



Research Paper

Gender Difference in Mathematics Achievement among Senior Secondary School Students in Ondo West Local Government Area of Ondo State, Nigeria

AKINNODI, Phillips Akinrotimi (Ph.D)

Department of Educational Psychology and Counselling,
Adeyemi Federal University of Education, Ondo

EKPENYONG, Sunday Imoh

Department of Educational Psychology and Counselling,
Adeyemi Federal University of Education, Ondo

Abstract

The study examined gender difference in mathematics achievement among senior Secondary School students in Ondo West Local Government Area of Ondo State, Nigeria. The subject consisted of 150 Senior Secondary School Students sampled from five selected senior secondary school in ondo West Local Government Area of ondo state. An ex post-facto design was adopted. The scores of the students were collected from the selected schools and analysed using t-test analysis. The null hypothesis was tested using t-test analysis at 0.05 level of significance. Result revealed that there was significant different in the academics' performance of male and female students in mathematics, male students perform better than the female students. It was recommended among others that government should make adequate provisions for the equipment of the schools

Keywords: Gender, Difference, Mathematics Achievement, Students

Received 07 Mar, 2022; Revised 20 Mar, 2022; Accepted 22 Mar, 2022 © The author(s) 2022.

Published with open access at www.questjournals.org

I. Introduction

Education is highly essential for the development of any nation. It is therefore the aspiration of all developing countries to educate their youths properly for the future development in their countries. In a nation, education is very important to every child who should know his right and be able to contribute his own quota to the development of that nation. And every child should be trained in subjects that can develop critical thinking in them. One of such subjects is Mathematics.

It is the belief of majority that men are stronger and more capable than women in certain subjects most especially science related subject like Mathematics (Berkely, 1974; Kelly, 1981). Although a few numbers of women go for mathematics. The observation over the years is that this number is small compared with that of men. What has remained the main focus of great concern in the field of science education are the biases and misconception about woman and mathematics, that is, mathematics is a male enterprise (Erinosho, 2005). In Nigeria and perhaps Africa, gender bias is still very prevalent (Arigbabu & Mji, 2004). This is view to which Onyeizugbo (2003) has also alluded in pointing out that "sex roles are somewhat rigid in African, particularly in Nigeria... gender differences are emphasized". It is common place to see gender stereotypes manifested in the day-to-day life of an average Nigerian. Certain vocations and professions (medicine, engineering and architecture) have traditionally been regarded for men and others (nursing, catering, typing, and arts) for women. Typically, parents call boys to wash cars, cut grass, fix bulbs, or climb ladders to fix or remove things.

On the other hand, chores such as washing dishes, cooking, cleaning and so on, are reserved for the girls. In a nutshell, what are regarded as complex and difficult tasks are allocated to boys, whereas girls are expected to handle the relatively easy and less demanding tasks. As a result of this way of thinking, the larger society has tended to see girls as the "weaker sex". Consequently, an average Nigerian child goes to school with these fixed stereotypes. These stereotypes persist because in terms of assertiveness, for example, men in Nigeria were reported to be more assertive than women among teacher education, law, pharmacy and medicine.

It is not surprising that the school, being a microcosm of society, consciously or unconsciously perpetuates stereotypical behaviour, and, indeed, teachers within the system exhibit gender bias in the classrooms (Arigbabu & Mji, 2004). For example, it has been reported that teachers, consciously or unconsciously, often met out differential treatment to boys, and girls in their classrooms (Rubble & Martins, 1998). Students, on their part, tend to have formed a stereotypical concept of mathematicians and scientists whom they regard as a special group. In such a concept, female students (mothers of tomorrow) do not see themselves as having the potential to become mathematicians and scientists (Arigbabu & Mji, 2004).

From the ongoing, gender barriers have persisted even within the science classroom. There are mixed reports on the research on gender differences in science. Many researchers have provided reports that there are no longer distinguishing differences in the cognitive, affective and psychomotor skill achievements of students in respect of gender (Arigbabu & Mji, 2004; Bilesanmi, 2006; David & Stanley, 2002; Freedman, 2002; Sunger & Tekkaya, 2003). Girls are being encouraged and sensitized into developing positive attitudes towards science. Other researchers have reported differently on this issue.

For example, in studies carried out by Eriba and Sesugh (2006) and Onyelzugbo (2003), they found that boys outperformed girls in science and mathematics achievement test. Some other research studies reported that males are becoming the disadvantaged gender in schools, and that fewer males are interested in science (Alkhateeb, 2001; Bleuer & Waltz, 2002; Omoniyi, 2006; Weaver-Hightower, 2003). Gender difference also exists in areas of employment that require science -related qualifications. Weinburgh (2000) submitted that although females make up one half of the workforce, only 15% of U.S. mathematicians, scientists, and engineers are females.

Although a number of studies have been done on issues related to gender as well as the teaching and differences in students' performance in other core science subjects (Biology, Chemistry and Physics); students' gender, most especially in Integrated Science, however has not been given as much attention. As schools are becoming more and more co-educational, sex differences in education are generating much research interest. Studies on sex differences and academic performance have led to a number of conflicting results. While some find sex as an important factor in academic achievement, others have found no differences between the sexes. This had led the researcher to find out the difference between the academic performances of students in mathematics on the gender. The study specifically investigated whether there was difference in the academic performance of boys and girls in mathematics with reference to some selected secondary schools in Ondo West Local Government Area of Ondo State.

Research Hypothesis

H₀₁: There is no significant difference between the academic performance of male and female students in mathematics.

II. Methodology

An ex-post-facto design was employed to carry out the study as the researcher does not have direct control on the independent variables, since their manifestation had already occurred. The target population consisted of all 2020/2021 SS 2 students that sat for SS 2 first term, second term and third term examinations. The sample was made up of one hundred and fifty students randomly selected from five secondary schools that were purposively selected in Ondo west Local Government Area of Ondo State. Equal number of male and females were selected. An inventory titled SSS2 students Academics Performance was used to collect data. The inventory requested among other things, name of school, name of student, data on enrolment, class, students mathematics scores in first term, second term and third term examinations.

The researcher visited the selected schools to seek for permission from the principals for the use of their schools and also informed the principals on the objectives of the study. Records of the academic performance of the selected students in SS 2 first term, second term and third term examinations were collected using the inventory. Data collected were analysed using inferential statistics of t-test at 0.05 level of significance.

III. Results

Table 1: Mean, standard and deviation and t-test values of SSS 2 mathematics examinations for Female and Male

Examination	Sex	Freq.	Mean	Standard Deviation	Df	t-value
1 ST TERM	Female	75	43.51	5.82	74	30.41*
	Male	75	55.22	5.74		
2 ND TERM	Female	75	40.13	6.16	74	11.64*
	Male	75	46.78	5.63		
3 RD TERM	Female	75	46.56	5.71	74	8.28*
	Male	75	52.32	5.38		

First term examinations *significant, $P < 0.05$

Second term examinations * significant, $P < 0.05$

Third term examinations, *significant, $P < 0.05$

The above table shows that there was significant difference between the academic performance of male and female students in mathematics ($t = 30.41$, $p < 0.05$; $t = 11.64$, $p < 0.05$; $t = 8.28$, $p < 0.05$). The hypothesis is therefore rejected. The above table also reveals from the means and standard deviations that male students perform better than female students'. Means scores were higher and the SDs were more homogeneous for the male than the female for the whole session in mathematics.

IV. Discussion

Based on the results obtained there has been an established significant difference in the academic performance of male and female students in secondary schools in mathematics. Boys were found to perform better than the female counterparts in schools. Studies conducted by Cornelius and Cockburn (1998), Finn (2001), Ato (1986), Jacklin and Maccoby (1994), Inyang (2004) and Ausa (2005) have similar conclusions. This trend has often been attributed to the fact that females regard Mathematics as masculine, had, intellectually complex and tables oriented. Kaminski (2003) in his work emphasized that girls are discouraged from mathematics as a result of the calculation the subject requires and the abstract nature of the subject. He further pointed out that girls in co-educational schools' belief that the subject is only for male students.

V. Conclusion

Having examined the result compiled from the data analysis, it could be concluded that gender has influence on the students' performance in mathematics at the secondary school level in Ondo West Local Government area of Ondo State. Boys Performed better than girls in mathematics. Thus governments and stakeholder in education sector should be able to make necessary adjustment to reduce the differences in the academic performance of the students in mathematics at secondary school level.

VI. Recommendations

Based on the conclusion above, the following recommendations were made.

1. Government should make adequate provision for the equipment of the schools.
2. Parents should motivate and encourage their female children towards mathematics and advise them to be up and doing in their academic work so that they can compete with their male counterparts.
3. The mathematics teachers should be able to speak the words of advice and encouragement to their students and be ready to encourage them and help them in any problem they find difficult in mathematics.
4. Schools should encourage competitions among the two different sexes and compensate the winners with good prizes.
5. Government agencies and women groups should float some scholarship opportunities for girls that are interested in mathematics as this could act as an impetus for them.

References

- [1]. Alkhateeb, H.M. (2001). Gender difference in Mathematics achievement among high school students. *School of Science Mathematics*, 101 (1), 5-9.
- [2]. Arigbabu, A.A, and Mji, A. (2004). Is gender a factor in mathematics performance among Nigeria pro service
- [3]. Ausa, E.I. (2005). Construction and validation of a mathematics test for senior secondary schools. Akwa Ibom, Nigeria.
- [4]. Ato, A.A. (1986). Gender and achievement in science subjects. *Journal of Social Sciences*, 43 (4), 240-247.
- [5]. Berkeley, C.T. (1974). *Sex and Behaviour*. Huntington: New York,
- [6]. Bilesanmi - Awoderu, J.B. (2006). Effect of computer-assisted instruction and simulation / games on the academic achievement of secondary school students in Biology. *Sokoto Educational review*, 8 (1), 49-90.
- [7]. Bleuer, J. and Waltz, G. (2002). Are Boys failing in academics? Part. 1. Washington, D.C: Department of education, office of educational research and improvement. ERIC Document Reproduction service, ED470601.
- [8]. Bruner, J. (1960). *The Process of Education*. Cambridge: Howard University Press.
- [9]. Cornelius, M.S. and Cockburn, A.N. (1998). *Influence on pupil performance*. Educational Research.
- [10]. Daramola, S.O (1983). The influence of location and sex differences in the knowledge of basic physics processes. Kwara, Nigeria.
- [11]. David, K.D., and Stanley, H.L. (2002). Effect gender on computer- based chemistry problem-solving. *Electronic Journal of Science Education*, 4 (4), 36 46.
- [12]. Eriba, J.O, and Sesugh, A. (2006). Gender differences in achievement in calculating reacting masees from chemical equations among secondary school students in markuidi metropolis. *Education Research Revolution*, 1 (6), 170-173.
- [13]. Erinosh, Y.E. (2005). Women and science. 36th Inaugural Lecture. Olabisi Onabanjo University, Ago Iwoye, 1-37.
- [14]. Federal Republic of Nigeria (1981). *National Policy on Education*. Lagos: Federal Ministry of Education
- [15]. Finn, J.D. (2001). Sex differences in educational outcomes. *Journal of Education Research* 75 (6), 209-214.
- [16]. Inyang, N.E. (2004). The construction, validation and standardization of Integrated science achievement test for JSS. Unpublished doctoral thesis Zaria.
- [17]. Jacklin, C.M and Maccoby, O.E. (1994). *The psychology of sex differences*. Standard, California.
- [18]. Kaminski D.M (2003). Girls and Mathematics and Science. An annotated Bibliography of British Work (1980-1991).

- [19]. Kelly A. (1981). *The missing half: Girls and science education*. Manchester. Manchester University Press.
- [20]. Levi, L. (2000). Gender Equal in Mathematics Education. *Teaching children Mathematics*, 7 (2), 101-105.
- [21]. Ma, X (1995). Gender difference in Mathematics achievement between Canadian and Asian education systems. *Journal of Education Research*, 89,118-127.
- [22]. MCTM (1998). *Principles and Standards for School Mathematics: Discussion*. Draft Reston, V.A. Author.
- [23]. Mingand Din, Y.Y., Ming MC, and Ho, E.S. (2004). Hong-Kong students Achievement in OECD-PISA study, gender differences in science concept, literacy skills, and Test item formats. *International Journal of Science Mathematics Education* 2 (2), 91-106.