Mid-Phase Competition Absolute Priority 3 (STEM)
Michigan State University
S411B230030
A culturally responsive project-based learning intervention in secondary science in Alabama and North Carolina

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Applicant Name: Barbara Schneider, Joseph Krajcik, Clausell Mathis, Sheneka Williams
Project Title: A culturally responsive project-based learning intervention in secondary science in Alabama and North Carolina
Type of Grant Requested: (select one) ☐ Early-Phase ☒ Mid-Phase ☐ Expansion
Absolute Priorities the Project Addresses: (select all that apply)
☒ Absolute Priority 1-- Demonstrate a Rationale (Early), Moderate (Mid), Strong (Expansion)
☐ Absolute Priority 2-- Field-Initiated Innovations—General
☒ Absolute Priority 3-- Promoting STEM Education
☐ Absolute Priority 4-- Meeting Student Social, Emotional, and Academic Needs
☐ Absolute Priority 5-- Educator Recruitment and Retention
Competitive Preference Priorities the Project Addresses: (select all that apply)
☒ Competitive Preference Priority 1— Promoting Equity in Student Access to Educational Resources and Opportunities: Implementers and Partners
☐ Competitive Preference Priority 2—Supporting a Diverse Educator Workforce and Professional Growth to Strengthen Student Learning* (FOR EARLY-PHASE AP5 APPLICANTS ONLY)
Total number of students to be served by the project: 3840
Grade level(s) to be served by the project: High School Physical Sciences (9-12)
Definition of high-need students: low SES students and students in rural areas of the South
Brief description of project activities: This project implements and tests a project-based high school physics and chemistry curriculum (Crafting Engaging Science Environments [CESE]). This project includes curriculum materials, formative assessments, and professional learning for teacher implementation. Shown to be effective in Michigan and California, this project extends the interventionto be more culturally responsive and determine its effectiveness in the rural areas of the South.
Summary of project objectives and expected outcomes: The objective of this project is to adapt CESE to be more culturally responsive and to test it with a new sample of students in the South and to determine if those who received the intervention perform higher on: state science assessments, levels of engagement, and STEM college and career ambitions compared to those students who do not.
Summary of how the project is innovative: The CESE is one of the few interventions that uses project-based learning, is aligned with NGSS, and has been rigorously tested and shown to be effective in a small diverse sample of students (Schneider et al., 2022). It is also a holistic system that prepares teachers with professional learning and provides both curriculum materials and formative assessments.
Other studies related to the proposed project: Multiple Literacies in Project Based learning, an elementary project based learning science curriculum intervention (Krajcik et al., 2022); Crafting Engage Science Environments in Michigan and Finland High School (Schneider et al., 2020; Schneider et al., 2022).
Proposed implementation sites: Alabama and North Carolina
Organizations partnering with this project: Alabama A&M University and Winston-Salem State University; Evaluating Partner: STEPP Center at Northwestern University; Chemistry and Physics