A SURVEY OF ATTITUDES OF SECONDARY SCHOOL STUDENTS TOWARDS AGRICULTURAL SCIENCE

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ABSTRACT

The study investigated the factors that influence students' attitudes toward Agricultural Science. A random sampling procedure was used to select ten male and ten female SS1 agricultural science students from each of the ten secondary schools involved in the study. A thirty- two item four - point Liker-scale questionnaire was used to collect the relevant data. Two research questions and six hypotheses were used as guide in the study. The statistical tests used were Pearson product moment correlation coefficient, population t-test, independent t-test and one-way analysis of variance (ANOVA). Test of significance was done at 5% level of probability. The result of the study reveals the factors that influence students' attitudes towards agricultural science. Among these factors are students' gender disparity, perception of teaching method, perception of faming as a career, students' intended future career and level of availability of instructional materials for agricultural science. Recommendations were presented to address the problems identified were provision of agriculture as a noble career, creation of interest in the female students for agricultural science education, emphasis on the industrial potential of agriculture, counseling of students to choose their career based on aptitude, and regular refresher courses and seminars for agricultural science teachers to enhance their productivity.
Keywords: Academy Achievement, Agriculture, Attitudes, secondary Students.

INTRODUCTION

The need for agricultural science education in the Nigerian secondary school system can not be over-emphasized due to the impact of the agricultural sector on the nations economy. Agriculture has been described as one of world's most important industry in the rural economy of most developing countries including Nigeria (Anyanwu, 1981; Adegbola *et al*., 1978). It plays a critical role in the rural livelihoods and is often used as a strategy for job creation and poverty alleviation by successive governments in Nigeria through such programmes, as PEPI, graduate employment project, Graduate agricultural loan scheme etc. Agricultural science education is so vital to national economic growth and productivity that the Nigeria's national policy on education has made agricultural science one of the core subjects at the secondary school level in the country (NPE, 1981). The teaching and learning of agricultural science in the Nigerian secondary school system is far from satisfactory as reflected in the perennial poor performance of the students in the subject in the Senior Secondary Certificate Examination and other related examinations. The recurrent low students' achievement in agricultural science might be attributed to some factors among which students' attitudes towards the subject and gender are critical. Attitudes are fundamental to the dynamics of human behaviour and is one of the key variables within the affective domain that influence learning and hence, academic achievement (Weinburgh, 1995). Attitudes have a strong influence on people's perception of things around them and helps to determine their likes and dislikes (Okon, 1987). Students with positive attitude towards the learning of agricultural science often perform well and those that are negatively disposed towards the subject usually perform poorly in it (Falaye and Ayoola, 2006). Students' attitude to agricultural science education is largely determined by their erroneous perception of the profession as the major livelihood option for the resource-poor peasants who have no other meaningful sustenance. This myopic view has rather dampened the students' morale, without realizing that scientific and technological innovations can transform farming into a lucrative business. Gender differences in students is often implicated in their attitudes towards the learning of science subjects including agricultural science education and other professions or vocations. Though some findings have found differences between boys and girls in cognitive achievements in science subjects (Aremu, 1999; Granewell, 2000), whereas other investigations found no such differences

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(Ezewu, 1981; Adesoji, 1999), female students tend to exhibit a dislike for science subjects like Agric science that usually involve strenuous practicals that require physical exertion which is usually associated with fatigue and sometimes physical injuries. To promote better understanding and appreciation of agricultural science, it is important that factors that militate against students' effective learning experience in the subject be identified with a view to modifying instructional delivery strategies to promote its learning in the school.

PURPOSE OF THE STUDY
The purpose of this study was to identify the factors that influence the attitudes of secondary school students towards the teaching and learning of agricultural science.
The goal was to answer the following research questions.
1. What is the attitude of secondary school students towards the teaching and learning of agricultural science in secondary schools?
2. What are the basic factors that affect the attitude of students to agricultural science in secondary schools?

HYPOTHESES
The following hypotheses were formulated :
1. Secondary schools students do not differ significantly in their attitudes towards agricultural science.
2. Gender difference has no effect on students' attitude toward agricultural science.
3. Students' perception of these methods of teaching agricultural science in secondary schools does not significantly influence their attitudes towards the subjects.
4. students' intended future career has no significant influence on their attitudes towards agricultural science.
5. Students' perception of farming as an occupation does not significantly influence their attitude towards agricultural Science.
6. Availability of agricultural science facilities in the school has no significant influence on students' attitude towards the subject.

RESEARCH DESIGN AND METHODOLOGY
Sample and sampling procedure
The study sample included two hundred (100 male and 100 female) student at the senior secondary one (SS1) level. The sample was taken from ten randomly selected secondary schools in Obanliku Local Government Area of Cross River State. All schools were co-educational institutions. Ten boys and ten girls aged between 13 and 17 years, were randomly selected from each of the schools which all shared similar socio-cultural characteristics.

INSTRUMENTATION
The Linker-type, four-point scale questionnaire was designed by the researcher to generate information on attitudes towards agricultural science among secondary school students. The instrument was face validated by an expert. The items of the questionnaires were so structured and distributed as to prevent guesswork, pre-conceived ideas or assumptions. The questionnaires consists of 32 items to measure students' attitudinal disposition towards agricultural science. Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2 and strongly disagree (SD) = 1 were used as response options. However, items worded negatively were scored in a reverse order. The questionnaires were administrated on the students during the Agricultural science lesson with the assistance of the subject tutors. All the 200 questions were duly completed by the students and were all recovered.

DATA ANALYSIS AND FINDINGS
Independent and dependent variables were sorted out and the appropriate statistical analysis carried out. Three of the hypotheses were tested using Pearson product moment correlation coefficient while one hypothesis each was tested using population t-test, independent t-test and one-way analysis of variance (ANOVA). Test of significance was done at 5 % level of probability

Hypothesis 1: Secondary school students have negative attitudes towards agricultural science. population t-test analysis was used and the result presented in Table 1.

Table 1. Population t-test analysis of students' attitudes towards agricultural science (n = 2000)

Variable	No. of items	Expected mean	Observed mean	SD	t-cal	t-tab
Attitudes towards agric Science	10	25.00	31.28	2.20	0.44ns	1.65

ns: Not significant at 0.05 level, d f = 199, critical t= 1.65.

Data in Table 3 reveal that the calculated value of t (0.44) at 0.05; degree of freedom (d f) 199, is lower than the critical value of t (1.65), thus the null hypothesis that secondary school students have negative attitude toward agricultural science was retained

Hypothesis 2: Stated positively, the hypothesis says there is no significant gender influence on secondary students' attitudes towards agricultural science. Independent t-test was used to test the hypothesis. The mean response for males (12.83) and female (10.63), were calculated together with their standard deviations (Table 2). The resulting calculated t-test value of 3.41 at 0.05 and d f (199) was higher than the critical t-value of 196. thus the null hypothesis was rejected and the alternate hypothec that influence students' attitude to agricultural science.

Sex	n	X	SD	T 0.05	Critical t-value
Male	100	12.83			
			0.92	3.41	1.96
Female	100	10.07			

Significant at 0.05 level, d f = 199, critical t-value =1.96 From Table 4, the male students' response of 12.83 was significantly higher than that of the female students (10.00), indicating gender difference in students' attitude towards agricultural science.

Hypothesis 3: Students' perception of the method of teaching agricultural science has no significant influence on their attitudes towards the subject. This hypothesis was tested using the Pearson product moment correlation coefficient (r). An obtained r-value of 0.948 and critical (r) value of 0.195 at 0.05, d f (199) were obtained (Table 3). The null hypothesis was rejected and the alternate hypothesis that students' perception of the method of teaching agricultural science significantly influence their attitudes towards the subject was retained. As the correlation was positive and significant, it follows that the more favourable students' perception of the method of teaching agric science, the more positive will their attitudes towards the subject tend to be.

Table 3. Pearson product moment correlation analysis of the relationship between students' attitudes towards agric science and their perception of teaching method.

Variable	$(\sum X)$ $(\sum y)$	$(\sum X^2)$ $(\sum X^2)$	$\sum X y$	R	Critical r (0.05)
Attitude toward agric science (x)	4,721	148,302			
			50,469	0.940*	0.195
Perception teaching method	1,610	17,716			

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*Significant at 0.05 level, d f = 199

Hypothesis 4: Students' intended future career has no significant influence on their attitude towards agricultural science. A one-way analysis of variance used to test the hypothesis should a significant influence of students' intended future career on their attitude toward agricultural science. The null hypothesis was rejected.

Table 4: Analysis of the influence of intended career on students' attitudes towards agricultural science (n=200)

Intended future career	n	X	SD
Armed forces	49	4.9	1.00
Farming	20	2.0	1.00
Medicine	57	5.7	1.78
Teaching	30	3.0	1.18
Business	32	3.2	1.17
Others	12	1.2	0.94
Total	200		

Source of variation	d f	Ss	MS	f-cal	f-tab$_{(0.05)}$
Between group	5	40.51	40.06		
				70.28*	2.57
Within group	194	109.63	0.57		
Total	199	350.20	-	-	-

*Significant at 0.05, d f 5,194
Critical F $_{(0.05)}$ = 2.57.

Hypothesis 5: There is no significant relationship between students' perception of farming as an occupation and their attitudes towards agricultural science. Data analysis by Pearson product moment correlation coefficient showed r-value of 0.989 which was significantly higher than the critical (r) value of 1.96 at 0.05 and d f = 199 (Table 5). The null hypothesis was rejected in favour of the alternate hypothesis which says the students' perception of farming as an occupation significantly influences their attitudes towards agricultural science. The significant positive relationship between the two variables implies that students' attitudes tend to be more positive as their perception of the subject becomes more positive.

Table 5: Correlation analysis of the relationship between students' attitude toward agric science and their perception of farming as an occupation.

Variable	$(\sum X)$ $(\sum y)$	$(\sum X)^2$ $(\sum X)^2$	$\sum(X y)$	R	Critical (r) (0.05)
Attitudes towards agric science (x)	4721	148,3020			
			72,606	0989	0.195
Perception of teaching method (y)	2463	31,892			

HYPOTHESIS 6: The level of availability of agricultural science facilities in secondary schools has no significant influence on students' attitudes towards agricultural science. Data analysis by the Pearson product moment correlation coefficient showed r-value of 0.466 which was significantly higher than the critical t-value of 0.195 at 0.05 level of probability and d f = 199. Thus alternate hypothesis that the level of availability of agric science facilities in the school has significant influence on students' attitudes towards the subject was retained.

Table 6: Pearson correlation analysis of the relationship between students' attitudes towards agricultural science and availability of agricultural science facilities in the school.

Variable	$(\sum X^2)$ $(\sum y2)$	$(\sum X^2)$ $(\sum X^2)$	$\sum(X y)$	R	Critical (0.05)
Attitude toward agric science (x)	4,720	148,300			
			77,800	0.466*	0.195
Perception teaching method (y)	2,482	36,344			

 *Significant at 0.05 level, d f = 199, critical r = 0.195.

DISCUSSION AND FINDINGS
This study has shown significant positive students perception and attitudes towards the teaching and learning of agricultural science as a school subject. The students' disposition and interest in the subject might be a reflection of the socio-economic circumstances of the study area. Obanliku is typically agrian and farming is the main livelihood of the people. Even those whose main occupation is not farming have personal farms and most are doing better than the full-time farm families. The children that are brought up in such an agrian setting might have been introduced into farming early in life and have become used to the practice as a means of sustenance of their people. The influence of parental background and other home variables on students attitudes and hence, their academic performance in other subjects has been reported by Falaye and Ayoola (2006). This study has revealed that gender had significant influence on students' attitude towards agricultural science. Though gender influences attitudes to some schools subjects especially science subjects is still controversial (Weimburg,1995), there is reasonable consensus that boys appear to perform better than girls in certain subject areas (Falaye and Ayoola, 2006). In this subject area, the practical components entails physical labour and strenuous farming or gardening activities. Girls being Weaker than boys, usually prefer practical activities that are less tasking on physical energy and tend to dislike subjects like agricultural science that have such strenuous practical components. This might be the reason why girls in this study exhibited a negative attitude to the subject. Boys that are generally of stronger physique and can cope with the rigours of agricultural science practicals showed positive attitudes to the subject. Gender disparity influence on students' cognitive achievement has similarly been reported by Greenfield (1996) and Kolte (1996). The implication of the finding is that agricultural science teachers should strive conduct exciting lessons to get the female students interested in the subject. Another way to elicit students interest in the subject is by emphasizing agriculture as a business and not just as a means of livelihood. Agricultural science practical sessions should be simplified as much as possible to minimize the stress usually associated with it. Students' attitudes towards agricultural science education significantly influenced their perception of the instructional methods in the subject. This implies that application of stimulating and lively instructional strategies during agricultural science lessons/practicals could be beneficial in facilitating or promoting students understanding or comprehension and thus develop high interest and positive attitudes towards the subject. A similar observation has also been reported by Arvidson and Glassy (1984). On the other hand, students who do

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not appreciate the methods of teaching will likely develop negative tendency in any cognitive task. It is therefore imperative that agricultural science teachers should create a congenial and interactive instructional delivery strategies to stimulate students' interest and hence, high assimilation in the subject. Okon and Ibanga (1982) had earlier recognized this fact and noted that successful instructional exercise depends primarily on the teacher's dynamism and personality as well as professional competence. Teachers should therefore be student - friendly and diversity their teaching methods to ensure exciting lessons that arouse interest. Students varied in their choice of future career. Though majority of then preferred the armed forces as their future profession, they may not have the right aptitude and capability to cope with the demands of the career. The relative advantage enjoyed by members of the profession especially during the prolonged military rule era might have influenced their choice without taking cognizance of the full implications of their choice. This calls for effective counseling of the students to guide then in choosing their careers based on their individual aptitudes and capabilities. Availability and utilization of instructional materials during agricultural science lessons positively influenced the students' attitudes towards the subject. This underscores the critical importance of teaching aids in instructional delivery. Teaching aids, amongst other advantages, promote the development of positive attitudes in the students and constitute one of the most important factors that facilities effective teaching/learning in the school system. The importance of instructional materials in the teaching / learning experiences has also been identified by Gibson (1981). Effective use of teaching aids makes teaching more practical and learning more enhanced, leading to high self confidence and development of positive attitudes to learning by students as noted by Umoinyang and Okpalla (2001) and Falaye and Ayoola (2006). The implication of this finding is that the government and other operators of schools should strive to provide the necessary/relevant instructional materials in the schools to promote teaching . Agricultural science teachers should also try to improvise where the right materials are not enough or completely lacking in order to conduct agricultural science lessons that are practical – oriented and easy to understand so as to attract students interest in the subject.

RECOMMENDATIONS

Since it was found that the level availability of agricultural science facilities significantly influences students' positive attitude towards agricultural science, it is recommended that:

1. To enhance further development of positive attitude towards agricultural science by youths, it is necessary to have agricultural science facilities in the schools. This will help to create a conducive materials environment for the development of interest and skills in agricultural science.
2. Students' intended future career had a significant influence on their attitude towards agricultural science. In this regard the youths should be advised to take to agriculture as means of employment instead of going into other areas such as factories and ministries to look for work.
3. Female students should be advised to create interest in agricultural science since government is now trying to involve everybody in the practice of agriculture to help solve the problem of food shortages in the country.
4. Teachers should emphasize the importance of agricultural science in terms of food supply for the masses, supply of raw materials for industries, creation of employment opportunities both directly and indirectly, provision of income for the farmers, foreign exchange earner etc. When such importance of agriculture is known, it will help to create positive attitude towards the profession in the students. Such positive attitude can be created in the students through the formation of young farmers club in the school, quiz competitions in agricultural science among schools offering the subject, organization of agricultural Fairs and Exhibitions, Excursion to Agricultural research institutes and modern plantations, etc.
5. Schools should employ the services of career counselors to advise students on their choice of career or profession based on their aptitude or competence.
6. Finally, Agricultural Science teachers should be up-to-date in their dissemination of information. This is possible by assisting them to attend workshops aimed at enhancing their professional competence.

REFERENCES

Adesoji, F. A. (1999). Mock Examination results and students gender correlates of performance in secondary school in Mathematics. *African Journal of Educational Research,* 5(1): 70-77.

Anyanwu, A. C. (1981). Junior Agricultural Science for West African Schools. University Press, Ife.

Aremu, A. (1999). Strategies for Improving the performance of female pupils in Mathematics. *African Journal of Educational Research,* 5(1): 79-85.

Arvidson, M. and Glassy, D. (1984). Home Studies. Educational publishers.

Ezewu, E. E. (1981). The effect of mastery strategy on selected learning outcomes in French. An unpublished Ph.D. Thesis, University of Ibadan.

Falaye, F. W. and Ayoola, R. A. (2006). Home variables, attitudes and gender correlates of secondary school students cognitive achievement. *Global Journal of Educational Research,* 6(1&2) 2006. 39-42.

Granewell, c. (2000). Sex differences in second language learning the ring. The university of Victoria.

Greenfield, J. A. (1996). Gender, ethnicity, Science achievement and attitudes. *Journal of Research in Science Teaching, 33(8): 903-933.*

Kolte, D. (1996). Gender difference in school achievement in 10 countries. New York, Peter Lang.

NPE (1981). National Policy on Education. Federal Ministry of Education, Lagos.

Okwu, F. (1987). The role of attitudes in learning in secondary schools. Unpublished M.Ed, Thesis.

Okon, E. E. and Ibanga, j. (1982). Teacher Preparation and classroom teaching. Paico publishers, Calabar.

Umoinyang, I. E. and Okpalla, P. N. (2001). Socio-psychological factors, knowledge and understanding on Mathematical achievement at cognitive level of thinking. In: Chamoata, J. O.; Ayodele, B. O. and Araram, M. A. (eds). Evaluation in African. String Harder Publishers, Nig. Ltd. Ibadan.

Weimburg, M. (1995). Gender differences in student attitude toward science: A Meta-Analysis of the literature from 1970-1991. *Journal of Research in Science Teaching. 32(4): 387-398 (1995).*