Seeds to STEM Student Observations Findings

Report Purpose

To address **Student Outcomes** related to **Aim 1** of the *Seeds to STEM* (*S2S*) program, PreK teachers in Los Angeles and Philadelphia from Cohort 1 (*S2S* Intervention) and Cohort 2 (Comparison) were asked to complete an Observation Checklist for each 4-year-old in their classroom. PreK teachers completed a checklist for each child at the beginning of the academic year (Fall 2022) and end (Spring 2023) to evaluate growth in Kindergarten Readiness Skills.

Instrumentation and Sample

The Observation Checklist is comprised of 17 total kindergarten readiness skills across four content areas: Literacy (5 items), Math (4 items), Science (4 items), and Nutrition (4 items). Teachers rated individual students on a 4-point scale that also includes the option of "Not Observed": "Not Meeting (Unable to demonstrate skill even with guidance), Beginning (Demonstrates skill with a lot of guidance), Approaching Proficiency (Demonstrates skill with a little guidance), Proficiency (Independently demonstrates skill)". A sample Observation Checklist is provided below.

Rate child's current proficiency level on each skill.

Content	Student Skills	Not Observed	Not Meeting (Unable to demonstrate skill even with guidance)	Beginning (Demonstrates skill with a lot of guidance)	Approaching Proficiency (Demonstrates skill with a little guidance)	Proficiency (Independently demonstrates skill)
Literacy	1. Name uppercase letters.					
	2. Name lowercase letters.					
	3. Answer questions about texts.					
	4. Write or draw to communicate thoughts.					
	5. Sound out letters to read words.					
Math	6. Recognize numbers up to 10.					
	7. Compare sizes of two objects (smaller, larger, same).					
	8. Recognize simple patterns.					
	9. Make a simple graph or chart of results.					
Science	10. Share ideas with others.					
	11. Do simple experiment.					
	12. Make observations.					
	13. Explain possible reasons for experiment results.					
Nutrition	14. Explain the importance of water for our bodies.					
	15. Make healthy food choices.					
	16. Name healthy foods.					
	17. Classify food items into their food group (fruits, vegetables, dairy, grains, protein).					

A total of 151 students (*S2S* = 96, Comparison = 55) had both beginning-of-year and end-of-year observation data and are thus used in this report. No demographic data were collected on the students. Averages across items in each content area were computed and compared over time (Fall to Spring) and between groups (*S2S* vs. Comparison) by conducting multiple 2 Between, 2 Within Repeated Measures ANOVAs. Fall scores were first evaluated for similarity between groups using independent samples *t*-tests to test that cohort baseline averages were statistically similar.

Findings

Students in both groups (*S2S* and Comparison) significantly increased in their Kindergarten Readiness Skills from Fall to Spring (*p*<.001). On average, students across both cohorts were rated between the "Beginning" and "Approaching Proficiency" categories in Fall and increased to a level between "Approaching Proficiency" and "Proficiency" by Spring. There were, however, no significant differences between cohorts in their Kindergarten Readiness Skills growth over time. Both cohorts' skills grew at statistically similar rates. The line charts below show the growth in students' observed Kindergarten Readiness Skills by cohort for each content area.