CCWIC 2010 Poster Submission: Abstract

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Title: Assessing Effects of an Introductory Computer Science Course on Recruiting and Retaining Women in Computer Science Studies

Recruiting and retaining underrepresented groups, especially women, in the field of Computer Science (CS) is an increasingly important issue. The percentage of women in the U.S. completing bachelor's degrees in computer and information sciences is much lower than men. Females obtained 22.2% of those degrees in 2005 and the percentage declined to 17.6% in 2008 (IES NCES, 2009). These concerns are of particular interest at my institution, Colorado School of Mines, since only 15% of the undergraduate students enrolled in the CS program are female. In response to the need to improve female participation and retention within our CS program, I have decided to research issues related to this need as part of my Master's thesis.

There are several possible topics of interest for my thesis. One possibility is to study formal learning groups in an introductory CS course and their impact on the recruitment and retention of women in CS. The study would include observations of conflict, creativity, motivation and openness in learning groups, and how these group dynamics relate to group members' gender, personality type and level of commitment to pursuing a CS degree. Another option is to assess the impact that the use of engaging educational software tools, such as collaborative active learning games for introducing specific CS concepts, has on women's interest in studying CS. Another potential area of study involves examining female students' perceptions of and performance in various aspects of an introductory level CS course. The study would evaluate how perceptions and performance in an early course impact successful recruitment and retention of women and underrepresented groups in CS.

As part of my research I will conduct a number of studies with students taking a new course, Introduction to Computer Science (CSCI 101). CSCI 101 is being offered for the first time at Colorado School of Mines in the Fall 2010 semester and I am currently a co-instructor for the course. CSCI 101 is intended to introduce the building blocks of CS and incorporates formal learning groups as a primary instructional approach. Students who register for the course include CS majors as well as non-majors, and students of all undergraduate levels of academic progress (freshman through seniors). My studies will be focused on identifying ways in which CSCI 101 helps motivate women and other underrepresented groups to pursue a degree or continue their studies in CS. Throughout the course I will collect data from students regarding their intent to major, interest in computing, personality types according to Keirsey Temperament Sorter or Myers-Briggs Type Indicator, and perceptions of formal learning groups. I will also investigate students' perceptions of specific educational tools such as simulations and collaborative games aimed at introducing new computing concepts.

References:

1. IES National Center for Educational Statistics (NCES). (2009). "Degrees in computer and information sciences conferred by degree-granting institutions, by level of degree and sex of student." Available at: http://nces.ed.gov/programs/digest/d09/tables/dt09_303.asp. Retrieved on September 27, 2010.