PR Award #: S423A20008
Organization Name: Clemson University
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Absolute Priority: AP 1 (Supporting Effective Teachers)
Competitive Preference Priorities:
1) Promoting Science, Technology, Engineering, or Math (STEM) Education:
2) Fostering Knowledge and Promoting the Development of Skills That Prepare Students to Be Informed, Thoughtful, and Productive Individuals and Citizens; and
3) Spurring Investment in Qualified Opportunity Zones.
Requested Total Award Amount: $3,068,160.00
Project Description: The goal of Clemson University's STEM Teacher Learning Progression (CU-TLP) is to create a replicable model that identifies and supports personalized professional development pathways (PPDPs) designed to improve: (1) STEM teacher effectiveness, (2) teacher retention, and (3) student achievement in South Carolina's high-needs, high-poverty middle schools (grades 6-8). CU-TLP will use a collaborative filtering algorithmic recommender system, a set of data science analytics and machine logic, to guide the collection of teacher and school needs assessment data and to model the PPDP output for each STEM teacher. The PPDP recommends evidence-based personalized professional development experiences in STEM, including computer science and socio-emotional skill development in the form of stackable, advanced credential options (micro-credentials, courses, endorsements, and degree program) to advance teacher competencies. The results of these efforts will help retain STEM educators in South Carolina (SC), particularly within Qualified Opportunity Zones, who are adequately prepared to deliver rigorous instruction in STEM fields—thus resulting in access to high quality STEM learning for all and increased student achievement. CU-TLP will investigate the impact of personalized professional development on teacher effectiveness, teacher retention, and student achievement, while basing the intervention on the best available research practices and prior experience.
Project Expected Outcomes: CU-TLP will provide educators and school leaders with a replicable model that is designed to: (1) increase STEM teacher effectiveness, (2) increase STEM teacher retention, (3) improve student achievement in STEM disciplines, including computer science as well as socio-emotional skill development, and (4) improve personalized professional development via an iterative recommender system algorithm output.
Project Special Features: CU-TLP will use a collaborative filtering algorithmic recommender system**,** a set of data science analytics and machine logic, to guide the collection of teacher and school needs assessment data and to model the PPDP output for each STEM teacher.
Project Partners: Thirty-five middle schools in 16 districts across South Carolina with priority given to high-needs, high-poverty schools within Qualified Opportunity Zones. These districts suffer high teacher attrition rates and high poverty rates with low student proficiency in mathematics and science, according to state and national metrics.