STRATEGIES FOR ENSURING QUALITY STANDARD IN DEGREE CHEMISTRY EDUCATION IN ENUGU STATE COLLEGE OF EDUCATION (TECHNICAL) (ESCET), ENUGU

By

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Abstract

A study was carried out on the Strategies for ensuring Quality standard in Degree Chemistry Education Program me in Enugu state college of Technical (ESCET).The design of the study is survey method. One research question and two null hypotheses guided the study. The two null hypotheses were tested at 0.05level of significance. A structured questionnaire was used to gather data for the study. The study population comprised all Chemistry students of year one to year three students of 2011/2012, 2012/2013and 2013/2014 sessions and their lecturers numbering three hundred and sixty (360) persons. The sample and sampling technique are one hundred (100) students and random sampling technique. The instrument used is structured questionnaire. Data collected were analyzed using Mean (x) statistics while the null hypotheses were analyzed using t-test analysis. Results show that the mean (x) and standard deviation (SD) obtained are 112.34 and34.09 while the t-test analysis obtained the t-cal= 51.06 and hence t-critical was found as = 1.68. These indicate that the Hypotheses are significant. From the findings of the study, it was concluded that the adoption of strategies such as quality of programmes and syllabus and provision of requisite infrastructure and facilities like standard Chemistry laboratory and chemistry library for Degree chemistry Education did the magic. Provision of Chemistry library and quality lecturers like professors on Sabbaticals, Ph.DS(Permanent and sabbaticals) and M.Sc/MAs in their correct ratios of degrees as stipulated by National university commission (NUC) and a good number of quality students ensured qualitative education that earned the chemistry full accreditation

Introduction

A working and vibrant college chemistry laboratory should contain plenty of laboratory equipments. Akpan (2005) discovered that most secondary schools and colleges have chemistry laboratory in their schools while only 35% of them indicated they have enough equipment. According to Okeke (2011) these material resources should be at the disposal of the teacher to use when the need arises. Okeke (2005) discovered in her studies that these materials show high in efficiency management and performances in cognitive and psychomotor domains. The role of chemistry in the development of the scientific base of a country cannot be over emphasized and Nigeria is not an exception (Oloyede, 2010). Chemistry is one of the science subjects taught at senior secondary schools and colleges level. According to Okeke (2005) and Muhammad (2007) Chemistry students who have inadequate practical knowledge find it difficult to cope with some aspects of the course. Unfortunately majority of chemistry teachers in rural and urban areas do chemistry practical exercises only when instructions from WAEC arrives (Okeke, 2015). He further stated that such exercises are only in a hurry and is only on qualitative and volumetric analysis specific to the WAEC practical questions of that year in particular.

Purpose of the Study

The Study (i) determined the strategies that were ensured that earned chemistry department full accreditation unlike other departments (ii) May be such strategies may be replicated in the next visit of

team of a creditors from National University Commission (NUC) to other science departments more especially computer science in order to obtain full accreditation.

Research Question: The research question raised guided the study at 0.05level of significance.

What is the effect of quality indicators that ensured quality standard in chemistry department?

Hypotheses: The hypotheses formulated were tested at 0.05level of significance using t-test analysis.

Quality standard of chemistry department has no relationship with the students' academic performance.

There is no significant difference between the male and female quality lecturers that ensured quality standard.

Method

The study adopted the survey research design. The population of the study comprised all the degree chemistry students of year one to year three and their lecturers in 2011/2012, 2012/2013 and 3012/2014 sessions of ESCT in Affiliation to Nnamdi Azikiwe University Awka (NAU) numbering three hundred and sixty (360). The sample is 150 students and Lecturers while the sampling technique is random sampling. The instrument used is structured questionnaire. It was used to collect data. Data collected were analyzed using Mean and standard deviation (SD) while the t-test analysis obtained t-cal and hence t-critical was found

Results

The results obtained are presented in the tables in accordance with the research questions and hypotheses as shown below

1. What are the effects of quality indicators that ensured quality standard in chemistry department?

Table 1: Mean and SD of Lecturers and Students

Groups	N	Mean	Std. Deviation	Std. Error Mean
BES	50	63.0400	16.26686	2.30048
GES	50	59.3000	17.72724	2.50701
BCS	30	3.9667	2.52550	.46109
GCS	20	2.3000	1.34164	.30000

Hypotheses:

Ho1: Quality standard of chemistry department has no relationship with the students' academic performance.

Ho 2: There is no significant difference between the male and female quality academic lecturers.

Table 2 : Mean and SD of Students and Lecturers

GROUPS	N	MEAN	SD	Std.Error Mean
A	100	61.17	17.00	2.40553
B	50	3.13	1.93	0.38055

From Table 1 the Mean and standard deviations of Students and Lecturers are 112.34 and 34.09 while from Table 2 the t-test calculated and t-critical (P) found are 51.06 and 1.68 respectively. The Mean and SD of Quality indicators are 112.34 and 34.09. They are high enough. The quality indicators are directly proportional to quality standards and quality standards are also directly proportional to quality academic performance of chemistry department full accreditation. The t-cal obtained for quality indicators is 12.85 at df = 4. Therefore, t-critical or table value obtained is p = 1.77. Since t-cal is greater than the t-critical, the hypothesis for quality indicators is significant.

Table 3. **Mean and SD of Quality Indicators**

Groups	N	Mean	Std. Deviation	Std. Error Mean
QP	5	16.8000	3.03315	1.35647
SMA	5	16.4000	2.30217	1.02956
SQ	5	17.2000	1.92354	.86023
IF	5	17.2000	1.92354	.86023
SP	5	16.4000	2.30217	1.02956

QP= Quality Programmes, SMA = Staff Mix on Accreditation, SQ = Student Quality (Enrollment and Minimum std), IF= infrastructure, SP = Spaces (labs, lib, theatre, game fields, etc.

Table4:
T-test Analysis of Quality indicators

Groups	Test Value = 0				95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
QP	12.385	4	.000	16.80000	13.0338	20.5662
SMA	15.929	4	.000	16.40000	13.5415	19.2585
SQ	19.995	4	.000	17.20000	14.8116	19.5884
IF	19.995	4	.000	17.20000	14.8116	19.5884
SP	15.929	4	.000	16.40000	13.5415	19.2585

Discussion

Results show that the mean(x) and standard deviation(SD) obtained are 112.23 and 34.09 while the t-test analysis obtained the t-cal = 51.06. Hence, t-critical was found as 1.68. These indicate that the hypotheses are significant. From the fin dings of the study, it was concluded the adoption of strategies such as quality of programmes and syllabus and provision of requisite infrastructure and facilities like standard chemistry laboratory and chemistry library for degree chemistry education did the magic.

Provision of chemistry library and quality lecturers like professors on sabbatical leave, PhDs (permanent and sabbaticals) and MSc/MA in their correct ratios of degrees as stipulated by national University Commission (NUC) and a good number of quality students ensured qualitative education that earned the chemistry department full accreditation. The t-cal obtained for quality indicators 12.85 at df = 4. Therefore t-critical or t-table obtained= 1.77. Since t-cal is greater than the critical, the hypotheses for quality indicators are significant. The quality indicators are directly proportional to quality standards and quality standards are also directly proportional to quality academic performances of chemistry department full accreditation.

REFERENCES

Akpan E.U.U (2005) Issues of Qualitative analysis in SSCE Chemistry guidance for improving

> Students performance, Paper presented at a refresher course for secondary School Chemistry Teachers by Chemical Society of Nigeria, Jos Chapter 11-12th Nov

Oleyede, O. I. (2010). Enhanced Mastery Leaarnig Strategy on the Achievement and Self

> Concept in Senior secondary School Chemistry, Humanity and Social Sciences Journal

> 5(1),19-24

Okeke, O. J (2005). Effect of Students Prior Knowledge of Instructional Objectives on their achievement in Senior
> Secondary Chemistry. Un published M.Sc Thesis Thesis. Enugu State University of Science and Technology (ESUT).

Okeke, O J (2011) Effect of Mend Mapping Teaching Strategy on students interest, Achievement and Retention in Senior   Secondary School Chemistry. Unpublished Ph.D Thesis. University of Nigeria, Nsukka.

Okeke, O J (2015) Effect of Chemistry Practical on Students Interest and Achievement in Senior Secondary School Certificate. A Paper presented to the 4th South East Academic Conference held at Enugu State College of Education, (Technical) between

Okeke, O J (2015) Impact of chemistry Laboratory on the Academic performance of Students in Senior Secondary School   Certificate. A paper presented to the 4th South East Academic Conference held in Enugu State College of Education(Technical) between 9-12th Sept Sept

Okeke, O J (2015) Quality Assurance In Teaching and Learning in Tertiary Institutions in Nigeria. A paper presented to the Academic Forum (TAF) Titled QUALITY ASSURANCE IN TERTIARY EDUCATION IN NIGERIA held between September 17th -19