Can Universal Pre-K Work?
Yes, High-Quality Pre-K Has the Potential to Reduce School-Readiness Gaps

by Hirokazu Yoshikawa, C. Cybele Raver, and Pamela Morris

Executive Summary

In the United States, educational disparities between affluent children and their economically disadvantaged peers are quite large. Studies show that implementing high-quality, publicly funded pre-K programs can reduce gaps in both math and reading for children of different backgrounds. The long-term benefits of universal pre-K may extend beyond test scores to important societal outcomes, such as reduced crime and increased high school graduation rates.

To ensure children have access to high-quality pre-K, and gains made in school readiness extend into children's learning and development after pre-K, the authors recommend:

- Schools work to improve measures of classroom quality in pre-K and the early primary grades.
- Legislators support city and state efforts to improve the quality of pre-K programs.
Educational disparities between affluent children and their economically less well-off peers are distressingly large in the United States. Children from families with parents with a high-school education or less enter school about a year behind in learning, compared to their counterparts with college-educated parents. These stark disparities are substantially larger in the United States than in Canada, the United Kingdom, and Australia. It is clear that waiting until children are 5 years old to tackle inequality in learning is far too late.

Universal pre-kindergarten (pre-K) programs have been proposed as an important policy pathway towards reduced disparities in school readiness. These programs have been implemented at the state level (e.g., in Georgia and Oklahoma) and at the city level (e.g., in Boston, New York City, Seattle, and San Antonio). The most longstanding policies are in Georgia and Oklahoma. These policies reduce the national gaps in access to preschool education. In 2010, for example, Latino children were enrolled in preschool education at rates 18 percentage points lower than White children.

Can universal pre-K programs, particularly those of high quality, reduce not only gaps in access, but also gaps in child learning and school readiness? The available evidence suggests yes. We show below that high-quality universal pre-K has resulted in substantial reductions in kindergarten school readiness gaps in early math and reading skills, for both race/ethnicity and income-based gaps.

But two further steps are needed to ensure that the gains made in school readiness from high-quality preschool are sustained throughout elementary school. First, more concerted efforts to improve the quality of pre-K programs are required. The strongest evidence for the ability of pre-K to reduce early educational disparities comes from high-quality programs. Many pre-K program evaluations show smaller effects and the evidence suggests that they are of lower quality. Implementing high quality at scale is not easy, especially at the scale that many cities are considering for the provision of universal pre-K. Second, improving pedagogical, instructional, and more general classroom quality in the early primary grades is needed, particularly for disadvantaged populations, so that children continue to extend their learning and development after their experience in pre-K.

In this paper we use the term pre-K to denote publicly funded pre-kindergarten programs (largely funded by state and local sources). We use the broader term preschool when we refer to the larger set of preschool and center-based programs, which include the federal Head Start program and a variety of smaller-scale programs that have been prominent in the overall evaluation literature.
Short- and Medium-Term Effects of Universal Pre-K Programs

Universal pre-K programs have shown short-term effects of between one-quarter and a full year of additional learning in domains of language, literacy, and math, relative to comparison groups. In these studies, large proportions of the comparison groups attended other preschool programs or centers. Other studies of large-scale programs such as Head Start show that when comparisons are made to just those children who are at home, effects are generally larger than when comparisons are made to those in centers or other preschools. Effects also tend to be larger on more narrowly defined skills such as identifying letters and words, than on broader skills such as overall vocabulary. And while small-scale efforts to produce gains in children’s social-emotional skills that may underlie children’s approach to learning have shown some success, universal pre-K has rarely assessed these skills.

To understand whether universal pre-K programs can reduce disparities in school readiness, we need to examine how their effects might vary across groups of children that may be facing differing levels of risk. Evidence from two of the programs with the largest short-term effects on language, literacy, and math (conducted in Tulsa, Okla., and Boston) suggest that both non-poor and poor children benefit from high-quality pre-K. However, the effects are larger for poor children, and therefore these programs have an important effect: reducing income-based school readiness gaps, as shown in the figure below.

The two studies also show that effects are larger for Latino and dual-language-learner children than for White non-Latino children or children from English-speaking households, suggesting gains for a population particularly at risk. Indeed, these two universal pre-K programs with the highest observed quality have shown on average that they largely eliminated Black-White and Latino-White gaps in early reading skills, and reduced Black-White gaps in early numeracy and math skills by 45 percent and Latino-White gaps in early math by 78 percent.

In short, high-quality, universal pre-K can substantially level the playing field at the point of kindergarten entry.

The pattern of long-term effects of universal pre-K programs is not yet known. This is partly due to the challenge of following up children over a long period of time, and partly due to the specifics of the evaluation approach used in these studies, known as a regression-discontinuity design. That design permits strong causal inference in estimating short-term impacts, allowing us to be confident that the effects observed are due to pre-K and not differences between the families of children who attend pre-K and those who do not. Longer-term impacts from these cohorts have used weaker designs. A third-grade follow-up evaluation of Tulsa’s pre-K program showed persistence of effects only for one of the two cohorts studied, and only for math skills among boys, not girls. However, a recent long-term study of the first year of rollout of Oklahoma’s universal pre-K program showed that the program reduced rates of criminal activity (felonies and misdemeanors) for Black youth ages 18 and 19.

In fact, one of the largest challenges of preschool interventions more generally (beyond universal pre-K programs in particular) has been concerns about the “fadeout” of these early gains, over time. Fadeout is a term that has been used to describe how longer-term follow-up studies of preschool evaluation samples show progressively smaller positive effects. A recent large-scale meta-analysis showed that the effects of the average preschool program evaluated in the studies to date faded out over a period of roughly 10 years, with the decline most rapid in the early elementary grades. It is not that children exposed to preschool lose their skills, rather, those not exposed to preschool appear to catch up to those who were exposed to preschool, such that on the most widely evaluated outcome—standardized achievement tests in reading and math—the scores of the two groups converge. It appears that scores representing narrower skills such as letter-word identification converge faster than broader outcomes such as vocabulary. This may be because these narrower skills are the most common focus of kindergarten and first-grade teaching; building broader skills such as...
Reduction in kindergarten math and reading achievement gaps between low-income and higher-income students, in months

Higher income

Math

Reduction after UPK: 27% → 8.2

Gaps in months

Reading

Reduction after UPK: 41% → 7.7

Note: "Low income" refers to children whose household incomes are at or below 200 percent of the federal poverty guidelines, or FPG. "Higher income" refers to children whose household incomes are above 200 percent FPG.

Estimated reduction in kindergarten math and reading achievement gaps between African American and white students, in months

White

Math

Reduction after UPK: 45% → 4.9

Gaps in months

Reading

Reduction after UPK: 98% → 0.1

Estimated reduction in kindergarten math and reading achievement gaps between Hispanic and white students, in months

White

Math

Reduction after UPK: 78% → 2.4

Gaps in months

Reading

Reduction after UPK: 106% → 0.7

vocabulary and comprehension is a challenge in the typical early-elementary classroom. The precursors to those broader skills are more difficult to improve in preschool as well.

When long-term follow-up studies have been conducted of large-scale programs such as Head Start, the available national data sources suggest positive impacts in the long run on important societal outcomes other than test scores, such as reduced crime, reduced grade retention, and increased high-school graduation. This suggests that test scores do not tell the only story in explaining long-term impacts of quality preschool and pre-K.

These patterns of fadeout or convergence suggest two important corollaries to the promise of implementing universal high-quality pre-K. First, the larger the short-term impact, the longer the effects are sustained. Approaches to raising quality to levels such as those observed at large scale in Tulsa or Boston must become much more widely implemented. The best evidence for how to achieve high quality at scale consists of two complementary strategies: a) implementing proven curricula focused on particular skills (e.g., language and literacy; math; socio-emotional skills such as self-regulation or executive function) combined with b) training of teachers paired with intensive and high-quality coaching and mentoring in the classroom.

Second, the quality of schooling in the early elementary grades must also be improved. Children exit from preschool into a wide range and sequence of subsequent “treatments”—when modeling children’s outcomes in 3rd grade, those outcomes are likely produced by children’s exposures to a wide range of family, community, and school-based supports and stressors, all of which can be conceptualized as additional treatments. It is interesting that the question of sustained effects into adulthood is not typically asked of any single other grade, be it kindergarten or 2nd or 10th grade. Our efforts to model the role of that exposure to additional treatments (such as children’s enrollment in high-versus low-quality kindergarten, for example) suggests that the benefits of pre-K can be detected for some children for whom the second treatment was also putatively beneficial, (e.g., higher-quality schooling). Unfortunately, those analyses also suggest that those benefits had evaporated for other children who were exposed to a second treatment that was potentially iatrogenic (e.g. crowded, noisy, lower-quality kindergarten). A recent national study showed a disturbing trend in kindergarten instruction: The skills being taught were largely ones that the children already possessed at the beginning of the kindergarten year.

How to Achieve Universal Pre-K: Lessons for Scaling Up

Fortunately, there has been an increased commitment at the city, state, and even national levels, for the provision of universal pre-K to address the income-achievement gap. President Obama, for example, highlighted universal preschool education as “among the smartest investments that we can make” in his 2013 State of the Union address, and

New York City Department of Education Division of Early Childhood Education/NYU Steinhardt Partnership

Funded by the Foundation for Child Development, the Spencer Foundation, and the U.S. Department of Education’s Institute of Education Sciences, Morris and Raver (drawing on the expertise of faculty in early childhood education and policy at New York University) collaborate with leaders in New York City’s Division of Early Childhood Education in the Department of Education (DECE-DOE) in a vibrant research-practice partnership. Together, the NYU team and the DECE-DOE leadership have embedded a research infrastructure into the program for evidence-based decision-making. The partnership helps city leaders define consistent quality standards for the system, and tailor and allocate key supports (including coaching and training as part of a sophisticated professional learning system) to sites in ways that support quality Pre-K for All.
called for dramatic expansion of universal pre-K for “every child in America.” Yet this vision for the promise of high-quality universal preschool education to help close the achievement gap is stymied by a gap that exists between research on typically smaller, sometimes model programs and the challenges of delivering high-quality preschool at a large scale.

The challenge can be summarized briefly: Preschool approaches with strong evidence of efficacy are rarely studied under the conditions that agency leaders face in delivering these same programs to large numbers of children. Fortunately, new ways of doing work, called research-practice partnerships, are gaining traction among researchers and being supported by funding agencies. Those collaborations allow agency leaders and academic researchers to collaborate to identify research-based solutions to agency goals of delivering high-quality programs. These efforts have leveraged findings from smaller-scale studies and selected district-level successful efforts (such as Boston)—including the benefits of a research-based curriculum strategy alongside training and coaching of teachers—along with a commitment to building the infrastructure (which we term the research architecture). The aim of those collaborations is to leverage the knowledge we have available in universities for rapid, rigorous, and relevant use by leaders in the early childhood and K-3 educational sector. In so doing, we aim to provide localities with the tools they need to monitor, assess, and strengthen universal pre-K programs as they launch, expand, and stabilize as part of larger district educational systems.

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<th>What are the features of High-Quality Pre-K?</th>
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<td><strong>STRUCTURAL QUALITY</strong> in preschool education includes features such as the following:</td>
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<td>• Safety</td>
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<td>• Group/class size</td>
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<td>• Adult-child ratio</td>
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<td>• Teacher or caregiver qualifications, including salary, degree qualifications, experience, evidence of specialized study in early childhood development</td>
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<td>• Supports for nutrition, including healthy, nutritious, and developmentally appropriate food and drink</td>
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<td>• Physical activity</td>
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<td>• Materials—including developmentally appropriate furniture, print materials, toys, manipulatives</td>
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<td><strong>PROCESS QUALITY</strong>, which has more direct benefits for children’s learning, has these features:</td>
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<td>• Teacher instructional skills—both general and those skills that are specific to particular domains of skills, such as language/pre-literacy; math; socio-emotional development; and executive function and self-regulation</td>
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<td>• Teacher’s ability to manage behavior</td>
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<td>• Emotional climate of the care setting or classroom</td>
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<td>• Quality of peer interaction</td>
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<td>• Organization of the care setting or classroom, both in terms of space and time (e.g., balance of instructional time across different domains and topics, and instructional time vs. other activities such as physical activities, art, music, or snacks/meals; whole-group vs small-group activities; time on task in instructional activities)</td>
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Conclusion

There is considerable public investment in pre-school—with nearly 1.2 million or 29 percent of four-year-olds being served in state pre-K alone and a number of states enrolling a majority of four-year olds in their program.\(^{15}\) This represents a public investment on the part of states and cities of $6.2 billion, rising another 10 percent this year.\(^ {16}\) And, with this growing commitment to access to care, there appears to be a commitment as well to quality, as more programs are improving relative to well-accepted quality standards.\(^ {17}\) So preschool programs are on the right track in terms of delivering on their promise of preparing more children better for school. Yet, we still have a long way to go: A number of states with high numbers of children in poverty do not meet quality standards and questions remain about how those states will achieve high enough levels of quality to deliver the kinds of positive results that have emerged from the most well-studied and well-resourced programs. Given substantial public commitment to pre-K, now is the time to support city and state efforts to boost quality to ensure that low-income children enter elementary school with the skills they need to succeed.

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Endnotes


8. Reductions of 7 percentage points, from a 31% incidence rate of these crimes among Black youth. Reductions among White youth were not statistically significant; White youth in Oklahoma show a much lower incidence rate of these crimes of 7%. Smith, A. The Long-Run Effects of Universal pre-K on Criminal Activity (Social Science Research Network Working Paper). West Point, NY: United States Military Academy.
