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CodeVA receives NSF CSforAll Grant for Computer Science For and By Teachers: An Integrative Toolkit for 3rd-5th Grade Classrooms

CodeVA will work with University of Virginia, Virginia Commonwealth University, and teachers from Petersburg City Schools, and Chesterfield County Schools to create a toolkit of resources and associated Professional Development to support teachers in crafting their own culturally relevant CS instruction.

Richmond, VA: Two elementary school teachers from Petersburg and Chesterfield have spotlight roles in a recent grant awarded to CodeVA by the National Science Foundation. The recently awarded CSforAll researcher-practitioner partnership grant provides three-year support for CodeVA's proposal, *Computer Science For and By Teachers: An Integrative Toolkit for 3rd-5th Grade Classrooms*. The project aims to address the importance of 3rd-5th grade teachers introducing Computer Science (CS) into their classrooms. The "toolkit" in the project's name aims to arm teachers with the means to create culturally relevant and responsive curricula to address their students' specific needs.

The \$999,985 project award, which also partners University of Virginia and Virginia Commonwealth University with Petersburg City Schools, and Chesterfield County Public Schools, will develop a toolkit of CS and computational thinking (CT) resources, and associated professional development to support 3rd-5th grade teachers in developing their own culturally relevant CS instruction.

"Students and teachers both benefit from teacher-produced CS classroom content that addresses ethnically, racially, and culturally diverse students," says Dr. Anita Crowder, CodeVA's Research and Evaluation Manager and the project's PI. "Culturally relevant instruction in the elementary classroom leads to increased interest in and learning of CS content later in the educational process by racially, ethnically, and culturally diverse students, which in turn leads to better representation of diverse backgrounds in professional CS careers."

The increasing racial, ethnic, and socioeconomic diversity of Virginia students adds to the need for teachers to develop their own CS and CT integrated instruction. The CS toolkit and associated professional development developed by Principal Investigator (PI) Dr. Anita Crowder (CodeVA), and Co-PIs Dr. Jennie Chiu (UVA), Dr. Dwayne Ray Cormier (VCU), Sheila Mosby (Petersburg), and Michelle Gay (Chesterfield) will empower teachers in 3rd-5th grade classrooms in their schools to develop or continue adapting CS and CT integrated curricula. The goal of the researchers is to encourage teachers to provide intersectional and culturally relevant CS instruction to their students in their own classroom contexts.

CodeVA's experience in providing state-supported CS professional development programs for approximately 3,500 teachers since 2014 will enable the project team to develop a multi-year approach to developing, scaling, and piloting the toolkit and associated professional development. The project team will develop templates, lesson plan rubrics, and student outcome rubrics amongst other resources as part of the toolkit that will continue to reinforce and support teachers' ability to critically assess the cultural responsiveness of the CS/CT integrated instruction they provide.

"Teachers are on the front line. What research is done behind closed doors, we put into action," says Michelle Gay Co-PI on the project, the 3rd grade Team Lead from Ettrick Elementary in Chesterfield County Schools. By engaging teachers as core to the research team, she said, "we take into account our resources, our time, our students, our cultures, and so much more. I like to think that this is a partnership in which the goal is to better the lives of our students."

The goals of this RPP program include:

- Increasing teachers' understanding of the importance of knowing their students' racial, ethnic, and cultural backgrounds while developing culturally relevant classroom content.
- Fostering teachers' ability to examine and challenge their own conceptions of CS/CT integration.
- Developing an appreciation for the value CS/CT integration brings to 3rd-5th grade curriculum.
- Building teacher's knowledge and skills to critically examine and modify CS/CT content to meet the needs of all of their students.
- Creation of lessons and classroom content that increases engagement and learning of CS/CT by racially, ethnically, and culturally diverse students.

"Most teachers have the pedagogy and textbook knowledge on how to write and teach a lesson, but not much knowledge on how to teach the specific children they have in their classrooms; thus, resulting in gaps in learning," says Sheila Mosby, Co-PI on the project and instructional coach at Cool Spring Elementary School in Petersburg. "Providing necessary, culturally responsive resources and curriculums for teachers to increase their knowledge is an absolute leap in a positive direction towards bridging learning gaps for teachers and students alike."

About CodeVA: CodeVA is a non-profit that partners with schools, parents, and communities to bring equitable CS education to all of Virginia's students based in Richmond, VA. Since 2014, CodeVA has provided no-cost professional development for Virginia teachers. CodeVA's direct student programs serve students in the Richmond region and statewide, and its advocacy has helped define Virginia's CS K-12 landscape. Learn more at codevirginia.org.

About University of Virginia: The University is an iconic public institution of higher education, boasting nationally ranked schools and programs, diverse and distinguished faculty, a major academic medical center and proud history as a renowned research university. The community and culture of the University are enriched by active student self-governance, sustained commitment to the arts and a robust NCAA Division I Athletics program. Learn more at virginia.edu.

About Virginia Commonwealth University: Virginia Commonwealth University's mission is to advance knowledge and student success through its commitments to an engaged, learner-centered environment, research that expands the boundaries of new knowledge, and diversity that provides a climate of inclusion, a dedication to addressing disparities wherever they exist. VCU serves in Virginia and around the world through sustainable university-community partnerships that enhance the educational, economic and cultural vitality of the communities. Learn more at vcu.edu.

About Petersburg City Public Schools: Petersburg City Public Schools works to develop 21st-century citizens able to effectively collaborate, communicate and innovate. Learn more at petersburg.k12.va.us.

About Chesterfield County Public Schools: Chesterfield County Public Schools is a leader in public education on the cusp of creating classrooms of the future that will allow our students to soar to even greater heights. Our daily focus is to provide amazing learning experiences in remarkable learning environments while encouraging

students and staff to exemplify personal responsibility and supportive relationships. Learn more at mychesterfieldschools.com.