THE RELATIONSHIP BETWEEN THE PERFORMANCE OF MALE AND FEMALE STUDENTS IN MATHEMATICS FEDERAL COLLEGE OF EDUCATION (TECHNICAL) GOMBE

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TITLE PAGE

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APPROVAL PAGE

This research has been read and approved by

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DEDICATION

We dedicated this project work to Almighty Allah, through whose support, guidance and protection this work is possible.

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First and foremost gratitude goes to Almighty Allah, who has been so merciful and generious in our life. We express our dobt of gratitudes to our project supervisor Mr Daniel Bello for sparing his time in making constructive critism and making guidance that has help tremedously in shaping our effort on the successfully accomplishment of this project.

ABSTRACT

The purpose of this research is to determine the relationship between the performance of male and female students in mathematics in Federal College of Education (Technical) Gombe using the result of students from 2010 to 2013 which comprises a total of 140 students. Independents sample T-test for equality of means was used to analyze the data, it was discovered that there is significant effect of gender on the performance of students in Mathematics and significant difference exist between their performance. It was also discovered that there is significant difference between the performance of male and female students in mathematice among the three sessions 2010 to 2013. Recommendation were given based on the finding of the study.

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CHAPTER ONE

1.0 Background of the Study

Hiebert and Carpenter (1992) asserted, one of the most widely accepted ideas in mathematics education is that students should understand mathematics. Sierpinska (1994) starts her book on understanding in mathematics with similar words: "how to teach so that students understand?, What exactly don't they understand? What do they understand and how?" (p. XI). Pirie and Kieren (1994) mention the interest towards teaching and learning mathematics with understanding, which is shown in recent curricular reforms in many countries. This interest is also reflected in conference proceedings and research articles in psychology and artificial intelligence.

The importance of the idea of understanding for mathematics education is emphasized in recent works by Sierpinska, Pirie and Kieren, Koyama (1993), amongst others. Nevertheless, characterizing understanding "in a way which highlights its growth, and identifying pedagogical acts which sponsor it, however, represent continuing problems" (Pirie and Kieren, 1994, p. 165).

The use of the term 'understanding' (or 'comprehension') is varied, depending on institutional contexts, although the dominant psychological approach emphasizes the mental facet of understanding, which is strongly challenged by Wittgenstein. The cognitive revolution supported by Vygotsky -who claims the

analytical and genetic priority of sociocultural factors when attempt to understand individual psychological processes-, Bruner (1990) -with his proposal of a cultural psychology, or Chevallard (1992) -who speaks of cognitive and didactical anthropology- requires a reconceptualization of mathematical knowledge and its understanding.

The book by Sierpinska (1994) represents an important step forward, when discerning between understanding acts and processes and when relating "good understanding" of a mathematical situation (concept, theory, problem) to the sequence of acts of overcoming obstacles specific to this situation. Through the historical empirical approach it is possible to identify meaningful acts for understanding a concept. Nevertheless, we think that taking the notion of object as primitive and deriving meaning from understanding cause some difficulties in analyzing the processes of assessing students' understanding.

Pragmatic and relativist onto semantics for mathematics

Our theory is based on the following epistemological and cognitive assumptions about mathematics, which take into account some recent tendencies in the philosophy of mathematics (Tymoczko, 1986, Ernest, 1991): 2

- Mathematics is a human activity involving the solution of problematic situations. In finding the responses or solutions to these external and internal problems, mathematical objects progressively emerge and evolve. According

to Piagetian constructivist theories, people's acts must be considered the genetic source of mathematical conceptualization.

- Mathematical problems and their solutions are shared in specific institutions or collectives involved in studying such problems. Thus, mathematical objects are socially shared cultural entities.
- Mathematics is a symbolic language in which problem-situations and the solutions found are expressed. The systems of mathematical symbols have a communicative function and an instrumental role.
- Mathematics is a logically organized conceptual system. Once a mathematical object has been accepted as a part of this system, it can also be considered as a textual reality and a component of the global structure. It may be handled as a whole to create new mathematical objects, widening the range of mathematical tools and, at the same time, introducing new restrictions in mathematical work and language.

In conjunction with other social institution of the society, education dispenses on life ideology skills to male students who are traditionally destined to hang on the society dominant position. The gender society looks at certain courses as differently positioned in society masculine and other feminine, because they are and because of the learning style and how they perceive and process reality. Most mathematics classroom discourse, is organized to accommodate male learning

pattern, hence their high performance in mathematics these differences have implication for the kind of instructional procedure that are to be adopted for setting up a appropriate teaching and learning environment for mathematics, that is suitable to both genders.

1.2 Statement of the Problem

The study is an attempt to investigate the relationship between the performance of male and female students in mathematics at federal college of education (technical) in Gombe metropolis, it is often assumed that male performed much better than female students in mathematics, the researcher attempt to investigate and find out whether this assertion was true or false. This study is going to examine the relationship between the performance of male and female student in mathematics at federal college of education (technical).Gombe, in Gombe state.

1.2 Purpose of the Study

The major purpose of the study is to find the relationship between male and female students performance in mathematics at Federal College of Education (Technical) Gombe.

Specifically the study will determine:

i. The factors affecting male student's performance in mathematics.

ii. The factors affecting female student's performance in mathematics.

iii. How to develop student's interest and better attitude toward mathematics.

iv. How to enable the students realize the importance of mathematics.

1.3 Significance of the Study

The importance of this study and findings would be of valuable use to the mathematics teachers, students, parents and other stake holders in the field of education and the society at large.

1.4 Research Questions

The following research questions will guide the study:

i. Is there any significant effect of gender on the performance of students in mathematics?

ii. Is there any significant difference between performance of male and female students in mathematics.

1.5 Research Hypotheses

The following hypothesis will be tested at 0.05 alpha level of significance obtain the required findings.

i. There is no significance effect of gender on the performance of students in mathematics.

ii. There is no significant difference between then performance of male and female students in mathematics.

1.6 Scope and Limitation of the Study

This study is limited to federal college of education (Technical) Gombe. The study is limited to only students of mathematics department who graduated in years 2010 to 2013.

1.7 Definition of Term

Gender:- is a range of characteristics of femininity and masculinity

Performance:- the standard of success that someone or something achieves

CHAPTER TWO

REVIEW OF THE RELATED LITERATURE

2.0 Introduction

This chapter deals basically with review of related literature on gender and performance of students in mathematics. In this respects, various sources such as books, journals, periodicals, magazines, newspapers, seminar papers, articles and documents were consulted for broad base reviews

2.1 Theoretical Frame Work

Since creation of everywhere in the world, women have always been considered inferior to men, in many traditional societies, the female is merely regarded as commodity that can be bought and sold, or treated any how (Salihu, 2001). The Indian, for example as illustrated by Reddy (1991); in Ogunniyi (1993). The Indian old dictum of Manu. A woman should be dependent on her father as child for her husband as adult, on her son when she is old, a woman should never be sub-ordinate individual that must pay serious to their fathers, brothers and most importantly their husband.

According to Salihu (2001), in American before the First World War, the women were solely responsible for child care with little or no involvement in commence politics, or industrial activities. In pre-Islamic Arabic, female children were said to be buried alive for fear to disgracing of family: In Nigeria, women are

still held in how esteem in a family where a female is the first born, the parent are always very disappointed and the worst is the case when children in the family are all female but in the families where the children are mixed up, they will always prefers to educate the male children at expose of the female because the female will not propagate the name of the family. They believe that educated women are not likely in produce as many children as possible.

In another development, place of the women is in the kitchens is an old adage. The same source further stated that western education exposes the women and makes them immoral and other flimsy reasons. It is in the light of this, that quite a number of conference, workshops, seminars, symposia, and other Torms of consultation forums have been held worldwide to address the plight of women, woman have to be giving equal opportunity the men in acquiring their education endeavor Education is seen as the training given to a person (not only men) to help the person read, write, calculator and find a good living and reliability earns in order to be proficient in the society

Education has been further defined as all efforts conscious and direct, in confidential and indirect, made by a given society to accomplish certain objectives that are considered in terms of the individual own need as well as the need of the society where education is based, costive (2005).

2.2 Female Students and Learning of Mathematics.

There is common belief that female children are less mathematically capable han male. This belief is fairly constant across population (Eccles, 1987) Classroom studies have shown that this belief is in place by the time children enter the school and it is by student's parent. By the time the children start kindergartens, parents expect girls to do better at verbal tasks and boys to do better at mathematics. These beliefs continuous through elementary school and through the academic process (Snyder and swann, 1978).

Aiken (1971) has noted that parents and teachers negative expectations put girls at distinct disadvantage in the classroom.

Halliana and Sorenson (1987) stated that even in the same classroom the question meant for female student tend to be at lower cognitive level than the more conceptual question does not provide the opportunity to apply basic mathematics kills to higher order concepts.

Chipman and Wilson (1985), indicate that female show less confidence in their to learn than male student do and are less confidence in their ability to learn ability than male students do and are less confident about future mathematics performance, when predicating future grades in mathematics, female are less optimistic reasons. Female students believe that they are incapable of performing

well in mathematics class; they may experience a sense of helplessness n the classroom.

Negative feedback given to male students often focuses on their poor behaviors or lack of effort while negative, feedback given to female students often focuses on the intellectual short comings with these type of feedbacks, it is not surprising that female learn to attribute their failure to lack of ability and male students learn to attribute theirs to lack of effort, because of moving from one area to another in mathematics (example moving from arithmetic to algebra to trigonometric to calculus) often involve learning entirely new concepts, it is unlikely that students will understand new subject completely when are first presented.

These students not only give up too soon, when they are capable of solving problem, but they persist in inappropriate strategies when there is little hope of a solution, this lead to frustration and taken as further evidence of low ability. The tendency of female students to hold an entity theory about mathematics packs double whammy when combined with the belief that they are incapable of performing well, this cognitive combination affects female students negatively many ways. First female students have a secondly, they are to the stereotype that female students just cannot do mathematics which leads to increased in frustration and decreased in performance in the case of difficult mathematics problems,

thirdly, female students belief that in higher level of mathematics anxiety heir show that no amount of any advice that may drain their willingness to persist Finally, if female students believe that they will fail no matter how much effort they expand; they become self-handicap by withholding effort (Arkin and Baumgartner, 1985)

2.3 Attitude of Male Student to Mathematics

Gender relationship is a recurrent throughout the literature in academic studies in general and in mathematics studies in particular. Mathematics is often considered to be a domain in which male students are higher achiever, both in terms of attitude and self concept.

Male students show more positive attitude towards mathematics in the class. Leek (2003), conducted a study in Greece that showed than in mathematics classes teachers tend to direct more question to male than female students. 1 le found that teacher considered male students to be more talented and brighter than female students in mathematics logical thinking.

Male students liked working with the other male collaboratively to solve mathematics problems and sharing ideas. Male students listen and share ideas, they also like personal interaction. They tackle mathematics concept, in groups during breaks and together come up with solution.

Boaler (1997) found that male students value experience that allowed them to think and develop their own ideas as their aim was to gain understanding.

2.4 Factors Affecting the Gender Performance in Mathematics

Researcher internationally have undertaken studies in various contexts examined factors that influence gender achievement in mathematics, many studies have focused on factor related to difference in the performance of boys and girls. One body of research comes from feminist researchers who have tried to make meaning of the experience of girls and boys in the mathematics classroom and interpret male/female power relations (Lungwrith, 1991, Waiden and walker dine, 1985). These findings reveal that often girls are marginalized and given a sub-ordinate stated in the mathematics class. The teacher perception arc that girls performance in mathematics are dependent on role of learning, hard work and perseverance rather than natural talent, flexibility and risk taking which are the learning style of boys. Teachers are also of the view that girls "learn" mathematics whilst by "know" mathematics.

According to Nwoye (1999), five factors are responsible for gender performance in mathematics. They are;

- Gender role stereotype
- Female children and access to education
- Difference in education quality of male and female

- Lack of appropriate guidance and counseling service in school
- Classroom interaction

CHAPTER THREE

3.0 Introduction

Matter of l act any research work to be carried out successfully must have a hurt of procedure of getting adequate and designed information to make meaningful, progressive and organized research work

3.1 Research Design

Base on the purpose of the study, the research was design to compare the relationship between the performance of male and female students in mathematics in tem of studies at N.C.E level. The study is also a descriptive in nature. It examined scores Collected from the exams office school of science and use was a raid data. In the descriptor, the research made some observation within the area of study in order to obtain additional facts related to the problem at hand.

3.2 Instrument for Data collection

The results of students in mathematics from N.C.E T to N.C.E 5 were used as data for the study. The students consist of male and female which were noted. the data collected comprises of three consecutive session, 2010/2011, 2011/2012 and 2012/2013.

3.3 Method of data analysis

The SPSS application package was used, independent samples t - test for equality of means was used to analyzed the data collected at 0.05 alpha level of significance

CHAPTER POUR

RESULT ANALYSIS

4.0 Introduction

The study find the relationship between the performance of male students and female student mathematics in Federal College of Education (Tech) Gombe, two hypotheses are postulated and tested at 0.05 alpha level of significant using independent sample t-test for equality of mean statistical tool

HYPOTHESIS TESTING

Hypothesis One:

There is no significant effect of gender on the performance of students in mathematics in Federal College of Education (Technical) Gombe

The analysis of the result is shown below

Table 1: Analysis of performance of male and female students in mathematics

Group Statics

Gender	N .	Mean	Std Deviation	Std Error Mean
Performance Male	230	2.9955	.88383	.05831
Female	131	2.7960	.77582	.06786

Independent Samples Test

	Levene's test for equality of variance		T – test for equality of means						
	F	Sig	T	df	Sig	Mean diff	Std Error diff	95% confidence interval of the difference	
								Lower	Upper
Performance Equal variance assumed	2.017	.156	2.152	358	.032	.19952	.09273	.01716	.38188
Equal variance not assumed			2.230	299.392	.026	.19952	.08948	.02344	.37560

From the above table, the associated p value is 0.032 (2-tailed test). Since p = 0.052 is less than 0.05 alpha level of significant, therefore the null hypothesis is hereby rejected, hence, there is significant effect of gender on the performance of students in mathematics in Federal College of Education (Technical) Gombe.

Hypothesis Two:

I: There is no significant difference between the performance of male and female students in mathematics among the three sessions 2010/2011, 2011/2012 and 2012/2013.

The result is shown in the tables below;

Table 2: analysis of the performance of male and female students in mathematics between the first two sessions (2010/2011 and 2011/2012)

Group Statics

Session	N	Mean	Std Deviation	Std Error Mean
Performance 2010/2011 session	120	2.9002	.92813	.08479
2011/2012 session	102	2.8438	.80800	.07994

Independent Samples Test

	Levene's test for equality of variance		T – test for equality of means					
	F	Sig	T	df	Sig 2-tailed	Mean diff	Std Error diff	95% confidence interval of the difference
								Lower / Upper
Performance	4.728	.031	.479	220	.632	.05644	.11783	-.17577 / .28865
Equal variance assumed			.484	219.869	.626	.05644	.11654	-.17323 / .28611
Equal variance not assumed								

From the above table, the p value is 0.632 (2-tailed). Since p = 0.0632 is less than 0.05 alpha level of significant, therefore the null hypotheses of no any significant difference is hereby rejected, hence, there is significant difference between the first two session (2010/2011 and 2011/2012) on the performance of male and female students in mathematics in Federal College of education (Technical) Gombe.

Table 3: analysis ol the performance of male and female students in mathematics between the first and the third sessions (2010/201| and 2012/2013)

Group Statics

Session	N	Mean	Std Deviation	Std Error Mean
Performance 2010/2011 session	120	2.9002	.92813	.08479
2011/2012 session	138	3.0016	.80963	.06881

Independent Samples Test

	Levene's test for equality of variance		T – test for equality of means						
	F	Sig	T	df	Sig 2-tailed	Mean diff	Std Error diff	95% confidence interval of the difference	
Performance								Lower	Upper
Equal variance assumed	5.902	.016	-.937	256	.350	-.10134	.10813	-.31428	.11160
Equal variance not assumed			-.928	237.704	.354	-.10134	.10920	-.31647	.11379

From the above table, the p value is 0.350 (2-tailed). Since p = 0.350 is less than 0.05 alpha level of significant, therefore the null hypotheses of no any significant difference is hereby rejected, hence, there is significant difference between the first

two session (2010/2011 and 2012/2013) on the performance of male and female students in mathematics in Federal College of education (Technical) Gombe

Table 4: analyses on the performance of male and female students in mathematics between the first and second and the third sessions (2011/2012 and 2012/2013)

Group Statics

Session	N	Mean	Std Deviation	Std Error Mean
Performance 2011/2012 session	102	2.8438	.80800	.07994
2012/2013 session	138	3.0016	.80963	.06881

Independent Samples Test

	Levene's test for equality of variance		T – test for equality of means						
	F	Sig	T	df	Sig 2-tailed	Mean diff	Std Error diff	95% confidence interval of the difference	
								Lower	Upper
Performance									
Equal variance assumed	.012	.911	-1.495	239	.136	-.15778	.10551	-.36563	.5007
Equal variance not assumed			-1.496	218.364	.136	-.15778	.10548	-.36567	.05010

From the above table, the assuming equal variance and thus using the first row in the table the associated p value is 0.1 36 (2-tailed test). Since p 0.136 less than 0.05 alpha level of significant we reject the null hypotheses that there is no significant difference between the performance ol male and female students I mathematics and conclude that there 1S Significant diligence on the performance of male and female in mathematics in Federal College of Education (Technical) Gombe between the sessions (2011/2012 and 2012/2013) In general, based on the results we can state that there is significant difference on the performance of male and female in mathematics among the three sessions from 2010 to 2013 in Federal College of Education (Technical) Gombe.

CHAPTER FIVE

5.0 Introduction

This chapter is concerned With the summary of the major findings in the research. It also revealed the conclusion from the study as well as recommendation based on the research alters completion.

5.1 Summary of the Major Finding

This research aimed to find out the relationship between the performance or male and female students in mathematics at N.C.E level in federal college of education (technical) Gombe. Two hypotheses were postulated and tested using independent sample -test statistical tool at 0.05 alpha level of significant. I rom the first hypothesis, it was shown that there is significant effect ol gender on the performance of students in mathematics. This study in line with the findings of Chipman and Wilson (1985) who ascertain that male students performed better than their female counter part in mathematics and other science related subjects. Also it was discovered that there is significant difference between the performance of male and female students in mathematics from the result of testing the hypothesis two. This corresponds to the findings of Shoprro Grammer and Tlunder (1981), stated that in early child education, male students performance is found better than the female students.

5.2 Conclusions

Therefore it can be concluded that here is significant effect of gender on the performance of students in mathematics and also there is significant difference exist between the performance of male and female students in mathematics among the three sessions 2010 to 2013 in Federal College of Education (technical) Gombe.

5.3 Recommendation

Based on the findings of this study, the following recommendation was given:

1. There is need to step-up effort toward improving the st performance. Hence lecturer should strive to ensure that students improve their performance academically.
2. Lecturer should improve their instructional method to ensure students effective and comprehensive study toward the content of the school work
3. Students on the other hand should work harder as the task may be in order to achieve the goal and objective of the study
4. Students should be taken to industries /institutions once a semester for execution so as to acquire skills of the practical application of the taught in the class
5. Parent should be interested in their children study and provide all the required materials for their school work.

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