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INNOVATIVE STRATEGIES FOR TEACHING VOCATIONAL, SCIENCE, TECHNOLOGY AND MATHEMATICS EDUCATION: CLASSROOM PRACTICES



PROF. JOSEPHINE N. OKOLI

**INNOVATIVE STRATEGIES FOR TEACHING
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MATHEMATICS EDUCATION: CLASSROOM
PRACTICES**

**EDITOR
PROF. JOSEPHINE N. OKOLI**

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PREFACE

The electronic book (e-book) acknowledges that traditional methods in Vocational, Science, Technology and Mathematics Education: Classroom Practices may not be sufficient to equip students with the necessary skills for a rapidly evolving technological landscape.

Therefore, it advocates for the adoption of Innovative teaching approaches that promote a more dynamic and effective learning experience.

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FOREWORD

This book entitled “**Innovative Strategies for Teaching Vocational, Science, Technology and Mathematics Education: Classroom Practices**”, is a book of readings on various innovative classroom pedagogies. It is a welcome literature for Education System and a very important resource book for teachers who are functioning in the disciplines of Vocational Education, Science, Mathematics and Technology education and training. It is a compendium of most of the **active learning strategies** aimed at producing graduates who have been prepared for adaptation to the conditions of the 21st century world of fluidity. The 21st century world accommodates soft skills which the individual can edit from time to time as the conditions of socio-cultural, economic and technological environments change constantly and uncontrollably. A century in which cross-border job openings are important means of employment, a century where attitude is more important than subject-based excellence, a century where collaboration, innovation and creativity are irreducible demands by employers of labour, a century where adaptive skills are critical for entrepreneurship, creation of jobs and wealth.

All categories of teachers at all levels of education would find this resource book interesting and professionally helpful for their teaching practice. Because conditions of the modern world are in perpetual flux, teachers have to re-skill in order to produce adaptive graduates and the era of lecture method is literally over. It is these modern innovative instructional strategies that would enable teachers to produce such graduates who would survive and then succeed in the 21st century global economy.

This book would also be very useful to researchers and innovators in the envisioned pedagogic paradigm shift of this era. I therefore, proudly recommend this book, a compendium on innovative pedagogies to all classes of teachers and researchers on pedagogies and curriculum reforms in the modern era.

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DEDICATION

This book is dedicated to educators in the world

CHAPTER 4

INFLUENCE OF DEMOGRAPHIC VARIABLES AS A DETERMINANT PRINCIPALS ADMINISTRATIVE PRACTICES IN ENUGU STATE NIGERA

**Nweke Phina Amaka
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Abstract

The paper discusses the following concepts: demographic variables, administration and relationship between principal's demographic variables and their administrative performance. The researchers seeks find out the influence of demographic variables is a determinant principals administrative practices Enugu State. The objectives were to determine the influence of demographic variables determinant principals' administrative practices in Enugu State. The study employed descriptive Survey research. The target population of the study comprised all the 1496 principals in public secondary schools in Enugu State. Simple random sampling technique was used to sample 260 principals for the study. Five research questions were formulated in order to find out the influence of demographic variables as a determinant to principals administrative practices in Enugu State. A questionnaire titled influence of demographic variables as a determinant principals' administrative practices questionnaire (IDVAPAPQ). Mean and standard deviation statistics were used to analyze the research questions. The result showed that secondary school principals in Enugu State the exhibits some common administrative practices of administrators which includes instructional management, staff personnel administration, school plant management, financial management, and school. Analyses were carried out using, mean standard deviation. The findings from the analysis of the study revealed that the common administrative practices of administrators in Enugu State were instructional management, staff personnel administration, school plant management, financial management. That principal often carries out their administrative practices irrespective of their educational qualification, gender, age and years of experience. It was also found out that administrative practices were not based on gender whether the principal is male or female. Furthermore it was also that age whether old or young does not determine how secondary school principals often carry out their administrative practices. Also it was found out that secondary school principals carry out their administrative practices irrespective of their work experience. Based on the findings and conclusions, it was therefore recommended that workshops and seminars should be organized for secondary school principals in Enugu state , in order to educate them on instructional management, staff personnel administration, school plant management, financial management, amongst others. In addition also, from the findings it was recommended that both male and female individuals should be given appointed as principals of secondary schools in Enugu State as the study has shown no disposition in their administrative practices.

Keywords: Demographic Variables, Principals Administrative Practices

Introduction

Secondary School education is the apex of Nigerian basic education. It serves as a link or bridge between the primary and tertiary education in Nigeria education System (Ibukun, 2004) . The Federal Government of Nigeria (2013) in her National Policy on Education highlighted the aims of Secondary education as preparing students for useful living within the society and preparing them for higher education. Hussamni (2008) stated that a critical element to the achievement of secondary school education objective is the principal stands out as the chief executive of the school

administrator , instructional leader, personnel managers for both the pupils (student) and staff personnel. These administrative practices of the principal captured is essential for the realization of the objectives of secondary school education as spelt out in the national policy on education (N.P.E, 2013).

Principals are the custodians of secondary school administration; they keep track of events and boost educational programme and implementation of educational policies. According to Ebere and Nsan (2012) for secondary school to do well, principals must employ good administrative practice. Mgbodile (2004) pointed out that principals are the fulcrum on which the success of secondary school education revolves ; hence they interpret educational policies and put them into action through their administrative practices. it has been noticed that there is high rate of teachers absent seem, low productivity, lateness to school and this suggest to lapses in administrative practices amongst principals as this necessitates a study on the demographic variables of principals as determinant of principals administrative practices. That is to say those demographic variables may influence principal's administrative practices. Demographic variables, as conceived by Andreas, Petros, Leonidas & Kyriadikes (2010) as characteristic of individuals of a given population that varies among members of the population in relation to principals it is the characteristics of the principals such as educational qualification , gender, work experience , marital status, religion amongst others that may not only vary amongst the principals but may influence principals administrative practices (Brooks & Jones 2010). Furthermore Ibukun, Oyewole and Abe (2011) observed that in Nigeria demographic factors such as age, educational qualification , gender, experience, and location of school, marital status and religion affliction among others have been considered in appointment of principals. This is done with the belief that some principals would be better than others (Ibukun, Oyewole and Abe 2011). It is on this foregoing premise that the demographic variables of principals as determinants of principal's administrative practices were investigated in Enugu State, Nigeria. Secondary schools in Nigeria including the ones in Enugu state are headed by principal of different demographic characteristics. It is therefore hoped that these diverse characteristics of the principals, especially the principals gender, educational qualifications, age and year of experience may influence their administrative practices. It is on the forgoing premises that the demographic variables of principals namely gender, administrative practices were investigated in secondary schools in Enugu State

Statement of the Problem

The principal is the foundation upon which the success of secondary school administration evolves. The success and failure of any secondary school administration s is contingent upon the principal's administrative practices. Thus principal's administrative practices can make or mar the school. In the Nigerian education history, there have been trends of poor academic achievements and general ineffectiveness of the secondary schools. All these suggest poor administrative practices by the principal of secondary schools. The history of education in Enugu State still occupy a vantage and strategic position in the education of children yet it is faced with many malfeasances which includes indolence, indiscipline amongst others and all these suggests poor administrative practices by principals in the public school. Therefore whether gender , age , work experience, educational qualification of principals the researcher seek to study if there's demographic variables influences or mares the administrative practices of secondary school principals n secondary school in Enugu State.

Purpose of the Study

The study specifically intends to;

1. Identify common administrative practices of principals in secondary schools in Enugu State
2. Determine the influence of qualification on the common administrative practices of principals in secondary schools in Enugu State
3. Determine the ` the influence of age common administrative practices of principals in secondary schools in Enugu State

4. Determine the influence of gender on common administrative practices of principals in secondary schools in Enugu State
5. Determine the influence of work experience on common administrative practices of principals in secondary schools in Enugu State

Research Question

The following research questions guided the study;

1. What are the common administrative practices of principals in secondary schools in Enugu State
2. What is the influence of qualification on the common administrative practices of principals in secondary schools in Enugu State
3. What are the influence of gender on the common administrative practices of principals in secondary schools in Enugu State
4. What is the influence of age on the common administrative practices of principals in secondary schools in Enugu State
5. What are the influence of work experience on the common administrative practices of principals in secondary schools in Enugu State

Methodology

Design of the study

The researcher adopted a descriptive research survey.

Population of study

The population of the study was made up of all the principals 300 public secondary schools in Enugu State. A total number of 1497 served as the population for the study.

Sample and sampling technique

A simple random technique was used to select 260 principals for the study. This sample size is determined using 17% of the population

Instrument of data collection

The instrument for data collection was a structured questionnaire titled influences of demographic variables a determinant principals administrative practices questionnaire (IDVAPAPQ).

Validation of instrument

The validation of the instrument as ascertained by the researchers and two experts from educational planning and the other from measurement and evaluation department all from University of Nigeria Nsukka, these experts looked at the purpose, objective of the study, research question, hypotheses, appropriateness of language and expression, clarity of statement as well as the relevance of the items of the instrument to the purpose of the study. The suggestions were also made by the experts after scrutinizing the instruments

Results

Research question one: what are the common administrative practices of principals in Secondary school in Enugu State

Table 1: Mean and standard deviation of the responses on the common administrative practices of principals in secondary school in Enugu State

S/N	Principals administrative Practices	\bar{X}	SD	Dec
1	Financial management	2.19	0.42	S
2	Instructional management	3.26	0.49	0
3	School plant management	2.19	0.42	S
4	Staff personal administrative	3.25	0.39	0
5	Student personal administrative	3.36	0.52	0
6	School –community relations	3.03	0.74	0
Cluster Mean		2.94	0.24	0

The results of the study as presented on Table 1 shows the mean ratings and standard deviation of responses on principals' administrative practices in Enugu State. The result of the study showed that mean ratings responses of 3.2, 3.25, 3.36 and 3.03 were obtained from responses of the different principals administrative practices listed above. The mean rating responses within 2.50-3.49 sets a criteria for often practices which implies that secondary school principals in Enugu State often carries out their administrative practices in those areas while that ranges from 2.19 and 2.13 for school plant management and financial management respectively showed that school principals do not effectively carry out their administrative practices with regards to school plant and financial management. The cluster mean of 2.91 with a standard deviation 0.24 shows that secondary school principals often practice their administrative functions in Enugu State. The finding is in accordance with the findings of Adeniyi and Omoteso (2014) which showed that instructional management , staff personnel administration , student personnel administration, school plant management , financial management as well as school community relations management were common administrative considered by principals to achieve school success.

Research Question 2: What is the influence of qualification on the common administrative practices of principals in secondary school of principals in Enugu State.

Table 2: Mean and standard deviation of the common administrative practices of principals in secondary schools in Enugu State based on qualification.

S/N	PRINCIPALS ADMINISTRATIVE PRACTICES	BA.ED/B.Sc. Ed (N=98)			PGDE (N=56)			M.Ed/MA.Ed (N=83)			N.C.E/HND (N=11)		
		\bar{X}	SD	DE C	\bar{X}	SD	DE C	\bar{X}	SD	DE C	\bar{X}	SD	DEC
1.	FINANCIALLY MANAGEMENT	2.15	0.36	S	2.13	0.31	S	2.09	0.35	S	2.11	0.44	S
2.	INSTRUCTIONAL MANAGEMENT	3.30	0.43	O	3.19	0.43	O	3.21	0.60	O	3.49	0.23	O
3.	SCHOOL PLANT MANAGEMENT	2.23	0.35	S	2.15	0.44	S	2.18	0.47	S	2.19	.33	S
4.	STAFF PERSONAL ADMINISTRATIVE	3.28	0.38	O	3.19	0.43	O	3.21	0.60	O	3.49	0.23	O
5.	STUDENT PERSONAL ADMINISTRATIVE	3.39	0.50	O	3.33	0.54	O	3.33	0.55	O	3.40	0.40	O
6.	SCHOOL COMMUNITY	2.95	0.84	O	3.06	0.60	O	3.18	0.64	O	2.55	0.88	O
Cluster Mean		2.92	0.24	O	2.88	0.24	O	2.90	0.23	O	2.91	0.23	O

Table 2 shows the mean ratings responses and standard deviation of respondents on principals administrative practices in secondary school Enugu State based on qualification. the range rating of 2.50-3.49 set a criteria for often practice meaning that the secondary school principals in Enugu State do often carry out their administrative practices efficiently irrespectively of their qualification. However the mean ratings responses from school plant management and financial management are within the range of 1.50 - 2.49 which showed that some secondary school principals do not carry out their administrative practices effectively with regards to school plant and financial management., the cluster means of principals with various educational qualifications as presented on table 2 are within the range of 2.50 - 3.49 which show that secondary school principals often carry out their administrative practices effectively. This finding is in consistent with the result by Harmstrong (2006) which showed that age has no significant relationship with leadership behaviours of head of secondary schools. Similarly Barfield supported by reporting that there was no significant relationship between principals' age and principals administrative practices.

Research Question 3: What is the influence of gender on the common administrative practices of principals in secondary school in Enugu State?

Table 3: Mean and standard deviation of responses on the common administrative practices of principals in secondary schools in Enugu State based on gender.

S/N	PRINCIPALS PRACTICES	ADMINISTRATIVE	MALE			FEMALE		
			\bar{X}	SD	DEC	\bar{X}	SD	DEC
1.	FINANCIAL MANGEMENT		2.12	0.36	S	2.13	0.34	S
2.	INSTRUCTIONAL MANGEMENT		3.23	0.50	O	3.27	0.48	O
3.	SCHOOL PLANT MANGEMENT		2.17	0.44	S	2.21	0.39	S
4.	STAFF PERSONAL ADMINISTRATIVE		3.27	0.41	O	3.24	0.37	O
5.	STUDENT PERSONAL ADMINISTRATIVE		3.32	0.53	O	3.38	0.51	O
6.	SCHOOL COMMUNITY RELATIONS		3.05	0.72	O	3.02	0.75	O
Cluster mean			2.90	0.25	O	2.91	0.22	O

Data in Table 3 indicates that the mean ratings for both female and male respondent with regards to instructional management, staff personnel administrative, student personnel management and school community relations are within the range of 2.50- 3.49 set as criteria for effective (often) practice. This means that both male and female secondary school principals Enugu State effectively (often) carry out their administrative practice as it relates to include instructional management, staff personal administration, student personnel administration and school community relations. However the mean ratings responses for school plant management and financial management for both male and female respondents are within the ranges of 1.50- 2.549 which showed that some secondary school principals seldom carry out their administrative practices with regards to school plant and financial managements, the cluster means Of 2.90 with the standard deviation of 0.25 for male principals and 2.91 with a standard deviation of 0.22 for female principals shows that both male and female secondary school principals often carry out their administrative practices. The finding is in discordance with the result of Clement (2010) which indicated that administrative practices of male principals are superior to those of females.

Research Question 4: What is the influence of age on common administrative practices of principals in secondary schools in Enugu State.

Table 4: Mean and standard deviation of the common administrative practices of principals in secondary schools in Enugu State based on age

S/N	PRINCIPALS ADMINISTRATIVE PRACTICES	45years and below N=75			46years-50yrs N=67			51-55 N=75			years 56years and above N=32		
		\bar{X}	SD	DEC	\bar{X}	SD	DEC	\bar{X}	SD	DEC	\bar{X}	SD	DEC
1.	FINANCIAL MANGEMENT	2.08	0.3	S 7	2.14	0.32	S	2.14	0.36	S	2.17	0.32	S
2.	INSTRUCTIONAL MANGEMENT	3.33	0.4	O 1	3.32	0.39	O	3.23	0.54	O	3.00	0.64	O
3.	SCHOOL PLANT MANGEMENT	2.19	0.3	S 6	2.25	0.39	S	2.18	0.46	S	2.09	0.45	S
4.	STAFF PERSONNEL ADMINISTRATIVE	3.28	0.3	O 6	3.28	0.41	O	3.29	0.36	O	3.06	0.43	O
5.	STUDENT PERSONNEL ADMINISTRATIVE	3.36	0.4	O 6	3.42	0.51	O	3.29	0.36	O	3.06	0.43	O
6.	SCHOOL COMMUNITY RELATIONS	2.88	0.8	O 0	3.13	0.68	O	3.10	0.70	O	3.03	0.74	O
Cluster		2.89	.25	O	2.95	0.19	O	2.92	0.24	O	2.78	0.24	O

Table 4 x-rayed the mean ratings responses and standard deviation of respondents on principals administrative practices in secondary schools in Enugu State based on age. The result of the study showed that the mean responses of the respondent with various age brackets as 45-50yrs, 51-55 years and 56years and above with regards to instructional management, staff personnel management and school community relations are within the range of 2.50-3.4 set as criteria a for often practice. This means that the secondary school principal in Enugu State irrespective of age, often carry out their administrative practice in this task area, but the mean ratings for school plant management and financial management for respondents with various age brackets are within the range 1.50-2.49 which showed that secondary school principals seldom carry out their administrative practices with regards to school plant and financial management. The cluster mean ratings of principals with various age brackets as presented on table four shows that secondary school principals often carry out their administrative practices. The findings of Kliginsmith (2007) disagrees stating that there is no relationship between the administrative practices of two group of principals (classified as junior principals, below 5years experience and senior principals above 5 years' experience). This implies that both young and old principals are likely to possess and employ administrative practices alike in the day to day running of their school.

Research Question 5: What is the influence of years of experience on common administrative practices of principals in secondary schools in Enugu State?

Table 5: Mean and standard deviation of the common administrative practices of principals in secondary schools in Enugu State based on work experience

S/N	PRINCIPALS ADMINISTRATIVE PRACTICES	5years and above N=75			6years -10yrs N=67			11-15 years N=75			Above 15years N=32		
		\bar{X}	SD	DEC	\bar{X}	SD	DEC	\bar{X}	SD	DEC	\bar{X}	SD	DEC
1.	FINANCIAL MANGEMENT	2.13	0.39	S	2.11	0.33	S	2.11	0.36	S	2.19	0.29	S
2.	INSTRUCTIONAL MANGEMENT	3.18	0.51	O	3.30	0.47	O	3.29	0.43	O	3.21	0.60	O
3.	SCHOOL PLANT MANGEMENT	2.17	0.39	S	2.21	0.42	S	2.18	0.43	S	2.19	0.39	S
4.	STAFF PERSONNEL ADMINISTRAT-ION	3.24	0.44	O	3.26	0.37	O	2.87	0.36	O	3.25	0.40	O
5.	STUDENT PERSONNEL ADMINISTRATI-ON	3.42	0.52	O	3.40	0.43	O	3.25	0.55	O	3.31	0.65	O
6.	SCHOOL COMMUNITY RELATIONS	3.15	0.70	O	3.01	0.74	O	3.06	0.77	O	2.79	0.74	O
Cluster		2.90	0.25	O	2.91	0.22	O	2.90	0.23	O	2.87	0.24	O

In Table 5, it shows the mean rating responses and standard deviation of respondents on principals administrative practices in secondary school in Enugu State. The result showed that the mean ratings of the respondents with various years of working experience such as 5yrs and below, 6-10years, 11-15years and above s, in respect to instructional management, staff personnel administration, student personnel management, and school community relation are within the range of 2.50-3.49 set as a criteria for often practice except for school plant management and financial management. This means that the secondary school principals in Enugu State irrespective of their work experience often carry out their administrative in these task areas. However, the mean rating responses for school plan management and financial management for respondents with various working experiences are within the range of 1.50-2.49 which showed that the seldom carry out their administrative practices with regards to school plants and financial management based on experience. The cluster mean ratings of principals with various work experiences shows that the often carry out their administrative skills. In support, Mbam (2009) found a positive correlation between work experience and principal administrative practices.

Discussion

The findings of the study are discussed in line with the specific purposes that guided the study. The findings of the study as presented on table 1 shows that secondary school principals in Enugu often carry out their administrative practices . the findings shows that secondary school principals carry not most administrative practices that are expected of them such as instructional management functions, staff personnel administration amongst others the findings is in line with the findings of Adeniyi and Omoteso 2014) which shows that instructional management , staff personnel administration , student personnel administration amongst others are common administrative practices considered by principals to achieve school success. On influence of principal's educational qualifications of principal's administrative practices in secondary schools in Enugu state, the result of the study as presented in table 2 showed that secondary school principals often carry out their administrative practices notwithstanding their educational qualifications. This finding is in consistence with the result of Bruner (2001) which showed that there was no significant relationship between principal's level of education and principals administrative practices. This means that educational qualification of principals does not impact on their administrative practices. The finding of the study also as presented in table 4 shows that both male and female secondary school principals often carry out their administrative practices. This implies that administrative practices of principals are not gender sensitive. The findings is in discordance with the result of Clement (2010) which indicated that administrative practices of male principals are superior to those of female. Conversely Tulen and Serife (2012) found that the principals exhibited good leadership practices with female principals possessing better leadership practices than males in Istanbul turkey. The result as presented on table, Showed that both young and old (age) secondary school principals often carry out their administrative practices. In other words being young or old does not affect administrative practices employed by secondary school principals. The findings is in consistent with the result by Harmstrong (2006) which showed that age has no significant relationship with leadership behavior of heads of secondary school. In disagreement, Ibukun, Oyewole and Abe (2011) reported that the older principal the better his or her administration. Furthermore, the result as presented on table 5 show that secondary school principal often carry out their administrative practices without being influenced by their year of experience. However, in actual sense the more one perform an act, the more one perfects in the act. Therefore, principals who have served for many years ought to adopt more effectively administrative practices than those who have spent few years in service.. However Mbam (2009) found positive correlation between work experience and principals administrative practices.. in the same vein , Brook and Jones (2010) also found a significant relationship between principals years of service as an administrator and their administrative practices as principals who had served for 15 years and above had better administrative practices than those who had served for 15 years.

Conclusion

The study focused on demographic variables as a determinant to principals administrative practices in Nigeria. It discussed that demographic variables such as the age, the qualification, and the gender of principals influences their administrative practices in secondary schools. Research from some scholars stressed that in Nigeria demographic factors such as age, educational qualification, gender, experience, and location of school, marital status and religion affliction among others have been considered in appointment of principals. This is done with the belief that some principals would be better than others. In conclusion, principals who are older, more experienced and who possess professional educational qualification are more efficient in their administrative practices. Therefore, for future administrative effectiveness and quality service delivery, it is suggested that demographic variables (age, gender and working experience) amongst others should be taken into consideration in the assessment, appointment of school principals and promotion to administrative positions in secondary schools be based on these factors in Nigeria Secondary educational system.

Recommendations

On the basis of the findings the following recommendations were made;

1. That government should organize workshops and seminars for secondary school principals in Enugu State in order to sustain and ensure consistency in their administrative tasks to promote organizational progress.
2. Only educationally qualified individuals should be appointed as secondary school principals in Enugu State.
3. Both male and female principals should be given appointment as principals of secondary school in Enugu State
4. Federal government should ensure that there should be young and older principals in service for a better secondary school administration in Enugu State.

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