

TEACHING COMPETENCIES POSSESSED BY AGRICULTURAL SCIENCE TEACHERS IN THE AWKA EDUCATION ZONE OF ANAMBRA STATE

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Abstract

This study was designed to assess the level of competencies possessed by Agricultural Science teachers in the Junior Secondary Schools. Four research questions and three hypotheses were formulated. Questionnaire was used to collect relevant data from a sample of 120 Agricultural Science teachers selected from 101 schools in Awka Education Zone of Anambra State by stratified and random sampling techniques. Mean was used to answer the research questions, while t-test statistic was employed to test the null hypotheses at 0.05 level of probability. The study revealed that Agricultural Science teachers are moderately competent in planning and implementing instruction, evaluation of instruction and classroom management. On the use of educational Technology for instruction, low competence was indicated. Further qualifications and teaching experience were found to be determinants of the teachers' levels of competence. Gender was however, not indicated as a significant factor in this regard. Based on these findings and their obvious implications, recommendations were proffered.

Introduction

The philosophical foundation of Agricultural Science is on 'doing' science rather than 'talking' science. The implication is that it has to be child-centred, exploratory and creative in its approach. It follows that only competent teachers can make this realizable. Hence, the poor performance of students in the Junior Secondary Agricultural Science Examination as reported by Nwagu (1985) has cast doubt on the competencies possessed by the present crop of Agricultural Science teachers.

Competence is used here as a combination of knowledge, skills and attitudes that can be developed through training and which are adequate for accomplishing some specific tasks (Maduabum, 1992). These tasks include understanding of children's developmental and learning problems, classroom management, knowledge of subject matter, planning and implementing the curriculum and use of educational technology (Agbi, 1994). By implication, therefore, the type of training undergone by the teacher can play a significant role in determining his level of competence. According to Ndubuisi (1989) the social background, age and sex of the teacher, the type of programme the institution offered him and the knowledge, skill and personality traits, which he acquired and is ready to apply, all determine how he performs as a professional teacher. Hence, the effect of some of these variables on the competence of the Agricultural Science teacher will also be determined. To a great extent, such findings will help in the selection of teachers and also for designing in-service programme for those already in service.

The need to assess the competencies possessed by Agricultural Science teachers has become more compelling as it has been reported that the Agricultural Science teachers at the Secondary school level do not demonstrate the competencies they possess. For example, it has been argued by Ugwu, (1995) that the Agricultural Science teachers could not have received adequate and appropriate training for the effective teaching of the subject because of the various modes of their preparation in the different institutions of training. It has therefore become necessary to actually ascertain the competencies possessed by the present crop of Agricultural Science teachers

Statement of the Problem

It has been established that students have low enrolment, interest and performance in Agricultural Science (Ugwu, 1986). This poor state of affairs has been blamed on the ineffective teaching methods adopted by teachers (Bajah, 1978; Aghenta, 1982). Studies by Okorie (2000) and Ugwu (2002), have also shown that most teachers of Agricultural Science in Secondary Schools are

unqualified to teach the subject. These instances have therefore put the competencies of the present crop of Agricultural Science teachers to question. This has become more compelling since the fire studies (Nzewi, 1985; Nwaloka, 1988; and Maduabum, 1992) carried out to ascertain the competencies possessed by science teachers were mainly in other science subject areas apart from Agricultural Science.

Based on the foregoing, therefore, these questions then arise: How well prepared are the Junior Secondary School Agricultural Science teachers to teach effectively in the school? Do they possess the competencies needed to teach Agricultural Science effectively? This study addresses these questions.

Purpose of the Study

The purpose of the study is to ascertain the competencies possessed by Junior Secondary School Agricultural Science teachers. Specifically, the study was aimed at finding out the level of competence possessed by Agricultural Science teachers in:

1. Planning and implementing science instruction.
2. Evaluating Agricultural Science instruction.
3. Using educational technology for Agricultural Science instruction.
4. Classroom management for Agricultural Science instruction, -

Research Questions

What is the mean rating of teaching competencies possessed by Agricultural Science teachers in the competency clusters of:

- i. planning and implementing instructions in Agricultural Science,
- ii. evaluating Agricultural Science instruction,
- iii. using educational technologies for Agricultural Science instruction,
- iv. classroom management for Agricultural Science instruction,

Hypotheses

The following hypotheses were formulated for the study:

HO₁: Teachers' qualification is not a significant factor in the mean rating of competence possessed by Agricultural Science teachers in the identified competency clusters. (P. < 0.05). HO₂: Teaching experience is not a significant factor in the mean rating of competence possessed by Agricultural Science teachers in the identified competency clusters. (P. <0.05)

HO₃: Teachers¹ gender is not a significant factor in the mean rating of competence possessed by Agricultural Science teachers in the identified competency clusters. (P. <0.05)

Method Research

Design

A survey research design was used for the study. The survey design was used because the study merely sought information from the respondents, as the situation exists without manipulation of any variable.

Population of the Study

The 442 Agricultural Science teachers in the 250 Junior Secondary Schools in the two Awka Education Zones of Anambra State served as the population for the study. It consisted of male and female teachers, experienced and less experienced teachers as well as qualified and less qualified teachers. (Source: Statistics Unit, PPSMB, Awka, 1998).

Sample and Sampling Technique

Stratified random sampling technique was adopted for selecting the sample. Stratification was based on gender, experience, and qualification of the teachers. On the whole, a total of 120 Agricultural Science teachers were eventually sampled from 65 schools out of the 101 schools in the two (2) Awka Education Zones.

Instrument

The instrument employed in the study was questionnaire -the Teachers Competency Rating Scale [TCRS] for Agricultural Science teachers which was developed by the researcher based on literature review. The preliminary list of the instrument was validated by ten experienced Agricultural Science teacher educators from one College of Education and a University in the state. Subsequently, the instrument was pilot-tested on 50 Agricultural Science teachers in the neighboring Ebonyi State schools. Their responses were computed and analyzed. This helped to determine the construct validity of the instrument (Adeyemi,1990). Based on this analysis, a final instrument consisting of 35 items grouped under five competency clusters emerged.

In order to establish the reliability of the instrument, it was further administered to 15 Agricultural Science teachers randomly selected from ten secondary schools in Ishielu and Ohaukwu Local Government Areas of Ebonyi state. These teachers/schools were not initially used during the validation of the instrument. From their responses, the reliability of the instrument was estimated in terms of internal consistency using Cronhach co-efficient Alpha. The reliability co-efficient was found to be 0.78.

Method of Data Collection

The instrument was administered to the respondents by the researcher with the aid of two research assistants. Out of a total of 120 copies of the questionnaires which were administered to the respondents in 65 secondary schools, 116 copies were properly completed and returned representing 97% return rate.

Method of Data Analysis

The mean was used in answering the research questions. Based on the 4-point modified Likert type scale used, the mean performance ratings were interpreted as follows:

Above - 3.50 Competent
2.50 - 3.50 Moderate
Below - 2.50 Not competent (low competence).

The three hypotheses were tested using t-test at 5% level of significance to determine the significance of the difference between the mean performance levels of male and female teachers qualified and unqualified and experienced and less experienced teachers on each of the identified competency clusters.

Graduates in Agricultural Education from Universities and NCE Graduates in Agricultural Sciences were treated as 'qualified' teachers while other categories of teachers involved in the teaching of Agricultural Science were treated as 'unqualified' teachers. Teachers who have taught Agricultural Science for a minimum of seven years were termed 'experienced' teachers while those with teaching experience below seven years were regarded as 'inexperienced' teachers.

Results

The results of the study are presented below in accordance with the research questions and hypotheses that guided the study.

Table 1
Mean Ratings of Competence Possessed by Agricultural Science Teachers N = 16

S/N	Competency Clusters	Mean Ratings	Remarks
1	Planning and implementing instruction in Agricultural Science teachers	3.22	Moderately competent
2	Evaluating Agricultural Science instruction	3.43	Moderately competent
3	Using educational technology for Agricultural Science instruction	1.96	Not competent
4.	Classroom management for Agricultural Science instruction	3.18	Moderately competent

As shown in table 1, the mean ratings of Agricultural Science teachers in planning and implementing instructions, evaluating instructions, using educational technology and classroom management are 3.22, 3.43, 1.96 and 3.18 respectively. These are indicative that the teachers are moderately competent in all the competency clusters except in using educational technology for instruction. The mean rating in this competency cluster, indicates that they are not competent.

Table 2
The T-Test of (he Mean Rating Of Competence Possessed by Qualified and Unqualified Agricultural Science Teachers in the Identified Competency Clusters

	Mean	S.I)	IN	dl	Standard error	t-calculated	t-critical	Decision
Qualified teachers	3.03	0.03	39	114	0.108	4.53	1.98	Rejected
Unqualified teachers	2.54	0.95	77					Ho,

From Table 2, t-calculated (4.53) is greater than t-critical (1.98) at 0.05 level of probability. The null hypothesis is therefore rejected. Hence, teachers' qualification is a significant factor of mean rating of competence possessed by Agricultural Science teachers in the identified competency clusters.

Table 3
The T-Test of the Mean Rating Of Competence Possessed by Experienced and Inexperienced Agricultural Science Teachers in the Identified Competency Clusters

	Mean	S.D	N	dl	Standard error	t-calculated	t-critical	Decision
Experience teachers	2,87	0.82	51	314	0.155	3.52	1.98	Rejected
Inexperienced teachers	2.32	0.85	65					Ho ₂

From Table 3, the t-calculated (3.52) is greater than the t-critical (1.98) at 0.05 level of significance. The null hypothesis is therefore rejected. Hence, years of teaching experience is a significant factor in the mean rating of competence possessed by Agricultural Science teachers in the identified competency clusters.

Table 4

The T-Test Of The Mean Rating Of Competence Possessed By Male And Female Agricultural Science Teachers In The Identified Competency Clusters

	Mean	S.D	N	df	Standard error	t-calculated	t-critical	Decision
Male teachers	2.63	0.81	73	114	0.163	1.59	1.98	Rejected Ho ₃
Female teachers	2.37	0.87	43					

From Table 4, the t-calculated (1.59) is less than the t-critical (1.98) at 0.05 level of significance. The null hypothesis is therefore accepted. Hence, gender is not a significant factor of mean rating of competence possessed by Agricultural Science teachers in the identified competency clusters.

Discussion

The results of the study show that Agricultural Science teachers are competent in planning an implementing instruction. This is very commendable as no meaningful learning can occur in the absence of effective planning and implementing of instruction (Agbi and Mbuk, 1996). In this, not very commendable disposition of the teacher, some specific competencies are the most challenging-preparation of specimens; preservatives, reagents and stains, observing appropriate safety precautions and use of First Aid. There is a dire need to consciously familiarize teachers with these tasks in both pre-service and in-service programme,

The fact that teachers do not also show adequate competence in evaluating instruction is a matter of grave concern for it provides the acid tests for students performance (Maduabum, 1992). This is however in line with the findings in similar earlier studies (Dougan, 2001), that science teachers do not effectively evaluate learning outcomes using comprehensive assessment tools. For enhanced students performance, a teacher should not only be able to transmit knowledge and skills effectively and efficiently but should also be able to inspire the learners to greater heights of achievement through meaningful use of evaluation techniques.

An area of serious weakness (incompetence) in the Agricultural Science teachers responsibility in the classroom highlighted by the study is in the use of educational technology for instruction. The teachers indicated low competence (low rating) in all the competencies in this task category. This finding which is in agreement with earlier studies (Nzewi, 1985; Ugwu, 1989; Maduabum, 1992) is indicative of the fact that more works need to be done in this task category, for it is only when the teachers are given adequate preparation in this area that a better performance can be expected.

The finding that Agricultural Science teachers show competence in classroom management indicates that there is still need for improvement. This should be given the desired attention since meaningful performance is very unlikely in an atmosphere devoid of effective discipline and learning (Aghenta, 1982; Adeyegbe, 2002; Iwovi, 1994).

Teachers' qualification has been indicated as a significant factor in determining the level of competence possessed by the teachers in the identified competency clusters. This explains why a teacher is not actually regarded as a teacher without the requisite professional qualification (Yoloye, 1982). Hence, Dougan (2001), Picus (1979) and Agwubuike (1982) did not mince words when they opined that qualified Agricultural Science teachers are likely to be more competent than the unqualified ones since the former know the different strategies to be employed during instruction in order to enhance students' understanding of the concepts being learnt. The presence of unqualified Agricultural Science teachers in the nation's classrooms would mean that improved students performance in the subject may still remain elusive for a long time.

Conclusion

The finding that experienced Agricultural Science teachers indicated a significantly better mean rating of competence in the identified tasks than the less experienced must have given the former adequate opportunity to participate meaningfully in seminars/workshops from which the defects which may have existed in the pre-service training must have been remedied. Hence, teaching experience cannot be ignored in determining the professional competence of the teacher (Anderson, 1971).

Despite the often held view of male superiority in spatial and mechanical skills (Anderson, 1971), there was no significant gender-based difference revealed by the study. Perhaps, enhanced interest shown by the females to their responsibility compared to the males may have leveled the gap that hitherto existed between male and females in the competency areas.

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