

## **Early-Phase Competition Absolute Priority 3 (STEM)**

**WestEd**

**S411C220011**

### **Furthering Rural Adoption of Computers and Technology through Artistic Lessons (FRACTAL)**

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#### Project Abstract

Furthering Rural Adoption of Computers and Technology through Artistic Lessons (FRACTAL) WestEd, Katabasis, Empirical Education Inc., and Bertie, Granville, Jones, and Robeson County Public Schools propose an early-phase EIR project to enhance, extend and experimentally test an innovative intervention to improve access and interest in computer science (CS) among high-need rural students. These students include historically marginalized groups in computing (e.g., Black students), students in the lowest achievement quartile, students with disabilities, and students from low-income backgrounds. High-need groups frequently have limited access to technology at home and at school and limited opportunities to learn about CS.

FRACTAL will be built upon Katabasis' successful implementation of CS camps where students build computers, learn how they work, develop coding and computational thinking skills, and get to keep the computers they build. We will co-design an extension of middle school art and CS curriculum called expeditions that integrate computational thinking, universal design for learning and culturally responsive pedagogy to build middle school students' positive attitudes towards CS, CS knowledge and skills, and interest in STEM and STEAM. By focusing on the discipline of STEAM, we will help students identify with CS, and, for some students, to take the first step towards careers in high paying jobs in CS.

This project addresses Absolute Priority 1 (Rationale), Absolute Priority 3 (Promoting STEM, Computer Science); Competitive Preference Priority 1 (Promoting Equity and Access); and Competitive Preference Priority 2 (Innovative Approaches to COVID-19). Project FRACTAL will engage 8 teachers and 100 students across 4 rural NC counties during the development phase and 57 teachers and 3,420 high need students in 6 rural North Carolina middle schools during the experimental evaluation.

This project will improve access and achievement in CS among high need students in rural areas, create CS expeditions and materials for use in middle schools, create professional development materials and conduct an efficacy trial. It will also support dissemination and scaling of FRACTAL for use in other rural communities.