

ENHANCING TEACHER LEARNING IN COMPUTATIONAL THINKING THROUGH CULTURALLY RESPONSIVE PROFESSIONAL DEVELOPMENT

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The analysis reported in this presentation examines a professional development initiative in a rural region of the United States known as East Tennessee that integrated community resources and culturally responsive pedagogy to deepen teachers' understandings of computational thinking (CT). We focus on understanding the affordances and limitations of the activities and instructional design of the professional development in supporting teacher learning and fostering engaged identities in relation to CT.

The analysis is part of Computer Science (CS) for East Tennessee, a three-year project funded by the National Science Foundation (#2219418), aimed at increasing elementary students' access to CT through its integration with literacy. Building on a prior NSF planning grant, the project leverages community practices such as making and storytelling to create meaningful connections between teachers' (and students') experiences and key CT concepts.

Since its launch in Fall 2022, the project has undergone two cycles of design-based research. This presentation focuses on the second cycle, implemented in 2024, in which a cohort of elementary teachers from multiple schools across East Tennessee participated in six professional development sessions spanning Summer and Fall. Our analysis frames the professional development context through the lens of access, emphasizing how learning environments are designed and structured to distribute opportunities for engagement (Engle & Conant, 2002). Using this framework, we examine discourse from professional sessions, including large and small group discussions, teacher artifacts, and interviews. Preliminary findings indicate that teachers drew on their own and their students' prior knowledge, leveraging cultural connections to engage with CT. Additionally, the data highlights the significance of linking community aspects to computational thinking in shaping teachers' professional identities. The presentation will discuss implications for teacher learning and the role of culturally responsive approaches in expanding access to computational thinking in elementary and teacher education.

References

Engle, R. A., & Conant, T. (2002). Guiding principles for fostering productive disciplinary engagement: Explaining an emergent argument in a Community of Learners classroom. *Cognition and Instruction*, 20(4), 399-483.