K-12 Computer Science Expansion Project Goals and Overview

Numerous professional development opportunities for K-12 computer science teachers exist, however the computing community has little understanding of how these opportunities fit together in a strategic framework for systematically growing the number of teachers and learners of computer science. Expanding K-12 computer science education is of vital importance to the United States, and the community’s engagement on this grand challenge has been spurred on by the National Science Foundation’s “CS10K” vision, which seeks to have rigorous academic computer science courses in 10,000 high schools taught by 10,000 teachers by 2016. Does the nation and education community have the capacity to greatly increase the ranks of K-12 computer science teachers, and put rigorous computer science in places where it currently is not and never has been? If so, where will those teachers come from, and what kinds of professional development and supports do they need? If we are going address the grand challenge of scaling K-12 computer science education across the country, we need to develop a greater understanding of how to prepare, develop and support K-12 computer science teachers of all levels and advocate for expansion and reform.

The University of Chicago’s Urban Education Institute (UEI) and the Center for Elementary Mathematics and Science Education (CEMSE) are carrying out an 18-month study for the computer science education community to (1) understand and document the landscape of current K-12 computer science teacher professional development; (2) identify the community’s capacity for both serving current computer science teachers and attracting new teachers to the discipline; (3) understand the professional development and institutional supports needed to both attract new and retain teachers in computer science; and (4) work closely with PD providers to identify and develop models and best practices for computer science professional development that attract, retrain and expand the ranks of K-12 computer science educators.

Over the course of the 18-month study, CEMSE and UEI will use surveys and interviews to collect data from professional development providers, computer science teachers, CSTA members, students, and school leaders. Ongoing information about this project will be available at: http://cemse.uchicago.edu/research-and-evaluation/research/computer-science/ and at the conclusion of this project, we will produce a report that includes a summary of our key findings and recommendations to the computer science field for next steps.

Success for this project will be defined by both the development of professional development capacity and an articulated computer science expansion plan, as well as the acceptance of that plan by the computer science community. To that end, our project team will work with the partnership that ACM has established with the National Science Foundation, Google, the Computer Science Teachers Association, Microsoft and the National Center for Women and Information Technology to assure our deliverables will be useful the broader computer science and computer science teaching community.

For more information contact:

Jeanne Century  
Director of Science Education and Research & Evaluation  
University of Chicago’s Center for Elementary Mathematics and Science Education  
jcentury@uchicago.edu

Michael Lach  
Director of STEM and Strategic Partnerships  
University of Chicago Urban Education Institute  
mlach@uchicago.edu