DIMACS

Center for Discrete Mathematics & Theoretical Computer Science
Founded as a National Science Foundation Science and
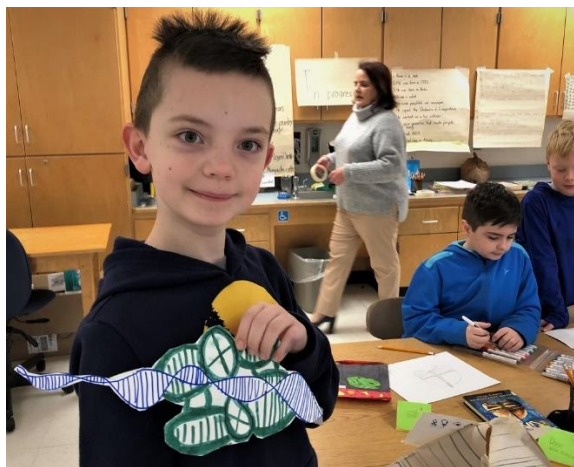*Technology Center*

Video about the CTPD Project in the 2020 STEM for All Video Showcase

[May, 2020] The 2020 STEM for All Video Showcase includes a video on our project *Integrating Computational Thinking in Mathematics and Science High School Teacher Professional Development*, or CTPD for short. The project is developing an online course in computational thinking (CT) for high school math and science teachers, delivering it to teachers throughout the country, and conducting research to assess the efficacy of the professional development delivered. The three-minute video that appears in the Video Showcase provides an overview of the project and features several project team members.

The course introduces CT concepts in the context of real-world examples, many of which align with the core curriculum in science or mathematics to enable teachers to bring CT ideas from the course directly into their classrooms. The course is conducted online, but online use is preceded by one-day in-person workshops. The workshops are a critical bridge that serve to introduce teachers to CT, to the online platform, and to each other to help establish a community that persists online. So far, we have tested the course with cohorts of 20-25 teachers in five different locations around the country: Oklahoma City, OK; Helena, MT; Albany, NY; Pittston PA; and Nevada, MO. Later this year, we will launch courses to serve teachers near Logan, UT, Groton, MA, and Boston, MA.

Feedback from teachers completing the course has been extremely positive and even somewhat surprising. Throughout the course we encourage teachers to think about whether and how they can bring what they are learning into their classrooms, and many have already done this. The majority of teachers taking the course are in-service high school science and math teachers, but pre-service teachers, middle and elementary school teachers, and social studies and language arts teachers have also completed it. These teachers have shown us that teachers in all career stages, disciplines, and grade levels are excited about CT and are finding innovative ways to bring it to their students. Their enthusiasm is challenging us to think about expanding professional development in CT into lower grades and beyond the bounds of STEM. A story on the CTPD website highlighting

the use of CT in third grade, seventh grade, and language arts classrooms illustrates why. (Link to story is provided below.)

Now in its sixth year, the annual Video Showcase features short videos produced by 170 innovative projects aimed at improving STEM learning and teaching that have been funded by the National Science Foundation and other federal agencies. During the week-long event, researchers, practitioners, policy makers, and members of the public are invited to view the short videos, discuss them with the presenters online, and vote for their favorites.

The 2020 Video Showcase is being held online May 5th -12th. (The videos will remain for viewing after the conclusion of the event.) The theme for this year's event is "Learning from Research and Practice." Video presentations address improving K-12 STEM classroom, informal environments, undergraduate and graduate education, teacher professional development, and community engagement. Collectively the presentations cover a broad range of topics including science, mathematics, computer science, engineering, cyberlearning, citizen science, maker spaces, broadening participation, research experiences, mentoring, professional development, NGSS and the Common Core.

This is the third straight year the Showcase includes a video about a DIMACS education project. A video on the PS-Future project was part of the 2018 Showcase, and a video on the Douglass-SAS-DIMACS Computer Science Living-Learning Community for Women (CS LLC) was part of the 2019 Showcase.

We invite you to watch our 2020 video and share it online!

Go to: https://stemforall2020.videohall.com/presentations/1701

Related Links:
- 2020 STEM for All Video Showcase: https://stemforall2020.videohall.com/
- CTPD Video: https://stemforall2020.videohall.com/presentations/1701
- CTPD Project Website: https://ctpdonline.org/
- CTPD Story "CT is for Kids": https://ctpdonline.org/2020/02/28/computational-thinking-is-for-kids-not-just-math-science-geeks/