A STUDY OF THE FACTORS INFLUENCING THE CHOICE OF STRATEGIES USED IN TEACHING AGRICULTURAL SCIENCE IN SENIOR SECONDARY SCHOOLS IN ADAMAWA STATE

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Abstract

Since work environment influences the attitude of teachers, a study was carried out to examine the factors influencing the choice of the strategies used in teaching Agriculture in Senior Secondary School, in the light of the observation that the young school leaves in Adamawa State were not adequately vocationally prepared. Two research questions were asked and two null hypotheses were tested at 0.05 level of significance. The population consisted of all the 330 Agriculture teachers in the state who were all used for the study. The instrument used for data collection was a closed response questionnaire which was validated and pilot tested, yielding an alpha value of 0.86. The data collected were analyzed using mean, z-Test and one-way analysis of variance. The results revealed that all the 20 factors influenced the choice of teaching strategies. Significant differences were observed between the responses of the male and female Agriculture teachers on seven items while inter-zonal differences also existed among the teachers in the five Education Zones. Based on these findings, it was recommended that all the factors that influenced the choice of teaching strategies should be properly managed to motivate the teachers and enhance their productivity.

Introduction

Adamawa State was carved out of the defunct Gongola State on August, 27th 1991 together with Taraba State in North-Eastern Nigeria. According to the National Population Commission (2006), Adamawa State has a population of 3,168, 101 people. The state is endowed with abundant agricultural resources including an expanse of fertile arable and Fadama land, range land, water and favourable climatic conditions. Most of the people of the state practice agriculture as their main occupation.

Both the government and the people have great interest in vocational education. The has five Education Zones namely: Yola, Mubi, Gombi, Ganye and Numan. There are 108 senior secondary schools and agricultural science is one of the subject that are taught in all the schools in the state. Whereas vocational agriculture requires that students be taught the knowledge and skills needed to perform on the job, the attainment of the objectives of vocational education cannot be accomplished without adequate teaching strategies (Olaitan, 2003).

The teaching of agriculture in Senior Secondary Schools in Adamawa State has not been very effective. Its major problem was identified as inadequate vocational preparation on the part of the graduating students (Amechi, 2000). Whereas a good agricultural education is supposed to prepare students for

agricultural occupations of their choice (Okoro, 1994), in addition to a sound academic education, that has not been the case in Adamawa State where students passed the Senior Secondary Certificate Examinations with distinctions but without acquiring entry skills for low level agricultural jobs (Agbulu, 1996).

The strategies used by male and female agricultural science teachers in Adamawa State has been identified (Obi, 2008). Teachers' choice of strategies is influenced by a number of social and economic factors which in turn influence their productivity (Obi, 2008). According to Okorie (2008), the working conditions and the general work environment influence the attitude of teachers. The object of this study was to examine and specifically identify the factors influencing the choice of strategies used in teaching Agricultural science in Adamawa State. This would enable effective management of such factors and enhance the productivity of the teachers.

Purpose of the Study

The purpose of study was to examine the factors influencing the choice of strategies used in teaching Agriculture in Senior Secondary School in Adamawa State. Specifically, this study was to:

i. identify the factors influencing the choice of teaching strategies.
ii. determine the factors that have a more pronounced influence on the choice of teaching strategies.

Research Questions

This study would provide answers to two research questions.

1. What are the factors that influence the choice of strategies used in teaching Agricultural Science in Senior Secondary Schools in Adamawa State?
2. What are the factors that have a more pronounced influence on the choice of teaching strategies?

Hypothesis

The following hypotheses were tested at the 0.05 level of significance.

Ho1: There is no significant difference between the mean of the responses by male and female Agriculture teachers on the factors influencing the choice of teaching strategies.

H02: There is no significant difference in the mean of responses by teachers in the five Educational Zones on the factors influencing the choice of teaching strategies.

Methodology

The survey research design was adopted for the study. Area of the study is Adamawa State. The population of the study comprise the 330 Agriculture teachers in the 108 Senior Secondary Schools in Adamawa State. The distribution of the population in the five Education Zones of the state is as follows: Ganye 61, Gombi 64, Mubi 67, Numan 67 and Yola 71.

The instrument used for data collection was a closed response questionnaire constructed by the researcher. It has a five point scale with options coded and rated as follows:

Scale Option	Code	Rating
Strongly Agree	SA	5
Agree	A	4
Undecided	UD	3
Disagree	D	2
Strongly Disagree	SA	1

The lower and upper limits of each of these ratings (Runyon and Haber, 1980) were stated as follows:

Rating	**Lower Limit**	**Upper Limit**
5	4.5	5.00
4	3.5	4.49
3	2.5	3.49
2	1.5	2.49
1	0.0	1.49

The instruments has a total of 20 items on the factors influencing the choice of teaching strategies. Validation of the instrument was done by experts. Two experts in vocational education did the face validation. The reliability of the instrument was established using Cronbach alpa after a pilot test carried out in Taraba State on 120 subjects.

The reliability coefficient of the instrument was found to be 0.86. The questionnaire was administered by the researcher on all the respondents. They were all returned in usable form and used for data analysis. Data analysis was done using a computer program, the Statistical Analysis System (SAS installed from SAS Institute (1994). In this system the analysis of the data for answering the two research questions was done using the mean (X). Data analysis for testing the null hypothesis l was done using the z-Test statistics while hypothesis 2 was tested with one-way analysis of variance (ANOVA).

The Decision for answering the research questions was based on real limit of numbers (Runyon and Haber, 1980). The range of each category was used to take decision on the items. The lower limit of 4 (Agree) on the scale was 3.5 which was used as the cut-off with corresponding remarks on the remarks column. The decisions taken on testing the null hypothesis I was based on comparing the calculated z-ration with the level of probability at 0.05 as provided by SAS. According to SAS Institute (1994), a null hypothesis was rejected and result statistically significant when the calculated z-ration was less than or equal to (>) 0.05. Otherwise the null hypotheses was not rejected and the result were said to be non significant.

The decision taken on testing the null hypothesis 2 was based on comparing the calculated probability of F with the level of probability at 0.05

and decision was taken as explained in the case of z-Test statistics. In hypothesis 2, where a significant difference was observed, the Least Significant Difference (LSD) test was used to determine where the difference occurred among the five means. Where the difference between two means was less than the LSD, there was no significant difference. The LSD test incorporated in SAS performs the functions of the Scheffe's test used in the post-hoc test in the traditional manual system of analysis.

Results

Research Question 1

What are the factors influencing the choice of strategies used in teaching Agriculture?

The data that answered this research question are presented in

Table 1.

Table 1: Mean Rating of Teachers on the Factors that Influence the Choice of Strategies used in teaching Agriculture

S. No.	The following factors that influence the choice of strategies used in teaching Agricultural science in my school	X_1- X_2 N= 330	Remarks
1.	Class size	4.07	Agree
2.	Inadequate staff	4.12	Agree
3.	School location	3.51	Agree
4.	Gender difference	3.54	Agree
5.	Availability on instructional material	4.15	Agree
6.	Availability of physical facilities	4.17	Agree
7.	Inadequate staff remuneration	3.57	Agree
8.	Poor school administration supervision	3.57	Agree
9.	Professional training/qualification	4.05	Agree
10	Professional experience	4.24	Agree
11	Inadequate exposure and orientation	3.51	Agree
12	The amount of time allowed for instruction	3.52	Agree
13.	Effectiveness of medium of instruction	3.57	Agree
14.	Availability of transport facilities	3.58	Agree
15.	School/community relationship	3.50	Agree
16.	Attending to religions duties	3.59	Agree
17.	Inadequate Educational financing	3.66	Agree
18.	Attending to other school responsibilities	3.66	Agree
19.	Attending to community responsibility	3.68	Agree
20.	Participation in in-service education	3.55	Agree

Data in table 1 shows that the means of all the factors have been rated agree by the respondents. This means that all the factors influenced the choice of

teaching strategies. The knowledge of the influence of these factors will necessitate the need for effective management to improve the quality of instruction in schools.

Research Question 2

What are the factors that have a more pronounced influence on the choice of teaching strategies?

The data that answered this research question are also presented in table 2. Table 2 shows that out of the 20 factors that influence the choice of teaching strategies, six of them including class size, inadequate staffing, availability of instructional materials availability of physical facilities professional training/qualification and professional experience have been rated > 4. this means that they had a more pronounced influence on the choice of teaching strategies than the remaining 14 that have been rated < 4.

Hypothesis 1

There is no significant difference between the mean of the responses by male and female teachers on the factors influencing the choice of teaching strategies.

Data for testing this hypothesis are presented in table 2.

Table 2: Test of Difference Between Mean Rating of Male and Female Agriculture Teachers on the Factors Influencing the Choice of Teaching Strategies

S/N	The following factors influence the choice of strategies used in teaching Agricultural science in my school	X_1 male teachers N= 200	X_2 female Teacher	Z-Ration	Remarks
1.	Class size	4.17	3.54	0.01	Significant
3.	School location	4.13	3.50	0.01	Significant
4.	Gender difference	3.87	3.51	0.56	Not significant
5.	Availability on instructional material	3.70	3.55	0.16	Not significant
6.	Availability of physical facilities	3.73	3.57	0.49	Not significant
7.	Inadequate staff remuneration	3.50	3.58	0.01	Significant
8.	Poor school administration supervision	4.03	3.96	0.66	Not significant
9.	Professional	3.97	3.54	0.01	Significant

	training/qualification				
10	Professional experience	3.53	3.58	0.01	Significant
11	Inadequate exposure and orientation	3.87	3.57	0.16	Not significant
12	The amount of time allowed for instruction	4.00	3.71	0.39	Not significant
13.	Effectiveness of medium of instruction	3.57	3.99	0.07	Not significant
14.	Availability of transport facilities	4.87	3.96	0.04	Significant
15.	School/community relationship	4.01	3.99	0.27	Not significant
16.	Attending to religions duties	3.93	3.84	0.06	Not significant
17.	Inadequate Educational financing	3.63	351	0.14	Not significant
18.	Attending to other school responsibilities	3.90	3.74	0.29	Not significant
19.	Attending to community responsibility	4.47	3.57	0.01	Significant
20.	Participation in in-service education	3.70	3.54	0.06	Not significant

Data in table 2 shows the result of the z-test of difference between the mean ratings of male and female Agriculture teachers on the factors that influence the choice of teaching strategies. Seven out of the 20 factors compared had z-ratio of < 0.05. The Ho is therefore rejected. For the rest of the items, the null hypothesis is not rejected since they had z-ratio of > 0.05. this means that both the male and female Agriculture teachers had similar ratings in those factors.

The items that had significant difference include class, size, inadequate staffing, inadequate staff remuneration, professional training/qualification, professional experience, availability of transport facilities and attending to community responsibility. Although the two groups of respondents agreed that the factors influenced their choice of teaching strategies as shown by their mean ratings, the male Agriculture teachers felt the impact of seven factors on their choice of teaching strategies more than their female counterparts. These observations could be due to the difference in the perception of the two groups

of respondents regarding the influence of these factors on their choice of teaching strategies.

Hypothesis 2

There is no significant difference in the mean of the responses by teacher in the five educational Zones on the factors influencing the choice of teaching strategies.

Data for testing this hypothesis are presented in table 3 and 4.

Table 3: ANOVA result for Mean Rating of Teachers in the Five Educational Zones of Adamawa State on the Factors Influencing the Choice of Teaching Strategies

Source	Df	Sum of square	Men square	F	Pr>F
Items	19	0.276624	0.014559	1.03	0.443
Zone	4	1.446221	0.365531	25.76	<0001
		24			
Error	76	1.078436	0.1419		
Corrected	99	2.817184			

Data analysis of variance Table for the mean ratings of Agriculture teachers in the five Education Zones of the state is represented in table 3. the probability of F for the five groups is < 0001 which is <0.05. therefore there were significant differences in the mean ratings of the five groups.

There inter-zonal differences in their responses could be attributed to the difference in their location and working environment.

Table 4: ANOVA Results Comparing Mean Rating of Teachers in the Five Educational Zones of Adamawa State on the Factors Influencing the Choice of Teaching Strategies.

Zones	Mean
Zone 1: Yola	4.0575c
Zone 2: Mubi	3.9845c
Zone 3: Gombi	4.3075a
Zone 4: Ganye	4.2605a
Zone 5: Numan	4.138b
Pro. Of F	0.01
LSD	0.075

Mean with the same letter are not significantly different at P = 0.05. Data in Table 4 shows the mean ratings of the teachers on the factors influencing the choice of teaching strategies. Zones 1 and 2 had the lowest mean rating (4.06 and 3.98 respectively) while zones 3 and 4 had the highest mean rating. (4.31 and 4.26 respectively). Even though there was significant difference among the rating from the different zones, all the mean ratings ranged from 3.98 to 4.31

which indicate that all agreed that all the factors used for the study influenced their choice of teaching strategies. The highest means from zone 3 and 4 shows that there were fewer respondents that disagreed with the majority as compared to zones 1 and 2 which had the lowest mean thus indicating that there were more teachers that disagreed with the majority.

Findings

The following were the findings of the study:

i. all the 20 factors influenced the choice of teaching strategies.
ii. Six factors, namely class size, inadequate staffing, availability of instructional materials, availability of physical facilities, professional training/qualification and professional experience have a more pronounced influence on the choice of teaching strategies that the remaining 14 factors.
iii. There were significant differences between the mean ratings of male and female Agriculture teachers on seven factors influencing the choice of teaching strategies.

Discussion

The findings of the study regarding the factors that influence the choice of teaching strategies were in line with that of Ezeji (2000) who observed the influence of similar factors on the vocational teachers work. The significant difference observed between the responses of male and female Agriculture teachers on the factors influencing the choice of teaching strategies were in consonance with those of Osinem (2000) who observed similar gender differences in this study. The inter-zonal difference also observed in the study were in agreement with those of Osinem (2000)and Ezeji who made similar observations in their respective studies.

Conclusion

The Agriculture teachers' choice of strategies was influenced by a number of social and economic factors. Some of the factors had a more pronounced influence on the choice of teaching strategies than the others. There was the need for the Adamawa State Educational Administrators to be conscious of these factors, manage them effectively and enhance the productivity of the teachers.

Recommendation

On the basic of the findings of the study and its implications, the following recommendation were made:

i. Adequate number of Agriculture teachers should be employed, adequate furniture provided and more classroom blocks and offices constructed by the Adamawa State Ministry of Education to decongest large classes.

ii. Regular in-service education should be provided by the Ministry of Education for the teachers to upgrade their knowledge and pedagogy.
iii. Relevant educational materials and equipment including the modular Agriculture curriculum should also be provided by the Ministry of Education to ease the teachers' work.
iv. The teachers' general emolument should also be reviewed upward by the Ministry to motivate the teachers to put in their best.
v. The State Educational Administrators should not over-labour the Agriculture teachers with non-instructional responsibilities

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