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FACTORS INFLUENCING TEACHING OF PRACTICAL AGRICULTURE IN SECONDARY SCHOOLS IN IMO STATE, NIGERIA

Mazza Mary-Ann
National Root Crops Research Institute, Umudike Abia State, Nigeria

Corresponding Email: maryannmazza61@gmail.com

ABSTRACT

The study examined factors influencing teaching of practical agriculture in secondary schools in Imo State, Nigeria. Multistage random sampling technique was utilized in selecting 190 respondents used for the study. From the study, eighty six percent of the teachers are professionally trained as they had educational qualifications and seventy two percent of them taught in government schools. Results revealed that majority of the instructional materials were available but were not all adequate for practical agricultural training, and that teachers were faced with problems like distant location of school farm from school premises, the structure of the curriculum does not allow for practical agricultural training, inadequate fund for agricultural science teachers, and needed support for them to effectively teach practical agriculture. From the binominal logit regression analysis, there was negative significant relationship between type of school, level of teaching, position of agricultural science teachers, problems faced by these teachers, availability of instructional materials and positive significant relationship between support needed by agricultural science teachers and their involvement in teaching practical agriculture. It was recommended that the necessary instructional materials needed should not only be made available but should be adequate as this will facilitate effective practical agricultural training. Government should assist secondary schools in tackling the various problems faced by agricultural science teachers.

Keywords: *Teaching, Practical Agriculture, Secondary schools*

INTRODUCTION

Agricultural education is the process of imparting technical knowledge and vocational skills necessary for the improvement and development of agricultural production (Idoko, 2020). It teaches students about agriculture, food and natural resources. Through these subjects, agricultural educators teach students a wide variety of skills, including science, communications, leadership, management and technology (Adah, 2020). Agricultural education can be seen as any kind of education - formal or informal - that aims to increase agricultural production by using better methods and techniques (Olaitan, 2019). He further stated that it provides opportunities to learn basic agricultural skills and knowledge, occupation training and retraining, and professional growth and development. According to Idoko (2020) some of the agricultural education courses include crop and soil sciences, farm and ranch management, agricultural business, agricultural communications, animal sciences, horticultural sciences, biotechnology, business administration, agricultural economics and extension.

The edifice of educational programme such as agricultural education is hinged upon certain philosophy and objectives. According to Ben (2020) agricultural education is based on philosophies such as: (1) Agricultural education stresses pragmatism. Its theories and practices lay emphasis on result as a test of its validity. (2) Agricultural education emphasizes analytical and prescriptive approaches of education. It is on this ground that greater portion of time is spent surveying the needs of the learners and developing, testing and prescribing learning resources and strategies to meet the needs of the learners. (3) Agricultural education believes that life has purpose and meaning. Within the bounds of democratic society and other people's rights, humans are free to choose their own path in life. (4) Agricultural education is based on the idea that real-life and workplace experiences are used to create learning scenarios. This allows students to recognize issues and practical answers for the present while also acknowledging that future remedies could be required. Therefore, the curriculum for agriculture education is always changing and adaptable. (5) Agricultural education strongly believes in the discovery of knowledge through scientific research and human experience. It is a programme of instruction whose main objectives according to Udo (2021) are to: 1) Prepare teachers with the right altitude to, and knowledge/professional competence in vocational agriculture; 2) Produce teachers who can inspire students to develop a passion for agriculture, 3) Develop in the teachers the appropriate communication skills for effective transmission of agricultural information to the students in the context of their environment; 4) liquid the student-teacher with adequate knowledge and ability to establish and manage a model school farm effectively; and 5) Provide a sound background to enhance further academic and professional progression of the students and teachers.

Practical classes are always organized to ensure that practical skills are imparted to students to enable them become self-reliant, resourceful and useful to the society. Unfortunately, Taiwo (2021) reported that the actual method of teaching agriculture was depressing. Agricultural science, he pointed out, is taught theoretically and hasn't had much of an impact on society. Nzekwe (2018) reported that practical activities in the school farm promote students' interest to enter production and marketing of crops and livestock in the society after graduation. He stressed

that poor funding of practical agriculture, educational qualification of teachers, lack of instructional materials and intellectual ability of the teachers are some of the factors that influence the outcome of the teaching– learning process. Furthermore, According to Idoko, 2020, when agricultural science is taught by a teacher who is ineffective, the pupils do not comprehend. Among other crucial elements like money, high-quality curricula, and learning environments, Adah (2020) asserts that the quality of the teacher is the most crucial. Poor student performance in agricultural science was ascribed by Udo (2021) to administrative issues, teacher qualifications, and insufficient instructional materials. It is against this background that this study seeks to identify the factors influencing the teaching of practical agriculture in secondary schools in Imo State. Specifically, it identified the educational characteristics of agricultural science teachers; investigate availability and adequacy of instructional materials for teaching practical agricultural science and determine the factors influencing teaching of practical agriculture in secondary schools in Imo State, Nigeria.

METHODOLOGY

The population of the study was agricultural science teachers in secondary schools in Imo State. Multistage random sampling technique was used to select respondents for the study. Imo State has three agricultural zones namely Okigwe, Orlu, and Owerri zones. Two blocks were randomly selected in each of the three agricultural zones, two circles were randomly selected. Ten secondary schools were randomly selected from each selected circle, to have 180 schools for the study. There was purposive selection of all 190 agricultural science teachers in the schools because agricultural science teachers were few in the schools. Data were obtained with the aid of structured interview schedule and analyzed with descriptive and inferential statistics such as frequency counts, percentages, mean, standard deviation and binary logistic regression. Level of problem faced by teachers in practical agricultural training were realized with mean score using a 3 point Likert type rating, weighed in these order: no problem = 1, mild problem = 2, and severe problem = 3. Decision rule: mean score response equal to or above the calculated mean score of 2.0 were regarded as major problems. Factors influencing the dependent variable which is teaching of practical agriculture were determined with binary logistic regression. The dependent variable was measured on a 3-point rating scale of not involved = 0, fairly involved = 1 and highly involved = 2.

Binary logistic specification

The binary logistic regression model was used to determine the factors influencing teaching of practical agriculture in secondary schools. Involvement in teaching of practical agriculture was the dependent variable and was captured using a dummy (involved =1, and not involved =0). The logit equation by Greene (1993) is given below:

$$\Pr(Y = 1) = \frac{e^{\beta' x}}{1 + e^{\beta' x}}$$

With the cumulative distribution function given by:

$$F(\beta' x) = \frac{1}{1 + e^{\beta' x}}$$

Where β' represents the vector of parameters associated with the factors x. Assuming the probability that a teacher n will be involved in teaching practical agriculture is equal to the proportion of agricultural teachers teaching practical agriculture and then the individual empirical model to be estimated is specified as follows:

$Y = \beta_0 + \beta_1$age + $\beta_2$sex + $\beta_3$marital status + $\beta_4$qualification + $\beta_5$years of teaching experience
+ $\beta_6$position + $\beta_7$school type + $\beta_8$teaching level + $\beta_9$problems faced
+ β_{10}availability of materials + β_{11}adequacy of materials + β_{12}support needed + e

Where
Y = Teaching of practical agriculture (involved = 1, non-involved = 0);
β = Coefficient of parameters to be estimated;
Age = Age of the respondents (years);
Sex = Dummy (male = 1, female = 0);
Marital status = Marital status of respondents (single =1, married = 2, widowed = 3, Divorced = 4);
Qualification = Qualification of respondent (NCE = 1, HND = 2, B.Sc Ed = 3, PGDE = 4, M.Ed = 5);
Years of teaching experience = Number of years spent in teaching (years);
Position of respondents = Position held in the school (principal = 1, vice-principal = 2, subject teacher = 3, class teacher = 4);
School type = Type of school (private = 1, government = 2);
Teaching level = Level of teaching (JSS = 1, SSS = 2);
Problems faced = dummy (problems = 1, no problems = 0);
Availability of materials = dummy (available = 1, not available = 0);
Adequacy of materials = dummy (adequate = 1, not adequate = 0);
Support needed = dummy (support needed = 1, no support needed = 0).

RESULTS AND DISCUSSION

Results showed that majority (61.58%) of the respondents were females with mean age of 40 years. This implies that teaching of agricultural practical in Imo State is female dominated, the teachers are in their productive years and energetic to impact knowledge in the students. Most (86.32%) of the respondents were professionally trained as they had educational qualification of NCE, B.Sc Ed, PGDE and M.Ed. However, there were some with Higher National Diploma (HND) which is not in education and could be assumed as not qualified to teach agricultural science in schools. This is consistent with the Olaitan (2019) report, which states that one of the academic and professional degrees required to become a registered teacher in a primary or secondary school is a teaching qualification. Such qualifications include, but are not limited to, Nigeria Certificate in Education (NCE), Bachelor of Education (B.Ed), Postgraduate Certificate in Education (PGDE), Professional Diploma in Education (PDE), etc. The result revealed the mean years of teaching experience of the interviewed respondents as 10 years. The teachers must have gotten enough experience in teaching (Table 1).

Table 1: Respondents' Educational Characteristics

Educational characteristics	Frequency	Percentage	Mean
Age (years)			
31 – 40	98	51.58	40.00
41 – 50	68	35.79	
51 – 60	24	12.63	
Sex			
Male	73	38.42	
Female	117	61.58	
Marital status			
Single	28	14.74	
Married	158	83.16	
Divorced	4	2.11	
Years spent in teaching			
1 – 10	91	47.89	10.25
11 – 20	67	35.26	
21 – 30	32	16.84	
Highest qualification level			
NCE	35	18.42	
HND	26	13.68	
B.Sc Ed	70	36.84	
PGDE	50	26.32	
M.Ed	9	4.74	
Position held			
Principal	2	1.05	
Vice-principal	5	2.63	
Subject teacher	147	77.37	
Class teacher	36	18.95	
Type of school			
Private	53	27.89	
Government	137	72.11	
Level of teaching			
Junior Secondary class	92	48.42	
Senior secondary class	98	51.58	

Source: Field Survey, 2022.

The findings revealed that instructional materials were available in the schools to teach practical agriculture, such as cutlass (90.5%)**,** hoes (89.5%), pictures (77.9%), graph (69.5%), charts (63.2%), herbicides (78.9%), sprayers (51.1%), tractors (36.8%), etc (Table 2). The table equally showed that most of these available instructional materials were not adequate for teaching practical agricultural science, as seen with cutlass (38.9%), hoes (36.8%), herbicides (33.2%), sprayers (28.9%), etc. This indicated that, there are available instructional materials for teaching of practical

Agriculture in Imo State. This agrees with the report of Williams, 2018 that schools in Nigeria have instructional materials for teaching. However, it was found out that most of these available instructional materials were not adequate for teaching practical agricultural science. This result implies that the available instructional materials will enhance efficiency in the training process, but the inadequacy of these instructional materials might cause serious constraints to the teachers as not all the students will have access to these materials at the time of training.

Table 2: Instructional Materials available in Teaching Practical Agricultural Training

Materials	Available		Adequate	
	Yes	No	Yes	No
Hoes	170 (89.5)	20 (10.5)	100 (52.6)	70 (36.8)
Cutlass	172 (90.5)	18 (9.47)	98 (51.6)	74 (38.9)
Herbicides	150 (78.9)	40 (21.1)	87 (45.8)	63 (33.2)
Sprayers	97 (51.1)	93 (48.9)	42 (22.1)	55 (28.9)
Tractors	70 (36.8)	120 (63.2)	20 (10.5)	50 (26.3)
Planters	38 (20.0)	152 (80.0)	15 (7.9)	23 (12.1)
Harvesters	20 (10.5)	170 (89.5)	13 (6.8)	7 (3.7)
Storage facilities	25 (13.2)	165 (86.8)	16 (8.4)	9 (4.7)
Processing machines	18 (9.5)	172 (90.5)	10 (5.2)	8 (4.2)
Pictures	148 (77.9)	42 (22.1)	90 (47.4)	58 (30.5)
Graphs	132 (69.5)	58 (30.5)	95 (50.0)	37 (19.5)
Charts	120 (63.2)	70 (36.8)	82 (43.2)	38 (20.0)
Filmstrips	15 (7.9)	175 (92.1)	8 (4.2)	7 (3.7)
Textbooks	66 (34.7)	124 (65.3)	26 (13.7)	40 (21.1)
Agricultural laboratory	54 (28.4)	136 (71.6)	32 (16.8)	22 (11.58)
Chalkboards	188 (98.9)	2 (1.1)	160 (84.2)	28 (1)
Projectors	105 (55.3)	85 (44.7)	60 (31.6)	45 (23.7)
Video recording	16 (8.4)	174 (91.6)	8 (4.2)	8 (4.2)

Source: Field Survey, 2022. The figures in parentheses are the percentages.

From the results in Table 3 majority of the respondents agreed that the following supports were needed for effective practical agricultural training in the study area: sufficient instructional aids be made available by government, organizing field trips for teachers in order to acquire more knowledge to be applied on the school farm, more fund for agricultural teachers to conduct practical agricultural training, and workshop should be organized for teachers to keep them creative and up to date in practical agricultural training.

Table 3: Support needed by respondents in practical agricultural training

Support needed	Mean	Ranking	Remark
Organizing a field trip for teachers in order to acquire more knowledge to be applied on the school farm	1.13 (0.913)	2	Agreed
Organizing seminars and conference for teachers	1.07 (0.976)	7	Disagreed
The school management should motivate agricultural teachers through improved working conditions	1.09 (0.949)	5	Disagreed
Sufficient instructional aids should be made available by government	1.15 (0.937	1	Agreed
Schools must have adequate farmland	1.08 (0.927)	6	Disagreed
There should be enough fund for agricultural teachers to conduct practical agricultural training	1.11 (0.963)	3	Agreed
Staff allowance for practical agricultural training	1.06 (0.942)	8	Disagreed
Refresher courses or workshop be made available to teachers to keep them creative and up to date in practical agricultural training	1.10 (0.957)	4	Agreed

Source: Field Survey, 2022. The figures in parentheses are the standard deviations

Results of the binary logistic regression model used to determine the factors influencing the teaching of practical agriculture in secondary schools showed that six variables were statistically significantly, namely position of teachers (10%), type of school (10%), teaching level (5%), availability of materials (5%), problems faced (10%) and support needed (10%) (Table 4). This revealed that two variables namely availability of instructional materials and support needed by teachers had positive relationship with the teaching of practical agriculture. This shows that teachers' probability to be involved in practical agricultural training increases with availability of instructional materials and support received by these teachers. This agrees with Williams (2018) that having instructional materials contribute to effectiveness to agriculture training. Furthermore, four of these variables (position of teachers, type of school, teaching level and problems faced by the teachers) had a negative relationship with teaching of practical agriculture. The negative coefficient of school type indicated that the probability of involvement of private schools to practical agricultural training is lower while government schools had a high level of probability to be involved in practical agricultural training. This shows that in government schools, there is availability of land which is needed for teaching practical agriculture. The negative coefficient of problems faced by teachers in teaching practical agriculture shows that the lesser the problems faced by teachers the higher their level of probability to be involved in teaching practical agriculture. This implies that the absence of problems will enable teachers to be effective in teaching practical agriculture. This is in agreement with the report of Nzekwe (2018), that the more the challenges faced by agricultural science teachers, the less their effectiveness in teaching agriculture. The negative coefficients of position of respondents and teaching level indicated that the tendency of teachers who are on higher rank in the educational hierarchy to be involved in practical agricultural training is lower. This implies that those teachers on higher rank like principals and vice-principals are more involved in the administration of the school.

Table 4: Factors Influencing the Teaching of Practical Agriculture in Secondary Schools

Variable	Coefficient	Standard error	t-value
Age	0.076	0.061	1.246
Sex	0.341	0.412	0.828
Marital status	-0.439	0.438	-1.002
Years of teaching experience	-0.102	0.068	-1.500
Qualification	-0.063	0.171	-0.368
Position	-0.700	0.352	-1.989*
Type of school	-0.982	0.527	-1.863*
Teaching level	-0.817	0.406	-2.012**
Availability of materials	2.688	1.174	2.289**
Adequacy of materials	0.393	0.863	0.455
Problems faced	-0.477	0.287	-1.662*
Support needed	0.512	0.292	1.753*
Constant	3.968	2.571	1.543

Source: Field Survey, 2022. *Significant at 10%, **Significant at 5%

From the findings in Table 5, the major problems faced by teachers in practical agricultural training were distant location of school farm from school premises (x = 2.95), structure of the curriculum does not allow for practical agricultural training (x = 2.84), the time allocated for agricultural practical is not adequate in schools (x = 2.58), the practical period clashes with other subject on the time table most times (x = 2.52), lack of interest by students in practical agricultural training (x = 2.46) and inadequate number of staff in practical agriculture training (x = 2.37). This result indicated that there are lots of problems faced by teachers in practical agricultural training in the study are. This is in agreement with Waweru (2016) that teacher encounter a lot of problems in practical agricultural training in Nigeria.

Table 5: Problems faced by teachers in practical agricultural training

Problems of Agricultural teachers	Mean Score	Rank
The practical period clashes with other subject on the time table	2.52	4
Lack of interest by students in practical agricultural training	2.46	6
Inadequate fund to agricultural science teachers for them to proceed in professional training courses to be able to impact more knowledge to students	1.07	12
Difficulty with agricultural science teachers in handling students who show poor attitude towards practical agricultural training	1.91	8
Encroachment of labour activities during planting season	1.09	11
The school does not provide adequate fund to manage practical oriented agricultural training	1.32	10
Inadequate number of staff in practical agriculture training	2.37	7
The time allocated for agricultural practical is not adequate in school	2.58	3
The structure of the curriculum does not allow for practical agricultural training	2.84	2
Stealing of agricultural produce (theft)	1.56	9
Distant location of school farm from school premises	2.95	1
There is no adequate farm land for practical training	2.50	5
Grand mean score	**2.10**	

Source: Field Survey, 2022. Major problems ≥ 2, not a major problem < 2.

CONCLUSION

Most of the agricultural science teachers were qualified to teach agricultural science and majority of the instructional materials were available but were not all adequate for practical agricultural training. The factors that significantly influenced the teaching of practical agriculture were type of school, position of agricultural science teachers, support needed by these teachers, problems faced by the teachers and availability of instructional materials. Teachers were faced with lots of problems and needed support for them to effectively teach practical agriculture.

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