

Perceptions of Head Agricultural Science Teachers Regarding Problems and Challenges of Vocational Agriculture Delivery in Secondary Schools in Delta State, Nigeria

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Abstract

The purpose of this study was to determine the perceptions of head agricultural science teachers regarding problems and challenges of vocational agriculture delivery in secondary schools in Delta State. The population included all agricultural science teachers (n = 915) in Delta State from which a purposive sample of 370 agricultural science teachers were drawn. A total of 290 (80%) copies of a 47 item-questionnaire distributed were correctly filled and used for this study. Data were analysed with frequencies, percentages, means and standard deviations. The result showed among others that conducting regular continuous assessment/tests was the most frequently used technique of vocational agriculture delivery among agricultural science teachers while poor funding of vocational agriculture in secondary schools and keeping abreast with developments in the field of agriculture and communication of such developments to students were the most perceived problems and challenges of vocational agriculture delivery in secondary schools. The study recommended that these perceived problems and challenges by head agricultural science teachers be built into short-period in-service education and refresher programmes of serving teachers in agricultural science.

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Introduction

Teaching of agricultural science at the secondary school requires a sound background in theory and practical aspects by the teachers of agriculture. The new 6-3-3-4 system requires that agriculture be taught as pre-vocational subject at the primary and junior secondary schools and as a vocational subject in senior secondary school level (National Policy on Education, 2004). The 6-3-3-4 educational system in Nigeria includes six years of primary education, three years of junior secondary (pre-vocational) education, three years of senior secondary education and varying tertiary education

period of not less than four years. Although this system of education has remained fairly constant since it became government policy, there have been some slight modifications in government commitment towards the provision of basic education to Nigerians. For instance, the scope of the Universal Basic Education (UBE) programme has been extended to nine years, which includes six years of primary education and three years in junior secondary school.

The delivery of vocational agriculture at the senior secondary level should not be handled as a science per se but rather as a vocational subject for acquisition of practical agricultural skills for meaningful living (Obi, 2005).

Olaitan (1997) maintained that the basic goal of our National Policy on Education is to make education both functional and utilitarian. Ikeoji (1999) reported that vocational education is borne out of the need for the system to make its products useful to themselves. The Federal Ministry of Education (as cited by Obi, 2005) stated that the objectives of agricultural education at the senior secondary should include;

- 1) to stimulate and sustain students interest in agriculture;
- 2) to enable students acquire useful knowledge and practical skills in agriculture;
- 3) to prepare students for further studies in agriculture; and
- 4) to prepare students for occupations in agriculture.

In addition to this Yoloye (1984) outlined the aim of vocational education in Nigeria as:

- 1) to provide people who can apply scientific knowledge to the improvement and solution of environmental problems for use and convenience of humanity;
- 2) to provide the technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economic development; and
- 3) To provide young men and women with an intelligent understanding of the increasing complexity of technology.

Observation has shown that as laudable as the objectives of agricultural and vocational education in Nigeria are it may be impossible to achieve them due to poor delivery process of the programme and inappropriate method of evaluating the performance of students in vocational agriculture at the senior secondary school (Ikeoji, 1997a, 1998). Martin and Odubiya (1991) reported that the primary role of vocational agriculture teachers has always been to help students to learn knowledge and skills in agriculture.

Several researches have shown that many teachers of agriculture at the secondary school leave the profession early in their life (Myers, Dyer and Washburn, 2005; Heat-Camp and Camp, 1990, 1994). Myers et al 2005; Camp, Broyles and Skelton, 2002; Mundt and Connors, 1999; and Veenman, (1984) have conducted studies on the problems of beginning teachers of agriculture. These problems of beginning teachers include classroom management and student discipline, balancing work and personal life,

managing stress, lack of preparation time at beginning of school year, time management, and motivating students. Others were dealing with individual differences, assessing students work, relationships with parents, organization of class work, inadequate teaching materials and supplies, and dealing with problems of individual students (Myers, et al 2005; Mundt and Connors, 1999; Nicholas and Mundt, 1996; Mundt, 1991; Heath-Camp and Camp, 1990; Barrick and Doerfert, 1989; Veenman, 1984)

Several lapses associated with the organisation of vocational agriculture in secondary schools in Nigeria have also been identified. The curriculum objectives have been found to be too broad; there is the inability of the policy to state general aim of vocational education (Olaitan, 1992; Egbule, 1998; Obi, 2005). Other lapses include inability to identify areas where practical skills are to be developed (Obi, 2005), unspecified evaluation system (Egbule, 1998, Ikeoji, 1998); cases of duplicated topics and poor programme delivery system (Egbule, 1998); lack of instructional aids and materials for vocational agriculture delivery; lack of means and ability to provide recommended guest lecture visits and excursions (Obi, 2005, Olaitan, 1997). Egbule (1998) noted that the teaching and learning activities of vocational agriculture at the secondary schools are grossly insufficient to elicit the desired level of initiative and creativity in students. It noted that the recommended instructional strategies is full of “showing”, ‘telling’ and ‘observing’ with a few cases of ‘doing’ and ‘practice’ thus contradicting the recommended ‘learning by doing’ and ‘guided discovery’ instructional strategies (National Policy on Education, 2004). Cases exist of poor performance of candidates who enrolled in agricultural science examinations (Mamman, 2000). Studies have also shown that graduates of vocational agriculture in senior secondary schools in Nigeria have often not been able to take up paid jobs at the completion of their secondary education thus defeating the goal of vocationalisation of secondary agriculture (Olaitan, 1997; Okorie, 2000; Obi, 2005; and Ikeoji and Agwubike, 2006).

Theoretical Framework

The theoretical framework for this study is hinged on the model for the study of classroom teaching as developed by Mitzel (Dunkin and Biddle, 1974; Osborne and Hamzah, 1989; Smith, Kistler, Williams, Edmiston and Baker, 2004). The model according to Dunkin and Biddle (1974) contain four classes of variables namely presage, context, process and product variables. The presage may include his personality, preparation, general characteristics, background, competencies and inadequacies, teacher-education experiences (Smith, et al 2004) and teacher properties (Mitzel, 1969). The context variables address the student characteristics and the classroom environment (Mitzel, 1969). Process variables show the interaction or interrelationship between the teacher and the student (Dunkin and Biddle, 1974). Smith et al, (2004) reported that all activities within the classrooms are considered process variables. The product variables are those associated with the effects of instruction (Mitzel, 1969; Dunkin and Biddle, 1974). Mitzel’s model recognises the presage variables as fundamental in understanding classroom problems and challenges using the experience of the teacher. The experience of the classroom teacher tends to affect the classroom environment (context), interaction between the teacher and the students (process), and the effects of the instruction (product) (see figure 1)

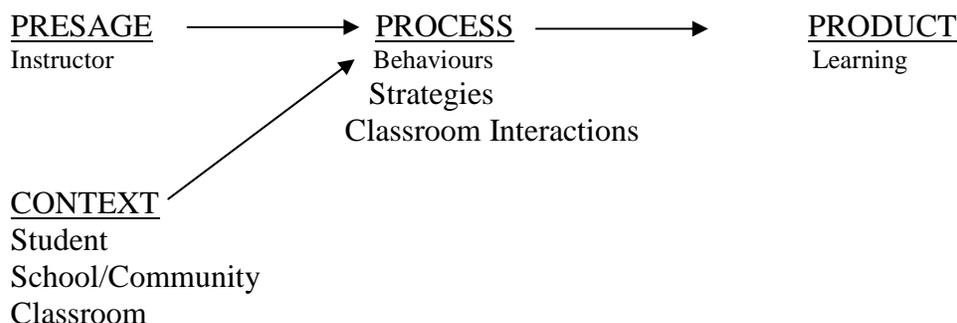


Fig: 1 An illustration of the Mitzel's model for the study of classroom teaching.
after Dunkin and Biddle (1974)

This study revolves around the presage variables of the Mitzel's model. A study of the problems and challenges of vocational agriculture delivery will improve the efficiency of the teacher and in turn improve students' achievement. It is believed that an articulation and identification of problems and challenges of vocational agriculture delivery in secondary schools by head agricultural science teachers with their wealth of experience will help in repositioning the vocational agriculture curriculum for pre-service and in-service vocational education teachers' preparatory programme planning and implementation. Head agricultural science teachers as used in this study refers to the most senior agricultural science teachers in each of the secondary schools studied. Seniority here is based on years of teaching experience. Every secondary school in Delta State secondary school system recognizes one most experienced agricultural science teacher as the head agricultural science teacher for a particular secondary school.

Literature reviewed so far studied problems of beginning agricultural education teachers abroad. No study of this kind has been conducted in Delta State especially that addressing the problems and challenges of vocational agriculture delivery as perceived by head agricultural science teachers.

Purpose and Research Questions

The purpose of this study was to determine the perceptions of head agricultural science teachers regarding problems and challenges of vocational agriculture delivery in secondary schools in Delta State. The following research questions were developed to guide the study:

1. What were the demographic characteristics of head agricultural science teachers in secondary schools in Delta State?
2. What techniques of teaching were adopted by vocational agricultural science teachers in secondary schools in Delta State?
3. What were the problems and challenges of vocational agriculture delivery in secondary schools in Delta State as perceived by the head agricultural science teachers?

Methods and Procedures

This study was conducted across all the secondary schools in Delta State, Nigeria. The research design chosen was a survey. The study included all agricultural science teachers from the 370 public secondary schools in the State where agricultural science is taught (N = 915). The sample included purposively selected 370 heads of departments of agricultural science, one from each school. The most senior agricultural science teacher in each school was taken as head agricultural science teacher.

A 47 item self-administered questionnaire was prepared and used to collect data from the respondents. The five point Likert-type scale instrument sought information on the demographic characteristics of the teachers, the teaching techniques adopted and perceived problems and challenges of vocational agriculture delivery in secondary schools. After a pilot test, the instrument was adjusted to the present form in which it was used to collect data for the study. Expert panel drawn from Vocational Education Department, Agricultural Education Unit, Delta State University, assessed the instrument for content validity. Sections B and C items of the instrument registered reliability (Cronbach's Alpha) coefficients of 0.78 and 0.92 respectively.

Questionnaire copies were distributed through each school's principal from the Ministry of Education in the process of submitting their monthly returns. The principals were asked to administer the questionnaire on their head agricultural science teacher who should return it through him the next month. A reminder was sent back to the head teachers at the end of the first month to remind those who had not returned the completed copies. After the second reminder, a total of 290 copies were correctly filled and returned. This gave a return rate of 80%. The copies were collated and analysed using frequencies, percentages, means and standard deviations.

Results and Findings

A total of 202 (69.66%) secondary school agricultural science teachers in Delta state sampled were teaching in the rural areas while the remaining 88 (30.34%) of them were found in urban schools (see Table 1). No respondent was in the age range of 20 – 30, while 25(8.62%) were in the age range of 31 – 40. Majority of the head teachers, 189 (65.17%) were in the range of 41 – 50 years; while 76 (26.21%) were 50 years and above. There were more female head agricultural science teachers (175, representing 60.34%), while 115 (39.66%) were males. No head teacher had teaching experience of 1 – 5 years, while 26 (8.97%) had experience of 6 – 10 years. Eighty-seven (30.00%) head agricultural science teachers had between 11-15 years teaching experience, while 72 (24.82%) had experience of between 16 to 20 years. Fifty-eight (20.0%) were in the teaching experience range of 21-25 years with the remaining 47 (16.21%) having teaching experience of 25 years and above.

Table 1. Demographic Characteristics of Head Agricultural Science Teachers (N = 290).

| Characteristics | Number | Percentage |
|--------------------------|--------|------------|
| Location | | |
| Urban | 88 | 30.34 |
| Rural | 202 | 69.66 |
| Age | | |
| 20-30 years | - | - |
| 31-40 years | 25 | 8.62 |
| 41-50 years | 189 | 65.17 |
| Above 50 years | 76 | 26.21 |
| Mean age | | 46.75 |
| Gender | | |
| Male | 115 | 39.66 |
| Female | 175 | 60.34 |
| Teaching Experience | | |
| 1 –5 years | - | - |
| 6-10 years | 87 | 30.00 |
| 11-15 years | 72 | 24.82 |
| 16-20 years | 58 | 20.00 |
| Above 25 years | 47 | 16.21 |
| Mean teaching experience | | 17.37 |

As indicated in Table 2, conducting regular continuous assessment/test was perceived as most effective technique of vocational agriculture delivery adopted by the teachers in secondary schools (*M = 4.93, **SD = 0.25). This is closely followed by the use of lecture approach (M = 4.86; SD = 0.35). The use of subject matter approach (M = 4.08; SD = 1.18) and use of discussion approach (M = 4.08; SD = 0.80) were all accepted as techniques adopted for vocational agriculture delivery in secondary schools in the state. The other fifteen items on Table 2 were perceived by the head teachers as not effective vocational agriculture delivery techniques adopted in Delta State secondary schools. They include learning-by-doing approach (M = 1.10; SD = 0.30), use of guest lecturers to cover technical areas (M = 1.31; SD = 0.46), use of community-based-materials for teaching (M = 1.33; SD = 0.47), making students spend ample time with professional persons as a way of mentoring them (M = 1.38; SD = 0.49); using problem solving approach (M = 1.48; SD = 1.10); arranging visits to commercial farms (M = 1.84; SD = 0.94), using case studies approach for teaching (M = 2.08; SD = 0.94), use of local extension officers to teach special subject matter areas (M = 2.19; SD = 1.13), use of supervised/occupational experience approach (M = 3.16; SD = 1.13); using life experiences as examples (M = 3.28; SD = 1.36), use of demonstration (M = 3.37; SD = 1.31), and organisation of agricultural shows and exhibitions (M = 3.42, SD = 1.04).

Note: *M=mean; **SD=standard deviation

Table 2. Perception of Head Agricultural Science Teachers on Effective Techniques of Vocational Agriculture Delivery Adopted in Secondary Schools in Delta State (N = 290).

| Techniques | M | SD |
|---|----------|-----------|
| 1. Conducting regular continuous assessment/tests | 4.93 | 0.25 |
| 2. Use of lecture approach | 4.86 | 0.35 |
| 3. Subject matter approach | 4.38 | 1.18 |
| 4. Use of discussion approach | 4.08 | 0.80 |
| 5. Organisation of agricultural shows and exhibitions | 3.42 | 1.04 |
| 6. Use of demonstration | 3.37 | 1.31 |
| 7. Using life experiences as examples | 3.28 | 1.36 |
| 8. Use of supervised agricultural/occupational experience approach | 3.16 | 1.13 |
| 9. Use of local extension officers to teach special subject matter areas | 2.19 | 1.13 |
| 10. Using case studies approach to teaching | 2.08 | 0.94 |
| 11. Arranging visits to commercial farms | 1.84 | 0.94 |
| 12. Using group work approach | 1.64 | 1.10 |
| 13. Using inquiry approach | 1.48 | 0.82 |
| 14. Using problem-solving approach | 1.41 | 0.81 |
| 15. Making students spend ample time with professional persons as a way of mentoring them | 1.38 | 0.49 |
| 16. Use of community based materials for teaching. | 1.33 | 0.47 |
| 17. Use of guest lecturers to cover technical areas | 1.31 | 0.46 |
| 18. Use of guided-discovery approach | 1.17 | 0.53 |
| 19. Learning-by-doing approach | 1.10 | 0.30 |

Note: 5=Strongly Agree, 4=Agree, 3=Uncertain, 2=Disagree, 1=Strongly Disagree

Table 3, revealed that the respondents perceived poor funding of vocational agriculture in secondary schools ($M = 4.93, SD = 0.25$) as the most challenging problem of vocational agriculture delivery in secondary schools. The second most accepted problem and challenge was keeping abreast with developments in the field of agriculture and communication of such developments to students ($M = 4.69; SD = 0.50$). Others include contending for adequate time in the school time table ($M = 4.56; SD = 0.77$), conducting evaluation of teaching and learning outcomes under the present system (large number of students in classroom) ($M = 4.44; SD = 1.09$) pressure on teachers and students to excel in what is tested and not what is functionally relevant ($M = 4.26; SD = 1.26$), administration of vocational agriculture by non specialists ($M = 4.14; SD = 0.35$); utilization of alternative resources and improvisation of teaching materials ($M = 4.10; SD = 1.35$) and others (see Table 3). The mean and standard deviation ranged between

(1.41 to 4.93) and (0.25 to 1.97) respectively. The least challenging problem identified was lack of basic knowledge of the syllabus ($M = 1.41$; $SD = 0.81$)

Table 3: Problems and Challenges of Vocational Agriculture Delivery in Secondary Schools as Perceived by Head Agricultural Science Teachers (N=290)

| Perceived problems and challenges | M | SD |
|--|------|------|
| 1. Poor funding of vocational agriculture in secondary schools | 4.93 | 0.25 |
| 2. Keeping abreast with development in the field of agriculture and communication of Such developments to students | 4.69 | 0.50 |
| 3. Contending for adequate time in the school time table | 4.58 | 0.77 |
| 4. Conducting evaluation of teaching and learning outcomes under the present system (large number of students in a classroom) | 4.44 | 1.09 |
| 5. Pressure on teachers and students to excel in what is tested and not what is functionally relevant | 4.26 | 1.26 |
| 6. Administration of vocational agriculture by non specialists | 4.14 | 0.35 |
| 7. Utilization of alternative resources and improvisation of teaching materials in teaching vocational agriculture | 4.10 | 1.35 |
| 8. Lack of basic teaching and learning aids (Farm tools, land, and other laboratory equipment) | 4.09 | 1.50 |
| 9. Lack of interest on the part of the students | 4.04 | 1.46 |
| 10. Lack of required material and resources for vocational agriculture delivery | 3.98 | 1.49 |
| 11. Understanding the purpose and objective of teaching vocational agriculture in secondary schools. | 3.93 | 0.97 |
| 12. Examination and certification of candidates based on 90% external testing and 10% practical examination. | 3.76 | 1.68 |
| 13. Harmonization of the aims of prevocational practical agriculture at the junior secondary level with that of senior secondary level | 3.73 | 0.94 |
| 14. Inability of the curriculum to transmit employable skills to students | 3.71 | 1.63 |
| 15. Overlap of syllabus content in agriculture and other science subjects. | 3.58 | 1.31 |
| 16. Combining teaching vocational agriculture with other administrative jobs | 3.51 | 1.64 |
| 17. Effectiveness in teaching practically usable skills. | 3.46 | 1.55 |
| 18. Ambiguity of purpose and objectives of vocational | | |

| | | | |
|-----|---|------|------|
| | agriculture in secondary schools | 3.39 | 1.97 |
| 19. | Piecing together competencies involved in teaching the right attitudes and values | 3.04 | 1.30 |
| 20. | Ability to identify areas in which practical skills should develop | 2.97 | 1.61 |
| 21. | Poor sequencing of topics in the syllabus | 2.96 | 1.61 |
| 22. | Keeping abreast with latest scientific knowledge available | 2.31 | 1.58 |
| 23. | Combining teaching vocational agriculture with personal engagements | 2.24 | 1.33 |
| 24. | Lack of basic knowledge of the syllabus | 1.41 | 0.81 |

Note: 5=Strongly Agree, 4=Agree, 3=Uncertain, 2=Disagree, 1=Strongly Disagree

Discussion of Findings

Results presented above have shown that 69.66% of the respondents teach in rural secondary schools signifying that majority of the secondary schools were located in the rural areas of the state. Also noticeable is the fact that the average teaching experience of the head teachers was 17.37 years. The explanation to this may be that to become heads of agricultural science department in their various schools required that the teacher should have had many years of experience in the teaching of agriculture.

Conducting regular continuous assessment/tests was perceived by majority of the respondents as the effective technique of vocational agriculture delivery adopted by teachers of agriculture in the secondary schools. This finding is consistent with those of Gordon (1998) who reported that vocational teachers' attitude towards assessment were viewed as positive, suggesting that vocational education teachers rely on the information generated by tests to provide them with the basis for improving instruction. Also Scharfer and Lissitz (1987) concluded that although teachers may be ill trained to use accepted measurement practices, they see assessment as an important part of their professional role and have a positive attitude towards it. However, the high level of agreement may necessarily not be that it was the best technique of vocational agriculture delivery, but it may be as a result of the State's policy on education that teachers should regularly conduct assessment/tests on instructions given to students to ascertain their level of progress. The Delta State Ministry of Education has an effective and well co-ordinated mechanism for ensuring that primary and secondary schools perform regular tests at specified periods in a term, and these tests are recorded as part of the students' final performance. Over time this practice has become part of all primary and secondary school teachers including agricultural science teachers.

The use of lecture approach was also identified as an effective technique used by agricultural science teachers in Delta State. This tends to corroborate the findings of Osborne (1989) and Egbule (1998). Osborne (1989) reported that although generally accepted components of problem solving in teaching are being used by agricultural science teachers, lecture-discussion is also often used by teachers to present problems solutions or answers to students. Furthermore, Egbule (1998) also reported that the instructional strategies adopted in vocational agriculture are full of 'showing', 'telling'

and 'observing'. 'Learning-by-doing' approach and use of guided discovery approach were hardly used by teachers of agriculture in secondary schools in the State. This however, runs counter to the use of 'learning-to-doing, and 'guided discovery' approach recommended by the National Policy on Education (2004). An explanation to this trend may not be unconnected to the findings of Ikeoji and Agwubike (2006) who reported that one of the major problems facing new agricultural science teachers in Delta State was that of coping with large agricultural science class sizes.

The problems and challenges identified in this study were those associated with head agricultural science teachers in secondary schools in Delta state. Poor funding of vocational agriculture in secondary schools, keeping abreast with development in the field of agriculture and communication of such developments to students, administration of vocational agriculture by non specialists; inability of the curriculum to transmit employable skills to students; lack of required material and resources for vocational agriculture delivery; lack of interest on the part of students; pressure on teachers and students to excel in what is tested and not what is functionally relevant among others were the major perceived problems and challenges of vocational agriculture delivery in secondary schools identified in this study. Problems and challenges identified here are not consistent with those of beginning agriculture teachers documented (Mundt and Connors, 1999; Myers, et al, 2005; Camp, et al, 2002 and Veenman, 1984). The findings also contrast with those documented in that the areas not recognized as problems and challenges such as combining teaching vocational agriculture with personal engagements in this study was the major problem of beginning teachers of agriculture as shown in literature (Myers, et al, 2005; Mundt and Connors, 1999). This sharp contrast may not be unconnected with the use of head agricultural science teachers in the identification of the problems and challenges of vocational agriculture delivery. Experience of the head agricultural science teachers as observed in this study seems to have conditioned them to the teaching job and reduced problem areas from their perception. However, the most perceived problems of poor funding of vocational agriculture and keeping abreast with development in the field of agriculture are worthy of note. Delta State runs about 370 public secondary schools majority of which are in the rural areas. Much of the funds are provided by government, since primary and secondary education in Nigeria are tuition free. Public resistance has tended to restrain government from increasing school fees to be able to fund the schools better. Also the rural location of most schools compel teachers to live in rural areas which lack basic amenities like libraries, electricity and internet facilities. Teachers therefore find it difficult to keep abreast with developments in the field of agriculture.

Implications and conclusions

The perceptions of head agricultural science teachers have implications for organization of refresher programmes for serving teachers of agriculture. These perceived problems and challenges could be used to develop programmes for seminars and workshops for teachers and administrators in the field of agricultural education. This will help to improve on the performance of teachers of agriculture. Another implication is that the findings will aid in re-designing inservice educational curricula of teacher education institutions in the State.

Based on the results of this research, it is hereby recommended that:

1. The State Post-Primary Education Board (SPEB) should design programmes that will equip the State's teachers of agriculture in the use of the instructional strategies (i.e. learning-by-doing approach and the guided discovery approach) as recommended in the National Policy on Education (2004).
2. Regular seminars and workshops/symposia need to be organised to keep agricultural science teachers informed of latest developments in the field of agriculture and how best to communicate them to students.
3. The perceived problems and challenges should be built into short-period in-service education programmes of serving teachers in agricultural science.

The effect of these identified problems and challenges of head agricultural science on job performance is beyond the coverage of this study. On the basis of this, it is further recommended that a study be conducted in that direction.

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