

Project Summary

Abstract: During this five-year study, the University of Miami (UM) and the Miami-Dade County Public Schools (M-DCPS) will examine and improve elementary school teachers' knowledge, beliefs and practices involving their teaching of science to English language learners (or ELL students) within an environment that is becoming increasingly driven by high-stakes testing in science. The four major research and development areas are (1) teachers' initial knowledge, beliefs, and practices; (2) professional development intervention; (3) policy contexts; and (4) improvement among teachers and their ELL students. All third- through fifth-grade teachers in 12 M-DCPS elementary schools that enroll large numbers of ELL students will participate in a professional development intervention primarily through the provision of instructional units and teacher workshops. Six schools enroll Spanish-speaking students; the other 6, Haitian-Creole speakers. Initial participation in the intervention will be determined randomly, with the eight experimental group schools engaging in the intervention for three years and one-year follow up without the intervention (sustainability) and the four comparison group schools engaging in the intervention during their final two years (replicability). Additionally, the University of Miami preservice elementary teachers will participate in the project. We will examine how both preservice and practicing teachers grow in their use of reform-oriented practices and how they balance that with the demands of high-stakes testing and accountability in Florida's policy environment where third-grade students who fail the statewide reading assessment are retained and where science assessment for school accountability will begin during school year 2006-2007.

Intellectual merit: The results contribute to knowledge at the intersection of science education, the education of ELL students, professional development, and educational policy. The results will provide insights about how to assist elementary teachers in enabling ELL students to learn science, while meeting the demands of high-stakes testing and accountability. The results will also provide insights into how high-stakes testing policy in science gets interpreted by district personnel and teachers and implemented in classroom practices. The research team's expertise includes science, science education, mathematics education, reading, literacy, policy analysis, assessment, teacher education, professional development, quantitative and qualitative research methods, and the teaching of ELL students.

Broader impacts: The research targets traditionally underserved students—ELL and low SES students in inner-city schools. Beyond increased student achievement in science, our professional development will have implications for scaling up with non-volunteer teachers at inner-city schools, and to states with a wide range of science and English language policies for ELL students. The results will also have implications for the teacher professional continuum including teacher preparation, professional development, and teacher leadership in the context of university-school district collaboration. Additionally, the results will help other districts use our professional development program and/or adopt their own policies so that their own teachers can better teach science in the forthcoming high-stakes testing environment.