

Roles of Students in Academic Performance in Agricultural Science in Secondary Schools in Emohua Local Government Area of Rivers State, Nigeria

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This study focused on the roles of students in academic performance in agricultural science in secondary schools in Emohua Local Government Area (LGA) of Rivers State, Nigeria. Multi-stage sampling techniques were used to sample 300 student respondents through personal interviews and structured questionnaires. Data were analyzed using descriptive and inferential statistics such as t-test, likert scale rating and one-way ANOVA. The results showed that student unfriendliness with their teachers led to their poor performance in agricultural science. The study also found out that the best teaching method for practical agriculture was demonstration method (40%) which was confirmed by the t-test result at 5% significance level. The results of the one-way ANOVA on teaching methods used in agricultural science was significant at 1% level, meaning each teaching method used was important depending on where it was used, either in classroom or school farm. The study further found out that

excellent performance in agricultural science could be achieved through students' personal efforts and level of intelligence (3.84) using four point likert scale. Other results on students' role such as students' attitude towards the subject (3.48), personality and interest of the students (2.83) and perception of their teachers (2.70), significantly affected students' performances in agricultural science. Therefore, the roles of students influenced their academic performance in agricultural science which led to their individual performance ranging from excellence to below average in secondary schools in Emohua LGA of Rivers State, Nigeria.

Keywords: Students roles, academic performance, ANOVA, t-test, Likert scale analysis, agricultural science, secondary schools, Emohua LGA, Rivers State Nigeria

INTRODUCTION

Agricultural science is the art and science of cultivating the soil, providing livestock, preparing livestock feeds, processing crops and livestock products for the use of man. The history and development of agriculture are closely related to the history of man and his search for food, employment, income, raw materials for industries, foreign exchange, shelter, market and industrial goods (Ezewu, 2007). It is the invaluable contributions of agriculture to our nation that bring forth our educationists and government to make provision in the National Policy on Education for practical agriculture in the curriculums of the Junior Secondary School and Senior Secondary School as core subject (NPE, 2004). But despite

the efforts to promote agriculture in this wise, its impact is yet to be felt. Ezewu, (2007) reported that the major examination bodies in Nigeria such as West African Examination Council (WAEC) and the National Examination Council (NECO), have been recording poor results from candidates who sit for examination on agricultural science. Besides, the enrollment for the examination in agricultural science is on the decline. Ezewu, (2007) stated that this could be attributed to lack of interest in the subject and poor perception that agricultural science has no future prospects for those who study it or that those who choose to further in it will end up as mere farmers.

According to Isangedighi, (2007) exposure or training is important if learning must take place. The study postulated that learning refers to any relatively permanent change in behaviour, interpretation or emotional response as a result of previous experience. Denga, (2002) argued that an individual is assumed to have learnt techniques and skills if there is a remarkable change in the academic performance during and after the course of the programme. Then it is assumed that the individual has learnt and that the success of an educational programme can be measured with regards to the degree with which its beneficiaries perform academically.

According to Turner and Lapan, (2002) learning of agricultural science is not totally new to the Nigerian culture, neither is it new to the age group now in our secondary schools (ages 11-17 years). Agriculture provided the source of livestock to well over 70% of the Nigerian population before independence. It was accepted as parts of the culture to have a child follow the parents to farm even as early as 6 years of age. Even at the time when the missionaries introduced formal education, it was still expected that a child goes to work on his father's farm after school hours and at weekends. The child thus obtained an informal education in agriculture through a system of apprenticeship.

In addition, even in the 1980s, children in boarding schools did some gardening and occasional farming, e.g. at Elele Alimini in Emohua Local Government Area of Rivers State, where maize and cassava were planted. Supervision was by missionaries, many of whom were not formally trained in agricultural science. The proceeds from the school garden and farms afterwards go towards augmenting the feeding requirements of the boarding school. Apart from training, the specific art of production, an attitude of self-reliance and the use of manual labour were taught. Onu and Ikechi, (2013) stated that agricultural science as a subject was introduced into the secondary school level before the tertiary institutions, it was also taught in the form of rural science at the pre-secondary level of education, thus creating a vacuum at the secondary level. Since the secondary level of education during colonial era was fashioned along the line of grammar schools in Britain, the introduction of a vocational subject such as agricultural science was not deemed necessary. The consequence therefore was the graduation of school leavers who at best saw agriculture as a part time hobby and not as a source of livelihood. Teaching of agricultural science at the secondary school requires a sound background of the theoretical and practical aspects by the teacher of agriculture. The 6-3-3-4 system requires that agricultural science be taught as a pre-vocational subject at the primary and junior secondary school and as a vocational subject in senior secondary school level (National Policy on Education, 2004). Martin and Odubiya, (1991) reported that the primary role of vocational agricultural teachers has

always been to help students to learn/gain knowledge and skills in agriculture.

Agricultural science is designed for inculcation of the necessary skills for the practice of agriculture and also contributes to food security for national sustainability (Egbule, 2004). The Federal Republic of Nigeria (FGN, 1994) in the blue print for family support programme in 1994 outlines the seven major objectives of teaching and learning of agricultural science to reflect the: ability to stimulate students interest in agriculture, ability of students to acquiring basic knowledge of agriculture, ability to develop basic agricultural skills in students, students ability to integrate knowledge with skills in agriculture, ability to expose students to opportunities in the field of agriculture, ability to prepare students for occupations in agriculture, and attainment of the above objectives depends on teacher-pedagogical approaches. Teachers in this case are agricultural science instructors who are trained and groomed in professional institutions for quality impacting of agricultural skills, knowledge, attitudes and values for self-reliance, promotion of agriculture and food security to improve their lifestyles (Fisher and Griggs, 1994).

According to Ikeoji and Agwubike, (2006 (a) and (b) the educational axiom that when a learner has not learnt, then the teacher has not taught is true. This directly relates to the concepts of teaching and learning as a process of inculcating the right values, attitudes, knowledge, modern life, long life, and skills acquisition, necessary to make individual benefit from the society as well as contribute meaningfully to the same society.

Waliki and Usman, (2009) saw teaching as a systematic, rational and an organized process of transmitting knowledge, skills and so on in accordance with professional principles. The implication is that agricultural science teachers who do not perform the act in accordance with the principles of teaching are therefore not teachers but cheats. Naturally, the outcome of teaching is learning. Learning occurs only where there is relatively positive permanent change in an individual behaviour. Modebelu and Duvie, (2012) recommended four innovative teaching methods that could enhance quality and effective teaching and learning of subjects/courses. These could be adopted and applied by agricultural science teachers. These methods include: information transformation and reception method, cognitive strategies development method, attitudes development method, cognitive and motor skills development method.

Modubelu and Nwakpadolu, (2013) identified seven major challenges facing agricultural science teachers in their quest to achieve effective teaching and learning of the subject. These include: inadequate qualification of teachers, inadequate technical know-how, inadequate instructional materials, and absence of terms for practical, poor funding, poor attitude of student towards agricultural science. However, effective teaching cannot

be carried out without adequate provision of learning facilities. In the aspect of funding, Puyate, (2008) opined that teachers must be well remunerated for the effective teaching of students. He maintained that this is a major challenge for the education system in Nigeria. Egbule, (1998) highlighted some challenges of effective agricultural science learning among the students which include; broad curriculum objective and unclear specification of areas that require practical skill. Poor programme delivering system, cases of duplicated topics. Poor performance of candidate who enrolled in agricultural science and high unemployment rate among agricultural science graduates (Mamman 2000).

Modebelu and Nwkapadolu, (2013) suggested ten possible ways of managing and redressing the challenges. These include ensuring that only professional qualified teachers teach, repositioning of teacher preparation institutions to produce highly relevant manpower that are conscious and well-motivated in the field, and provision of relevant instructional materials etc. Modebelu and Duvie (2012) also recommended innovative teaching methods for effective teaching and learning of agricultural science in secondary schools. Egun, (2009) argues that there is the need for a total overhauling of agricultural administration in Nigeria.

Academic performance tests are test conducted using standard scales got from a comprehensive scheme of work for a particular category of students. This test gives us a true picture of the knowledge retention ability of the students in a particular subject. So many factors influence the academic performance of students in their various schools. Denga, (2002) stated that so many factors influenced the academic performance of students in their various school endeavours. These factors can either be personal such as poor self-concept, motive, readiness, emotion, attitude, maturation level of the student, and the environmental factors which includes; perceptions, interests, intelligence, teaching-learning strategy (system causal factors), family causal factors and the teacher (academic causal factors) as these interfere with the performance level of students.

Marsh, (2004) confirmed that student's self-perception of academic ability or achievement will affect their school performance. Kinanee, (2004) viewed self-concept as the sum-total of ideas, feelings and attitudes that one has about him/herself. Thus self-concept lays a foundation for academic performance. When a person feels good about himself, he is propelled to want more success. As he gain success at his tasks, his self-concepts is strengthened and make him open to more challenging tasks. Kinanee, (2004) maintained that students with high self-concept have a better perception of self and are more confident in their abilities in school experience than those with low self-concept. According to Okwubunka, (2009), low self-concept can be closely associated to learning difficulties in students. A student who believes he is incapable of accomplishing his academic task is bound to be an

academic failure. The conception which we hold of ourselves as a result of interaction with others has influence on our behaviour collectively and is known as self-concept. He added that attitude as a psychological concept is relative. Inyang-Abia, (2003) asserted that attitude is a desire or tendency to approach or avoid something. He stated further that attitude of an individual can either be positive or negative. When it is positive, the individual approaches an object, otherwise the object is avoided when attitude is negative. Attitudes are interwoven with effective and highly networks experiences so that they are viewed as personality characteristics.

Ozioma, (2011) stated that student's attitude towards the study of agricultural science can affect his performance in the subject. Students exhibit a dislike for the subject due to the fact that it involves rigorous practical works which are carried out in the farm. This dislike as shown by apathy towards various practical farm activities leads to low performance and subsequent failure. Odachi, (2011) opined that information and communication technology (ICT) should be incorporated into agriculture in Nigeria. According to Clang, (2005) as in Jones *et al.*, (2010) individual interest, ability and needs are important factors that contribute to attitudinal life of student's studying agricultural sciences. Also culture and gender play a major role in determining the attitudes of students to agricultural science.

Margolis, (2008) also identified the following external factors as player to career interest choices. Teacher' influence, parents' pressure, economic and political condition of the country, peer group pressure, adequate vocational choice, self-concept and academic performance. Motivation has been recognized as another pertinent factor that is related to students' scholastic performance. The presence of the various learning resources in school such as audio-visual aids arouses student's interest towards learning and definitely might have positive effects on performance. As teaching resources they are useful for the presentation and clarification of information. Furthermore, the need for adequate supply of books especially textbooks in school libraries in terms of quality can be of immense importance towards the academic development or performance of the student (Onu and Ikechi, 2013).

Agricultural science taught in basic and secondary schools level has not been able to transform the citizens and the nation adequately. Products of secondary education skill lack vocational and entrepreneurial knowledge and skills expected to be acquired, retained and utilized from agricultural science.

A huge percentage of those that studied agricultural science in schools is either unemployed or are not practicing what they learnt in school, failure rates are still very high in schools despite government investment in the subject.

This study will therefore seek to establish whether

students roles had something to do with their performance in agricultural science examination. Also the study will seek to establish whether students' attitude have anything to do with their performance in agricultural science performance. Finally this study will seek to establish whether there are significant differences in the roles of students and their academic performance in agricultural science in secondary schools in Emohua LGA.

Several studies have been done and opinions expressed by great scholars in an attempt to explain the roles of students in academic performance in agricultural science in secondary schools in Nigeria and abroad. The literatures that had dealt with similar topics outside Nigeria, were Keraro *et al.*, (2004); Barchok *et al.*, (2007); Petegem *et al.*, (2007); Ferreria and Santoso, (2008); Petegem *et al.*, (2008) and Stewart, (2008). Within the country (Nigeria) the following authors had also studied similar topics and they include Ugbor and Oguzor, (2005); Nwanekezi, (2006); Adediwura and Bada, (2007); Ikpaikpai, (2008) and Salami, (2008) to mention but a few. However, none of these authors had studied the current topic, hence the need and justification for this study.

The beneficiaries of this study include the Federal and State Governments whose target is to increase food productivity and reduce unemployment through massive investment in agricultural science education in secondary schools. Others are policy makers and guidance counselors, researchers at all levels and educators worldwide. The main objective of the study is to ascertain the roles of students in academic performance in agricultural science in secondary schools in Emohua L.G.A of Rivers State, Nigeria. The specific objectives of the study are to:

- (i) Examine the influence of students' perceptions and attitudes in their academic performance in agricultural science in secondary schools in Emohua LGA.
- (ii) Evaluate the students' responses to methods of teaching agricultural science which teachers use frequently on the farm and classroom in secondary schools in Emohua LGA.
- (iii) Determine the effect of students' interests, efforts, personality, and intelligence on their academic performance in agricultural science in secondary schools.
- (iv) Determine the students' responses to students' roles in their academic performance in agricultural science.

Research questions of the study

- (a) To what extent do the students' perception and attitudes influence their academic performance in agricultural science in secondary schools in Emohua LGA?
- (b) What are the students' responses to methods of

teaching agricultural science which the teacher frequently used on the farm and classroom in secondary schools?

(c) To what extent do the students interests, efforts, personality and intelligence manifest as factors affecting their academic performance in agricultural science in secondary schools?

(d) What are students' responses to their roles in academic performance in agricultural science in secondary schools in Emohua LGA?

Hypothesis of the study

(i) H_0 : There is no significant difference between teaching methods used in teaching agricultural science and students' academic performance in secondary schools in Emohua LGA.

H_1 : There is significant difference between teaching methods used in teaching agricultural science and students' academic performance in secondary schools in Emohua LGA.

(ii) H_0 : There is no significant relationship between students' roles and their academic performance in agricultural science in secondary schools in Emohua L.G.A.

H_1 : There is significant relationship between students' roles and their academic performance in agricultural science in secondary schools in Emohua L.G.A.

METHODOLOGY

Study area

This study was carried out in secondary schools in Emohua Local Government Area (LGA) of Rivers State, Nigeria. The local government is strategically located in Rivers State of Nigeria with a common boundary with Ikwerre (LGA) on North East and on the North-West it has boundary with Ahoada-East L.G.A., on the South are Akukutoru and Degema LGAs and on the east is Obio/Akpor LGA. The Emohua L.G.A in Rivers State has good land topography, fertile enough for agricultural activities. Almost all the secondary schools within the Emohua Local Government Area have adequate land space for agricultural practices. Most of the teachers are more or less Rivers State indigenes that had lived in the state and practiced agriculture from their families before studying it as a career in the tertiary institutions. The study area has climate suitable for cultivation of arable and cash crops such as cassava, maize, cucumber, yam, plantain, potatoes, oil palm and rubber, etc.

Population of the study

The population of study area includes all agricultural

science students in the 16 public and private secondary schools located in the study area from JSS 1- SS III classes.

Sampling procedure and sample size

A multi-stage sampling procedure was used in this study. In first stage, a list of all secondary schools in the local education authority was obtained. Secondly from this list simple random sampling of 10 secondary schools offering agricultural science as a subject in the area was made. In the third stage, from each of the 10 schools selected, a sample of 30 students' respondents offering agricultural science as a major subject was drawn. This gave a total of 300 students interviewed from J.S. 1 - S.S. 3 in the selected secondary schools in Emohua LGA.

Type of data and sources of data collection

Primary data were collected and used in this study. The data were collected through oral interviews and structured questionnaires administered to the respondents. The questionnaire were used to obtain information on students attitudes, perception of their teachers, factors influencing academic performance of students in agricultural science, teaching methods liked and used on farms and classrooms, etc.

Data analysis

Data collected were analyzed based on the stated objectives. Specifically, objective one, two, three, and four were analyzed using descriptive and inferential statistical tools, which include percentages and frequency distributions for the descriptive statistics. For the inferential statistics a four point Likert scaling analysis was employed in addition to analysis of variance and t-test analysis to test the hypotheses set.

RESULTS AND DISCUSSION

The analysis of students' attitudes and perception of their teachers as influencing factors on their academic performance are shown in (Table 1). The results showed that 82.6% of the students affirmed on regular attendance to classes while 17.4% confessed to their irregularity in class attendance. About 72.4% of the respondents agreed that irregular attendance to classes affected their academic performance in agricultural science whereas, 28% disagreed that their absence from classes did not affect their academic performance. In the same way, 67.3% accepted the fact that being unfriendly with their teachers affected their attendance of their classes while

32.7% said, it did not affect their class attendance. The results on (Table 1) also revealed that 84.6% agreed that being unfriendly to their teachers greatly affected their academic performance on the subject matter while 15.4% disagreed with this fact stating that it never affected their academic performance. The results also showed that 70% of the respondents liked the methods used by their teachers in teaching agricultural science while 30% said they were not satisfied with the methods used by their teachers in teaching agricultural science. The implication of these results is that students' academic performance in agricultural science depended on their attitudes towards their lessons and perception of their teachers which affected their academic performance in agricultural science in secondary schools in Emohua LGA. The results obtained in this study are similar to the results of Ferreria and Santoso, (2008) on students' irregularity in class attendance, Adediwura and Bada, (2007) and Barchok *et al.*, (2007) on students' unfriendliness to their teachers.

Table 2 shows various students responses to the teaching methods preferred when studying agricultural science in the secondary schools in Emohua LGA. These results revealed that 20.67% of the students accepted that they learn better through exhibition and field trip whereas 27.67% agreed that the discussion methods is more preferable to them. The results of (Table 2) also shows that 40% of the students affirmed that the best teaching method they always preferred is the demonstration methods while only 6.0% preferred lecture methods and 5.66% said they liked other methods. The indication of this results showed that 40% of the students as represented on (Table 2) preferred the demonstration methods of teaching in learning agricultural science to other teaching methods respectively. The result is similar to Ikpaikpai, (2008).

Table 2 also presents the results of teaching methods frequently used by teachers on the school farms. This table revealed that only 2.0% of the students opined that the teachers did use lecture methods frequently in teaching agricultural science on the school farms while 26.67% affirmed that the teachers frequently use supervised methods in teaching agricultural science, whereas just 3.33% of the students respondents were of the opinion that a more frequently used teaching methods was the field trip/exhibition. The results also showed that 53.67% of the respondents accepted that the teachers frequently used the demonstration methods in teaching agricultural science on school farms in secondary schools while 14.38% said teachers used other methods more frequently. The implication of these results is that, teaching methods employed by the teachers were more or less teacher-centered instead of being concentrated on the students. The demonstration method was most popular because it enabled the students to follow their teachers and perform exactly the procedure and instructions given on the farm, hence increasing their

Table 1. Students attitudes and perceptions of their teachers as influencing factors on their academic performance.

Questions	Frequency		Percentage	
	Positive	Negative	Positive	Negative
Do you attend classes regularly?	248	52	82.67	17.33
Do you agree that if you don't attend classes regularly, it will affect your academic performance?	216	84	72.00	28.00
When you are unfriendly with your teachers, do you usually enter his/her class?	202	98	67.33	32.67
When you are unfriendly with your teacher, does it affect your performance?	254	46	84.67	15.33
Do you like the methods used in teaching agricultural science?	210	90	70.00	30.00

Source: Field survey, 2015

Table 2. Students responses on types of teaching methods used in classroom and on farms in agricultural science in secondary schools.

Teaching methods	Frequency	Percentage
Teaching methods generally preferred by students in agricultural science		
Exhibition / field trip	62	20.67
Discussion	83	27.67
Demonstration	120	40.00
Lecture	18	6.00
Others	17	5.66
Total	300	100
Teaching methods used by teachers in teaching agricultural science on the school farms.		
Lecture	6	2.00
Supervised practical/Discussion	80	26.67
Exhibition/field trip	10	3.33
Demonstration	161	53.67
Others	43	14.33
Total	300	100
Teaching methods used by teachers in teaching agricultural science in the classroom		
Lecture	67	22.34
Role playing/Exhibition and field trip	55	18.33
Discussion	58	19.33
Demonstration	92	30.67
Others	28	9.33
Total	300	100

Source: Field survey, 2015

knowledge, practical experience and above all, improving their academic performance in agricultural science in secondary schools in Emohua LGA of Rivers State, Nigeria. Table 2 further indicated the students' response to teaching method frequently used by teachers in teaching agricultural science in the class in secondary schools in Emohua LGA. All methods were adequately used in teaching the subject in the class but the most popular method was the demonstration method (30.67%), followed by lecture method (22.34%), then the discussion method (19.33%) and the role playing method (18.33%). These results were not similar to the results of Ikpaikpai, (2008) whose results showed that over 70% of the

respondents favoured demonstration method in classroom teaching. However, these teaching methods used in teaching agricultural science in secondary schools influenced the students' academic performance (Ugboh and Oguzor, 2005). The first hypothesis states that there is no significant difference between teaching methods used in teaching agricultural science and students' academic performance in secondary schools in Emohua LGA. This hypothesis was tested using one-way analysis of variance (ANOVA) originating from (Table 2).

H_0 : LM = EFTM = DISM = DEMM = OTM

H_1 : LM \neq EFTM \neq DISM \neq DEMM \neq OTM

Table 3. Results of one – way ANOVA on teaching methods used in teaching agricultural science in secondary schools in Emohua LGA.

Source of variation	Sum of squares	Degree of frequency (df)	Mean square	F _c	F _{0.01}
Among variable means (Teaching methods)	19,375	4	4843.75	7.12***	5.99
Within samples (Errors)	6,803	10	680.30	-	-
Total	26,178	14	-	-	-

Source: Estimated from Field Survey data, 2015. $V_1 = 4$; $V_2 = 10$ degrees of freedom; F_c = estimated F-value; $F_{0.01}$ = tabular value of F-test at 1%; *** = significant at 1% level.

Table 4. Results of estimated t-test values for different teaching methods used in teaching agricultural science in secondary schools in Emohua LGA.

Teaching methods	Mean (X)	Standard deviation (SD)	Estimated t-value (t _c)	Decision on H ₀
Lecture	30.3333	32.3161	-1.5901	Accept
Exhibition/field trip	42.3333	28.2194	-1.0846	Accept
Discussion	73.6667	13.6504	1.7348	Accept
Demonstration	124.3333	34.7035	3.2160**	Reject
Others	29.3333	13.0512	-4.0710**	Reject

Source: Estimated Field survey data, 2015. t_c = estimated t-test value; ** = significant at 5% level.

Where, LM = Lecture method, EFTM = Exhibition /Field trip method
DISM = Discussion method, DEMM = demonstration method; OTM = other methods.

Table 3 showed the one-way analysis of variance results estimated on teaching methods used on the farm, in the class and frequently liked by students offering agricultural science in secondary schools in Emohua LGA. Results on (Table 3) showed that the study rejected the null hypothesis that there is no significant difference between the teaching methods used to teach agricultural science in secondary schools, as there is a significant difference at 1% level. This means that each method used in teaching agricultural science was important on its own depending on whether it is used in classroom and/or on the school farm, hence had impacted on students' academic performance. This means that the various teaching methods used and liked were very significantly related to students' academic performance in agricultural science in secondary schools in Emohua LGA of Rivers State, Nigeria. Though not all the methods used were effective to students understanding of the lessons taught in agricultural science, some were more effective in disseminating the ideas taught and these methods were the demonstration and discussion methods. These results are similar to the results of Keraro *et al.*, (2004).

The results of the t-test estimated are presented on (Table 4). The results showed that demonstration method (3.2160) was significant at 5% level and it was positive confirming the earlier results on (Table 2) that on both the classroom and the school farm, the demonstration

method was the most preferred by the students and the teachers as an important teaching method that positively enhance and impacted the students' academic performance in agricultural science in secondary schools in Emohua LGA. Also significant at 5% level was the other methods (- 4. 0710), though negative, meaning that most of the other methods would have added value to teaching such as role playing and supervised practical were not frequently used in teaching agricultural science in secondary schools in Emohua LGA. Therefore these two teaching methods results rejected the H₀ hypothesis and accepted the alternative (H₁ hypothesis) that there were significant differences in the teaching methods. However, the discussion method (1.7348), lecture method (1.5901) and exhibition/field trip method (1.0846) accepted the H₀ hypothesis that there was no significant difference in using these methods to teach agricultural science in secondary schools in Emohua LGA.

Table 5 showed the likert scaling analysis results. This results indicated that four of the variables had a mean score of more than 2.50 which was the minimum mean expected. The variable with the highest mean value (3.84) was the influence of students' personal efforts and intelligence on their academic performance in agricultural science in secondary schools in Emohua LGA, meaning the respondents accepted that this variable was the most influential. Therefore, the H₀ hypothesis was rejected that students' roles had no significant relationship to their academic performance on agricultural science. Other variables that significantly affected the students' academic performance in agricultural science in secondary schools in Emohua LGA during the survey in

Table 5. Students responses to students' roles on their academic performance in agricultural science in secondary schools in Emohua LGA.

Roles of students on academic performance	Excellent (4)	Good (3)	Av. (2)	Low (1)	Mean Score x	Decision on H ₀
How does students' attitude towards the subject affect academic performance?	221	30	19	30	3.47	Reject
How does students' perception of their teachers influence their academic performance?	30	150	120	0	2.70	Reject
How does the students' age and gender influence academic performance?	6	32	141	121	1.67	Accept
How does students' efforts and intelligence influence academic performance?	253	47	0	0	3.84	Reject
How does the personality and interest of the students influence their academic performance?	122	64	56	58	2.83	Reject

Source: Field survey, 2015.

Table 6. One-way ANOVA for students' responses to influences of students' roles on their academic performance on agricultural science.

Source of variation	Sum of squares	Degree of frequency (df)	Mean square	F _c	F _{0.05}
Level of academic performance (Treatment among means)	51,712.50	4	12,928.125	3.6205**	3.06
Within sample mean (Error)	53,561.50	15	3,570.767	-	-
Total	105,274.00	19	-	-	-

Source: Estimated from data on Table 5 obtained from Field survey data, 2015. ** = significant at 5% level; F_c = calculated F-test value; F_{0.05} = tabulated value of F-test at 5% level.

2015 included students' attitude towards the subject (3.47), the personality and interest of the students (2.83) and students' perception of their teacher (2.70). However, the students age and gender was not an influential factor (1.67) and therefore not significant. This could be because traditionally children of different ages and irrespective of their gender help parents on farm as family labour. These results are similar to the results of Ezewu, (2007) and Turner and Lapan, (2002), who said that it was a culture in Nigeria that children from their early age of about 6 years accompany their parents to farm.

In (Table 6) one-way ANOVA was estimated from (Table 5) showing students' responses to the influence of students' roles on their academic performance in agricultural science in secondary schools in Emohua LGA. The null hypothesis stated that there was no relationship between the students' roles on their academic performance in agricultural science in secondary schools in Emohua LGA.

H₀: Ex = G = Av = L

H₁: Ex ≠ G ≠ Av ≠ L

Where, Ex = excellence, performance, G = good

performance, Av = average performance and L = low, or below average academic performance.

Relationship between the students' roles and their academic performance, hence accepted the alternative hypothesis (H₁) that significant relationship existed between the roles of students and their academic performance (at 5% level) in studying agricultural science in secondary schools in Emohua LGA in Rivers State, Nigeria. This means that the students' roles had significant influences and positive impacts on students' academic performance in agricultural science at 5% level of significance. This indicated that their performance was at various levels, while some performed at excellent level, some performance were at good and average levels and some showed non-seriousness by performing at low or below average in agricultural science in these secondary schools. These results confirmed the results from Likert scaling analysis.

Conclusion

From the results and findings of this research, the following conclusion was made. That students' unfriendliness with

the subject teacher could lead to not entering into classes and hence poor performance in agricultural science. The study showed that best teaching method preferred by the students was the demonstration method (40%), as this method was preferred by the students for their practical teachings on the farm (53.67%) and confirmed by the t-test analysis that the demonstration method was significant at 5% level. The results of the one-way analysis of variance (ANOVA) on teaching methods used in teaching agricultural science was significant at 1% level meaning each teaching methods used was important depending on where it was used i.e. classroom or school farm. The study also found out that excellent performance in agricultural science could be achieved through students' personal efforts and level of intelligence, students' attitude towards the subject, personality and interest of the students in the subject and students' perception of their teachers which had significantly affected their performances in agricultural science in secondary school in Emohua LGA of Rivers State, Nigeria. The one-way ANOVA results proved that students' roles influenced their academic performance on agricultural science at 5% significance level meaning that students' roles played led to their individual performance levels ranging from excellence to below average.

Recommendations

The following recommendations were made on ways to improve students' roles in academic performance in agricultural science in secondary school in Emohua LGA that:

- (i) Methods of teaching the practical aspects of the subject should be based on demonstration while students are urged to be friendlier to their teachers and among themselves to show the spirit of co-operation that is highly needed for effective practical knowledge as agriculture is vocational in nature.
- (ii) Students could perform better in this subject matter if they could work hard, show personal efforts, intelligence, interest, and have a positive attitude towards the subject and teachers respectively.

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