Combating Implicit Gender Bias in Introductory Computer Programming Courses

COMPUTER SCIENCE & ENGINEERING
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WORK IN PROGRESS

obstacles to gender diversity
in the computer science and computer engineering undergraduate programs

stereotype	climate	self-efficacy
traits of a computer scientist are not appealing to women, affecting entry-level enrollment	women experiences in freshman and sophomore-level courses are often negative (isolation, harassment, etc.), with the result that many decide to change majors, hence the poor retention rate	women have lower self-efficacy in STEM fields than their male peers, e.g. women view an A-/B+ as an indicator they are *not* performing at a level sufficient to complete the degree successfully

GOAL **remove obstacles** that hinder enrollment and retention of female students in the CSE program

research supported by Transforming Learning for a Third Century Grant: *Computing CARES*
THIRD CENTURY INITIATIVE UNIVERSITY OF MICHIGAN

Computing CARES Directive #3: Improve climate and conduct among the student population in the entry-level courses.

THEORY raising awareness of implicit bias will improve the climate of the CSE program

HOW a series of interactive exercises on implicit gender bias in CSE

WHY to encourage a more welcoming atmosphere for women (and everyone!)

COURSES ENGR 101/151
EECS 183/280

DATA Fall 2015 (collected, processing)
Winter 2016 (collecting now)

FUTURE track female student enrollment in CSE; long term study on implicit bias

in progress: comparing all data to assess impacts of these strategies

analysis will drive improvements to the program & future studies

entry survey
assess confidence in programming skills and perceptions of the CSE environment

staff training
GSIs and IAs are led through a 1 hour workshop focused on bettering teaching skills through knowledge of implicit bias

Implicit Association Test
students take Harvard's Gender-Science IAT and submit form *reflecting* on taking the IAT, but *do not* submit their results

implicit bias presentation
lecture given to all classes revisiting implicit bias, why we took the IAT, interviews with women from industry, interactive story sharing in lecture and via online form

exit survey
re-assess confidence in programming skills and perceptions of the CSE environment

semester →

IMPLICATIONS

improved understanding of student experiences in CSE classes will provide guidance on creating and sustaining **a welcoming environment for all students**

→ spin-off group investigating implicit bias of all kinds in first-year engineering courses

spin-off group supported by Inclusive Teaching Grant W16: *Addressing the Impact of Implicit Bias on Teams in Introductory Engineering Courses*
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