Mid-Phase Competition Absolute Priority 3 (STEM)
University of Texas Foundation
S411B230036
Transforming the Learning of Science for Second Grade Latinx Students Through Meaningful Interactions using Technology Outside of School (Project MITOS)

Applicant Name: University of Texas Foundation

Project Title: Transforming the Learning of Science for Second Grade Latinx Students Through Meaningful Interactions using Technology Outside of School (Project MITOS)

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: 6,000

Grade level(s) to be served by the project: Second grade

Definition of high-need students: English learners are individuals who speak a language other than English at home and whose language difficulties deny them the ability to meet challenging state academic standards, succeed in classrooms where the language of instruction is English, or participate fully in society.

Brief description of project activities: Project activities include: (1) gamifying activities that will increase student opportunities to learn and develop their language proficiency in science; enhancing the teacher dashboard with student scores to tailor their instruction to their student language needs and understanding of content; completing supplemental lessons for non-responders to increase their opportunities to practice; (2) complete training for teachers and parents, and implement across 60 schools with 240 teachers and 6,000 students; (3) conduct a rigorous evaluation of the MITOS app with two cohorts; and (4) disseminate results from findings to practitioners, parents, and school administrators as well as to researchers.

Summary of project objectives and expected outcomes: Objectives and expected outcomes include: (1) adapting the MITOS app for game play in multiple devises; students can use the app without adult support; (2) completing trainings for teachers and parents on how to use MITOS at school and at home at the end of Year 2; 100% of teachers attend the training and can use the dashboard, 100% of parents attend the workshop;(3) conducting 2 randomized control trials with two different cohorts; students in treatment schools benefit significantly more from MITOS compared to students in control schools; and (4) disseminating findings to researchers, practitioners, and parents increasing our knowledge of what strategies and activities work and for whom.

Summary of how the project is innovative: The app provides an alternative to traditional homework or independent practice by (1) allowing students to have engaging and substantive interactions that develop vocabulary and content knowledge, (2) leveraging family engagement, and (3) providing ongoing formative

assessment data through natural language processing, which teachers use to inform their instruction. MITOS is a scalable project because it can be used on an app that can be accessed at school or outside of school. Standard practice typically does not support sufficient focus on vocabulary instruction in content areas, does not attempt to engage families in student's regular homework/independent practice, and provides teachers with limited formative assessment information on language and vocabulary development.

Other studies related to the proposed project: MITOS is anchored on recommendations 1 and 2 with strong evidence from the WWC Practice Guide for ELs (S. K. Baker et al., 2014). Recommendation 1 emphasizes the teaching of key words intensively in a brief and engaging informational text. Recommendation 2 suggests providing ELs opportunities to learn and expand their knowledge of a content area by engaging in conversations around content topics. In addition, MITOS is based on a previous study created following the recommendations from the WWC Practice Guide for ELs, and with a similar population of students as the population included in the studies reviewed by the WWC Practice Guide panel.

Proposed implementation sites: School districts in Texas with at least 15% of ELs in second grade.

Organizations partnering with this project: The grant will be submitted by UT Foundations, a nonprofit organization. The University of Texas at Austin, a minority institution, will take the lead on carrying out the project. Southern Methodist University will be adapting the Speech Recognition system and the AS system in collaboration with technology experts at UT Austin. Austin Independent School District, Round Rock Independent School District, and Cityscape School District support this study and look forward to the collaboration (see district Letters of Support). American Institutes for Research will conduct the