Understanding the Gender Gap in Undergraduate Computer Science

General Exam Charge
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Committee ID: 7677

Committee Members

- Richard J. Anderson, Chair - Computer Science and Engineering

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Format and Questions

(This text from the original charge, as sent to the committee on 6 December 2002.)

This exam will be in the "research preparation" format[1] and will focus on a set of papers reporting studies of gender-related differences in retention among students of computer science (CS). The report will present a framework for summary, comparison, and critical analysis of the studies' settings, methods, and results. It will also discuss connections with broader retention studies in math/science fields. A substantial portion of the report will discuss future directions for research. More specifically, the following questions will be addressed:

- Although all of the studies examine retention in CS, how do the goals of the studies differ, and how are they reflected in the choice of methods for data gathering and analysis?

- How coherent are the studies' results with respect to factors found to be relevant to retention in CS? What assumptions about potential factors are implicit in the way data was gathered? What factors remain unexamined?

- What are some practical implications of the findings, i.e., what changes do they suggest in the way CS departments teach undergraduates?

- What new factors and methods should future studies of retention in CS consider? (This will include discussion of the examinee's specific plans for future work in this area.)

Papers

The following papers were listed in the original charge. Copies are available upon request via e-mail. Some papers are available in electronic form in Acrobat format.

- E.D. Bunderson and M.E. Christensen. An Analysis of Retention Problems for Female Students in University Computer Science Programs. *Journal of Research on Computing in Education*, 28(1):1–18, 1995.

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[1] See http://www.cs.washington.edu/education/grad/generals/, Section IV.B and Appendix A.

- V.A. Clarke and S.M. Chambers. Gender-Based Factors in Computing Enrollments and Achievement: Evidence from a Study of Tertiary Students. *Journal of Educational Computing Research*, 5(4):409–429, 1989.

- J.M. Cohoon. Toward Improving Female Retention in the Computer Science Major. *Communications of the ACM*, 44(5):108–114, May, 2001.

- C.M. Jagacinski, W.K. LeBold, and G. Salvendy. Gender Differences in Persistence in Computer-Related Fields. *Journal of Educational Computing Research*, 4(2):185–202, 1988.

- M.G. Sackrowitz and A.P. Parelius. An Unlevel Playing Field: Women in the Introductory Computer Science Courses. *Proceedings of SIGCSE 1996*, 37–41, February, 1996.

- E. Seymour. The loss of women from science, mathematics, and engineering undergraduate majors: An explanatory account. *Science Education*, 79(4):437–473, 1995.

The following additional study publications were also analyzed in the report. Copies of the papers (i.e., everything except for the book by Margolis & Fisher) are available upon request via e-mail.

- J. Margolis and A. Fisher. *Unlocking the Clubhouse: Women in Computing*. MIT Press, 2002.

- G. Scragg and J. Smith. A Study of Barriers to Women in Undergraduate Computer Science. *Proceedings of SIGCSE 1998*, 82–86, 1998.

- A.C. Strenta, R. Elliott, R. Adair, M. Matier, and J. Scott. Choosing and Leaving Science in Highly Selective Institutions. *Research in Higher Education*, 35(5):513–547, 1994.

- B.C. Wilson. A Study of Factors Promoting Success in Computer Science Including Gender Differences. *Computer Science Education*, 12:(1–2), 2002.