Vignette 8.2
Making a Meaningful Choice: Women's Selection of Computer Science in India

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Low participation of women in computer science (CS) education is a pressing problem in many Western countries (Ahuja 2002; Lie 2003; Singh et al. 2007). By and large, the field of CS is perceived as masculine both by men and women in Western countries (Wajcman 2004). In contrast, women in India have increased their presence in CS education in most nationally accredited institutes and universities (Basant and Rani 2004; Varma 2009; Fig. 8.4). In general, the field of CS is perceived as women-friendly both by men and women in India (Varma 2010). Regardless of economic, political, and social advantages in the Western countries, women in India seem to have levels of success in CS education that appear to somewhat outstrip those of Western women. This paper uncovers why women in India are attracted to CS education and career.

8.7 Methodology

The paper is based on in-depth interviews that were conducted by the author with 60 female undergraduates majoring in CS in 2007–2008. The study took place in two engineering institutes and two universities that granted 4-year undergraduate degrees in CS. Random sampling was used to select 15 subjects who were in their second and later years of studies at each institution. Interviews were recorded, transcribed, and analyzed with Nvivo. All of the students interviewed were young, unmarried women between the ages of 19 and 22. Other than being a full-time student, none held a job while attending university. Almost all of them characterized

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© Springer International Publishing Switzerland 2015
W. Pearson, Jr., et al. (eds.), Advancing Women in Science: An International Perspective, DOI 10.1007/978-3-319-08629-3_8
their family background as in the middle- or upper-middle-class categories. Almost 75% of students were born to Hindu families, with the majority belonging to middle and high castes; remaining students were born to Sikh and Muslim families.

8.8 Findings

8.8.1 Why Do Women Choose Computer Science?

The findings show that some female students became interested in CS education because they had early exposure to computers either in their homes, cyber cafes, or friends’ places. They used computers to browse the web, chat/email, and play games. A few took computer classes in their high schools to learn word processing, power point, and paint; however, they complained that the computer laboratories have poor resources with limited access due to power cuts. At least one-third of students were not exposed to a computer pre-college. A significant factor in most female students’ entrance into CS involved encouragement from a parent, sibling, or cousin who owned a computer or studied in an engineering field. They influenced the students by narrating personal experiences or by conveying that CS has a great potential for women. Especially male family members described CS as an excellent major for women because it required merely mental power not physical, and because they could work indoors rather than outdoors on a construction site. Also, students made a pragmatic assessment of the CS with great potential for employment, the omnipresent presence of computers in government and industry, and the power to be on the cutting-edge modern technology. A few female students believed that a CS degree would let them have some social independence.

8.8.2 Why Do Women Perform Well in Computer Science?

Since female students had little experience with computers in high schools, did they feel prepared for CS study at the university? A large majority of students stated that either their schools did not prepare them well or only partially prepared them for university level CS. Yet, most of these students believed that their high school education in mathematics was strong, and thus critical to their ability to proceed into CS. They were extremely confident about their mathematical skills and, thus, logical thinking and analytical abilities. So, even though they found CS a hard, demanding, technical field, female students felt their mathematical training prepared them to do well in CS at the university level.
8.8.3 How Do Women Perceive Computer Science?

Female students view the typical CS culture as people-friendly especially women-friendly. It consists of dedicated, hard-working, intelligent, meticulous, and smart students who help those needing assistance. In addition to the CS study, these students are active in social events and sports and it is pleasant to be around them. According to them, women who study CS are well respected by faculty and peers in the educational arena and by family members, friends, and neighbors in the social arena. Also, female students believed that economic rewards for a woman with a CS degree are much higher than with a degree in other science and engineering fields. Some female students indicated that employment in information technology (IT) companies is well appreciated and it alleviates concerns their families had about the high cost of marriage.

8.8.4 Why Do Women Stay in Computer Science?

If female students do not like the CS or find CS difficult, would they try to avoid disappointment by switching their major? The findings show that an overwhelming majority of students had not entertained the idea of leaving CS to another major. The respondents reported it did not cross their minds to switch to something else because of the economic benefits, work opportunities, and social independence they could gain with a CS degree. Most students did not know anyone who changed majors or dropped out of CS, which was seen as a step backward.

8.8.5 What Women Hope to Get with a Computer Science Degree?

Upon completion of their CS degree, most female students planned on joining the workforce, with a few interested in moving directly into a graduate program, and the remaining students undecided about a job or higher education. Students were confident about receiving placement into good IT companies due to the frequent job placement campus visits by company recruiters. Students who expressed their desire to move directly into a graduate program felt it would allow them even more opportunity than their peers, along with a broader range of possible employment and higher pay. Students who were not sure whether to join the workforce or a graduate program wanted to decide on the strength of job placement and the admission to the university that they wanted to attend.
8.9 Conclusion

Women in India are enrolling in CS because it is a means for them to secure a friendly working environment, gain prestige, become career-oriented professionals, and attain an economically independent status. This shows that women in computing cannot be viewed as a globally homogeneous group. The gender imbalance in the Western countries is not a universal phenomenon as it has been presented in the scholarly literature.

Acknowledgments This research was supported by a grant from the National Science Foundation (0650410).

References


