

Gender Differences and Gender Inequality in Mathematics

Anu Kathuria

The Technological Institute of Textile and Sciences, TITS, Bhiwani, Haryana, India

anu_sept24reddiffmail.com

Abstract: *This report highlights a survey of girls' and boys' mathematics achievement, confidence, and curiosity, as well as experiences at home and college, conducted by The Technological Institute of Textile and Sciences, Bhiwani. Gender disparities in mathematics are very modest or nonexistent, according to a recent review of several datasets.*

Keywords: Attitudes; Gender; Mathematical Achievement; Mathematical Instruction

1. Introduction

Science, mathematics, and technology are crucial to the development of national economies. Mathematical study has permeated every aspect of human existence (Alutu and Eraikhuemen, 2004). [1]. According to Aguele and Agwagah (2007)[6], there is no science without mathematics, no technology without science, and therefore no modern society without technology. Without mathematics, no nation can attain scientific or technological excellence. Consequently, nations that aspire to scientific and technological development should place a high priority on mathematics education at all levels of education. According to Wadesango et al. (2012) [7], mathematics is used to prepare students for specialised careers in fields like science, engineering, economics, and computer science. The investigation was guided by the research questions listed below:

- 1) Do you appreciate learning mathematics?
- 2) Do you favour the computational or practical aspects of mathematics?
- 3) Math: a language or a science?
- 4) Do you employ mathematics in everyday life?
- 5) is it true that more boys than girls excel in mathematics? In that case, what recommendations do you have for bridging the gap?
- 6) What measures can be taken to increase the number of women pursuing advanced mathematics?

2. Methodology

Design of Study

This research utilised a descriptive survey research design. According to Leedy (1980)[3], the descriptive survey design necessitates an in-depth examination of contemporary phenomena. The descriptive survey design entails examining a small number of examples in order to arrive at findings that are applicable to the entire population under consideration.

2.1 Population and sample

This study's population of 27 B.Tech (CSE) 1st 'A' level students included 14 male students and 13 female students from a Batch of 40 students. This study's data was collected through the use of a student survey and focus group discussions with students. In the survey, there were seven open-ended and closed-ended questions. Any statement regarding the gender gap and gender inequality in mathematics was met with vehement opposition from respondents and students. It was observed that Yes, boys outperform girls in mathematics due to genetics, and suggestions were made to increase girls' interest in the subject. Due to the difficulty of the calculations and their personal preferences, fewer girls in 10th grade opted for mathematics, according to their personal observations. Several contributors to the gender gap have been identified, however. Gender differences in interests, skills, and personality traits have also been linked to this inequality. Guiso et al. (2008) discovered a correlation between the gender gap in mathematics and data on female socialisation at the societal level. Attitude differences have also been linked to gender gaps in mathematics achievement in postsecondary education. According to Watt (2006), enrollment in mathematics courses and career aspirations are strongly correlated with high self-esteem, self-confidence, and mathematics appreciation. Watt (2006) found that men were more likely than women to plan on enrolling in advanced mathematics courses and pursuing a career in mathematics. Thus, early gender differences in values and self-image influence course selection and, ultimately, learning and career planning. The children's mathematical attitudes are influenced by their socialisation. According to Mawere et al. (2011), parents should encourage boys to be more physically active and learn to solve their own problems, whereas girls should be raised to be submissive, kind, and considerate. Boys adapt more readily than girls to the primary learning methods utilised in Science and Mathematics courses, such as discussion, problem-solving, and laboratory exercises. In turn, gender disparities in mathematics and science education become more pronounced. In addition, parents' and teachers' attitudes and expectations impede girls' engagement in

mathematics. Girls are frequently assigned time-consuming domestic tasks, leaving little room for individual study. Parents contribute to their daughters' lack of interest in math and science by assigning them more household chores than boys, resulting in less study time. This has an effect on female students, who lose interest in their studies, especially mathematics, due to the difficulty of the subject. Mathematical anxiety is one of the most prominent psychological challenges women face. Women may be hesitant to enter the field of mathematics due to the problem-solving phase and the fear of failure.

How can female participation in Advanced Level Mathematics be increased?

In this article, I discuss a variety of strategies for increasing the number of women studying advanced mathematics.

1. The provision of information, advice, and guidance

Children's participation in mathematics is significantly influenced by parental and educator encouragement and support. Parents should emphasise the importance of mathematics to their children's everyday lives and future careers. The personal benefits of pursuing a career in mathematics should be communicated to students by both parents and teachers.

2. Introducing young women to role models who have achieved success in mathematics and science

Female mathematicians who were devoted to the field and excelled at it can serve as role models and examples for young women. They must be taught mathematics by female instructors. Teachers of mathematics and secondary school teachers should be encouraged to invite prominent women who have excelled in Mathematics-related careers and professions to share their thoughts and experiences about why they entered the field, obstacles they overcame, the type of work they do daily, practical information (e.g., pay and benefits), and positive and negative aspects of their jobs. Young women's arithmetic ability may improve if they are exposed to positive role models, which can also help to dispel negative stereotypes. Female students should read biographies of female scientists, mathematicians, and engineers to assist them in identifying positive role models.

3. Developing an environment conducive to mathematical curiosity and interest in the classroom

As a teacher, I believe that the way in which Mathematics is taught in the classroom should be such that female students gain confidence and feel at ease during Math classes. This will aid in igniting and sustaining a passion for mathematics. Mathematics should be taught in a way that encourages students to create hypotheses, identities, talk, ask questions, and agree or disagree on difficulties in order to discover fundamental mathematical concepts. Teachers can achieve this

by being more adaptable and encouraging students consistently.

4. Develop, nurture, and boost girls' self-esteem

Girls have less confidence in their mathematical ability than boys, according to studies, and consequently, they lose interest in math and science careers as early as adolescence. Parents and educators should collaborate to instil girls with confidence in their math and science skills. Teachers and parents should emphasise to their female students that their mathematical abilities are not innate and can be developed through consistent effort and perseverance. The school and home environments have an effect on the interest and confidence of girls.

5. Students' participation in mathematics is substantially influenced by parental encouragement and motivation.

Parents should emphasise the value and significance of mathematics in their children's lives, as well as the career opportunities it can provide.

In early adolescence, girls lose interest in math and science careers because, according to studies, they have less confidence in their math skills than boys do. Parents and educators must find ways to boost girls' confidence in their math and science skills. Teachers and parents should inform young women that their math skills are not fixed and can therefore be enhanced. School and home environments can have a significant impact on the development of girls' interest and confidence.

3. Conclusion

The above study confirms that Gender gap in Mathematics among the group of boys and girls of Technological Institute of Textile and Sciences has been promising. There is not much significant gender difference in understanding the basic computation of Mathematics. It also states that girls are more prone to be affected by Mathematics anxiety than boys. Hence it could be summed up that with proper implications of studies i.e. test based studies, we can improve their analytical practice methods and exceed the level of Mathematics in them.

References

- [1] Alutu, A. N. G., and Eraikhuemen, L. (2004). The shortfall of female mathematics lecturers in Nigerian universities: Strategies for promotion and retention of prospective female mathematics lecturers. *Journal of International Women's Studies*, 5(5):72-84.
- [2] Anderson, L. S., and Gilbride, K. A. (2005). Image of engineering among Canadian high school students. 8th UICEE Annual Conference on Engineering Education, Kingston, Jamaica

- [3] Guiso, L., Monte, F., Sapienza, P., Zingales, L., (2008). Culture, gender, and math. *Science*, 320(5880):1164-1165
- [4] Leedy, P.D. (1980) *Practical research planning and designing*. New York, Macmillan publishing company
- [5] Watt, H. M. G. (2006). The role of motivation in gendered educational and occupational trajectories related to math. In Watt, H. M. G. and Eccles, J. S. (Eds), *Understanding Women's Choice of Mathematics and Science Related Careers: Longitudinal Studies from Four Countries*. *Educational Research and Evaluation*, 12(4).
- [6] Aguele, L. I., and Agwagah, U. N. A. (2007). Female participation in science, technology and mathematics (STM) education in Nigeria and national development. *Journal of Social Sciences*, 15(2):121-126.
- [7] Wadesango, N., Dhliwayo, J., and Machingambi, S. (2012). The effects of staff development on pedagogical practices of mathematics teachers in Gokwe South District in Zimbabwe. *Journal of Social Sciences*, 30(3): 235-242