

CSE 303: Concepts and Tools for Software Development

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Winter 2009
Lecture S2— Diversity

Diversity

Recurring topic — regular stories in the papers about women leaving or not entering computing.

But is it real?

Does it really matter? If so, to who? Why?

(How many of you are thinking right now: “oh, no, not again!”?)

Some CRA Statistics

Undergrad interest is down overall (from 14,000 new majors per year in 98-99 to 8,000 in '05-09)

Percent of CSE degrees awarded to women is at all-time lows (and was never very high to begin with)

- '99-01: Bachelors 19%, Master's 26%, Doctorates 15-18%
- '05: Bachelors 14%, Master's 25%, Doctorates 15%

This is low even in comparison to NSF statistics for science and technology overall

- '04: Bachelors 50%, Master's 44%, Doctorates 38%

Ethnicity is also skewed. Ph.D. statistics:

1. '05: Nonresident 53%, African-American 1%, Native American 0%, Asian/Pacific Island 11%, Hispanic 2%, White non-Hispanic 31%, Other 2%

Some AP statistics

2008 totals for some Advanced Placement tests

Subject	Male	Female	Total	%Female
Biology	63,679	90,825	154,504	59
Calculus (all)	155,232	136,706	291,938	47
Chemistry	53,332	47,254	100,586	47
Environmental Science	27,096	34,294	61,380	56
Physics (all)	67,804	30,472	98,276	31
Computer Science (all)	17,004	3,528	20,532	17

So what?

A random quote from some guy on the internet:

“28 percent! It sounds like the number is way too high already, there is no way that that many women are attracted to the field. Women are different than men and in general are just not cut out for this type of thing, the exceptions are just that, exceptions.

“I would think a more natural number would be around 5%. We don't need more women in the sciences, we need more competent people, whoever they may be.”

Causes?

Being smart is not cool?

Is programming “too hard”?

No role models? (a gender, ethnic, and socio-economic issue)

Cultural issues? (prestige of science/technology in American society, no CSI-CSE?)

Bad stereotypes? (geeks in front of monitors)

Desire for a more balanced life?

Tech crash?

Maybe there are no barriers — women and minorities just aren't choosing CSE for good reasons of their own (what kinds of reasons?)

Is this us?

Weizenbaum's classic description:

“Bright young men of disheveled appearance, often with sunken glowing eyes, can be seen sitting at computer consoles, their arms tensed and waiting to fire their fingers, already posed to strike, at the buttons and keys on which their attention seems to be riveted.

... They work until they nearly drop, twenty, thirty hours at a time.

Their food, if they arrange it, is brought to them: coffee, Cokes, sandwiches. ... Their rumpled clothes, their unwashed and unshaven faces, and their uncombed hair all testify that they are oblivious to their bodies and to the world in which they move. These are computer bums, compulsive programmers.”

Gender issues

Girls do as well as boys in science and math up through Jr. High school, then interest and self-confidence drops off dramatically

Self-confidence issues? Women and men react very differently to setbacks and have different perceptions of their own abilities compared to others

Lots of stories about slights faced by women (discrimination, glass ceiling, macho culture, etc.)

Although women are just as capable, and enter technical fields in reasonable numbers, they leave “hard science” mid-career at much higher rates than men

Historical falloff in computing: the field had a significantly larger percentage of women and was perceived as more welcoming in its early days

Are women guests in a male world?

You're only here because you're a woman!

From: Hank Levy

Sent: Tuesday, March 11, 2008 10:20 AM

To: cs-ugrads-urgent - Email Alias

Subject: men, women, and CSE admission

I was recently told that a number of CSE students, both men and women, have heard other students say: "Women mainly get into the department because CSE lowers the standards for women."

Such statements are, in addition to being totally untrue, not consistent with the kind of environment we want to establish in CSE, which is supportive to all students. For the record, we do not lower our standards for anyone, and in fact, that would be illegal in the state of Washington. Furthermore, I can tell you that the statistics reveal quite the opposite — looking at our 440 CSE majors who have started 300-level courses, the women students (25% of that population) actually have a *higher* average UW GPA than the men!

Does Diversity matter?

Some examples:

- Airbags were (still are?) designed for the average male. This turned out to be a dangerous design for smaller women.
- Early voice-recognition software could not recognize women's voices because it was trained on "normal" ones — male.
- The iPhone touch screens are hard to use if you have long(er) fingernails.
- Most research on heart disease has been done on middle-age men. Newer research suggests that these results don't generalize to women — but treatment is based on the "best available research".
- There is a consistent correlation in the Fortune 500 between companies with strong records of promoting women and profitability. (Pepperdine Univ.)

Computer Games

Do computer games attract or repel different groups from the field?

Does diversity have any role here?

- Women outnumber men in some gaming demographics (which ones do you think?)
- The initial version of the Xbox was not tested on women or Asian populations. The controller was too large for their hands and had to be redesigned.
- The Wii is a *huge* success — but not with typical hard-core gamers.

Some Questions

Does diversity matter?

- If so, to whom? Industry? Society? UW CSE?
- If so, why?

Is there a problem? If so, where?

- Jr. High School? UW CSE? Science & Engineering in general? Society?

Should we worry about it?

Could we do anything about it?

- Where?
- What?
- How?