

GENDER DIFFERENCES IN RELATION TO MODE OF ENTRY AND ACADEMIC ACHIEVEMENT IN CHEMISTRY EDUCATION AMONG 200 LEVEL B.SC. ED. STUDENTS OF THE UNIVERSITY OF JOS, NIGERIA

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ABSTRACT

The study investigated gender differences in relation to mode of entry and academic achievement in Chemistry among B.Sc. Ed. Students of the Department of Science and Technology Education, University of Jos, Nigeria. Ex-post facto research design was employed. A sample of 93 students were randomly selected from the population of 200-level B.Sc. Ed. Chemistry students for 2017/2018 academic session. Two hypotheses were tested at 0.05 level of significance. A proforma was used to gather the information and one-way ANOVA was used to analyse the data. Result showed that there was no significant difference in gender differences and mode of entry in 21 core courses among the 200-level Chemistry Education students. The result from hypothesis one showed that there was a significant difference in the mean GPA of 200-level Chemistry Education students across the mode of entry in favour of Direct Entry (DE) students followed by JAMB (UTME) then Remedial (REMS). The study recommended that Chemistry/Chemistry Education lecturers should endeavour to strive to equally train both male and female students, irrespective of their mode of entry, equally when teaching the Chemistry/Chemistry Education students.

Key words: Academic Achievement, Chemistry Education, Gender Differences, Mode of Entry

INTRODUCTION

In almost all the tertiary institutions in Nigeria, remedial programme was introduced in order to meet the aspiration of the academically deficient students at O'level. However, today, it is not the case particularly in Nigerian universities. Nowadays, before students are admitted into the remedial programme, they must meet the entry requirements, thus, the period of ten months is no longer to rectify the academic deficiencies. In addition to that, such candidates must meet up with their JAMB cut off marks. In the university, there are three modes of entry, namely, Remedial (REMS), JAMB (UTME) and the Direct Entry (DE). All these three groups consist of students who have the entry requirements of passes at credit level in at least five subjects including English Language and Mathematics.

These requirements should either be obtained at one sitting or two sittings in the West African School Certificate (WASC), National Examination Council (NECO) or NAPTEB or its equivalent. The students that enter through UTME and REMS sat for the entrance examination set and conducted by the JAMB. Successful ones are admitted into the university. Those that enter through REMS must pass their REMS courses in addition to passing JAMB at and above the cut-off point. Despite all this, Chemistry Education students still perform poorly. The poor achievement could be attributed to many factors, ranging from teaching approaches employed by teachers, lack of interest on the part of the students, negative attitude of students, to lack of instructional materials. Other causes could be because students have great difficulty in getting the courses of their choice. More than half of the population of candidates that applied for remedial programme do so with the intention to get to study medicine after the programme. Unfortunately, majority of these candidates end up with a course different from their desired course of study. When such candidates are offered Science Education (Chemistry Education particularly) after their remedial

programme, they find it very difficult to accept becoming teachers. This is because in Nigeria, deciding to choose teaching as a career is a serious challenge. This is so because would-be teachers see other professions or jobs as more lucrative. Therefore, those who just stagger into studying educational courses are not likely to perform well academically and also to make good science (Chemistry) teachers. Most of these young people believe that there are born teachers and they themselves are not born to be teachers. This is a misleading challenge, since teachers need serious training and re-training to be more efficient and productive. The author believes that it is the poor remuneration for teachers that frighten these aspiring young people to take to teaching as a profession. With this trend of things, how can we produce quality science (Chemistry) teachers? Who will tone and respect the teaching professional ethnics, willing to teach the next generation as friendly, jovial, dominant and serious Chemistry teachers? Verdi (2009) opined that good teachers are those who know how little they know. Good teachers never boast, whereas bad teachers are those who think they know more than they don't know. They are poor performers who are not knowledgeable and as such cover up their weakness by blaming their students for lack of concentration

A friendly teacher is always amenable, adjustable and tries to narrow down the gap between teacher and students. He makes himself accessible to students generally, while a hostile teacher poses a frightening image which is inimical and as well, scores away students. These behavioural actions towards students are usually reactive rather than proactive. Jovial teachers add favour to their teaching with fun and humour. They often punctuate their lesson, present the lesson with humorous jokes to remove boredom. Jovial teachers are not so easily provoked since they often take comments from their students jovially (Rao, 2010). Strict teachers are no doubt good teachers but they expect the classroom to be dead silent for the business of teaching to progress. As such, strict teachers do not encourage their students to discuss in the class. Such teachers are however, highly knowledgeable and very uncompromising, and strongly believe in professional growth (Rao, 2010).

However, unserious teachers take dominant teachers are prototypes of strict teachers since their degree of strictness is higher. They are referred to as dictatorial, authoritarian or autocratic teachers. Dominant teachers hardly consider the sentiments, views and opinions of the students, whereas submissive teachers always succumb to the demands of their students. In several cases, students dictate terms to them. Striking the mean between dominant and submissive teachers leads to the production of ideal teachers (assertive teachers) whom Rao (2010) refers as best teachers. However, in practice, do we really have ideal teachers? Serious teachers are by nature serious in their work and they often teach without adding any touch of humour. They are however, very efficient and effective and they do not take anything for granted.

A quote from Arthur's excerpts says that:

The mediocre teacher TELLS. The good teacher EXPLAINS. The superior teacher DEMONSTRATES. The great teacher INSPIRES. The great teacher INSPIRES

Now as a professional science (Chemistry Education) educator, what must you do to inspire the science (Chemistry Education) students?

Therefore, achievement can be seen in this context as the level of success or failure, arising from an assessment of Chemistry Education students' understanding of all their core courses registered in 200-level using the 2017/2018 sessional examination. Academic achievement is a direct manifestation of learning effectiveness and a valid indicator to evaluate the effectiveness of teaching and education in higher education as well as the overall development of students (Zheng & Mustapha, 2022). Gender refers to social differentiation or cultural distinction between males and females and the attribution of certain roles on the basis of differentiation (Idyorough, 2010).

PURPOSE OF THE STUDY

To investigate the gender issues in relation to mode of entry in 200-level Chemistry Education, University of Jos.

HYPOTHESES

The following hypotheses were stated and tested at 0.05 level of significance:

Hypothesis One: There is no significant difference in the mean GPA of 200-level Chemistry Education students across the mode of entry.

Hypothesis Two: There is no significant difference in the mean CGPA of 200-level Chemistry Education students in relation to gender.

METHOD

The study employed ex-post-facto research design in which there was no treatment and manipulation of subject, instead, it involved the collection of data from records. The target population of the study comprised all the 200-level Chemistry Education students of 2017/2018 academic session. A sample of 93 students which consisted of 42 males and 51 females was used. The semester's scores of the students were collected from the level coordinator and one-way ANOVA was used to test the hypotheses.

RESULTS

Hypothesis 1: There is no significant difference in the mean GPA of 200-level Chemistry Education students across the mode of entry.

Table 1: Mean GPA of 200-Level Chemistry Education Students Across the Mode of Entry

Descriptives								
GPA								
					95% Confidence Interval for Mean			
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum
UTME	72	2.1325	1.00111	0.118	1.8973	2.3677	0.44	4.0
REMS	6	1.7933	1.12882	0.461	0.6087	2.978	0.27	3.0
DE	15	3.1613	0.78301	0.202	2.7277	3.595	1.4	4.3
Total	93	2.2766	1.04647	0.109	2.061	2.4921	0.27	4.3

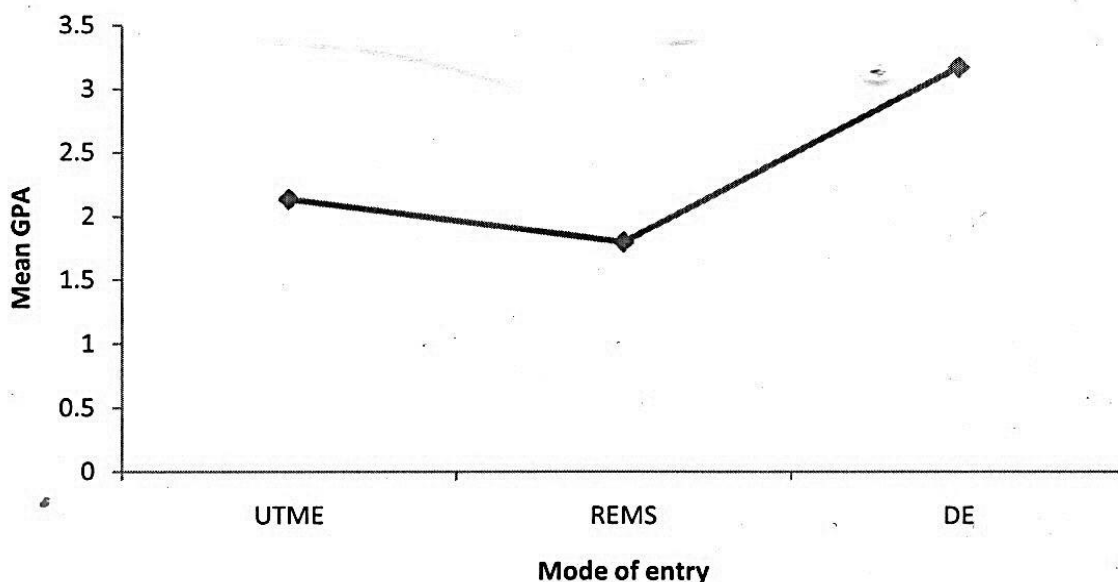
Table 2:

Multiple Comparisons						
Dependent Variable: GPA						
Tukey HSD						
(I) Mode of Entry	(J) Mode of Entry	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
UTME	REMS	0.33917	0.41564	0.694	-0.6513	1.3297
	DE	-1.02883*	0.27762	0.001	-1.6904	-0.3672
REMS	UTME	-0.33917	0.41564	0.694	-1.3297	0.6513
	DE	-1.36800*	0.4725	0.013	-2.494	-0.242
DE	UTME	1.02883*	0.27762	0.001	0.3672	1.6904
	REMS	1.36800*	0.4725	0.013	0.242	2.494

*. The main difference is significant at the 0.05 level.

Mean GPA Plot of 200-Level Students of Chemistry Education across Mode of Entry

A one-way ANOVA was conducted to compare the 200 level student's CGPA in Chemistry education for the three different mode of entry. Normality checks and Levene's test were carried out and the assumptions met. There was a significant difference in mean achievement in the mode of entry [$F(2,90)=7.649, p = 0.001$]. Post hoc comparisons using the Tukey test were



carried

out. There was no significant difference between REMS and UTME ($p = 0.694$). There was a significant difference between REMS and DE ($p = 0.013$). There was also a significant difference between UTME and DE ($P=0.001$). The results reveal clearly that those that came through DE have a mean CGPA higher than those that came through JAMB and REMS respectively.

Hypothesis 2: There is no significant difference in the mean CGPA of 200-level Chemistry Education students in relation to gender.

Table 3(a): Mean GPA of 200-Level Chemistry Education Students in Relation to Gender

Group Statistics					
	Sex	N	Mean	Std. Deviation	Std. Error Mean
GPA	Male	42	2.24	1.107	0.17
	Female	51	2.31	1.004	0.14

Table 3(b):

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower		Upper
GPA	Equal	0.34	0.56	-0.346	91	0.73	-0.08	0.22	-0.51	0.359

	variances assumed									
	Equal variances not assumed			-0.343	83.8	0.733	-0.08	0.22	-0.52	0.364

Reporting t-test of Independent: A t-test of independent was carried out and the output above clearly indicate that Male (2.24, S.D = 1.107) and Female (M = 2.31, S.D = 1.004), their GPA scores did not differ significantly, $t(91) = -0.346$, $p = 0.73$. The result portrays that the achievement of male and female is similar.

DISCUSSION

Based on the results of the study, Tables 1 – 3 showed that in GST 101 (Use of English) to PHY 205, DE students had the highest mean score of 3.16 with S.D 0.78, while the UTME students had mean score of 2.13 and S.D 1.00. Students who entered through REMS had mean score of 1.79, and S.D 1.13. Table 3 revealed that there was no significant difference in all the 21 core courses, Male students had the mean score of 2.24 and S.D 1.12, and female students had mean score of 2.31 and S.D 1.00.

CONCLUSION AND RECOMMENDATIONS

The findings of the study have shown that there was no significant difference between the academic achievement of male and female 200-level Chemistry Education students in relation to mode of entry in the 21 core courses. This is a justification to prove that the introduction of the remedial programme to remedy deficiencies at O'level should be encouraged. Therefore, the paper recommends that remedial lecturers should continue to maintain their standard of teaching and marking of students' scripts at this level. Discrimination based on sex in Chemistry subject should be discouraged and equal attention should be given to both sexes during teaching of Chemistry. Equally, the university authority should continue to admit more students in the remedial programme. Finally, the university authority should introduce a compulsory elective course and also give Chemistry Education the best academically sound remedial graduates to help produce atomically sound Chemistry teachers for the growth and development of Nigeria.

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