

Gender Issues In The Teaching Of Science, Technology And Engineering (STE): a Case Study Of Edo State Institute Of Technology And Management

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ABSTRACT- Education is very important for sustaining and developing the people. With education, people are able to endure, mature. Acquire experience, wisdom and the capability to fend for themselves as well as serve their communities and nation. Although some science courses at the tertiary level see 50% female participation or more, this trend is generally restricted to the biological and life sciences. Participation rates for females in other science and engineering courses remain substantially and consistently less than males throughout the world. Math anxiety among elementary school teachers, of which females constitute about 90 percent, is a commonplace phenomenon. Earlier studies also find a negative effect of math anxiety on teaching performance in math classes. It is generally believed that mathematics is the basis of technology and engineering courses and research shows that female rarely participates in it. The percentage ratio of female and male teaching staff in engineering, environmental studies and applied sciences as 14% to 85.7%, 18% to 81.8% and 24% to 76% respectively. This paper tries to investigate the reason of less female teaching staff in the schools of applied sciences, environmental studies and Engineering in Edo State Institute of Technology and Management Usen.

Keywords: Gender; Education; Teaching of STE; Math

I INTRODUCTION

Education is one of the earliest social services to be introduced to Nigeria. Initially, the majority of primary and secondary educational institutions were established and run by missionaries. A relatively few were Government-owned. Education is very important for sustaining and developing the people. With education, people are able to endure, mature. Acquire experience, wisdom and the capability to fend for themselves as well as serve their communities and nation. Education is also both an instrument of stability and of change: stability in the sense that good traditions are documented, taught, imbibed and practised, and changes because it equips people to meet new challenges.

In the same vein education is a tool for inculcating moral values in the citizen. Education statistics, like other social data, facilitates planning. They constitute invaluable inputs for computing important social indicators which are used to monitor trends in the quality of life and in making regional and international comparisons.

II REVIEW OF LITERATURES

Although some science courses at the tertiary level see 50% female participation or more, this trend is generally restricted to the biological and life sciences. Participation rates for females in other science and engineering courses remain substantially and consistently

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less than males throughout the world. Although the gender gap has narrowed over the years, boys continue to outperform girls on standardized tests of math and science achievement.

At the same time, girls' attitudes about math and science have become more negative. Many girls feel that they are not good at math and science and say that they do not like these subjects. These trends are troubling because girls' grades in math and science classrooms, which are often equal to or better than those of boys, do not tend to translate to standardized test results. In high school girls are more likely than boys to opt out of advanced math and science. As a result, girls are often less prepared for certain academic disciplines, limiting both their college major and career choices. The question is: Why do we see these differences? (1).

Scantlebury (2) posited that gender bias can occur within subject areas and school activities. For example, in subjects such as mathematics and the sciences, there are different participation patterns for girls and boys. Gender bias promulgates a myth that boys are naturally better at mathematics and science than girls. The implications are that if girls succeed in these subjects it is due to their hard work, not their intelligence, whereas boys' success is credited to their natural talent. There are some signs that gender bias in schools may be decreasing in some areas. The percentage of girls participating in science has increased and achieved parity with boys in biology, chemistry and algebra. However, subjects that are prerequisites for college majors such as engineering or physics remain dominated by men. Only 25% of high school students enrolled in physics are females. Moreover, there has been little increase in the percentage of women in engineering programs.

Antecol (3) write-up on the effect of teacher gender posited that recent national media accounts have drawn attention to a growing concern that math anxiety among elementary school female teachers is leading to poorer math achievement among female students but not male students (4,5,6) (Kaplan, 2010, Mack, 2010, and Molina, 2010). Math anxiety among elementary school teachers, of which

females constitute about 90 percent, is a commonplace phenomenon (7,8) (Bursal and Pagnozas, 2006 & Gresham, 2007).

Earlier studies also find a negative effect of math anxiety on teaching performance in math classes (9,10) (Bush, 1989 & Tobias, 1998).

Are female students adversely affected by having a female teacher? The evidence is mixed. Recent studies in economics either find having a female teacher has a positive effect on female student achievement outcomes (11,12,13,14,15) or no effect on female achievement outcomes (16,17,18) in middle school/high school or college/post-college. The educational psychology literature, on the other hand, finds that having a female teacher has a negative effect on female student math achievement in primary school (9,10,19).

There are two strands of literature using evidence from a well-executed randomized experiment. In particular, our results show that having a female teacher has a negative impact on the math test scores of female students in primary school. Moreover, the negative impact of female teachers on the math achievement outcomes of female students does not appear to be an artifact of female and male teachers having differential unobserved characteristics because we do not find a similar negative effect on the reading test scores of female students, nor do we find a negative effect on the test scores (math or reading) of male students.

In an attempt to further understand the potential mechanism behind our results, we draw on the educational psychology literature and tentatively show that female students' internalization of female teachers' math anxiety can play a role under the assumption that having a math or a math-related college/post-college major reduces or eliminates math anxiety among female elementary school teachers. In other words, we posit math anxiety is reduced either because female teachers have more extensive training in math and/or they do not hold stereotypical beliefs about gender ability differences.

III METHODOLOGY

The two main categories of education statistics are those collected through census surveys,

and as by-products of administration, no rigorous statistical techniques are adopted in data processing and analysis by most of the relevant agencies. As already indicated by the items and details of data generated by census surveys returns and reports on education statistics, most of the variables are categorised. As a result, aggregation by faculty/school, department and gender into frequency tables is the most commonly used statistical procedure. This also explains why non-parametric and other categorical methods are most frequently used in analysing education statistics.

Some of the variables generated by the census surveys and routine statistics are about the finances of educational institutions and physical facilities which are measurable on the ratio scale. These variables can be analysed using the various statistical methods applicable to sample survey data. In this research the method used are consultation of literature and personal interview/survey.

IV ANALYSIS AND RESULTS

Form the survey conducted the following tables were generated and the analysis presented in tabular and bar charts format.

Table 1: School of Engineering

Department	Male	Female
Electrical Electronics	6	0
Civil	4	0
Petroleum	6	1
Mechanical	7	0
Chemical	1	3
Total	24	4

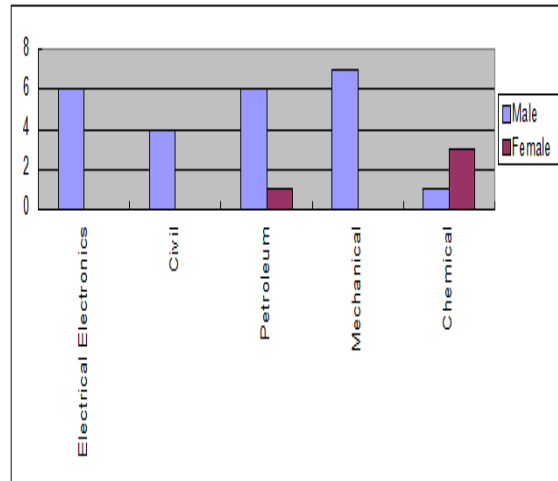


Fig 1: School of engineering bar chart
 From the table 1 and figure 1 it is important that note that in the school of engineering only 14% of the teaching staff are females while 85.7% are males.

Table 2: School of Environmental

Department	Male	Female
Urban and regional planning	4	0
Survey and Geo-infomatics	3	0
Estate management	2	2
Total	9	2

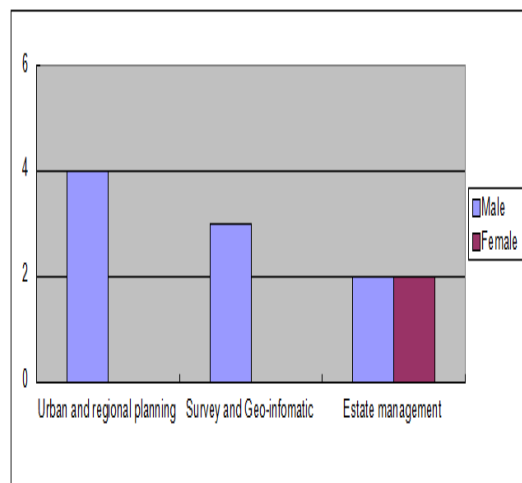


Fig 2: School of environmental studies bar chart
 From table 2 and figure 2 in the school of environmental studies the proportion of female

staff makes up 18% and the male teaching staff has a percentage of 81.8%.

Table 3: School of Applied Sciences

Department	Male	Female
Computer science	4	1
SLT	3	2
FST	5	1
Statistics	7	2
Total	19	6

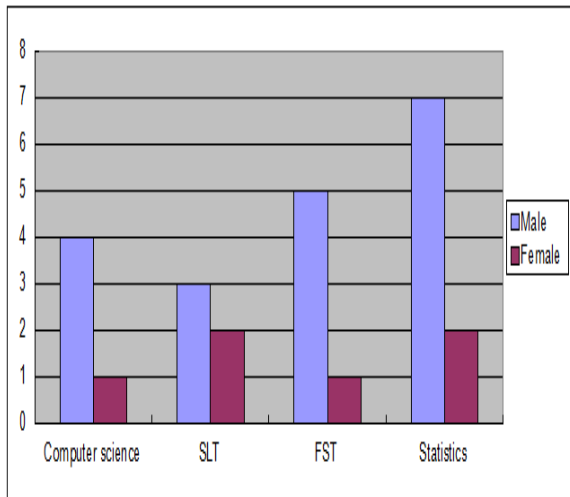


Fig 3: School of Applied sciences
 From the school of applied sciences we see that the teaching staff ratio is as follows 24% for females and 76% for males.

CONCLUSION

Education without doubt is very fundamental to the development, stability and growth of the nation. Having gone through various literatures it can easily be seen or inferred that the female gender is limitedly represented in the field of science, technology and engineering. It can be concluded that since mathematics is the core of this disciplines and that the female gender tend avoid mathematics. This research work tend to confirm the above in the sense that in school of engineering the percentage ratio of female to male is 14% to 85.7%, school of environmental studies is 18% to 81.8% and in school of applied sciences 24% to 76%.

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