

Women in Engineering in Bangladesh and the USA: A Comparative Study

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Abstract:

This paper focuses on the comparison of women in engineering in two countries (Bangladesh and the USA) which are miles apart not only geographically but also in social and cultural values. Engineering has traditionally been a male dominated profession. While progress is being made in encouraging women in engineering and technical fields, the progress rate has been very slow. Data from surveys indicate that the factors affecting recruitment and retention of women in engineering are very similar in both countries. The fact that the engineering profession is male dominated, is physically demanding and requires sound mathematical and scientific background are the major hurdles in attracting women in engineering. While workshops, special courses, seminars, congenial academic and workplace environments designed to improve the numbers of women in engineering are essential, attitude changes in society towards women in all countries has to change to encourage women to select engineering as a profession.

Introduction:

This paper focuses on factors that impact attraction and retention of women in the engineering profession both in Bangladesh and the USA. Bangladesh is a small country located in south-east Asia with a population of 90 million people. It currently has four state funded engineering colleges and one state funded engineering university. Some private institutions are also being established. Bangladesh University of Engineering and Technology (BUET) is the oldest institution for the study of engineering and architecture in Bangladesh. The history of this institution dates back to the days of Dhaka Survey School which was established in 1876 to train surveyors for the then government of Bengal of British India. As the years passed away the survey school was upgraded to the Ahsanullah Engineering College offering diploma courses in

civil, electrical and mechanical engineering. Ahsanullah engineering college was finally upgraded to the status of a university in 1962. It is currently known as BUET, Bangladesh University of Engineering and Technology. A small number of female students first entered the university by competitive merit examinations in architecture (1967) and engineering (1968). Since the inception of the university in 1962 till 1996, a total number of 11,936 students have graduated in the four major engineering disciplines namely chemical, civil, electrical, mechanical and metallurgical engineering. The number of women out of the total students graduated is 516. The USA in contrast has numerous engineering schools. Recent studies (Fentiman, 1995) indicate that an increasing fraction of new workers entering the US workforce will be women. While many programs for encouraging women into the engineering profession are in place in the USA, the national average for undergraduate engineering student remains at 18% (Tooley, 1997). This paper will focus on the comparison of women in engineering in two countries which are miles apart not only geographically but also in social and cultural values.

Factors Affecting Women in Engineering

Bangladesh is a country where women grow up amidst taboos and prejudices which relegate them to a secondary status and hinders their performance. Constitutionally women in Bangladesh have equal rights as men but social realities preclude girls from participating in numbers commensurate with men. Women have voting rights and fifteen percent of the government positions are reserved for women. Ten percent of the seats in the parliament are reserved for women. Most educational institutions offer equal opportunities for men and women. But social realities preclude girls from participating in professions which are typically male dominated. This is evident from the low female enrollment in many institutions in the country. There are no reserved seats set aside for women in engineering in Bangladesh. Women enter the engineering colleges and universities through severe competitive entrance examinations. Typically these students tend to be an exceptionally bright group and are usually in the top 10 % of their class.

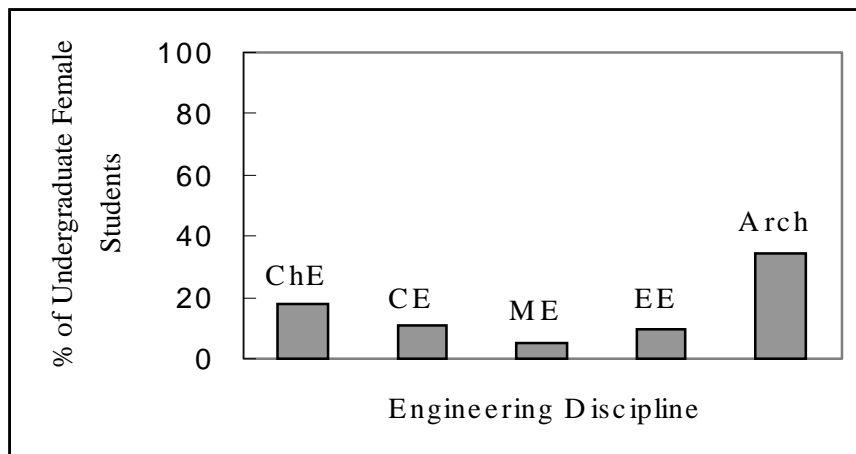
Some of the major factors affecting the recruitment and retention of women in engineering in Bangladesh stem from severe social prejudices and taboos. Gender sensitivity is typically absent in most institutions. There are still some male faculty, on the predominantly engineering male faculty, who still think that women have no place in engineering and science. Most eastern women are further burdened with the choice of marriage and motherhood over professional careers. The possibility of combining careers and marriage is slowly gaining acceptance in our society. The fear of sexual harassment is extremely rampant in our society as Bangladeshi

women regard the sacred virtue of chastity religiously. Sexual overtones in conversations are common in the workplace. Apart from these social issues, the fact that engineering requires a strong mathematical and science background is probably one of the major factors in hindering women from considering engineering as a profession. While the social and cultural values are very different in the USA from Bangladesh, it is interesting to note that all the above mentioned factors also impact women in the USA (Baum, E. 1990, Meyninger, R., 1991).

Retention of women in engineering programs is also of equal importance as their recruitment. Losing female engineering students is also a major problem in academic institutions both in Bangladesh and the USA. While this country is currently focussing on mentor programs, workshops, seminars etc. to help female engineering students, very little is being done in Bangladesh. Recently BUET has taken a small step by introducing a Gender Strategy Component with the University of Alberta Linkage project. This program was originally started in 1988 to train highly skilled engineers, both men and women, for the oil and gas industry in Bangladesh. Historically BUET has been free of gender bias in all its policies. The increasing number of women in all academic programs and teaching faculty clearly indicates that engineering is becoming an attractive profession for women. Industries recognize the importance of fostering a congenial workplace that recognizes the talents of female engineers and enables them to contribute to their full potential.

Statistics

Current records (The Daily Star of Bangladesh, May 13, 1997) indicate that the percent of women in engineering is around 16.5% and 31% in architecture. The following chart represents the percentage of women both in the undergraduate programs in various engineering programs in



1996-97 at BUET.

The trend of participation of women in engineering in Bangladesh is very encouraging. A separate residence hall for women at BUET was built in 1986. A physical instructor is available for encouraging women in sports and recreation. A female doctor is also available at the health center, which provides free medical services to all students. The fact that that the percentage of women in engineering in Bangladesh and USA are close is interesting. A similar percentage (15%) for women in engineering in India has been reported (Rao, J., 1997). While the USA has established programs (Tooley, 1997) to encourage and retain women in engineering, Bangladesh has none.

Conclusions

The comparison of Bangladesh and the USA with regards to women in engineering points out a significant factor: the lack of incentive to attract women in engineering at an early age specifically during their elementary education. Society typically in both western and eastern countries places undue emphasis on the abilities of girls and boys. Girls are encouraged to play with dolls while boys play with scientific toys containing mechanisms and electronics. The notion that girls are not strong in analytical, problem-solving skills is also rampant in most societies. Girls hardly ever see a female engineer role model on television or a newspaper. Few girls in an elementary or even at a high school can define the work of an engineer. While mediocre male students can think of engineering as a career, most mediocre females shun away from engineering. The solution for better participation of women in engineering is a change in the society at large. Mentoring programs for girls are essential to erase the fear of mathematics and science at an elementary level. Exposure to engineering careers and dismissing myths about physical hardship and strenuous labor are also extremely important.

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