PROJECT SUMMARY

Overview:

A partnership between the University of Florida and computer science (CS) education leaders from New York City Public Schools, San Francisco Unified School District, Broward County Public Schools, and P. K. Yonge Developmental Research School are proposing a Small Research-Practice-Partnership (RPP) in the PK-8 strand. This project will formalize our collaboration to address the needs a shared problem of practice related to the limited inclusion of students with disabilities in elementary CS education.

The primary goals of this proposed work are to:
1. Build and strengthen our partnership towards addressing our shared problem of practice focused on meaningful inclusion of students with disabilities in CS education;
2. Understand the level of inclusion and barriers to inclusion of elementary students with disabilities in CS education across the districts; and
3. Build a practical knowledge base about inclusive CS education for general and special education teachers that can be shared, vetted, and improved upon collaboratively.

Intellectual Merit:

This project will use early-phase design-based implementation research (DBIR) to address a shared problem of practice related to the meaningful inclusion of students with disabilities in elementary CS education. We will create the infrastructure for sharing knowledge, testing new ideas, empowering the RPP partners, and disseminating knowledge with the CS education field. Necessary steps to ensuring equitable access to CS education for students with disabilities include: (1) understanding the level of inclusion of these learners in elementary CS instruction as well as catalysts and barriers to inclusion in CS instruction across the school districts, (2) investigating instructional practices to support teachers in making CS accessible and engaging for these learners typically underrepresented in the computing fields, and (3) beginning to develop flexible resources that can be used in professional development (PD) for general and special education teachers on inclusive CS education. This project will, therefore, generate new and transferable knowledge about the degree to which students with disabilities participate in elementary CS education, how different districts approach inclusion in CS education, and the catalysts and barriers involved in this effort. In addition, we will conduct case studies (Stake, 1978; 1995) of each practice partners' unique contexts. Lastly, this project will operationalize inclusive CS in different instructional settings and provide examples of how the Universal Design for Learning (UDL) framework and a balanced approach to using explicit instruction within open inquiry CS education can be used to foster inclusive elementary CS learning.

Broader Impacts:

Students with disabilities have not been a major focus of the broadening participation discourse in K-12 CS education. Our collaborative work will broaden participation by focusing on increasing inclusion of elementary students with disabilities in four school districts. Increasing access to CS education for this broad range of learners presents an equity issue. It is widely known that people with disabilities are significantly underrepresented in computing education (e.g., NSF, 2019; Taylor & Ladner, 2011). Beyond equity, increasing diversity within the STEM disciplines, including CS, produces benefits to everyone as the range of ideas that come from diverse stakeholders supports critical thinking and development that benefits all of society (Ferrini-Mundy, 2013). Ferrini-Mundy (2013) stated, "We must embrace and encourage more comprehensive and strategic approaches in order to advance diversity and inclusion in the STEM workforce and beyond" (p. 278). Part of this strategic approach is to focus on students with disabilities. This project will make available a range of professional development resources that will allow teachers to challenge their beliefs about students with disabilities and develop skills and knowledge about effective instructional approaches for accessible and engaging instruction for all their learners, including those with disabilities.