
3. determine contemporary teaching strategies used in teaching agricultural education courses and
4. examine the challenges of teaching strategies in agricultural education.

Hypotheses

To further verify the data gathered for the study, the following null hypotheses were tested at 0.05 level of significance.

1. There is no significant difference between Lecturers of Rivers State University of Science and Technology, Port Harcourt (RSUST) and Federal College of Education (Technical), Omoku (FCET) in the mean response of conventional strategies used in teaching Agricultural Education courses.
2. There is no significant difference between Lecturers of RSUST and FCET in the mean responses of contemporary strategies used in teaching Agricultural Education courses.
3. There is no significant difference between Lecturers of RSUST and FCET in the mean response of the challenges of teaching strategies in agricultural education courses.

Methodology

The study was carried out in Rivers State. The state is bounded on the South by the Atlantic Ocean, on the North by Imo and Abia States, on the East by Akwa-Ibom State and on the West by Bayelsa and Delta States (Rivers State Government, 2016). This region was chosen as there are large rural areas in the State where majority are rural farmers on a subsistence or smallholder level and depend on agriculture as a means of livelihood. The study used a descriptive survey design aimed at analyzing the teaching strategies used by lecturers in teaching Agricultural Education. The population of the study comprised of all Agricultural education lecturers in two randomly selected higher institutions in Rivers State which includes: Rivers State University of Science and Technology, Port Harcourt (RSUST) and Federal College of Education (Technical), Omoku (FCET). A random sampling technique was used to select 20 lecturers from Rivers State University of Science and Technology, Port Harcourt and 20 lecturers from Federal College of Education (Technical), Omoku. Hence, the sample size for the study was 40. A structured questionnaire was designed to gather data. A four-point rating scale was used to elicit information related to conventional and contemporary teaching strategies and challenges in teaching method. Data were analyzed using mean, frequency and percentage with acceptance mean score of ≥ 2.50 while the hypotheses were tested using *T-test* at 0.05% level of significance.

Result and Discussion:
Table 1: Demographic Characteristics of RSUST and FCET Lecturers

S/N	S/NO	Variables	RSUST Lecturers (n=20) Frequency (%)	FCET Lecturers Frequency (%)
1.		Gender		
		Male	14(70)	11(55)
		Female	6(30)	9(45)
2.		Average Age Range		
		30-39	3(15)	6(30)
		40-49	8(40)	7(35)
		50-and above	9(45)	7(35)
3.		Marital Status		
		Single	2(10)	4(20)
		Married	18(90)	15(75)
4.		Educational Attainment		
		PhD	16(80)	8(35)
		M.Sc/M.Ed	4(20)	9(45)
		B.Sc/B.Ed/HND	-	3(15)
5.		Rank of Lecturers		
		Professor	1(5)	1(5)
		Associate Professor	1(5)	3(5)
		Senior Lecturer	11(55)	2(20)
		Lecturer I	4(20)	10(50)
		Lecturer II	2(10)	2(10)
		Asst. Lecturer	1(5)	1(10)

Field survey, 2017

The results in table 1 shows that majority of the lecturers in RSUST were male (70%) while female were less in number (30%). The results of age range in years were, 30-39 (15%), 40-49 (40%), 50 and above (45%). Single lecturers amounted to 10%, married was 90%. Majority of the lecturers in RSUST were PhD holders (80%), while M.Sc/M.Ed was (20%). The lecturers ranks stood at; professors (5%), Associate Prof (5%), senior lecturers (55%), lecturer I (20%), lecturer II (10%) and Asst. lecturers (5%). On the other hand, majority of the lecturers in FCET were males (55%) while females were (45%). Age 30-39 (30%), 40-49 (35%), 50 and above (35%), single lecturers (20%), married (75%), separated (5%). PhD (35%), M.Sc/M.Ed (45%), B.Sc/BEEd/HND (15%). the lecturers in FCET have the rank of professor (5%), Associate Prof (5%), senior lecturers (20%), lecturer I (50%), lecturer II (10%) and Asst. lecturers (10%). Olajide, Odoma, Okechukwu, Iyare, Okhaimoh, (2015) indicated that, qualification of teachers matters in the teaching profession. Hence, teachers with higher degrees need to grow in their professional ranks to make teaching attractive. The difference in the results is due to the fact that RSUST is a University while FCET is Federal College of Education which is why RSUST has more of Ph.D. holders than FCET.

Table2: Mean Responses of Conventional Teaching Strategies Used by RSUST Lecturers and FCET Lecturers in Teaching Agricultural Education Courses

S/N	ITEMS	RSUST LECTURERS (n=20)			FCET Lecturers (n=20)		
		M	SD	DECISION	M	SD	DECISION
1.	Role Play	2.45	1.05	Disagreed	2.35	1.05	Disagreed
2.	Workshop Training	3.25	0.97	Agreed	3.5	0.83	Agreed
3.	Grouping method	2.75	0.91	Agreed	2.85	0.81	Agreed
4.	Field trip method	3.45	0.89	Agreed	3.5	0.83	Agreed
5.	Discussion method	3.6	0.82	Agreed	3.4	1.05	Agreed
6.	Project method	3.45	0.89	Agreed	3.3	1.03	Agreed
7.	Problem solving method	3.55	0.83	Agreed	3.25	1.07	Agreed
8.	Inquiring method	2.85	0.99	Agreed	3.1	0.97	Agreed
9.	Experimental learning	3.05	1.00	Agreed	3.25	0.79	Agreed
10.	Demonstration method	3.35	0.81	Agreed	3.3	1.03	Agreed
11.	Lecture method	3.55	0.83	Agreed	3.65	0.81	Agreed
	Grand Mean & SD	3.21	0.91		3.22	0.93	

Field survey, 2017. M = Mean, SD = Standard Deviation

Result in Table 2 revealed that majority of respondents agreed to field trip, discussion, demonstration, project, problem-solving and lecture methods as the most effective strategies used in teaching agricultural education courses. Respondents disagreed to role play, as effective to teaching and learning agricultural education in higher institutions. This is in cognizance to Auwal (2013), Achor et al (2009), Nowak et al who revealed in their studies that discussion method, demonstration method and project method are the most effective and usable strategies to teaching agricultural education to the learner very well. Lecture method was equally viewed as agreed to be one method usable for effective teaching of agricultural education though despite this particular method was being criticized by Deekor and Nnodim (2006) and Veselinovska (2011) as a technique that is boring, a one way communication pattern which makes recipients remain passive in the learning/teaching process.

Result from the table revealed that demonstration method has a mean score of 3.35 and 3.30 for both RSUST and FCE(T) Omoku respectively while Problem-solving method has mean value of 3.55 and 3.25 for RSUST and FCE(T) Omoku respectively. The reason being that these methods will allow the students involve fully in practical works, produce crops/animals, learn the techniques and skills involve in the production process among others. Demonstration and lecturer methods are effective because learners are involvement practically and as well reaching out to a large audience at the same time. Discussion and demonstration methods permits interaction between lecturer and students involvement. Respondents identified field trip and lecture method arguing that in a large class students can be taught using the lecture method while they in turn visit a large agricultural establishment to have first hand view of things learnt in the class in the real world. Respondents identified discussion and problem-solving as the two outstanding strategies for teaching agricultural education. The reason was that students on the process of discussion can identify problems then try to solve them which can be done practically as well.

Table 3: Mean Response of Respondents on the Challenges of Teaching Strategies in Agricultural Education.

S/N	ITEMS	RSUST LECTURERS (n=20)			FCET Lecturers (n=20)		
		M	SD	DECISION	M	SD	DECISION
1.	Lack of relevant materials	3.45	0.83	Agreed	3.2	1.01	Agreed
2.	Lack of farm machines	3.25	0.97	Agreed	3.35	0.81	Agreed
3.	Wide coverage of subject area	2.45	0.94	Disagreed	2.35	0.88	Disagreed
4.	Lack of professionally trained teachers in use of contemporary strategies	3.5	0.83	Agreed	3.55	0.89	Agreed
5.	Inability of teachers to explain some concepts	2.45	0.94	Disagreed	2.25	0.85	Disagreed
6.	Lack of agricultural laboratory	3.55	0.89	Agreed	3.55	0.89	Agreed
7.	Too much work load on teachers	3.65	0.81	Agreed	3.4	1.05	Agreed
8.	Lack of in-service training	3.05	0.69	Agreed	3.15	0.75	Agreed
9.	Lack of demonstration farm	3.6	0.82	Agreed	3.4	1.05	Agreed
10.	Poor allocation of teaching time	3.15	1.04	Agreed	3.1	1.12	Agreed
Grand Mean & SD		3.21	.87		3.13	0.93	

Field survey, 2017

Result in Table 3 revealed that majority of the respondents agreed that lack of relevant materials (3.45 and 3.20), lack of farm machines (3.25 and 3.35), lack of agricultural laboratory (3.55 and 3.55), too much work load on teachers (3.65 and 3.4), lack of in-service training (3.05 and 3.15), lack of demonstration farm (3.6 and 3.4) and poor allocation of teaching time (3.15 and 3.10) are some of the challenges of teaching strategies in agricultural education. It was also agreed by the respondents that lack of professionally trained teachers in use of contemporary strategies (3.5 and 3.55) and as among the factors hindering effective use of appropriate teaching strategies in the teaching agricultural education. This in line with Deekor and Nnodim (2006) and Egun (2009) who opined that lack of agricultural laboratory, lack of relevant materials such as textbooks, wide range of subject concepts, time availability among others are some of the factors responsible for poor utilization of effective teaching strategies by teachers in teaching agricultural education. Meanwhile majority of the teachers had a contrary view thereby disagreed to wide coverage of a subject (2.45 and 2.35), and inability of the teachers to explain some concepts (2.45 and 2.25) in agricultural education as among the factors hindering effective use of appropriate teaching strategies in teaching agriculture.

Table 4: Mean Responses of Contemporary Teaching Strategies used by RSUST Lecturers and FCET Lecturers in Teaching Agricultural Education

S/N	ITEMS	RSUST LECTURERS (n=20)			FCET Lecturers (n=20)		
		M	SD	DECISION	M	SD	DECISION
1.	E-Learning	3.15	1.04	Agreed	3.40	0.82	Agreed
2.	Video Conference	2.55	1.00	Agreed	2.30	0.86	Disagreed
3.	power point presentation	3.55	0.83	Agreed	3.45	0.83	Agreed
4.	Internet	3.65	0.81	Agreed	3.55	0.83	Agreed
5.	Digital Presentations	3.35	1.04	Agreed	3.25	1.02	Agreed
6.	Computers	3.60	0.82	Agreed	3.50	0.83	Agreed
Grand Mean & SD		3.31	0.92		3.24	0.87	

Result in Table 4 revealed that majority of the respondents agreed that E-learning (3.15 and 3.04), video conference (2.55 and 2.30), power point presentation (3.55 and 3.45), internet (3.56 and 3.55), digital presentation (3.35 and 3.25) and computer (3.60 and 3.50) are some contemporary teaching strategies used in teaching agricultural education courses in higher institutions in Rivers State. This is in line with Agbulu and Ademu (2010) report which state that introducing technology into teaching and learning has been shown to make more student centered which encourages cooperative learning and stimulate increased teacher/student

interaction. Due to the rapid development of computer, agricultural education teachers have even fancy the use of computer (e-learning) as the best way of teaching agricultural education instead on the job method.

Table 5: T-test of Mean Responses of Lecturers in RSUST and FCET on Conventional Strategies Used in Teaching Agricultural Education Courses.

Groups	N	Mean	SD	df	t-cal	t-tab	P-value	Remakes
RSUST	20	35.30	0.84	38	-0.051	2.042	0.960	Accept (no sig. diff)
FCET	20	35.45	0.84					

Result in Table 5 shows that RSUST respondents have mean and standard deviation scores of 35.30 and 0.84 while FCET respondents have mean and standard deviation scores of 35.45 and 0.84 respectively, at Alpha level of significance 0.05%. At 38 degrees of freedom, the T-cal value of -0.051 was less than the T-tab value of 2.042. Therefore the null hypothesis of no significance difference on the mean response of RSUST respondents and FCET respondents on conventional strategies used in teaching Agricultural Education courses is thereby accepted. By implication, there is no difference in the response of RSUST respondents and that of FCET respondents on the concept

Table 6: T-test of Mean Response of Lecturers in RSUST and FCET on the Challenges of Teaching Strategies in Agricultural Education Courses.

Groups	N	Mean	SD	df	t-cal	t-tab	P-value	Remakes
RSUST	20	35.30	0.84	38	-0.051	2.042	0.960	Accept (no sig. diff)
FCET	20	35.40	0.84					

Result in Table 6 shows that RSUST respondents have mean and standard deviation scores of 35.30 and 0.84 while FCET respondents have mean and standard deviation scores of 35.40 and 0.84 respectively, at Alpha level of significance 0.05%. At 38 degrees of freedom, the T-cal value of -0.051 was less than the T-tab value of 2.042. Therefore, the null hypothesis of no significant difference on the mean response of RSUST respondents and FCET respondents on the challenges of teaching strategies in agricultural education courses were accepted. By implication, there is no difference in the response of respondents on the concepts.

Table 7: T-test of Mean Responses of Lecturers in RSUST and FCET on Contemporary Strategies Used in Teaching Agricultural Education Courses.

Groups	N	Mean	SD	df	t-cal	t-tab	P-value	Remakes
RSUST	20	35.30	0.84	38	-0.051	2.042	0.960	Accept (no sig. diff)
FCET	20	35.43	0.84					

Result in Table 7 shows that RSUST respondents had mean and standard deviation scores of 35.30 and 0.84 while FCET respondents had mean and standard deviation scores of 35.43 and 0.84 respectively, at Alpha level of significance 0.05%. The T-cal value of -0.051 was obtained. At 38 degrees of freedom, the T-tab value of 2.042 was obtained. Since the T-cal value is less than the T-tab value, the null hypothesis which states that there is no significance difference in mean responses of RSUST respondents and FCET respondents on contemporary strategies used in teaching Agricultural Education courses were accepted. By implication, there is no difference in the response of respondents on the concepts.

Conclusion

Based on the findings of the study, it was revealed that teachers at the higher institution used different conventional teaching strategies in teaching. These include lecture method, demonstration method, discussion method, field trip method, problem-solving strategy among others in the teaching of agricultural education courses. The reason being that these strategies can be used to present lesson to a large population, interact with students, avail learners the opportunities to participate actively in agricultural processes as in production as well gain practical experience by total involvement in the production process. The contemporary strategies used in teaching Agricultural Education courses include E-learning, video conference, power point presentation, internet, digital presentation and computer.

The study also revealed that lack of relevant materials like textbooks, lack of farm machines, wide coverage of subject area, lack of demonstration farms among others were some of the factors that have been hindering effective use of appropriate teaching strategies in teaching agricultural education courses in schools of higher

learning which invariably has affected the society to a large extent leading to lacks of food insecurity and neglect of agriculture in the society.

Recommendations

Based on the findings of the study, it is recommended that;

1. Agricultural education teachers should adopt teaching strategies that will be all inclusive and involve active participation of the students like the demonstration and problem-solving methods as this will enable the students have a practical knowledge in addition to the theoretical knowledge as professionals' in the teaching/learning of agricultural education not just remaining a passive learning.
2. Government at all levels, should be as supportive as possible to higher institutions by providing excess space of land for agricultural purpose, provision of machines and other practical aided equipments/facilities like laboratory as this will give a motivating spirit to the students thereby making them have the desire to carry out research works, practicalise their findings in the farm.
3. There should be a regular organization of workshop and in-service for the teachers as to give constant update on every progress on teaching strategies that will aid effective teaching of agricultural education in higher institution as this will enable them have current information on the teaching strategies.
4. Lecturers should use the contemporary strategies in teaching Agricultural Education courses.

References

- Abass T. B., Adekomi B. and Ojo O. A. (2012). Effects of animated agricultural science instructional package on attitude and performance of junior secondary school students in South West Area, Nigeria. *Mediterranean Journal of Social Sciences*, 3 (1), 425- 435
- Achor, E. E., Imoko, B. I. & Uloko, E. S. (2009). Effects of ethno-mathematics teaching approach on senior secondary students' achievement and retention in Locus. *Educational Research Revolution*, 4(8), 385-390.
- Agbulu, O. N. & Ademu, A. (2010). Assessment of agricultural science teachers' knowledge and utilization of information and communication technology in Nigerian secondary schools. *Journal of Emerging Trends in Educational Research and Policy Studies (JETERAPS)*, 1(1), 1-9.
- Ahiakwo, M. J. (2005). *Foundations of curriculum and instruction*. Harry publications, Port Harcourt, Rivers State.
- Amuah, K. A. (2009) Senior secondary school agriculture and environmental studies. London: Evans Brothers Limited.
- Aneke, C. U. (2015). Assessment of instructional methods adopted by teachers of agricultural science in secondary schools for enhanced skill acquisition for self-reliance in Enugu State, Nigeria. *British Journal of Education*, 3(11), 97-206.
- Auwal, A. (2013). Effects of teaching methods on retention of agricultural science knowledge in senior secondary schools in Bauchi Local Government Areas, Nigeria. *International Journal of Science and Technology Educational Research*, 4(4), 63-69.
- Binkley, H. R, & Tulloch, R. W. (1981). *Teaching vocational agriculture/agribusiness*, Danville, Illinois: The interstate printers and publishers Inc.
- Deekor, L. H & Nnodim, A. U. (2006). *Adult education in agriculture*. Mega Atlas project ltd, Owerri, Imo state.
- Dunkin, M. J. & Biddle, B. J. (1974). *The study of teaching*. New York: Host, Rinehart and Winston, London.
- Dyer, J. E. & Osborne, E. (1996). Effects of teaching approach on achievement of agricultural education students with varying learning styles. *Journal of Agricultural Education*, 37(3), 43-51.
- Egbule, P. E. (2004). Fundamental and practice of agricultural education: Owerri: Totam publishers Ltd.
- Egun, A. C. (2009). Focusing on agricultural education for better productivity in Nigeria in the 21st Century: *International Journal of Education, Sciences*, 1(2), 87-90.
- Federal Republic of Nigeria (2004): National Policy on Education. Lagos NERDC press.
- Heinrich, R. M. & Russel, I. (2003). *International media and new technologies of instruction*. New York: John Wiley & sons.
- Joseph, E. A. (2015). Model-Lead-Test(MLT) instructional strategy in basic sciences and technology lesson delivery in primary schools in OML58. *Total/NNPC Joint Ventures Teachers Development Workshop, 2015*, Ano publications company, Port Harcourt, 18-24.
- Joyce, B. & Weil, M. (1986). *Models of teaching* (3rd ed). Englewood Cliffs, NJ: Prentice-Hall
- Modebelu, M. N. & Nwakpadolu, G. M. (2013). Effective teaching and learning of agricultural science for food security and national sustainability. *Journal of Educational and Social Research*, 3(4), 161-170.
- Nowak, K. L.; Watt, J. & Walther, J. B. (2004). Contrasting time mode and sensory modality in the performance of computer mediator group using asynchronous videoconferencing'. *Proceedings of the 37th Hawaii*

- International Conference on System sciences.*
- Okorie, J. U. (2000). *Developing Nigeria's Workforce*. Calabar: Page Environs publishers
- Olajide, K; Odoma, M.O; Okechukwu, F; Iyare, R; Okhaimoh, K.I (2015). Problems of teaching agricultural practical in secondary schools in delta state, Nigeria *International Journal of Innovative Education Research* 3 (2):7-12.
- Osinem, E. C. (2008). *Managing agricultural education and training, resources, principles and methods*. Enugu: Belong International publishers.
- Phipps, L. J. & Osborne, E. W. (1988). *Handbook on agricultural education in public schools* (5th ed). Danville, IL: Interstate.
- Puyate, S. T. (2011). Inadequate implementation of technology and vocational education curriculum in secondary schools for youth empowerment and national development. *Journal of Research in Technology and Vocational Education Department of Technology and Vocational Education, Enugu State University of Science and Technology*, 5(2), 23-31.
- Rivers State Government (2016). Overview – Government of Rivers State, Nigeria. Port-Harcourt, Capital of Rivers State. The Garden City of Nigeria. riversstate.net.ng/overview
- Ssekamwa, J.C. (2009). *History and development of education in Uganda*. Fountain Publishers, Kampala, Uganda
- Tibi, E. U. (2012), Vocational agriculture in schools for productivity and entrepreneurship: are we teachers succeeding? *Paper presented at the 2nd Distinguished Lecture Series of Colleges of Education*. Agbor: Delta State, Nigeria
- Veselinovska, S. S. (2011). The effect of teaching methods on cognitive achievement, retention and attitude in biology studying. *Cypriot Journal of Educational Sciences*, 4(1), 175-185.