

---

Book Review

**Nigar Sultana**

***Gender and STEM: The Indian Context, Namrata Gupta, Routledge, 2025, 199 pp., INR 1,295.***

Access to education has historically been a contested terrain for women due to dense patriarchal notions regarding inferiority of the female gender. Science education especially was accessible to men alone until medicine was recognised as a culturally appropriate profession for women. Despite socio-economic advancements and government interventions, women continue to remain underrepresented in science education and careers across India. The book *Gender and STEM: The Indian Context* by Namrata Gupta examines the construction of gender and its implications for women in science, technology, engineering, and mathematics (STEM). She substantiates how the exclusionary forces of patriarchy, caste, and class create a disabling environment for women in the Indian sociocultural context. The book contributes to the existing body of literature which argues that the philosophy and culture of science is predominantly masculine and women's capability of doing science has been emphatically doubted. The author employs gender as an axis of enquiry and uses both numbers and narratives to explicate the female disadvantage in STEM.

The introductory chapter discusses how patriarchy, caste, and class invade the everyday social fabric of Indian society. The patrifocal structure of Indian families prioritises the son's education and career and makes educational choices for women with culturally desirable attributes in mind. The author argues that constructions of masculinity and femininity get reflected in the enrolment patterns in STEM. While women's enrollment in engineering has increased, core branches such as civil or mechanical engineering are widely perceived as a man's world. She further argues that caste continues to claim its space in the sociocultural order of society. Dalit and Adivasi women face discrimination both on the grounds of gender and caste. Women in science are usually from middle-class, upper caste backgrounds (Gupta, 2025b), with Dalits constituting only 8.1% of women enrolled in doctoral studies (2025b).

The first two chapters encapsulate Indian middle-class aspirations regarding educational choices and career planning that bear gendered underpinnings. STEM careers are more

remunerative in nature and draw relatively higher social repute than other academic disciplines. Investment in medical and engineering coaching bears the mobility aspirations of Indian parents. Studies (Gupta, 2012) show fewer female students at coaching centres for engineering examinations. The situation in medical entrance examinations differs as girls' participation exceeds boys. However, there exists horizontal segregation within the medical field as well. While women dominate fields such as gynaecology, nursing, and physiotherapy, the proportion of women is low in general surgery or orthopaedics (2025b).

Recent trends show that daughters are encouraged to pursue engineering despite its masculine imagery. Whether it is actually directed towards gender equality is doubtful, as another study by the author (Gupta, 2015) suggests that a professional degree eases marital negotiations. In India, girls opt for computer-related engineering fields (2025a) and are discouraged from taking up conventional departments such as civil or mechanical engineering perhaps because these are considered masculine fields. A narrative in the chapter confirms that strenuous field internships on construction sites discourage parents of daughters (2025b). Paradoxically, even though computer science engineering carries a "woman-friendly" image, women do not outnumber men in computer-related fields and struggle to reach leadership and managerial positions (2025b).

Gender marginalities are linked to caste, class, and regional locations as well. Privatisation of education and expensive coaching accentuates the class boundaries between social groups. Based on a study by Gupta on IIT students, Dalit and Adivasi women have the lowest cumulative performance index compared to women of other castes (Gupta, 2025b).

While there is a higher proportion of women enrolled in STEM courses in the country, it does not necessarily translate into workforce participation, whether in academia or research. Chapter three engages with challenges of women STEM professionals besides academia (Gupta, 2025b). The chapter touches upon issues of gender pay gap and the lack of women in senior, managerial positions, perhaps due to gendered perception of men as better leaders. It brings to light the gendered atmosphere in professions such as architecture and the IT sector. While the former is perceived to have a greater number of female students, the proportion of women practicing architecture is rather low. In the case of the latter, women's participation is found to have become stagnant at 30% since 2012.

The author reasons that gender inequality in the labour market is, in fact, a reflection of gendered practices at home. Ethnographic accounts in the book elucidate the nuanced relationship between patriarchal social structures and women's agency. While good academic performance saves a girl from being coerced into marriage, getting married brings a sudden drift into a woman's life, where in most cases, she opts out of her job, more so after having a child. The chapter further contests the woman-friendly image of the medical profession. Despite having historical access to the discipline, women as medical professionals are a minority, with men dominating fields such as general medicine and surgery.

Chapter four discusses the underrepresentation of women scientists in institutes of national importance; below 20% in IITs and at a base rate of approximately 8% at IISc (Gupta, 2025b). While scientific knowledge claims to be uncontaminated by biases, science professionals have a skewed understanding of what constitutes "merit". The masculine perception of a scientist as someone who immerses themselves completely into research is at odds with the gendered perception of an Indian woman whose primary responsibility ought to be inclined towards her family. This pushes women scientists to the margins of the scientific community (2016).

Women's contributions to science are rarely recognised (Gupta, 2025b) and they rarely reach leadership positions. Winning awards and accolades are a prerequisite of claiming "merit" but women are less likely to be selected for prestigious awards. The author argues that the culture of separate awards for women such as the Women Scientists' Award excludes them from "gender neutral" awards, thus reproducing gender-based hierarchy among scientists (2025b).

In the second section of the chapter, the author delivers a nuanced description of the doctoral phase and its broader implications on the progression of a female researcher's career. Knowledge production develops not through technical procedures alone but also through the informal milieu of interactions among peers and faculty members (Gupta, 2007). Lack of interaction adversely affects women in scientific research. It results in information deficit coupled with lack of visibility and academic networking (Gupta & Sharma, 2003). The situation is far more debilitating for Dalit and Adivasi women, who lack both resources and privilege.

The fifth chapter brings forth the gendered culture of scientific organisations through the everyday experiences of women scientists. Women in science undergo bias not only due to

their relatively lower proportion but also because hierarchy and patriarchy are deeply enmeshed into the sociocultural milieu. Women's minority position places them under greater scrutiny. While their smallest failures are magnified, their work is considered mediocre (Gupta, 2025b). Informal communication is crucial in science because science is very much a collaborative activity but interviews with women confirm that they usually work in isolation as men tend to network with men alone (2025b).

The last chapter critically engages with some government interventions aimed at bringing about gender parity in STEM. The Gender Advancement for Transforming Institutions Pilot Project was one such initiative that the author discusses at length. She also argues that existing schemes such as the Mobility Scheme (Gupta, 2025b) are gendered and reinstate the public–private dichotomy. The author observes that despite multiple initiatives targeting gender equality, there remains a disproportionate discrepancy between policy and practice. The challenges faced by women in our society emerge from deep-seated biases and neglect towards women and their right to educate, empower, and emancipate themselves.

The book claims to capture the complex linkages between gender, patriarchy, and education. However, it focuses extensively on women's issues in STEM and does not go beyond the traditional binary of male and female. Another observation has been that though the book acknowledges the vulnerability of Dalit and Adivasi groups, the book does not engage with this issue in an elaborate manner. Overall, the book is lucidly written, informative, and empirically rich. The book will particularly interest readers who wish to grasp the challenges that inhibit women's entry and retention in STEM in the Indian landscape.

## References

- Gupta, N. & Sharma, A. K. (2003). Patrifocal concerns in the lives of women in academic science: Continuity of tradition and emerging challenges. *Indian Journal of Gender Studies*, 10(2), 279–305. <https://doi.org/10.1177/097152150301000205>
- Gupta, N. (2007). Indian women in doctoral education in science and engineering: A study of informal milieu at the reputed Indian institutes of technology. *Science, Technology, & Human Values*, 32(5), 507–533. <https://doi.org/10.1177/0895904805303200>
- Gupta, N. (2012). Women undergraduates in engineering education in India: A study of growing participation. *Gender, Technology and Development*, 16(2), 153–176. <https://doi.org/10.1177/097185241201600202>

- Gupta, N. (2015). Rethinking the relationship between gender and technology: A study of the Indian example. *Work, Employment and Society*, 29(4), 661–672.  
<https://doi.org/10.1177/0950017014556410>
- Gupta, N. (2016). Perceptions of the work environment: The issue of gender in Indian scientific research institutes. *Indian Journal of Gender Studies*, 23(3), 437–466.  
<https://doi.org/10.1177/0971521516656079>
- Gupta, N. (2025a). Gender and civil engineering in the Indian context: Perceptions and experiences of female students. *Gender, Technology and Development*, 29(1), 160–180.  
[10.1080/09718524.2025.2470028](https://doi.org/10.1080/09718524.2025.2470028)
- Gupta, N. (2025b). *Gender and STEM: The Indian context*. Routledge.