

Rutgers Computer Science Teaching and Learning Collaboratory (CS-TLC)



A Partnership with school districts in New Jersey and Pennsylvania

Perspectives from Cynthia Blitz (Rutgers University New Brunswick), Vivian Allen (Rutgers University New Brunswick), Ria Galanos (Yext), Terri Evans (K12 Content Consultant), Nicole Norfles (Equity Content Consultant), Fran Trees (Rutgers University New Brunswick).

Project Overview

The problem of practice that inspired the grant (funded in 2018) was the persistent underrepresentation and disparities in participation and performance of students from traditionally underrepresented populations in computer science education. While the project team continued hard work to better understand all facets of this issue and the central project goal remained the same, the work in 2020 shifted more towards engaging all students in remote computer science education as a response to the pandemic.

The project operated on the idea that supporting the capacity of teachers through professional learning including participation in a research practice partnership (RPP) would enable them to better meet the needs of their diverse student bodies and ultimately address issues of equity, access, and rigor in computer science education. Additionally, the project team understood that in order to enact consistent and sustainable change, school and district administrators must be at the table with teachers in order to understand and support the teachers and also to think about potential supports beyond an individual classroom.

Project Data, Activities & Data Interpretation

To support the group of CS teachers in the collaboratory, this project curated four activities:

(1) Monthly RPP meetings were held that involved an exploration of a topic through discussion, implementation planning in breakout rooms, and a chance to share ideas among groups – as well as a brief turn to the ‘business’ of the grant project, such as logistics, sharing of information, and requests for feedback.

(2) A discussion board was established for questions, sharing of information, resources, and files.

(3) Monthly asynchronous professional development modules were offered for teachers based on CSTA standards that included a recorded lesson, discussion forum, and a short quiz.

(4) Annual summer institutes were run for the teachers that focused on professional learning and strategic planning within and between participating districts.

Data collected by the project included key informant interviews; periodic surveys for teachers probing efficacy beliefs, perceptions of computer science education, and pedagogical strategies using student performance; surveys for administrators on knowledge, beliefs, plans, and strategies, school-level data on CSE and enrolled student population; and finally feedback was regularly gathered during monthly professional development modules, other professional learning opportunities, and each day and session of the summer institute. Data was gathered to both learn how cultivating the teacher

community of practice impacted teacher ability to serve diverse students, as well as to investigate the RPP structure’s growth, sustainability, and usefulness.



In particular, the project hoped to:

- identify how best to increase the capacity of computer science educators and administrators to provide rigorous, inclusive CS education to all students.
- identify how to most effectively facilitate the formation and strengthening of productive relationships among educators both within and across districts.
- better understand the ‘structure’ or ‘mechanism’ that is most meaningful and sustainable for educators to both share their own knowledge and skills and receive the benefit from the experiences of other practitioners and relevant research to build their capacity to broaden participation in computing.

Equipping and supporting computer science teachers to better meet the needs of their diverse student bodies and ultimately address issues of equity, access and rigor requires more than stand-alone professional development; reflective professional communities of practice are crucial to ensure new teaching approaches approach these goals.

Strategies to Consider for CS Education

- Bring administrators to the table. *Include your school's admins in your work, they are valuable, and often underutilized, tools and in a unique position to help.*
- PD at your own pace. *Bring quality professional development to your teachers, rather than the other way around; doing so ensures they have the time to fully explore the relevant ideas.*
- Remain curriculum agnostic and complement the many other CS resources out there for teachers. *Do not create restrictive learning experiences for teachers, computational thinking is universal, and your preparation opportunities can be as well. This also allows the partnership to build off of other CS opportunities that teachers, schools, and districts may already have or plan to utilize in some fashion*

Contact the Center for Effective School Practices to learn more!

Cesp@gse.Rutgers.edu

Links and downloads are available for our publications on our website.

https://cesp.rutgers.edu/presentations_and_publications

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References to Learn More

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