Comparatve Study of Enrolment and Academic Performance of Science Education Students in Ralation to Gender: A Case Study of Federal University Gusau

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COMPARATVE STUDY OF ENROLMENT AND ACADEMIC PERFORMANCE OF SCIECNE EDUCATION STUDENTS IN RALATION TO GENDER:

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A RESEARCH WORK SUBMITTED TO THE DEPARTMENT OF SCIENCE EDUCATION, FACULTY OF EDUCATION, FEDERAL UNIVERSITY GUSAU, IN PARTIAL FULFILMENT FOR THE AWARD OF BACHELOR OF SCIENCE DEGREE IN BIOLOGY EDUCATION.

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i

CERTIFICATION

This research project has been carefully supervised and approved as meeting part of the requirement for the award of Bachelor of Science Education (Biology) in the Department of Science Education, Faculty of Humanities and Education, Federal University Gusau.

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ii

DEDICATION

This research project work is dedicated to God the Almighty our shield and giver of wisdom. And as well as to our dearly beloved parents and entire family whose prayers, support and blessings are always consistent during this course to make our dreams come true.

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To God be the Glory great things he has done. It is with an utmost gratitude and all sense of humility we hereby reverence the name of the Almighty Allah who alone deserve our thanks, praise, honour and adoration and has been our source of inspiration throughout this project work.

To our very own able and committed supervisor Mal. Akilulsma'il we wish to express our profound gratitude for a job well done who did not only supervised the work but also use his time to go through the manuscript so as to effect necessary correction and equally made suggestions that will suit to the success of this project work, Sir we highly indebted. Also, our appreciation goes to Mr.Aliuforhelping us with the analysis of the data collected.

We will also not hesitate in rendering a warm applause to our Head of Department Dr. Umar Sodangi and to the Project Co-ordinator Mal. Abdullahi Bello who both provides us with the necessary requirement to obtain the data used (i.e list of admitted students and their final CGPA). Avery big thanks to the University ICT management and the University Academic Secretary for providing us with all the needed information. To all our lecturers especially from Biological Science Department, we say thanks for the knowledge impacted to us, may Allah reward you all.

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ABSTRACT

This study makes a comparative analysis in enrolment, graduation and academic achievement in context of gender of the first graduated science education students of the Federal University Gusau. The study was inspired by findings of researches that the era of male dominance and supremacy in science and technology is fast becoming history. This research sought to verify this fact. Ex-post facto research design was used. A total sample of 255 (191 males and 64 females) students of Federal University Gusau, who enrolled for Science Education programmes in 2014 and graduated in 2018 academic sessions respectively were used for the study. Data regarding students' enrolment and graduation were obtained from the examination and academic record office of the university. Analysis of the data using simple percentages and t-test revealed that more female enrolled in Biology and chemistry education than other programmes, while Mathematics education had least of female enrolment. There was no significant (P<0.05) difference in terms achievement, area of specialization and the percentage of graduation in respect to gender of students were found. Some of the recommendations proffered are: teaching of science subjects especially Mathematics and physics should be made attractive and less feminine in order boost more female enrolment in such discipline, similar studies should be conducted in other higher institutions of learning which will illuminate the gender issues in academic achievement.

v

TABLE OF CONTENTS

CHAPTER ONE

INTRODUCTION

CHAPTER TWO

LITERATURE REVIEW

CHAPTER THREE

RESEARCH METHODLOGY

CHAPTER FOUR

DATA PRESENTION AND ANALYSIS

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

LIST OF TABLES

x

xi

CHAPTER ONE

INTRODUCTION

1.1   Background of the study

The major role of education in any nation is to prepare individual to function as responsible competent community members. In any environment one operate a members of roles since there is more to life after school than employability with changing trend in the world today traditional academic performances seems not be meet the social needs of individuals again.

Education can be defined as a process to attain acculturation through Cohens, the individual is helped to attain development of his or her potentiates so as to achieve perfect self-fulfilment (Okafor 2006).

According to (Odukoya, 1995) View education as the cultivation of whole person while involves intellectual affective character and psychomotor development. This involver human being themselves are the active agents in the accumulation of capital,

1

exploration and exploitation of nature resources building of social economic and political organization that influence national development. It is education that produces the best presidents, governors parent political medical doctors, teachers, Engineers among others. Therefore, no nation can be richer than the level of the education sector.

Education must therefore provide them with skills necessary to enter the world of world ethics. These goals can be successfully be achieve through science education which in it, the individuals are more provided with skills tab information competitive. e.t.c

This makes science education as an important segment of location education which prepares and produces self-reliant and tab creation through the following area teaching in private and public schools, an extra lesson teacher, work in the office as offered by government etc. All these is to produces a competent teacher lecture in a nation

Science education according to Nock(2002) is that area of education which concert with acquisition of skills requiring professional preparation for in science leaching and use to solve local and global problems.

1.2   Statement of the problem

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 to participate. This study, in which most participants were female, showed that media design activities significantly increased their participant students' attitude scores in science and media design activities. Hence, media design activities in the context of STEM have the potential to increase the attitudes of female students toward STEM fields.

1.3   Objective of the Study

The objectives of this research are;

1.   To determine the association between the gender and the enrolment in the area of specialization of the first graduated set of science education students in Federal University Gusau.

2.   To determine the difference in academic achievement of male and female science education students at graduation at Federal University Gusau.

3.   To find out the difference in academic achievement of science education students at graduation on the basis of their area of specialization at Federal University Gusau.

4.   To determine the association between the gender and the graduation status of the first graduated set of science education students at Federal University Gusau.

1.4 Research Questions

This research project sought to address the following research questions;

1. What is the gender difference in enrolment of the first graduated set of science education programmes of Federal University Gusau?

2. What is the gender difference in graduation of the first graduated set of science education programmes of Federal University Gusau?

3. What is the gender difference in academic achievement of the first graduated set of science education students of Federal University Gusau?

4. What are the mean difference in academic achievement of the first graduated set of science education students on the basis of their area of specialization in Federal University Gusau?

1.5 Hypotheses

$H0_1$: There is no significant association between the gender and the enrolment in the area of specialization of the first graduated set of science education students

6

H0$_2$: There is no significant difference in academic achievement of male and female science education students at graduation.

H0$_3$: There is no significant difference in academic achievement of science education students at graduation on the basis of their area of specialization.

H0$_4$: There is no significant association between the gender and the graduation status of the first graduated set of science education students

1.6 Significance of the Study

The findings of this study will be useful to science education teachers, students and other stake holders as:-

i. It will help science education teachers to identify problem that bring the issue of gender inequality, in order to make some science more attractive to feminine such as Mathematics and Physics.

ii. It will assist other students that were interested in conducting this type of research, as this work has to be carried out in the next five consecutive years of graduation.

iii. It will enable Government to initiate Girls-Child Education Programme, such as, Women Continue Education Programme, Females Education Programme e.t.c, when developing education, as female's enrolment keep dropping in many communities in Nigeria.

iv. It will also enable Government to embark on face-to-face interactions and enlightenment campaign against disparity and to make society parity fair towards the attainment of basic knowledge and science education.

v. It will help societies to overcome the socio-cultural factors which prevent females to be enrolled in to tertiary institutions, as in most cultures' women are considered as home makers especially in rural part of Nigeria.

1.7   Delimitation of the study

The study will be delimited to the comparative study of the enrolment, graduation and academic performance of male and female students in science education at Federal University Gusau (FUG).

1.8   Definition of Terms

SCIENCE: Is a systematic enterprise that build and organized knowledge in the form of testable explanations and prediction about the universe. Alber Einstein 14/04/1879

SCIENCE EDUCATION: Is the field concerned with sharing science content and process with individuals not traditionally considered part of the systematic community.

ACADEMIC ACHIEVEMENT: The performance is the extent to which a student, teacher or institution has achieve their short or long – term educational goals. Cumulative G.P.A and completion of educational bench marks such as secondary, diplomas and bachelor's degree represent academic achievements.

ACADAMIC: Is use to describe work or a school, college, or university that places emphasis on studying and reasoning rather than practical or technical skills. (Iduwole 2006). To effectively carry out thus study, data will be generated from both male and female students undergoing undergraduate programme in science education and lectures in the department.

CHAPTER TWO

LITERATURE REVIEW

2.0   Introduction

The aim of this chapter is to review the different perceptions and conscious understanding of male and female academic performance in the field of biology education in federal university Gusau. Therefore, this chapter will be discussed under the following sub-heading below:

2.1   Brief History of Federal University Gusau

Federal University Gusau, also known by the acronym FUGUS located in zamfara state Nigeria was one of the last threeproposed new university in 2010.The implementation of the establishment of nine universities, while the second phase involving the remaining three universities in including federal university Gusau was establishing in 2013 with three faculties humanities and education management and social and science

The academic year of the university consist of two semesters of 17 weeks each under the faculty of humanities & education are the following departments

i   Department of science education

ii   Department of language & culture

iii   Department of educational foundation

iv   Department of English and literature

v   Department of Arabic & Islamic

vi   Department of history & International studies

"The vision of the university"-is to be a renowned outstanding university, dedicated to excellence in teaching, research, science, and the protection of truth and the liberty ofman.

"The mission of the university"- is to generate and expand human knowledge and capacity to transform society and to create the positive change we all constantly seek the cherish in partnership with various stakeholder.

2.2   Concept of Education

Education is a dynamic concept. It's meaning changes from time to time. It is interpreted by different person from their own background and ideals. So it's psychological and philosophical connotation vary from one another. It is also given new meaning from national point of view, the goals and aspirations of the nations

The word "Education" has been derived from the latin word "Educatum" which again comprises two word "e" and "duco"meaning out of and to lead, respectively. The word Educatum means to lead out the inside to outside (to bring out inner abilities). Educationist also trace out the root of education, in two other latin words "educere&educare.The former meaning development or bringing out and the later meaning enhancement, improvement and progress.

Education is a process through which the inborn qualities or latent power of the child are improved and unfurled so that is personality is developed.

According to Ajayi and Salami, Adamu 2003, they said all education requires that programs of activities must be specified and organized to which an individual must be exposed and which must be acquired in order to change or refine his behavior on education.

2.3 Concept of Teaching

The chief task of education is above all, to shape man or guide the evolving dynamics through which man forms himself as man. Teaching traditionally, is the act of impacting instructions of the learner in the class-room situation. Teaching in a modern concept is to cause the pupil to learn and acquire the desired knowledge, skills and also desirable ways of living in the society.

2.4 Brief history of Science Education

Prior to 1859, no science was taught in any in Nigeria. At the establishment of the first senior secondary school (the C.M.S grammar school, Lagos) in Nigeria in 1859, arithmetic, algebra, geometry and physiology were introduced into the school curriculum (Omolewa, 1977; Adeyemo 2003 & Sunday 2010). A number of secondary and teacher training institution were found founded between 1859 and 1927, and their curriculums were science subjects friendly. These science subject include astronomy, chemistry, physiology, geology and botany Omolewa (1977), and Sunday, (2010) reported that science teaching and learning suffered in the hands of teachers and students; entry and performance at external examinations were very poor.

When the Phelps-strokes funded education communication visited West Africa in 1920, it found that the state of science education was deficient, consequently, a strong recommendation for the inclusion of science subjects in the curriculum in all science schools was even then, very few science teachers were available in a few for long time, "the provision for, and method of teaching were science were very unsatisfactory" (Omolewa, 1977 Adyemo, 2003 Sunday, 2010).

Before 1960, classics and arts subjects were emphasized in most Nigeria secondary schools' general science was being taught in lower forms of secondary schools. The government and missionary schools taught biology, chemistry and physics in the senior forms presumably due to availabilities of science teachers and equipment. Health science was taught and taken at the school certificate examination as an alternative to biology in the final year of secondary school course. The science content in schools dictated by an external examination board (London University Examination syndicates) with little or no regards to peculiarities in Nigeria (Ivowi, 1984; &Adeyemo 2003). Science teaching and learning in schools was in fact a privilege. The ministry of education inspected and recommended schools for recognition of science teaching and learning and for West Africa Council (WAEC) approval to present candidate for science subjects at the school

certificate examinations. In most cases, the order of approval was usually biology, chemistry and physics. In a few cases, a school had approval for the threescience subjects at the time (Ivowi, 1983; Adeyemo, 2003; &Sunday, 2010).

The attainment of political independence in 1960 marked the start of a new era a number of activities in Nigeria. Modification on the basis of nationalism became a common feature soon after 1960. In education, more institutions were established to cope with the increased demand for formal learning with special emphasis on increased demand for formal learning with special emphasis teaching and learning especially at the secondary school level. The members of courses available in our educational institutions were increased and these courses were made more relevant to the needs of the county. In particular, science, agriculture and technical courses began to acquire their due position in the scheme of things. By the end of the first ten years of independence, Nigeria curriculum development movements became established and concrete effort at innovations had begun to manifest their reality (Ivowi, 1984;& Sunday, 2010). The experiments in education soon after independence, typified by the events and the comprehensive high school, Aiyetoro, the polytechnic (the technical college) Ibadan, has proved so encouraging during the period that a number of activities aimed at improving

education generally began. Curriculum development conference and workshops were held between 1969 and 1975 culminating in the production of science curriculum resources for both primary and secondary levels and the national policy statements on education by our various governments were affected to have received appropriate attention in deferent communities of the country (Ivowi, 1982, &Adeyemo, 2003).

2.5   Concept of Science Education

Science education is the production of citizen who is creative, critical, analytical and rational. For this reason, science for citizenship has been discussed as an important goal of science education (Kolstoe, 2001) Longbottom and Butler (1999) refer to science education that should be designed for the general population rather than for a specialist group of future scientists and that should lead to empowerment in some general sense given citizen more control or decision-making ability. To do this, price and cross (1999) observed that science education should give pupils a basis for understanding and for coping with the lives they should be given applications and effects of science in their personal and social life. Scientific literacy should be embedded in context that promotes a socially responsible and competent citizen (Hurd, 1998 Science for citizen is an important goal (Jenkisn, 1998, Duggan &Gott 2002, 1998, Kolstoe 2001).

This is a challenge for school science education. Therefore, this raises student as citizen based on the view of science as knowledge and traditional education view of cognitive learning, science education focused on a long –term impacting of knowledge in the different branches of science.

2.6 Teacher Education in Nigeria

Although Teaching Education Both Pre and in servicesPrograms Are Offered in Nigeria By Different Teacher Education institutions (as provided in the National policy on Education), and varying degrees of success recoded, various problems still confront the program with fair reaching consequences in Nigeria's Educational System.

Teachers Education refers to professional education of teaching towards attainment of attitudes, skills and knowledge considered desirable So as Make them efficient and effective in their work in accordance with the need of a give society as any point in time. Every society requires adequate human and material resources to improve the social organization preserve the culture, enhance economic development and reform the political structures.

Education is seen as a prerequisite for quality manpower development and creation of wealth, a sure path to success in life and service to humanity thus, teachers

have important role to play to adequately prepare the young for their roles in this society in order to achieve the set national objectives Education is an inevitable tool for sustainable development and a vehicle for advancing the frontier of knowledge (Abdul – Kareem 2001).

2.7   Teachers Professional Qualification

Teacher qualification refers to academic and professional qualifications that enables a person to become a registered teacher at all levels of education. It also relates to the acquisition of relevant knowledge, skills, competence, and creativity needed for quality productive engagement in the teaching profession. Darling, (2007) defined, a well quality teacher as one who is fully satisfied and hold the equivalent of a major in a field. Osuji (2009), teacher education refers to profession education of teacher towards attainment of attitudes, skills and knowledge considered desirable so as to make them efficient and effective in their work in accordance with the need of the society. Wikipedia (2014), define teacher education as the policy and procedures design to equipped prospective teachers with the knowledge, attitude, behavior and skills they require to perform their task effective in the classroom. A qualified teacher is a teacher who has

earned credentials from an authoritative source such as the government, a higher education institution or a private source (Wikipedia 2017).

In England and Wales, teachers in the maintained sector must have gained Qualified Teacher status (QTS) England or the General Teaching council for Wales. There are many paths in which a person can work towards gaining their QTS. The most popular is which have completed a first degree (such as a B.A or B.Sc) and then a postgraduate Certificate in Education (PGCE) other methods include a specific teaching degree or on-the-job training, such as a school. All qualified teachers in England must serve, after training, a statutory one year indication period that must be passed in order to remain a registered teacher. In Wales, this period a teacher is known as NQT (New Qualified Teacher). School are obliged to provide guidance, support and training to facilitate the NQT`s success during this year. Local education authorities are also obliged to provide professional development opportunities.

Teacher qualification in Nigeria, in the past to teach in primary schools a person needed certificate grade II (TCGDII) from four years of secondary schools at a grade II teacher training college. These were phased out after 1998 when the Nigerian Certificate of Education (NCE) became the require diploma for all primary and junior secondary

school teacher. In 1996, out of approximately 420000 primary school teachers in the country, about 80 percent had either the NCE or PGDE. The government creates the National Teachers Institution (NTI) in 1978 to conduct programs that will upgrade teacher qualification to the NCE level, with most of this training carried out by distance learning.

Between 1993, and 1996, the NTI graduated 34,486 in the NCE distance learning programs. In 2000, it trained 20000 teachers. NTI also conducts workshops and conference and curriculum development in other areas of teachers training. To teach in senior secondary school a person must have either a bachelor's degree in education or bachelor's degree in subject field combined with a post graduate diploma in education.

Nowadays, teacher education program in Nigeria is categorized into three levels on the basis of training and certificate. These includes: Nigeria Certificate in Education (NCE), which is run for a minimum of three years and maximum of five years, bachelor's Degree in Education (B.Ed, B.Sc(ed), and B.A(ed), it's provides professional training in pre-service and in-service auxiliary teachers, M.Ed, and the Ph.D. Certain basis requirement are needed for teachers training before one can gainfully be certified as a qualified teacher.

2.8 Gender Disparity in Science Teaching

Education is the method by which a society transfer from one generation to the next its knowledge, culture and values. The nature and expected function of education reflect the importance of education in any society. Education serves, the society in various ways, which include to, preserve, rediscover and transmitknowledge. It is a catalyst for bringing radical changes to existing culture and for preparing the student for the future. Education has been concerned with the promotion of individual development and social welfare for long.

The full benefit of education can be derived only when there is no bias in the gender concept a society holds. The need for gender complementarity goes beyond mere lending of helping hands for effective change to take place, females must be encouraged to develop interest in all disciplines, especially in science and technology which has been known for long as the realm of man alone for effective social transformation therefore there is need for both formal and informal education to address the gender in balance in society that prevents females from being at their optimum best in the development race.

2.9 Gender Enrolment rate of Prospective Science Teaching in Nigerian Tertiary Institution

Evidence of gender gap in the trend and pattern of enrolment in Nigerian universities was observed by different researcher (Ezeliora&Ezeokana, 2010; Imhabekha; 2003, etc.). the turnout of graduates in Nigerian universities according to NUC report on university annual review, showed that from 2007-2005, males who obtained master'sdegree were 44,337 (i.e. 72.79%) while female were 16,567 (i.e. 27.20%) for graduates with doctoral degree for the same period males were 2,587 (64.01%) and females were 798 (23.57%).

There was also low evidence of female enrolment in science and technology related courses. Gender imbalance in student university enrolment has been attributed to and many factors like traditional and cultural norms, attitudes and prejudices religion poverty ignorance (Nzewi 1996). Gender stereotyping rooted in cultural values and practices has led to some courses constructed as being muscling and feminine. When any female is pursuing a male-labeled profession and vice-versa he/she taken as being abnormal (Imogie 2007).

CHAPTER THREE

RESEARCH METHODOLOGY

3.0   Introduction

This chapter explains in details the methods and procedures of the research study, it also describes the method adopted in carrying out the research study under the following sub-headings:

➢ Research Design

➢ Population of the study

➢ Sample and sampling techniques

➢ Instruments for data collection

➢ Procedure for data collection

➢ Data analysis procedure

3.1   Research Design

The research design used for this study was an expost-facto experiment research design. According to Kerlinger (1964), defined expost-facto research as: that research in

23

which the independents variable(s) have already occurred and in which the researcher starts with the observation of a dependent variable(s). He then studies the independent variables in retrospect for their possible relations to, and effect on the dependent variable(s).

AryJacobs and Razavieh (1972) suggested the basic purpose of expost-facto research is to discover or establish casual or functional relationship among variables and that careful investigators prefers to speak on functional rather than causal relationship.

Thus, expost-facto experiment type of research design was considered and found to be more suitable since the study conducted was to ascertain a comparative study of academic performance between male and female students in science education in Federal university Gusau.

3.2   Population of the Study

Population according to Crowler (2008) is generally a large collection of individuals or objects which constitutes the main focus of the research. The population therefore, for this research consists of the 2014/2015 academic session entrants for

science education program of Federal University Gusau which includes B.sc. Ed (Biology), B.sc.Ed. (Chemistry), B. sc Ed (Physics), and B.sc. Ed Mathematics.

Table 3.1List of Science Education Program of federal university Gusau in 2014/2015 academic session and their population

S/No.	Program of study	Students population
1.	B.SC. Ed (Biology)	95
2.	B.SC. Ed (Chemistry)	81
3.	B.SC. Ed (Physics)	45
4.	B.SC. Ed (Mathematics)	3

3.3 Sample and Sampling Techniques

A sample in the context of scientific research and statistics, is a representative subset of a population. According to Cambridge Dictionary (2010), a sample is a subset of a population select from measurement, observation or questioning to provide statistical information about the population. The sample was the total number of the students that

graduated from the department of science education at the end of the fourth year i.e. 2017/2018 academic session.

3.4   Data Collection Procedure

The data collected for this research work is from the admission list of 2014/2015 academic session of science education student. The data work and information was achieved from the office of the academic secretary who is responsible for the admission and student result lists. Through following the due process where the researchers applied for permission through the project co-coordinator who in turn write to the academic secretary in approval for the data to be released to the researchers. Though at the beginning data was collected from the department of science education who provided the CGPA (cumulative grade point average) of the students under confidentially by the Head of the department (H.O.D) science education i.e. (the names and admission number of each student were cut out) leaving only the CGPA of the student.

3.5   Instrument for Data Collection

The instrument for data collected for this research work is from the admission list of 2014/2015 academic session of science education students. As well as from their final CGPA i.e. (cumulative grade point average) result. In education research instrument are the tools used in collecting and gathering data. It is therefore recommended that the researcher must ensure that the instrument chosen is valid and reliable. The validity and reliability of any research project depends to a large extent on the appropriateness of the instrument. As clearly stated the data collection instrument were only two and there as follows:

   i.   Student admission list

   ii.   Student CGPA (cumulative grade point average) result.

➤ Students' academic admission refers to the right to follow the course after a review of the academic background and professional project of the applicant. It is also a university or college admission through which students enter tertiary education. Though the systems vary widely from country to country and sometimes from institution to institution. The minimum admission criteria are the same for all students irrespective of

their country of origin or of the training track they apply for. Students admission to first degree programmes in Federal University Gusau are of three modes as follows:

i. Unified tertiary matriculation examination (UTME) organized by Joint Admission and Matriculation Board (JAMB) for undergraduate degree programmes.

ii. Direct entry admission into three (3) years degree courses through JAMB.

iii. Pre-degree programme

All enquiries on available courses in the university are to be directed to the admission officer.

➢ Students CGPA (cumulative grade point average): this refers to the overall GPA (grade point average) of a student which includes dividing the number of quality points earned in all courses attempted by the total degree credit hours in all attempted courses.

The performance of a students in a semester is reported as (GPA), while the overall performance at the end of the session and /or at any points in his/ her study programme will be reported as CGPA. It is achieved from a letter grades and grade points which are earned from percentage scores in the final examination in a given course as follows.

➤ **Table3.2**   **Percentage and Grade Distribution of Students Performance.**

Percentage score	Letter grade	Grade points
70-100	A	5
60-69	B	4
50-59	C	3
45-49	D	2
0-44	F	0

3.6   Procedure for Data Analysis

In these regards based on the data collected, from the two instruments. A descriptive statistic of mean, mode and median will be used in answering the research question and research hypothesis, analysed as follows:

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.0 Introduction

In this chapter the data collected were analysed, mean score for each variable in the research questions was determined.

4.1 Research Questions

Research Question One: What is the gender difference in enrolment of the first graduated set of science education programmes of Federal University Gusau?

Table 4.2.1 Enrolment of Science Education Students base on gender and programme

| Gender | Enrolment based on programs | | | | |
	Biology(%)	Chemistry(%)	Math(%)	Physics(%)	Total
Male	61 64%	64 79%	29 85%	37 82%	191
					75%
Female	34 36%	17 21%	5 15%	8 18%	64 25%
Total	95 100	81 100	34 100%	45 100%	255 100%

The result of the above table shows that, out of 95 students enrolled to biology, 61 (4%) were males, while 34 (36%) were females, and out of 81 students enrolled to chemistry 64 (79%) were males while 17 (21%) were females, and also 34 students were enrolled to mathematics, 29 (85%) were males while only 5 (15%) were females.

This means that, there were very few females enrolled to study Mathematics Education and Physics Education.

Research question Two: What is the gender difference in graduation of the first graduated set of science education programmes of Federal University Gusau?

31

Table 4.2.2   Academic performance of science education students based on gender and programme

Gender	Graduation status	
	Graduated (%)	Not graduated (%)
Male	90 79%	101 72%
Female	24 21%	40 28%
Total	114 45%	141 55%

From table 4.2.4, the result of the analysis indicates that, 90 (79%) malestudents and 24 (21%) female students were able to graduate, which gives the total number of 114 graduated students. While on the other hand, 101 (72%) male and 40 (28%) female were unable to graduate, which gives the total number of 141 not graduated students.These shows that, slightly below half of the students were able to graduate.

Research Question Three: What is the gender difference in academic achievement of the first graduated set of science education students of Federal University Gusau?

Table 4.2.3   Mean academic achievement of science students based on gender

Gender	N	Mean	SD
Male	191	2.9223	0.57740
Female	64	2.9580	0.50850

The table above depicted that, male students had the mean of 2.9223 with the SD of 0.57740 while female students had the mean of 2.9580, with the SD of 0.50850. These means that, the academic performance of both male and female students were almost the same.

Research Question Four: What are the mean difference in academic achievement of the first graduated set of science education students on the basis of their area of specialization in Federal University Gusau?

Table 4.2.4   Gender Different in Academic Performance of Science Education Students based on the Area of Specialization

Program	Gender	N	Mean	SD
Biology	Male	61	2.9870	0.53256
	Female	34	3.0426	0.56146
Chemistry	Male	64	2.9330	0.58115
	Female	17	2.8853	0.45561
Physics	Male	37	2.8573	0.67465
	Female	8	2.8075	0.40319
Math	Male	29	2.8455	0.53701
	Female	5	2.8700	0.46765

The result of the analysis in table 4.2.3 reveals that in Biology, female graduated students in science education had higher C.G.P. scores (Mean=3.0426, SD=2.9870) than male students (Mean=2.9870, SD=0.53256). In Chemistry, male students had higher C.G.P. scores (Mean=2.9330, SD=0.58115) than female students (Mean=2.8853, SD=0.45561). In Physics, male students had C.G.P. scores (Mean=2.8573, SD=0.67465) higher than female students (Mean=2.8075, SD=0.40319). In Mathematics, female students had C.G.P. scores (Mean=2.8700, SD=0.46765) higher than male students (Mean=2.8455, SD=0.53701) respectively.

4.2   Hypotheses Testing

The hypotheses formulated to determine the significance of the observed variability in the categories of the variable in the research project. They consisted of four null hypotheses. Null hypotheses 2 and 3 were tested using the independent t-test while null hypothesis 1 and 4 were tested using Chi-square.

Hypothesis one: There is no significant association between the gender and the enrolment in the area of specialization of the first graduated set of science education students.

Table 4.3.1Chi-square analysis of the association between gender and science education students' enrolment base on programs

| Gender | Enrolment based on programs | | | | | | | | |
	Biology	Chemistry	Math	Physics	Total	χ^2	df	Sig.	Decision
Male	61	64	29	37	191				
						9.74	3	0.021	Rejected
Female	34	17	5	8	64				
Total	95	81	34	45	255				

The result of table 4.3.1 shows that the association between gender and the enrolment of programs in science education was significant, χ^2 (3, N = 255) = 9.740, P<0.05. This implies that the null hypothesis was rejected. That is the enrolment for each program in science education influence by gender.

Hypothesis two: There is no significant difference in academic achievement of male and female science education students at graduation.

Table 4.3.2   Independent t-test analysis of gender different in science education students C.G.P. scores

Gender	N	Mean	SD	T	Df	Sig.	Decision
Male	191	2.9223	0.57740				
				-0.440	253	0.660	Accepted
Female	64	2.9580	0.50850				

The result of analysis in the table 4.3.2 shows that female graduated students in science education had higher C.G.P. scores (M=2.9580, SD=0.50850) than male students (M=2.9223, SD=0.57740), $t_{(253)}$ = -0.440, P>0.05. Therefore, the null hypothesis was accepted, that is there is no significant difference in academic achievement of male and female science education students at graduation.

Hypothesis three: There is no significant difference in academic achievement of science education students at graduation on the basis of their area of specialization.

Table 4.3.3 Independent t-test analysis of gender different in science education students C.G.P. scores base on the area of specialization

Program	Gender	N	Mean	SD	T	Df	Sig.	Decision
	Male	61	2.9870	0.53256				
Biology					-0.478	98	0.633	Accepted
	Female	34	3.0426	0.56146				
	Male	64	2.9330	0.58115				
Chem.					0.313	79	0.755	Accepted
	Female	17	2.8853	0.45561				
	Male	37	2.8573	0.67465				
Physics					0.200	43	0.842	Accepted
	Female	8	2.8075	0.40319				
	Male	29	2.8455	0.53701				
Math					-0.096	32	0.924	Accepted
	Female	5	2.8700	0.46765				

The result of the analysis in table 4.3.3 reveals that in Biology, female graduated students in science education had higher C.G.P. scores (Mean=3.0426, SD=2.9870) than male students (Mean=2.9870, SD=0.53256), $t_{(98)}$ = -0.478, P>0.05; in Chemistry, male students had higher C.G.P. scores (Mean=2.9330, SD=0.58115) than female students (Mean=2.8853, SD=0.45561), $t_{(79)}$ = 0.313, P>0.05; in Physics, male students had C.G.P. scores (Mean=2.8573, SD=0.67465) higher than female students (Mean=2.8075, SD=0.40319), $t_{(43)}$ = 0.200, P>0.05; in Mathematics, female students had C.G.P. scores (Mean=2.8700, SD=0.46765) higher than male students (Mean=2.8455, SD=0.53701), $t_{(32)}$ = -0.096, P>0.05. In all the programs, the null hypothesis which states that there is no significant difference in academic achievement of science education students at graduation on the basis of their area of specialization was accepted.

Hypothesis four: There is no significant association between the gender and the graduation status of the first graduated set of science education students.

Table 4.3.4 Chi-square analysis of the association between gender and science education students' graduation status

Gender	Graduation status		Total	χ^2	Df	sig	Decision
	Graduated	Not graduated					
Male	90	101	191				
				1.795	1	0.194	Accepted
Female	24	40	64				
Total	114	141	255				

From table 4.3.4, the result of the analysis indicated that the association between gender and the graduation status of the students in science education was not significant, χ^2 (1, N = 255) = 1.795, P>0.05. The indication shows that the null hypothesis which states that there is no significant association between the gender and the graduation status of the first graduated set of science education students was accepted.

4.3   Summary of Findings

The major findings of the study were:

1. Significant association was found between gender and the enrolment of programs in science education (χ^2 (3, N = 255) = 9.740, P<0.05). That is, the enrolment for each program in science education influence by gender.

2. There is no significant difference in academic achievement of male and female science education students at graduation. Female graduated students in science education had higher C.G.P. scores (M=2.9580, SD=0.50850) than male students (M=2.9223, SD=0.57740), $t_{(253)}$ = -0.440, P>0.05.

3. In all the programs, there is no significant difference in academic achievement of science education students at graduation on the basis of their area of specialization.

4. There is no significant association between gender and the graduation status of the students in science education (χ^2 (1, N = 255) = 1.795, P>0.05).

4.4   Discussion

The results revealed that the male students enrolled for B.Sc. (Ed) programme at Federal University Gusau, were more than their female counterparts in the years under study. The results also indicated that, more female students were enrolled in study biology education, follow by chemistry education and physics education. Mathematics education had the least enrolment of female students. This is a further affirmation of earlier studies by Ejifugha and Ogueri (2011) where female enrolment in AlvanIkoku College of Education, Owerri Imo state were higher in Biology education and Chemistry education programmes. Probable reasons are: teaching Basic Science at the primary and Chemistry at secondary levels are 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. The females who entered for the programmes also graduated with no significance difference between them and the males' counterpart for the year under study. What is not very clear from this study is that whether those 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 of male and female science education students at graduation. However, female graduated students in science education had higher C.G.P. scores than their male counterpart. This result, indisputably 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-Amayaw, 2013). Therefore, gender equity in science learning is paramount for sustainable development in Nigeria.

CHAPTER FIVE

SUMMARY, CONCLUSIONSAND RECOMMENDATIONS

5.0 Introduction

This study aimed at finding out the enrolment and academic performance of science education students in relation to gender.This chapter presents the summary of all the chapters of this project, implications of findings for all stake holders in educational sector conclusion, recommendations and suggestions for further studies.

5.1 Summary of the Study

Chapter one presented the background to the study, statement of the problem and four objectives that served as a guide to the study were set. Related to these are four research questions and four hypotheses. Significance of the study was stated, the scope and delimitations of the study were also highlighted.

Chapter two presented review of the related literature regarding to science teaching in Nigeria, objectives of science education, impact of science education on learners,

44

differences between the academic performance of male and female students and the challenges facing science education in Nigeria.

Chapter three presented the methodology adopted for the study. The study adopted the Expo Factor Design. Population of the study consists of all the first graduated set enrolled in the Department of Science Education of Federal University Gusau.

Chapter four presented data collected from the field. The Statistical package IBM version 20 was used in the analysis of data. The data collected were subjected to a descriptive analysis; means and standard deviations were used for the research questions. The hypotheses were tested using the inferential statistics including the two sample t-test and Chi-square). Only one out of the four null hypotheses stated in the study was accepted.

5.2   Conclusion

Based on the findings of this study, the following conclusions are arrived at:

5. The enrolment students to study B.Sc. (Ed) Biology, B.Sc. (Ed) Chemistry, B.Sc. (Ed) Physics and B.Sc. (Ed) Mathematics program in science education are influence by gender. Hence, significant association was found between gender

and the enrolment. Very few females were enrolled in B.Sc. (Ed) Maths and B.Sc. (Ed) Physics.

6. No significant difference was found in academic achievement of male and female science education students at graduation, but mean C.G.P. score of Female graduated students is higher than their male counterpart.

7. More so, in all the programs, no significant difference in academic achievement was found among students at graduation on the basis of area of specialization

8. No significant association was found between gender and the graduation status of the students in science education.

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.

5.3 Recommendations

The following recommendations are suggested based on the outcome of the findings:

1. Teaching of science subjects especially Mathematics and physics should be made attractive and less masculine in order boost more female enrolment in such discipline.

2. Beside this, the teaching of problem solving using scientific techniques namely observation, measurement, formulating or testing hypotheses, experimentation, drawing valid conclusions should be adopted in teaching and learning processes to remove the gender inequality.

3. Effort should be made to motivate and encourage both males and females' students towards the importance of science courses.

4. Gender inequality should be tendered in Nigeria as the population of females' students is high, and provide equal opportunity to all in respect of their gender as cited in the National Policy on Education.

5. Females should be part of supervisory team in charge of science subjects, as they will serve as role models to female students.

6. Parents, Gaudian, and other stake holders should also been enlight the importance of females offering at all level science subject.

7. Effort should be made for the enrolment of females in science education to study science courses as they have the least number especially in Chemistry, Mathematics, and Physics.

5.4   Suggestions for Further Studies

The study could be replicated by taking into consideration the trend of science education students enrolment and graduation over five consecutive years in respect to gender. Similar studies can be conducted in other universities as well as Colleges of Education and Polytechnics base on the geopolitical zones or the nation at large to make comparative analysis which will illuminate the gender issues in achievement.

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