



Sustaining the Pre-K Boost: Skill Type Matters

The experiences and learning opportunities children are exposed to in pre-K give them a boost as they enter school. However, the positive effects of pre-K attendance on children's academic and cognitive skills become smaller and sometimes disappear by third grade due to non-attenders "catching-up" to their peers. To make pre-K programs more effective, it may be key to create policies and practices that strengthen instruction to support children's unconstrained skills, such as vocabulary, problem-solving and critical thinking.

Introduction

Consistent and clear evidence indicates that children who attend a formal prekindergarten (pre-K) program start school with higher levels of language, literacy, math and social-emotional skills than classmates who do not attend pre-K.ⁱ The experiences and learning opportunities children are exposed to in pre-K provide them a significant boost as they enter kindergarten.ⁱⁱ However, questions remain about how long the "pre-K boost" lasts for different types of skills and for different groups of children, and the types of learning experiences that support children's academic and social-emotional outcomes across time.

The nationwide Early Learning Network is studying children's learning and development as they transition from pre-K into elementary school across a large number of diverse communities, ranging from rural to urban locations; coastal and central states; and including children and families from diverse racial, ethnic and linguistic backgrounds.

Past research has found that the initial positive effects of participation in pre-K on children's academic and social-emotional skills become smaller and may disappear as early as the end of kindergarten or first grade.ⁱⁱⁱ Although some studies with longer-term follow-up find positive impacts of pre-K programs into adulthood, the more typical pattern of diminishing benefit — referred to as "pre-K fadeout" — has received considerable attention.^{iv}

To make pre-K programs more effective, and get the most out of this significant public investment in early childhood education, it is useful to examine the extent to which fadeout is consistent or varies for different *types* of skills, which might then inform policies and practices to help sustain the benefits of pre-K. With recent federal proposals to expand pre-K universally to all 3- and 4-year-olds in the United States, such information is needed now more than ever.

In this brief, we examine patterns of children’s performance on assessments of different types of skills in the fall and spring of kindergarten for children who attended pre-K and their classmates who had no prior pre-K experience. We also explore factors that may be related to reasons why growth in pre-K attenders’ skills slows during the kindergarten year, in turn helping non-attenders quickly “catch up” to their peers. We conclude by providing recommendations for policy and practice.



Research Terms

Pre-K boost describes the advantages children have upon entering school from their exposure to experiences and learning opportunities in high-quality pre-K programs.

Fadeout occurs when the positive effects of pre-K attendance become smaller and eventually disappear as children move across the early elementary school grades.

Catch-up occurs when children who do not attend pre-K gain skills in elementary school faster than their pre-K attending peers and thus catch up with them.

A CONTINUUM: CONSTRAINED & UNCONSTRAINED SKILLS

The Early Learning Network’s research studies each assessed children’s learning and development in multiple skill areas, including literacy, language, math, executive functioning and social adjustment in the classroom. Taken together, these skills are routinely described as aspects of “school readiness” and can have important consequences for later academic success.

Some of these skills may be considered more rote, basic or **constrained**, reflecting more discrete knowledge or information, such as learning the 26 letters in the alphabet. Other skills can be considered more **unconstrained**, tapping more abstract abilities and continuing to develop in complexity over time, such as vocabulary skills. **Both skill types are critical for children’s development.**^v

What skills are more constrained vs. unconstrained?^{vi}



More constrained skills (basic) are finite and readily measured, such as recognizing and writing letters, spelling one’s name, number recognition, counting and shape identification.



More unconstrained skills (abstract) develop in complexity over time, and can be difficult to measure, such as vocabulary, comprehension, problem-solving and critical thinking.

What We're Learning

The Early Learning Network found consistent evidence across a diverse range of pre-K programs that **the decline in the pre-K boost is a matter of catch-up rather than fadeout.** In other words, children who attend pre-K continue to grow in their skills across kindergarten, although their growth rate is slower than it was in pre-K. In contrast, children who were not enrolled in a formal pre-K program show faster growth in these skills during kindergarten and therefore “catch up” to their peers by the end of kindergarten.

It does appear, however, that there are different levels of catch-up for different types of skills. For example, for early literacy skills (constrained), on which kindergarten teachers spend substantial instructional time, the benefits of pre-K seem to be less persistent than for other types of skills. Alternatively, across multiple sites, children who attended pre-K continued to outperform their peers at the end of kindergarten on assessments measuring less constrained skills such as vocabulary, executive functioning and math. In some sites, the size of the pre-K boost was still substantial by the end of kindergarten, representing in the range of one to three months of additional learning in vocabulary skills.

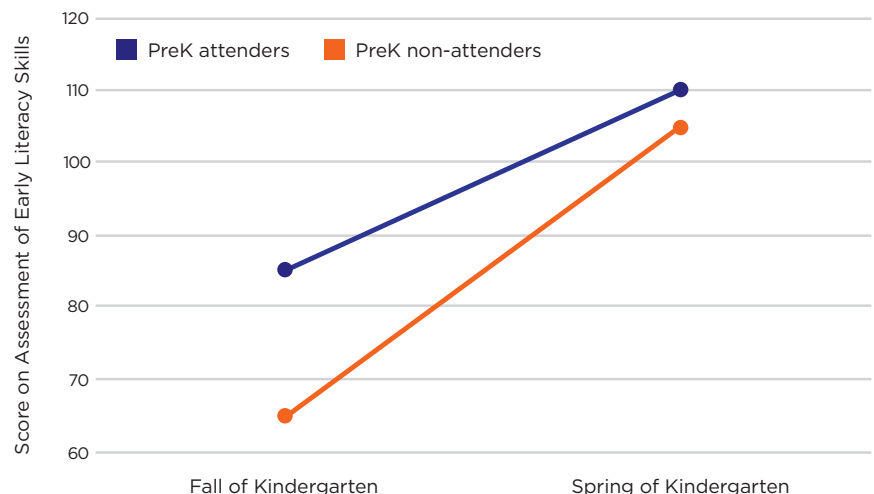
The network has thus far found limited evidence that patterns of pre-K persistence for constrained and unconstrained skills differ based on a child's racial, ethnic, linguistic or socio-economic background. Further, there was no consistent evidence that kindergarten instruction explained patterns of pre-K persistence or catch-up.

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CATCH-UP, NOT FADEOUT

This figure shows a pattern of catch-up across the kindergarten year typical of the network study findings for some types of skills, such as early literacy skills. The differences between pre-K attenders' and non-attenders' skills shrink over time. **Importantly, the skills of pre-K attenders continue to grow substantially in kindergarten, but the non-attenders grow faster and eventually come close to fully catching up to their peers.**



NETWORK FINDINGS

Network teams examined whether pre-K catch-up varies among different skill domains — more or less constrained — and the extent to which pre-K attenders' skill growth slowed and non-attenders' skills caught up to their peers over the kindergarten year. Here's what we found across four of the network's study sites:

Pre-K attenders performed better at the start of kindergarten than non-attenders.

- **Pre-K attenders consistently scored higher in literacy, language and math skills at the start of kindergarten** — a boost in skills that also supported more equitable pre-K learning outcomes for children from historically marginalized backgrounds.
- **Pre-K also supported children's skills in working memory and self-regulation, as well as children's social adjustment** — all key components of classroom functioning and learning.

When the pre-K boost became considerably smaller by the end of kindergarten, it was mostly for more constrained skills.

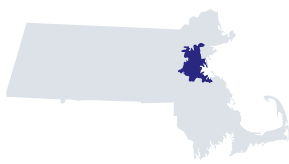
- **By the end of kindergarten, children who did not attend pre-K almost completely caught up to their pre-K attending peers on assessments of early literacy skills**, such as knowing letters and basic sight words.

The pre-K boost on more unconstrained skills was more likely to be sustained through the end of kindergarten.

- **For skills such as working memory and vocabulary, the amount of pre-K catch-up was far less and the benefit of attending pre-K often remained evident through kindergarten.**



Site-specific highlights



Boston

Children who did not attend the pre-K program completely caught up to the early literacy skills of their peers by the spring of kindergarten. However, 85% of the initial boost in vocabulary skills was sustained as was 75% of the boost in math skills.



Ohio

Kindergarten teachers reported spending less time talking one-on-one with children who attended pre-K than children who did not, but this did not contribute to catch-up.



North Carolina

There is substantial redundancy in instruction across pre-K and kindergarten. However, redundant instruction did not contribute to catch-up.



Virginia

Smaller effects of the pre-K program over time were explained by non-attenders catching up to their peers. The benefits of pre-K did not differ by students' demographic characteristics, such as race, ethnicity and family income.



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WHAT FACTORS MIGHT EXPLAIN CATCH-UP?

There are many reasons why children gain skills at different rates across the kindergarten year. Differences could be a function of the match between the instructional needs of pre-K attenders and the instruction they (or their peers who did not attend pre-K) are offered in kindergarten, the amount of individualized instruction received, or the overall quality of instruction and the classroom environment.

Direct classroom observations from some network sites indicate that a large amount of pre-K and kindergarten teachers' time was devoted to instruction focused on constrained skills (e.g., letters, numbers). In kindergarten, it may be the case that teachers focus on supporting children who did not attend pre-K to learn the types of constrained skills they might not have learned yet and are typically aligned with standards that teachers are accountable for.

There was no clear and consistent evidence across the network studies that children's experiences in kindergarten influenced the extent to which there was pre-K catch-up or persistence for different types of skills. For example, our work to date does not suggest that higher levels of observed instructional quality in kindergarten support persistence of pre-K benefits.



Network researchers are continuing to examine how subsequent learning environments may affect patterns of pre-K persistence and catch-up. For example, it may be important to examine individual children's classroom experiences as it is possible they could differ for children who do and do not attend pre-K, or to better understand the cumulative effects of classroom experiences across multiple grades.

Ongoing work is examining these experiences to determine how teachers' overall classroom practices and the individual experiences of children, including family engagement, combine to benefit children's learning.

What We Recommend

1 When assessing the effects of pre-K programs, take into account a broad range of children’s skills. Examine patterns across skills to understand how pre-K programming benefits children in different ways across time.

Actions to take:

- Integrate developmentally appropriate assessments of literacy, language, math and social-emotional skills into kindergarten programming to both inform instruction and to assess growth in children’s skills across time.
- Invest in developing a broader set of assessments that capture more unconstrained skills — competencies that are admittedly more difficult to assess — in addition to more constrained skills, which are more typically used by schools and researchers because they are easier to assess and directly aligned with standards.

2 Educational programs in pre-K and the elementary grades should prioritize balancing instruction to support constrained and unconstrained skills to promote lasting benefits of early learning programs.

Actions to take:

- Train teachers on curricula that incorporate content-rich, relevant instruction that supports a broader set of more unconstrained skills, like vocabulary and critical thinking, with content focused on more constrained skills — such as early literacy competencies to meet individual learner needs.
- Provide coaching for teachers across the school year to ensure high-quality implementation of curricula.
- Integrate supports to align this type of instruction across both pre-K and elementary school contexts.
- Systematically gather and use data to monitor progress toward achieving effective implementation of curricula, identify barriers to implementation and provide real-time support around challenges.

Final Thoughts

The advantages children gain from enrolling in formal pre-K programs are evident, but it will require continued work to ensure that planned large-scale investments in pre-K deliver on their promise to improve children’s learning and development in the long-term. Balancing instruction between more constrained and more unconstrained instruction in pre-K and early elementary school programming — and measuring children’s progress in both types of skills — shows promise for making progress on this goal.

Do you have additional ideas and recommendations? Contact us or tag us on social media.



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ENDNOTES

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The Early Learning Network is a research network working to improve the academic success of children in pre-K through third grade. Researchers are identifying research-proven policies and practices that narrow the achievement gap and maintain early learning success.

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