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Certified/Non-Certified Teacher in the Chemistry Classroom in North Eastern Nigeria: Who does a Better Job?

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Abstract

The study investigates the relationship between certified/non certified science teachers in the classroom vis-a-vis students' achievement in chemistry in some secondary schools in North Eastern Nigeria. A purposive sampling technique was used and five schools were selected for the study. Results (1006 marks / scores) of students' end of course examinations, conducted by National Examinations Boards for the years, 2008, 2009 and 2010 were used for the work. Data collected were analyzed using descriptive and inferential statistics and to attest to the existence of any significance in the means above, the results were subjected to analysis of variance (ONEWAY-ANOVA, using SPSS VERSION 19). This was further subjected to SCHEFFE'S post hoc Tests and the results were highly significant. In order of priority, skills-acquired science professional teachers registered more successes than science trained professional teachers with experience. This might not be unconnected to the need for skill acquisition in our science classrooms.

Keywords: Certified / Non Certified Science Teachers, Students' Achievements, Purposive Sampling Technique and Professional Teachers.

Introduction

Teachers are a vital pre-requisite for students' attainment of educational goals and objectives. In Adamawa state North Eastern Nigeria like elsewhere, educational stakeholders' discussions are frequently on educational standards and they are pondering why the system is turning out graduates with poor results. The National Policy on Education states "No Educational system can rise above its quality of teachers" (FGN, 2006). Iyamu (2005); Sial (2005); in their confirmation opined that the teacher is the king pin in the educational setup.

Multico-linearity between teacher variables can also mask the relationship between some of these variables and students achievement. Wayne and Young (2003) used the following example

to illustrate this problem; analysis may show that having a higher degree matters, but it is likely that teachers with higher qualifications also have teaching experience. Thus, what appears attributable to a higher degree may be instead being attributable to experience. Thus a study that assesses multiple teaching characteristics simultaneously is more reliable. This is because it will assess separately a teacher's qualification and his experience. Wayne and Young in their joint submission established that an observed teacher quality indicator matters but cannot convincingly show that an observed teacher quality indicator does not matter. This explanation provides caution to policy makers who tend to conclude that teachers' formal education, certificate and procurement of a major in the subject of teaching are not indicators of quality. Therefore skills-acquired science professional teachers vis-a-vis science trained professional teachers in the classroom and students' performance / achievement in chemistry in some secondary schools in North Eastern Nigeria covered in this studied should not be minimized.. However, there is also an obvious need to look for other important and more sensitive indicators of quality

Thus if teachers are unqualified, apathetic, uncommitted, uninspired, lazy, unmotivated, immoral and anti-social, the whole nation is doomed, If they are ignorant in their discipline and impact wrong information, they are not only useless, but dangerous. Therefore the kind of teachers trained and posted to schools may well determine what the next generation will be.

This research serves as a springboard to validate relationship between skills acquisition of teachers on the achievement of students

Statement of Purpose: To establish who does better between skills-acquired science professional teachers and science trained professional teachers in students' performance / achievement in chemistry

* Find out the impact of skills-acquired science professional teachers on students' achievement in chemistry

* Draw conclusion from the findings, make recommendations and highlight the Educational Authorities on improved planning and management of teachers that would facilitate teaching / learning and lead to higher students' achievements.

Methodology

The research design adopted for data collection is the survey/expose factor design, Khalid, (2008);

Surveys are commonly conducted to establish the nature of existing conditions, obtain an understanding of the present condition, and related problems

Sampling technique and Selection of subjects (Instrumentation): A sample size of 505 for National Examination Council (NECO) & 501 for West African Examination Council (WAEC) student's scores, from five (5) schools was considered using purposive sampling technique. Purposive in that Mubi zone was grouped into two and only specific schools that fit the purpose of the research (those schools that have started writing and wrote WAEC and NECO for the stipulated years (2008, 2009 &2010) were chosen.

The instrument used for the research is the results (marks / scores) of students` end of course examinations, based on the fact that all these schools present candidates for the two exams considered for this research.

Research Hypotheses and Categorization of Teaching Qualifications: HO ⁽¹⁾. There is no significant difference in the mean ratings of skills acquired professional teachers on students` performance in chemistry. HO ⁽²⁾. There is no significant difference in the mean ratings on students` poor performance relating to teachers` qualification in chemistry.

T₁: B. Ed. Chemistry, National Certificate of Education (NCE), and / or NCE and B. Sc. Chemistry and B.Sc. Chemistry plus Post Graduate Diploma in Chemistry (PGDE chemistry)

T₂: B.Sc. Chemistry or B. Tech. Chemistry.

T₃: B.Sc. Biochemistry, B.Sc. Food Science Tech. and other skill- acquired Science Degrees.

T₄: Ordinary National Diploma (OND), and any other Diploma.

* Qualifications are arranged in order of priority in teaching chemistry.

Results

Table 1: A Descriptive statistics table of Science Professional Teachers on students` performance in chemistry in five selected secondary schools in Mubi

Exam type	Teacher Category	Number of Students	Mean	Std. Deviation
NECO	1	235	35.91	9.639
	2	239	25.790	20.637
	3	55	39.527	11.277
	4	67	25.970	7.459
WAEC	1	107	30.009	9.9712
	2	239	39.728	11.900
	3	42	41.643	9.835
	4	59	24.983	6.2766

The best overall performance of the students for NECO was obtained from teachers with (T₃) qualifications, with the mean value of 39.527, followed by those with (T₁), mean value of 35.911, then (T₄) value of 25.970 and lastly (T₂), mean value of 25.791, (T₃>T₁>T₄>T₂)

For WAEC, the order of performance of the students from highest to lowest was as follows: - T₃ > T₂ > T₁ > T₄ with mean score values of 41.643, 39.728, 30.009 and 24.983 respectively. (Table 1)

Table 2: ONE-WAY ANOVA, of Science Professional Teachers' on students' performance in chemistry in some secondary schools in Mubi

	Sum of Squares	Df	Mean square	F	Sig.
NECO:					
Between Groups	15027.611	3	5009.204	19.819	000
Within Groups	124350.122	492	252.744		
Total	139377.734	485			
WAEC:					000
Between Groups	15600.623	3	5200.208	45.627	
Within Groups	50490.939	443	113.975		
Total	66091.562	446			

To attest to the significance of the above findings these mean values were subjected to ONEWAY-ANOVA, to verify the hypotheses;

The results were seen to be highly significant as indicated in table 2. This indicates that the null hypotheses be rejected, thus the need for skill acquisition in our science classrooms, plays a very important role in the achievements of students.

After the ONE WAY ANOVA, further confirmation was achieved by carrying out Scheffe's post hoc comparison of significant pairs of variables and magnificent significant, pairs were identified thus:

NECO: Teachers' qualification T₁ paired significantly with the T₂ and T₄, Teacher's qualification T₂ paired significantly with T₁ and T₃, Teacher's qualification T₃ paired significantly with T₂ and T₄, Teacher's qualification T₄ paired significantly with T₁ and T₃

WAEC: Teachers' qualification T₁ paired significantly with the T₃ and T₄, Teacher's qualification T₂ paired significantly with T₁ and T₄, Teacher's qualification T₃ paired significantly with T₁ and T₄, Teacher's qualification T₄ paired significantly with T₂ and T₃

This further attests to the rejection of the null hypothesis and thus validation of the fact that skills acquisition in our science classrooms play a vital, pivotal, kingpin role in the achievement / performance of students

Discussion (Summary): To impart education, teacher plays decisive role towards the student's learning. Some psychologists believe that a child's mind is a clean slate and a teacher could write anything on it. Others are of the opinion that a child is just like clay and a teacher like the potter could make anything out of it. Tania (2004) quoting Sanaullah (2002) alluded that teachers can play a momentous role in fostering environmental consciousness in the society; therefore more efforts are needed to sharpen their skills to integrate local environmental content in their teaching methods and activities since their qualification plays an important role in their impartation of skills to the learner.

From the fore-going research, it has been logically observed that teaching and learning are enhanced by practically oriented teachers (T₃) than theoretically oriented teachers (T₄). This could be due to the fact that students are opportuned to employ the five gateways of learning, smell, touch, see, taste and hear, thus the theoretical processes involved in learning are made clearer and retention augmented. Substantiating this, the Chinese summed that; I hear; I forget, I see; I

remember, I do; I understand after-all 90% of what one does is retained. Thus skills-acquisition is necessary in teaching the sciences.

Implication of the Study for Qualitative Planning: Institutional authorities should map-out values and goals within the framework of the national Policy on Education thrusts taking into cognizance internal and external developmental trends.

Appropriate forums should be created for teachers to interact and share experiences, knowledge and insight on the various techniques of teaching.

Only qualified and professional teachers should be recruited; as all this will promote system efficiency, thereby paving the way to optimal performance.

Implication for the Teaching / Learning Science: It could be seen that the studies tend to achieve more from skilled professionals than from science teachers. This is an indication for the 21st century teachers to vary their mode of instructions so that more students can be accommodated especially in skilled acquisition, since such skills cannot be acquired along most of our laboratories which are ill-equipped.

Interest to Science: To note the trend in some of the classrooms and the need to lay more emphases on skill acquisition in the sciences.

Conclusion

This piece of research work, investigates the qualification of teachers vis-à-vis students performance in some four selected secondary schools in Mubi.

It attest to all previous finding that teacher's adequacies and competencies in terms of quality (qualification) is a greater predictor of learning achievement in chemistry in our secondary schools. It has shown a positive and significant relationship between teacher's qualification and students' academic achievements. Thus the teacher's competencies and adequacies are a panacea for attainment of educational goals and objectives.

To impart education, teacher plays pivotal role towards the student's learning. Some psychologists believe that a child's mind is a clean slate and a teacher could write anything on it. Others are of the opinion that a child is just like clay and a teacher like the potter could make anything out of it. Tania (2004) quoted Sanaullah (2002), project Director of Deer Kohistanas, alluded that teachers can play an important role in fostering environmental consciousness in the society; therefore more efforts are needed to sharpen the skills of teachers to integrate local environmental content in their teaching methods and activities. Since it is said that no system of education can be better than its teacher, it means that the teacher is the king pin in the teaching process and his qualification plays an important role in his impartation of skills to the learner.

From the fore-going research, it has been logically observed that teaching and learning are enhanced by the qualification of the teacher. It thus means that teaching qualification makes great contribution to the improvement of the teacher's competence in the production, selection and utilization of instructional materials, laboratory tools and equipment.

More so, other parameters should be taken into cognizance when considering student performance.

In a nut shed, the study has given an insight into the complex discussion of student achievement versus teacher`s qualification, and has open new research frontiers.

Not only teacher`s qualification should be the ultimate in teaching recruitment interviews, but other parameters are also of importance.

Recommendations/ Suggestions

This findings is expected to draw the attention of unqualified teachers to understand their shortcomings so as to enable them go for further studies and update their conceptual knowledge. The challenge that these findings pose to the government and our immediate environment is that adequately qualified and competent chemistry teachers, should be employed in most if not all the secondary schools and to create and maintain favourable condition of service for them if we want the performance of our children to improve.

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