
GENDER DIFFERENCE IN ENROLMENT, GRADUATION AND ACADEMIC ACHIEVEMENT IN NIGERIA CERTIFICATE IN EDUCATION
BIOLOGY PROGRAMME AT FEDERAL COLLEGE OF EDUCATION, ZARIA.

BY

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ABSTRACT

This study investigated gender differences in enrolment, graduation of students and gender differences in academic achievement for Nigeria Certificate in Education Biology programme at Federal College of Education, Zaria. This study was motivated by findings of researches that the era of male dominance and supremacy in science and technology is fast becoming history. Ex-post facto research design was used. This research sought to verify this fact. A total sample of 1,672 (768 male and 904 female) students of Federal College of Education, Zaria who enrolled for an N.C.E Biology programme between 2007 / 08 – 2010 / 11 and graduated between 2009 / 10 – 2012 / 13 academic sessions respectively was used for the study. The sample was the total number of the students that graduated from the programme at the end of their third year. Data regarding students' enrolment and graduation were obtained from the examination and academic record office of the College. Analysis of the data using simple percentages and t – test revealed that more female enrolled for and graduated in Biology than their male counterparts. There was no significant ($P > 0.05$) difference in gender achievement in Biology for four consecutive years of students' graduations. This verified the findings of other researchers, that there is indeed gender parity in science academic achievement. Also concur with the Social Construction of Gender Difference Theories which argues that gender differences are socially constructed and influenced by factors such as stereotypical gender roles. Some of the recommendations proffered are: similar studies should be conducted in other higher institutions of learning which will illuminate the gender issues in academic achievement. The teaching of problem – solving using scientific techniques namely observation, measurement, formulating or testing hypotheses, experimentation, drawing valid conclusions must formed the springboard of our teaching and learning process.

INTRODUCTION

Education can be defined as a process to attain acculturation through which the individual is helped to attain development of his or her potentialities so as to achieve perfect self – fulfillment (Okafor, 2006). It can be viewed as the cultivation of whole person which

involves intellectual, affective, character and psychomotor development. This involves human resources development and constitutes the ultimate basis for wealth of nations. This opinion is reasonable because human beings themselves are the active agents in the accumulation of capital, exploration and exploitation of natural resources, building of social,

economic and political organizations that influence national development. It is education that produces the best Presidents, Governors, Parents, Politicians, Medical doctors, Teachers, Engineers among others. Therefore, no nation can be richer than the level of the educational sector (Odukoya, 1995)

World – wide education is perceived as “instrument par excellence for affecting national development” and the teacher is the fulcrum on which the entire education enterprise revolves. As the Nigerian society is evolving, the need for qualified teachers is ever expanding. Consequently, there is growing pressure on the teacher education programmes to provide the required teachers in quantity and quality. While the demand for qualified teachers is ever increasing, the enrolments into teacher education programmes have continued to dwindle (Isyaku, 2002). Sharehu (2009) has expressed the same fear concerning the dwindling rate of enrolment into the National Teachers’ Institute Kaduna teacher training programmes. The development posed a serious challenge to the production of quality teachers for the nation’s school system and the institute’s continued existence. This is a global problem; Freedberg (2013) reported the same scenario in California U.S.A, where enrolment in teacher preparation programmes in California is continuing to decline at a precipitous rate. A report for from California Commission on teacher credentialing, indicates that 26,446 students were enrolled in teacher preparation programmes in 2011 – 2012, a 24% reduction from the previous year’s total of 34,838 students. The declining enrolments are echoed by similarly declining numbers of teaching credentials.

One of the major challenges of science education in Africa is the problem of gender disparity. As we all know there is a particular history that presented science as male subject and thus females were not encouraged to take science courses (Asabere-

Amayaw, 2013). Gender differences in science participation and academic achievement have received much attention in science education literature. There appears, however, contradicting, conflicting and inconclusive views especially with regards to achievement. On gender enrolment, Dawson (2000), reported that females are less interested in the physical sciences than their male counterparts. Harding and Parker (1995) pointed to poor girls’ participation in science, especially in Chemistry and Physics. In most Nigerian schools, Edeh (2005) reported of low enrolment of students in science relative to the high enrolment in arts and other social sciences at the senior secondary level. Specifically with reference to gender, Okeke (1990); Maduabum (2006); Anaekwe and Nnaka (2006), remarked that females are grossly under represented at all levels of education in Nigeria in terms of enrolment, participation and achievement. Inequality between the gender (sexes) in enrolment and achievement in science has also been reported by Parker, Rennie and Fraser (1996).

With regards to enrolment in science education, Ejifugha and Ogueri (2011) reported that the female gender is dominant in the College of Education. Probably, because teaching at the primary and secondary school levels are considered mainly to be feminine. Enrolment statistics of females being higher than males in Federal College of Education is obviously a result of emphasis on promoting science and technology education of the feminine gender. However, Afuwape and Oludipe (2008), Ogunleye and Babajide (2011) in their studies remarked that the era of male dominance and supremacy in science learning is fast winding up. Their positions were based on their independent studies involving integrated science and Physics students in which the authors recorded statistically no significant difference both in achievement and practical skills of the male and female students. This research finding tends

to conjecture that gender inequality has been resolved. This is indeed good signs for sustainable development in Nigeria considering over 50% of the Nigerian population is dominated by the female folks (Eze, 2007). But such a conclusion lacks enough support and calls for much research in all levels of education to buttress it. Also, research findings by Jones, Howe and Rua (2000) and Dawson (2000) have indicated that female enrolment in the physical sciences drops as they get to high school physics stage. There appears to be no information regarding gender enrolment pattern at high school biology stage as in the Colleges of Education. This study is positioned on this literature.

Objectives of the study:

- i. Investigate gender differences in enrolment and graduation of students for a Nigeria Certificate in Education (N.C.E) biology programme of Federal College of Education, Zaria.
- ii. Determine the gender differences in academic achievement of the biology students at graduations in Federal College of Education, Zaria.

Research Questions:

This study sought to address two research questions and to test one hypothesis as stated below:

1. What is the gender difference in enrolment and graduation of students for N.C.E biology programme of the Federal College of Education, Zaria?
2. What is the gender difference in achievement of biology students at graduation in Federal College of Education, Zaria?

Hypothesis

Based on the above research questions, one hypothesis was tested at 0.05%.

H₀: There is no significant gender difference in academic achievement of biology students at graduation.

H_a: There is significant gender difference in academic achievement of biology students at graduation.

METHODOLOGY

The study made use of ex-post facto research design as it seeks to find out the effects of what had already occurred. Moreover, the variables under study could not be manipulated. A total of 1,535 (718 male and 817 female) biology students drawn from a population of 1,672 biology students constituted the sample for the study. The population consisted of entrants for N.C.E biology programme of Federal College of Education, Zaria Kaduna state in Nigeria from 2007/08 to 2010/11 academic sessions. The N.C.E programme is normally billed for three years. The sample was the total number of the students that graduated from the programme at the end of their third year (i.e 2009/10 to 2012/2013 academic sessions) respectively. The data were purposively collected from the examination and academic records office of Federal College of Education, Zaria. The entries and graduations by gender were analysed using simple percentages to answer the first research question. The means and standard deviation were applied to the students' Cumulative Grade Point Average (C.G.P.A) at their graduation years to answer the second research question. The College grading system at graduation which is a standard all over the Colleges of Education in Nigeria is shown below:

Range of G.P.A	Letter Grade	Remark
0.00 – 0.99	F	Fail
1.00 – 1.49	E	Pass
1.50 – 2.39	D	Pass
2.40 – 3.49	C	Merit
3.50 – 4.49	B	Credit
4.50 – 5.00	A	Distinction

A t – test analysis of the difference in the CGPA's was used to test the null hypothesis. The results of the analysis are presented in Tables 1 and 2.

RESULTS

Table 1: Analysis of Students' Enrolment and Graduation by Gender.

Year of Entry	Total Entries	Entry by Gender		Year of Graduation by Gender Attrition					
		M	F	graduation	M	F	M	F	
2007/08	350	146(42%)	204(58%)	09/10	133(38%)	194(55%)	13(4%)	10(3%)	
2008/09	448	218(49%)	230(51%)	10/11	198(44%)	213(48%)	20(4%)	17(4%)	
2009/10	534	273(51%)	261(49%)	11/12	256(48%)	241(45%)	17(3%)	20(4%)	
2010/11	340	131(39%)	209(61%)	12/13	108(32%)	193(57%)	23(7%)	16(5%)	
Total	1,672	768	904		695	841	73	63	

The results in Table 1 shows that more female students enrolled for biology programme than their male counterparts in all the years under study except in 2009/10 session where more male students (273) than female students (261) enrolled for the programme. In terms of graduation by gender, more female students graduated in 2009/10, 2010/11 and 2012/13 sessions as shown in Table 1. In the 2009/10 session where more

male than female students enrolled, the graduation followed the same pattern. That mean more male students (256) graduated than the female students (241). In all the years of entries, the number of students that could not graduate at the scheduled time or perhaps dropped from the programme was higher for males than females, except in 2009/2010 where more male students enrolled than the female students but more

female students (20) could not graduate at the expected time or dropped from the programme.

Table 2: Results of t – test Analysis of Students' Achievement by Gender at the End of Graduation Years

Year of Graduation and above	Total No graduating Graduands	No graduating with merits		No graduating with ordinary		No of candidates		X, SD of Students' CGPA		t - value	
		passes		carryovers							
		M	F	M	F	M	F	M	F		
2009/10	327	81	119	10	22	39	56	X= 2.83	X= 2.98	0.15(ns)	
								SD= 0.87	SD= 0.97		
2010/11	411	136	141	35	44	29	26	X= 2.87	X= 2.83	0.40(ns)	
								SD= 0.95	X= 0.87		
2011/12	497	142	140	47	30	70	68	X= 2.66	X= 2.70	0.58(ns)	
								SD= 0.95	X= 0.87		
2012/13	300	90	109	14	30	25	32	X= 2.92	X= 2.77	1.39(ns)	
								SD= 0.88	SD= 0.90		
Total	1,535	449	509	106	126	163	182	-	-	-	

ns = not significant at 0.05 level of significance.

The result of the t – test analysis of students' achievement by gender shows that there is no significant gender difference in academic achievement of the biology students at the end of their various graduation years from 2009/10 to 2012/13. Thus, the null hypothesis is accepted.

DISCUSSION

The results shows that the female students enrolled for N.C.E biology programme at Federal College of Education, Zaria were more than their male counterparts in virtually all the years under study. This

is a further affirmation of earlier studies by Ejifugha and Ogueri (2011) where female enrolment in Alvanikoku College of Education, Owerri Imo state was higher than that of their male counterparts. Probable reasons are: teaching at the primary and secondary levels is considered mainly to be feminine; consequences of the revised National Policy on Education (2004) which emphasized promoting science and technology education of the feminine gender. More females entered for the programme, more also graduated than the males for virtually all the years. What is not very clear from this study is that whether the high number of males who

could not graduate at the time expected actually dropped from the programme or graduated year or years later.

Similar studies were carried out in N.C.E Chemistry programme were more male students enrolled for the programme than their female counterparts (Dawson 2000; Edeh 2005 & Akpan 2013). More males also graduated than their female counterparts, which is the contrast of the study in question.

In terms of achievement, the study reveals no significant gender difference in achievement for four consecutive years of students' graduation. This result, undoubtedly agrees with the findings of Ejifugha and Ogueri (2011), Ogunleye and Babajide (2011) and Akpan (2013) that the era of male dominance and supremacy in science learning is fast winding up and becoming an issue of the past. It was a serious problem because the post – independence Nigeria society had the male – female ratio in her educational system predominantly focused on males in public schools (Asabere-Ameyaw, 2013). Therefore gender equity in science learning is paramount for sustainable development in Nigeria.

CONCLUSION

Female students enrolled and graduated more from the N.C.E Biology programme for the academic sessions 2009/10, 2010/11 and 2012/13 except for 2011/12. There was no significant gender difference in achievement for the four consecutive academic sessions in F.C.E Zaria. Gender parity in achievement portends great hope for overcoming challenges in order to sustain development in Nigeria, considering the large proportion of females in the country's population. As we all know that development in the 21st century is knowledge driven.

RECOMMENDATIONS

It is recommended that similar studies be conducted in other Colleges of Education, Polytechnics or Universities base on the geopolitical zones or the nation at large to make comparative analysis which will illuminate the gender issues in achievement. Beside this, the teaching of problem solving using scientific techniques namely observation, measurement, formulating or testing hypotheses, experimentation, drawing valid conclusions adopted in F.C.E Zaria in teaching and learning processes to remove the gender inequality should be sustained and disseminated to sister institutions of learning.

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