

Implementation of Agricultural Science Curriculum in Taraba State School System: Imperatives for Students' Occupational Skills Acquisition

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Abstract

The inability of secondary school graduates of Agriculture to secure jobs or be self-employed has sustained the perceived generation gap, which has been blamed on the way and manner in which secondary education Agriculture curriculum is implemented. Four objectives were addressed by the study. A total of 200 teachers of Agriculture randomly selected from 298 secondary schools across the Education Zones of Taraba state constituted the study sample. A questionnaire structured on a 4- point rating scale and with stability coefficients of 0.82, 0.76, 0.70 and 0.86 for sections B to E respectively was used in generating data for the study. Findings of the study indicated that some teacher-related factors are necessary for effective implementation of the curriculum among which is teacher's moral disposition, commitment, and teaching styles were indicated. Use of modular teaching methods, establishment of good school – community relationships and combined use of performance-based test and written test used for the purpose of occupation skills acquisition.

Keywords: Agriculture, education, students, Curriculum, school

1. Introduction

Most African economies are dominated by agriculture, which contributes about 17% to the Gross Domestic Product (GDP), 40% of exports, employment creation and has the potential to reduce poverty. The agricultural sector has been described as the engine for economic growth and improved livelihoods in Africa (World Bank 2006; Diao et al., 2007). The majority of the population in Sub-Saharan Africa lives in rural areas and depends directly or indirectly on agriculture (Diao et al., 2007). Despite the great potential for agricultural production in Africa, about 73% of the poor people living in rural areas subsist on less than a dollar a day (UNDP, 2005). About 200 million of the world's hungry people are found in the continent (Millennium Development Goals (MDGs) Technical Support Centre 2004) and available statistics suggest that about one third of Africa's population is malnourished (UNDP 2005). Africa has the highest proportion of people living in extreme poverty in the world arid is the only continent where food production has been falling over the years. Available statistics suggest that about 26% of Africa's population is malnourished. There has been under investment in the rural areas; inadequate access to markets and unfair market conditions; inadequate access to advanced technologies; weak infrastructure, high production and transport costs, conflicts, HIV/AIDS, natural disasters, deforestation, environmental degradation, loss of biodiversity and dependency on foreign aid.

The number of people living below the poverty line in Sub-Saharan Africa (SSA) is over 180 million, and is expected to exceed 300 million people by the year 2020. In addition, the per capita food production has continued to decline in SSA. It has been pointed out that the key to reversing this trend is to develop agriculture and industry through science, technology and innovation (ECA 2005). In view of the importance of agriculture to a nation, Nigeria adopted the teaching and learning of the subject at all levels of education.

As provided in the National Curriculum for senior secondary school (FME, 2008), Agricultural Education is designed to lay a solid foundation for vocational agriculture that is proposed to train individuals to acquire relevant occupation skills, that will make them to be productive farmers.

The teaching of Agricultural Science education in Nigeria secondary schools was first initiated in 1967. The curriculum in agriculture was jointly developed by the Nigerian Educational Research Development Council (NERDC) and West Africa Examination Council (WAEC).

The main objectives of introducing the teaching of agricultural science include:

1. encouragement of students in the use of their hands;
2. the appreciation for the dignity of labour;
3. familiarity with biological processes and thereby instilling rationality in the students;
4. increasing self-sufficiency and self reliance in food production students to produce part of their food needs and improve their diet and thus minimize the cost of feeding in their secondary schools.

The number of years agricultural science is taught as a school subject varies from one school to the other depending on the administration of the school as well as the availability of teachers. Agricultural Science as one

of the WAEC subject is taught theoretically and practically. The school farm or garden is often used as a means of providing practical experience for the students.

The relevance of the current senior secondary vocational agriculture curriculum has raised divergent views from different stakeholders. For instance, Ochu and Umunnagbu (2005) in a study titled: *Relevance of the Practical Content of the Senior Secondary Vocational Agriculture Programme* opined that the programmes are suitable for developing the right caliber of middle level manpower for the agricultural subsector of the economy. This finding however indicated an improvement over findings in the earlier reports made by Ivowi (1983) and Zahradeen (1990) who variously reported skills content deficiency. Ochu and Umunnagbu therefore concluded that given the right environment, the existing content will guarantee the acquisition of relevant occupational skills. Granted that the curriculum is suitable and appropriate all that remains would be an enabling environment for full expression of intended objectives (Amadi, Orikpe & Osinem 2007). This observation agrees with the views of Agwubuike (1985) that “the curriculum is adequate but what remained a significant shortcoming are the resources for its implementation. Ajalla(1985) in a study on *The Educational resources for effective teaching of vocational agriculture in secondary schools*” revealed that the nation is witnessing unprecedented high-level youth unemployment even with great number of students that offered agriculture in the school certificate examinations.

Nwabuisi (2003) reported dearth of instructional resources for teaching agriculture at vocational level in the secondary schools. Harping on the various limitations of the curriculum, Uwadiae (2003) observes that most schools have been unable to teach for the acquisition of occupational skills rather than knowledge needed to pass prescribed examinations. This has been blamed on absence of enabling environments due to poor infrastructural facilities in school.

Speaking on instructional methods for effective occupational skills acquisition, Okorie (2009) recommended ‘guided discovery’ as very potent. In another opinion, Olaitan and Uwadiae (2003) emphasized “learning –by-doing”. They were of the view that:

If the primary objective of the secondary level agriculture Curriculum is to equip students with occupational skills ... the recommended approach to teaching and learning should be learning- by-doing and nothing more

The attainment of the objectives of senior secondary vocational agriculture in schools depends on how well a teacher is able to present the learning experiences to the students. The Nigerian society is dynamic and in the face of these changes, new and better ways of planning and prosecution of learning experiences must be explored. It therefore behooves on the teacher who implements the ‘taught curriculum’ (Akusoba, 1995) to update his ideas, methods and experiences and to effectively ensure full integration of worthy “old practices” and experiences into new paradigms in the new world order (Amadi, 2002).

The teaching-learning milieu provides the medium with which the teacher assists his pupils to imbibe the learning experiences presented to them. In line with the above, Olaitan (1986) avers that:

The acquisition of the desired experiences by the students depends on how effective the teacher is able to present the learning experiences to them. The effectiveness of any teaching depends on the teaching strategies used.

Agricultural education has received a new emphasis considering the intent and purpose for its introduction. Some novelties in the new order required that teachers with special skills and competencies be mobilized to be in the vanguard of implementing the curriculum (Okorie, 2007).

The 6-3-3-4-education model was conceived to re-orientate and reorganizes our value system in the world or work. Consequently, non-acquisition of requisite occupational skills in identified areas would inadvertently result in the production of ill-equipped labour force. This old underemployed, hence the new wave of emphasis on job oriented education.

The introduction of agricultural programme as a pre-vocational core- subject at the junior and as a vocational core- subject in the senior secondary levels respectively (National Policy on Education, 2008) makes a lot of demands teachers as stakeholders. First as a relatively new curriculum signifying a complete departure from the old bookish model inherited from the Colonial masters it requires teachers who possess requisite knowledge, skills, attitudes and competencies. The effectiveness of any teaching is relatively a function of teaching styles, methods and strategies which were employed in the process. Quite regrettably, there is dearth of professionally qualified teachers of agriculture in the school system. Nwabuisi (2002) in a study on resources for teaching and learning agriculture science in Lagos State Junior secondary schools reported a low teacher/student ratio of 1:60. In a later study conducted in Taraba state, Amadi (2010) also reported a low teacher/student ratio of 1:158, which is just a marginal improvement on Nwabuisi’s. Though as reported by Amadi, (2010) there are more qualified teachers of agriculture these days, the imbalance stems from the population explosion since every student is expected to offer the subject.

Amadi’s (2001) study further revealed more importantly that the skill content of the agricultural programme for

the senior secondary is too comprehensive to lend itself to meaningful coverage within the time space of three years. Olaitan (2006) maintains that in a bid to cover the prescribed content, the teachers teach at a tremendous speed, which negates proper articulation by students. Further, Olaitan (2006) points that it does seem that host communities of some secondary schools as stakeholders do not realize or appreciate the magnitude of their responsibilities towards the teaching and learning of agriculture. Consequent upon the above revelations some vital questions needed to be addressed, namely;

- Could lack of equipment and facilities be responsible for the poor implementation of the curriculum?
- Is it possible that teachers are responsible for observed shortcomings due to lack of initiative to mobilize and utilize instructional resources in teaching agricultural skills?
- Could the problem be rightly situated on the nature of curriculum?

It is this problem summarized in the above three questions that prompted this study.

2. Methodology

The population for this study comprised all teachers of agriculture in all the 289 secondary schools in Taraba state offering agriculture science. The population is estimated to be 1,938 (Taraba state Secondary Education Management Board (TSEMB), 2011). A total of 200 teachers of agriculture chosen by multi-stage sampling based on school location, school type and age as main criteria constituted the sample for the study.

A structured questionnaire designed by the researchers made up of forty-two items was used for collecting data for the study. The questionnaire items rated on a 4 –point scale namely; Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1) were derived from the research questions raised for the study. And for each of the items, respondents rated using the key provided.

A draft of the instrument was criticized by three experts in the field of Agricultural technology. Any item that was accepted by at least any three of the five was deemed to be suitable. In essence, the final instrument was made on the basis of the comments and criticisms made by the lecturers

The questionnaire was subjected to a pretest using 10 secondary school teachers of agriculture drawn from Wukari, Saruana and Takum local Government Areas of Taraba state. The responses of these teachers to the items were later subjected to a test to ascertain the degree of internal consistency of the instrument. The results of the analysis for section B, C, D and E, indicated stability coefficients of 0.82, 0.76, 0.70 and 0.86 respectively and a mean stability coefficient of 0.76 which were considered high enough for the study. The instrument was administered to teachers of agriculture in the selected secondary schools in Taraba state by personal contacts however, using three research assistants who were fully instructed on what to do. All the 200 copies were completed and returned giving 100% return rate.

3. Data Analysis

Analysis of the data was carried out using some descriptive statistics, which included frequency distributions, means and standard deviations, in line with the questions raised for the study. Using a 4-point scale the mean decision point was established at 2.50. Thus any item that received mean rating of 2.50 was accepted while any one that received less than 2.50 was not accepted.

4. Results

The results of the data analysis are as presented in the table below: teacher characteristics (qualities, skills and competencies) required of senior secondary school teachers of vocational agriculture.

Research Question 1: What qualities and competencies are required of secondary school teachers of vocational agriculture?

Table1 : Mean responses of teachers of Agriculture on qualities and competencies required of teachers of Agriculture.

SS/N	Teacher Characteristics	X	SD	Decision
1	Must possess teaching qualifications of minimum of NCE.	2.96	0.60	Accepted
2	Must hold a university degree in agriculture or equivalent qualification.	2.5	0.52	Accepted
3	Must demonstrate good psycho-production skills	3.40	0.61	Accepted
4	Teachers must be masters of the various areas of agriculture with skill emphases	3.69	0.44	Accepted
5	Should specialize in a particular aspect of agriculture	2.50	0.51	Not Accepted
6	Ability to carry out practical exercises, in workshops and laboratories	3.06	0.48	Accepted
7	Must demonstrate enough interest in students	3.36	0.62	Accepted
8	Teacher must be sympathetic, humble, friendly but firm and resolute on matters of discipline	3.68	0.43	Accepted
9	Must be of outstanding moral caliber	3.40	0.66	Accepted
10	Must be highly resourceful	3.36	0.41	Accepted

Source: field survey, 2013

The table above indicates that all the suggested teacher characteristics got mean response ranging from 2.50 to 3.96 above the 2.50 mean decision point on ways of utilizing instructional resources for effective teaching and learning of Agriculture Occupation skills.

Research Question 2: By what means could available resources be utilized to ensure effective acquisition of agricultural occupation skills?

S/N	Suggested means/strategies	Mean	SS.D	Decision
1	Involve students in realistic farm project	3.33	0.46	Accepted
2	Demonstration Teaching	3.02	0.51	Accepted
3	Instructional Simulation/Games	3.66	0.41	Accepted
4	Modeling in Teaching Entrepreneurial skills	3.35	0.42	Accepted
5	Group Project Farming	3.68	.52	Accepted
6	Individual project Farming	3.00	0.48	Accepted
7	Use of Audio-visuals	3.03	0.55	Accepted

All the six items were rated highly above the 2.50 decision mark and therefore accepted as ways of utilizing instructional resources for effective teaching and learning of agricultural occupation skills.

Research Question 3: How can resources that abound in the neighbourhood be harnessed for effective teaching and acquisition of agricultural occupation skills?

Table 3: Mean Responses of teachers on means of utilizing community-based resources in teaching agriculture.

S/N	Suggested Strategies	X	SD	Decision
1	Use of successful non-graduate farmers as resource persons	3.20	0.42	Accepted
2	Use of successful graduate farmers only as resource persons/role models	2.58	0.55	Accepted
3	Establishing healthy relationship between teachers, students and the work-world.	3.66	0.41	Accepted
4	Regular use of master crafts men (farmers) as resources persons	3.35	0.42	Accepted
5	Student should be given assignments and projects bordering on skills on regular basis.	3.68	0.52	Accepted
6	Regular use of field trips and excursions.	3.00	0.42	Accepted
7	Use of team- teaching based on level of competency in different areas of agriculture.	3.32	0.48	Accepted
8	Use of Cooperative Education/work Experience Programme (CEWEP)	2.68	0.56	Accepted
9	Organizing pupils' lectures/speech days on topics of agriculture relevance.	3.42	0.54	Accepted
10	Involving students in realistic/live projects.	3.60	0.34	Accepted

Source: Field Survey, 2013

Research Question 4: How would the content of the secondary agriculture Curriculum be implemented to guarantee effective skills acquisition?

Table 4: Mean responses of teachers on ways of implementing agriculture curriculum to ensure acquisition of Agricultural Occupation skills.

S/N	Suggestions	X	SD	Decision
1	Curriculum should be arranged in modular packages.	3.62	0.36	Accepted
2	Team teaching based on specialization should be adopted.	3.33	0.42	Accepted
3	Curriculum should be compartmentalized.	2.45	0.53	N.A
4	Every practical lesson should be preceded by its theoretical lesson.	2.56		
5	Tasks implied in skill lesson must be analyzed preparatory to the actual teaching.	2.56	0.56	Accepted
6	Evaluation should be performance based only	2.02	0.62	N.A
7	Evaluation should combine performance based (PBT) and theoretical.	3.66	0.48	Accepted

Source: Field Survey, 2013 NA - Not accepted *Moderately accepted

Items number 2, 2, and 7 were highly rated as possible ways of improving the implementation and evaluation of the agriculture curriculum so as to ensure skills acquisition. Item 5 was moderately accepted.

5. Major Findings

The study came up with the following major findings:

On teacher characteristics it was indicated that:

1. Requisite academic and professional qualifications are imperative.
 2. Teachers of agriculture must be able to demonstrate mastery of the skills and knowledge of agriculture.
 3. Teachers must be humane, sympathetic but firm and resolute in terms of moral discipline.
- On ways of utilizing instructional resources for effective teaching and learning of agricultural occupation skills, the following were indicated.
4. Involving students in supervised live individually or in groups.
 5. Use of demonstration, task analysis.

On effective ways of harnessing community-bound resources the following were indicated:

6. use of successful farmers as resource persons
7. Establishing healthy school-community relationship
8. Regular use of field trip and excursions.
9. Involving students in homestead farming and live-projects
Ways of improving curriculum implementation and evaluation indicated include:
10. Modular arrangement o the curriculum
11. Team Teaching
12. Evaluation based on combined use Performance Based Tests (PBTs) and essays.

6. Discussions

For teachers of agriculture to be effective in the teaching of manipulative skills knowledge, they must possess both academic and professional qualifications. They must be pedagogically competent while possessing special attributes such as humaneness, being sympathetic but firm and resolute. They must be of high mastery of the discipline because in the words of Okorie (2007) “a teacher cannot teach a skill which he has not mastery”. This statement is somewhat in line with Ajala (2008) who opined that the effectiveness of skills acquisition by student depends on the extent available human resources are utilized. It is only the good teacher who can comfortably mobilize resources for effective teaching.

It was indicated in the findings that involving students in real projects either individually or in groups, use of field trips and involvement of students in home-stead farming are sure ways by which students could acquire basic agricultural occupation skills and knowledge. By extension, it implies that teachers of agriculture should as much as it is possible teach students by demonstration and by practical hands-on experiences.

It was further indicated that effective skill acquisition will be possible if the curriculum is modulated and if evaluation of skills learning programmes is undertaken performance-based. Each module should contain enough skills to be acquired, delivery system as well as methods or techniques of evaluation (Amadi 2001).

7. Recommendations

Based on the findings, the following recommendations are made:

1. Only qualified teachers of agriculture should be engaged.
2. There should be retraining of unqualified teachers of agriculture.
3. Technical assistants should be trained and deployed to schools.
4. Students should be involved in supervised live projects individually or in groups.
5. Successful farmers should be used as resource persons and role models.
6. Students should be involved in regular field trips and homestead farming.
7. Team-teaching should be emphasized.
8. Evaluation should be performance-based.

8. Conclusion

This study was a response to the perceived deficiency in the implementation of secondary school agricultural curriculum. Efforts were made to isolated basic issues which if properly addressed would encourage proper teachings that will in turn promote agricultural occupation skills acquisition by secondary school students.

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