Proven Practices

Initial Evidence of Early Learning Corps Numeracy Support

Early Learning Corps is a structured, empirically-evidenced AmeriCorps program that recruits, trains, and places AmeriCorps members ("tutors") in early childhood classrooms across the nation to provide class-wide, small group, and individualized early literacy and math support to young children. Prior to 2018, ELC tutors centered their support on early literacy skills. In response to community demand and evolving research, ELC engaged in a multi-year project to add numeracy content to the program.

The Project

This report outlines the results of an initial pilot of the numeracy materials adopted by ELC tutors. A subset of tutors were selected to incorporate a series of class-wide and small group numeracy strategies and interventions. Children in pilot classrooms—along with a sample of children in classrooms not supported by ELC—completed a numeracy assessment in the fall and spring. The pilot analyses examined the degree to which children in pilot classrooms improved their numeracy skills, and also compared the performance of students in pilot classrooms with students in comparison classrooms.

Why It Matters

The introduction of numeracy materials to ELC aligns with community needs and the availability of research-based strategies. Yet, piloting was a critical step in the scaling process. The initial pilot and associated evaluation provide insight into the feasibility and impact of the additional numeracy content in the ELC program model.

Key Takeaways

- **Early Learning Corps piloted the use of numeracy skill building materials and procedures in 29 early childhood classrooms.** *ELC tutors incorporated the materials into previously established program procedures for building the literacy skills of young children. All students, including a sample of 109 students in comparison classrooms not supported by ELC, completed the Preschool Early Numeracy Screener (PENS).*

- **Despite starting behind, students in the pilot demonstrated substantially greater growth in math readiness (PENS) from fall to spring.** *For example, among 4–5-year-olds, the fall benchmark gap of 19 percentage points reversed to a 6- point advantage for treatment students by spring.*

- **The inclusion of numeracy support did not detract from ELC's impact on literacy skills.** *After matching on fall literacy scores, spring literacy performance for pilot students was functionally identical to the performance of students in ELC classrooms that did not receive numeracy support.*

- **Collectively, the observed results illustrated the promise of incorporating numeracy materials and support procedures into the ELC program model.**

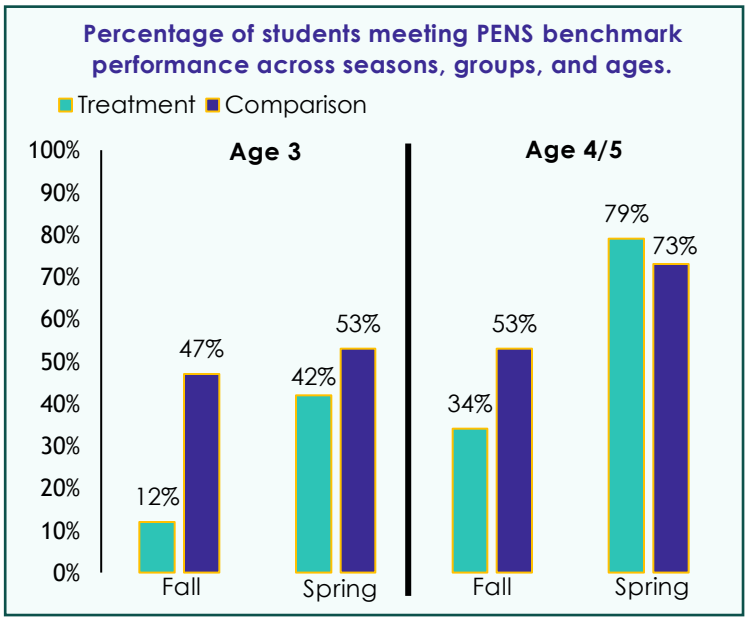
Methodology Overview

The pilot took place in 29 early childhood classrooms in Minnesota. All classrooms were already partnered with ELC for literacy tutoring and classroom support and agreed to allow the program to pilot numeracy materials, including an early numeracy assessment (PENS) in the fall and spring of the academic year. Tutors used the PENS data to identify students for the additional numeracy-focused tutoring and provided the new whole-class numeracy supports using a series of defined activities and strategies. Finally, a sample of early childhood students in classrooms not support by ELC also completed the PENS in the fall and spring.

Evaluators examined the percentage of students who met fall PENS benchmark expectations relative to the percentage of students who met spring PENS benchmark expectations. Evaluators also used propensity score matching and logistic regression to examine the degree to which differences in the rate of meeting the spring benchmark were associated with pilot exposure. Finally, evaluators examined the literacy performance of students in pilot classrooms relative to normative performance of ELC students in classrooms without numeracy support as a way to consider the potential negative impact on literacy associated with layering on numeracy support.

Results

Despite starting behind, students in the pilot demonstrated substantially greater growth in math readiness (PENS) from fall to spring. For example, among 4–5-year-olds, the fall benchmark gap of 19 percentage points reversed to a 6- point advantage for treatment students by spring and 3-year-old students demonstrated large gains in performance that helped close the gap with their higher performing peers in comparison classrooms.



The pilot impact was also evident when focusing on the group of students who were below the PENS benchmark in the fall. Among this group of students, there was a 16% difference in spring benchmark attainment favoring age 3 students in the pilot group and a 32% difference in spring benchmark attainment favoring age 4 students in the pilot group relative to similar students in comparison classrooms.

Due to differences in student population, comparison students tended to start the year with higher numeracy skills. Using propensity score matching, evaluators created a matched comparison group for analysis and used logistic regression models that included students' fall score as a covariate to more rigorously examine differences in spring benchmark attainment as a result of pilot participation. In those models, **assignment to the ELC numeracy pilot was associated with a 16% increase in the probability of meeting end-of-year numeracy benchmarks.**

One of the last points of interest for the pilot was the *literacy* performance of students in the pilot relative to the performance of students in the standard model. Evaluators examined the spring literacy performance of pilot students with a matched sample from the full scope of ELC implementation in the state. In that analysis, student literacy scores in the spring were functionally identical regardless of pilot participation. **That is, numeracy exposure was associated with benefits to numeracy and had no observed cost to literacy performance.**