Computer Science Teachers Association

« Hackathons as Possible Student Motivators | Main | The Bad Side of Good Publicity »

Branching Out: Modeling Topics in Social Science

Santa Fe Institute's GUTS y Girls program, in partnership with Arizona State University professor Dan Hruschka, has developed a new curriculum to engage students in understanding how computing and complex adaptive systems play an essential role in the social sciences. In the curriculum, geared towards the high school level, students explore questions and test their own assumptions using methods and data from the social sciences (anthropology, sociology and psychology) and computer modeling in NetLogo, a text-based computer programming language. Student investigations center on the role of cooperation in human interactions and how cooperation plays a role in global issues such as resource management, health equity and climate change.

Last year, the curriculum was piloted with a set of 12 high school students in a weekend club context. This summer we will be offering the program as a one-week summer intensive workshop for GUTS y Girls alumnae. We sought to address the issue of continuation of engagement for young women (high school age) who were initially interested in computing through our middle school GUTS y Girls program. We found that after being exposed to computing and computational thinking in the context of an all girls middle school program, young women were resistant to joining co-ed computing clubs and teams. Rather than viewing this phenomenon as a failing of either the girls or the GUTS y Girls program, we sought to prolong engagement and continue to build the skills of the young women whom we have mentored over the past years. It was our good fortune that at the same time we were looking for continuation opportunities for GUTS y Girls alumnae, Dan Hruschka was seeking a partner to develop an education outreach component as part of his research on social closeness.

We are eager to share our resources and encourage other CSTA members to consider forming partnerships with social science teachers. The potential for integrating computing across disciplines through modeling and simulation is huge and largely untapped. These interdisciplinary projects and teams offer many routes to expose students to the breadth of computing, and demonstrate its connection to understanding and solving real world problems, while preparing students for future endeavors involving computing.

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