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Objective

The objective of our study is to implement a rigorous, two-year randomized trial longitudinal evaluation of enhanced instructional science models for middle school students whose first language is Spanish with the hypothesis being a research-based model for improved science achievement and academic English proficiency.

Research Questions

1. How effective is the enhanced science program model in developing science achievement and academic English for non-English Language Learners, ELLs, or for ELLs whose first language is Spanish?
 2. Are there student, teacher, or home characteristics that predict academic success in the model in science achievement for non-ELLs or for ELLs whose first language is Spanish?
- Do student characteristics interact with program type (experimental or typical), and/or teacher characteristics to predict academic success in the science model for non-ELLs or for ELLs whose first language is Spanish?

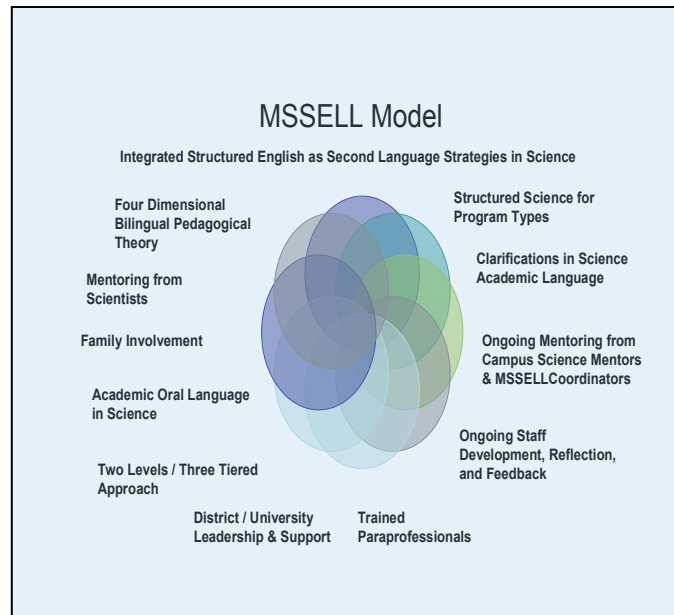
Research Design

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	5th	
	Science Enhanced Program (SEP)	Science Typical Program (STP)
English Language Learners (ELLs)	2 teachers, 4 classes, 100 students	2 teachers, 4 classes, 100 students
Non-ELLs	2 teachers, 4 classes, 100 students	2 teachers, 4 classes, 100 students

Foundations of Collaborative Research Through A Longitudinal Randomized Trial Study of Middle School Science for English Language Learners (Project MSSELL)

Intervention Model

Project MSSELL will test an enhanced aligned state and national standards-based science curriculum model that includes English language acquisition strategies integrated into the science curriculum in a planned, decisive manner. The MSSELL model (see below) includes a strong university partnership and support to provide two levels and three tiers of intervention into the science classroom.



Level 1: Teacher Level Professional Development
 Level 2: Student Level Instructional Intervention

- Tier I. District English curriculum in all content areas except science
- Tier II. Academic in-class science intervention components
- Tier III. Additional tutorials provided by trained paraprofessionals for lowest achieving students



Data Collection

Qualitative Measures: Factors that facilitate or impede the implementation, effectiveness, and sustainability of the interventions will be investigated through:

- Interviews (principals, intervention teachers, parents)
- Surveys (intervention teachers, university scientists)
- Teacher portfolios
- Field notes from classroom observations

Quantitative Measures:

- Implementation fidelity measures taken six times throughout year using Transitional Bilingual Observation Protocol (TBOP) and Science Teacher Observation Record (STOR)
- Student achievement measures focusing on science achievement, academic science vocabulary literacy, content area reading comprehension for ELLs using:

Construct	Assessment
Oral Language Proficiency	Woodcock Language Proficiency Battery-Revised (WLPB-R) : Picture Vocabulary, Oral Vocabulary, Listening Comprehension, Memory for Sentences Individual Proficiency Test (IPT)
Literacy Skills / Written Language Proficiency	Woodcock Johnson (WJIII) Number Reversed WLPB-R: Letter-Word Id, Word Attack, Passage Comprehension, Dictation Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Oral Reading Fluency
Science Skills	Iowa Tests of Basic Skills (ITBS) Science District science benchmarks Texas Assessment of Knowledge and Skills (TAKS) Science
Problem Solving / Intelligence	Wechsler Intelligence Scale III Naglieri Nonverbal Ability Test (NNAT) Hispanic Bilingual Gifted Screening Instrument (HBGSI)
Curriculum-Based Measures	WAVES CRISELLA FIS TIELLAS