

Starting Early: Introducing the Issue

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Across the nation, more and more people want to see children receive quality education before kindergarten. Public opinion polls suggest that 70 percent of adults favor such programs, partly because of the irresistible idea that “starting early,” and ensuring that children arrive in school ready to learn, is the best way to generate happy, healthy, and productive adults.¹ The notion of starting early resonates. Head Start, the federally funded prekindergarten program for children from low-income homes, was a cornerstone of President Lyndon Johnson’s War on Poverty. Even then it was believed that students can’t fully benefit from an elementary education if they don’t arrive at kindergarten ready to learn. Presidents with views as disparate as those of George W. Bush and Barack Obama have called for strengthening early childhood education in their budgets and State of the Union addresses.

One reason for the strong support of early childhood education is the seemingly

compelling evidence that exposing children to educational experiences when they’re young can have profound effects on later educational, social, and adult outcomes. In fact, as Lynn Karoly points out in this issue, estimates based on some older pre-K programs suggest that every dollar invested in prekindergarten pays off \$3 to \$17 in terms of benefits, both to the adult individual and to society. That suggests prekindergarten is one of the most effective investments that we can make in children. Indeed, James Heckman of the University of Chicago, a Nobel laureate in economics, has argued that investments made in early childhood are more beneficial and also more cost-effective than those made in later childhood and adolescence.²

The idea that prekindergarten can enhance later learning and adult success is based on the premise that if pre-K programs provide enriching activities more intensively and more intentionally than parents can, then those programs have the potential to boost children’s learning and skill acquisition. In brief, quality pre-K experiences can teach

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children the skills that make it easier for them to learn new skills in early elementary school: that is, skills beget skills.

Differences in literacy and cognitive skills between children in low-income families and their better-off counterparts are already apparent by age three, or perhaps even earlier.³ The pre-K education programs initiated in the 1960s and 1970s were designed to reduce those gaps by providing quality pre-K education to disadvantaged children, who were less likely to be ready for school. Few pre-K programs existed in the low-income neighborhoods where most disadvantaged children lived, and parents with little income and education were therefore less likely to send their children to prekindergarten than were parents with more resources. And when disadvantaged parents were able to find a pre-K program, it was likely to be of relatively low quality.⁴

Based on these observations, we would expect that children from disadvantaged environments would benefit the most from pre-K education; that high-quality programs would deliver the greatest benefits; and that children who received such education would benefit more than those who remained at home, cared for by parents, family, and friends. Comparisons between different pre-K programs, on the other hand, shouldn't show such a stark contrast. These assumptions imply that not all programs would show equal benefits in empirical evaluations. Scholars have called this heterogeneity in outcomes. Interpreting the research requires attention to many factors—family background, comparison group

composition, and programs' quality and intensity.

Scholars have extensively studied the efficacy of pre-K programs, especially those offered to four-year-olds. Of more than 100 evaluations of pre-K programs, the vast majority used random assignment of children to receive the preschool treatment or not.⁵ Most of these experimental programs served children from low-resource families, in keeping with the premise that these children were less likely to have the skills needed for kindergarten and were therefore most likely to benefit. Consequently, we know the most about how preschool influences children from disadvantaged backgrounds. And because many of these evaluations were conducted before pre-K programs were widespread, children who didn't participate in a specific program (that is, those assigned to the control group) generally received no pre-K education at all.

As theory predicted, these programs were largely successful. They raised children's academic achievement in the short term, and subjects who were followed into early adulthood showed higher educational attainment, reduced crime, and more employment. More recent evaluations, especially those involving universal pre-K programs rather than those targeting children from disadvantaged backgrounds, also generally show short-term benefits overall. Evaluations that examined children from different backgrounds have revealed stronger effects among disadvantaged children, again in keeping with theory. These evaluations are too recent to have followed their children into adulthood.

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The empirical evidence makes a good case for such early investments, but many questions remain. This issue takes a fresh look at the evidence on prekindergarten's effectiveness and its role in setting the foundation for later academic learning. We also review the evidence on other aspects of pre-K programs, such as teacher preparation and professional development, bilingual education, and parental and other supports for young children. And as much as possible, we address the integration of prekindergarten with the early elementary grades, specifically kindergarten through third grade (K–3). Public policy often doesn't focus on this integration, even though it's advocated by early childhood educators, developmental psychologists, and school districts. As pre-K programs become more widespread, the push for integration will be even more pronounced. The evidence for the effectiveness of pre-K education far surpasses the evidence for integrating it with K–3 education. This lack of evidence on the transition is reflected in many of the articles in this issue, which focus much more on prekindergarten

itself than on its integration with kindergarten through third grade.

What Is Prekindergarten?

Many people use the term *prekindergarten* generically to refer to any educational program for children before elementary school. In fact, prekindergarten is a web of programs that vary by the ages of the children served, funding source, structures of administration, and mission.

Pre-K programs can generally be divided into four categories based on their main source of funding and administration. The first category encompasses state and city pre-K programs, which are usually universal but are sometimes targeted to low-income children. Typically, these programs fall under state and local education departments, though other entities may share responsibility for oversight.

The second category involves federally funded programs. The best known is Head Start, a means-tested program serving children whose parents earn less than the poverty threshold (with a set-aside of 10 percent for children with special needs). Head Start is administered by the federal Department of Health and Human Services, not the Department of Education; it focuses not just on education but on the whole child, allocating significant funds to health and social services.

The third category, which might be termed community programs, is less well defined. These are subsidized not-for-profit programs, although in some

cases parents pay a portion of the cost. The programs may receive funds from government child-care organizations (such as the Child Care Development Program Block Grants), city agencies, community groups, or private donors. Many different groups operate such programs, including community centers; social service, housing, or city agencies; and churches and other not-for-profit entities. Sometimes, a single center may have classrooms funded by different sources.

The fourth category is for-profit centers. These aren't discussed in this issue, as they haven't been involved in research to examine their effectiveness and aren't often included in studies of classroom quality. In the few general observational studies of pre-K centers within a particular geographic area, for-profit centers were found to be of lower quality on average than programs in the other three categories.⁶ For-profit centers are also less likely to be influenced by state regulations for prekindergarten.⁷

Another important dimension of pre-K programs is the age of the children served. The vast majority of programs and evaluations have focused on four-year-olds; "prekindergarten" often refers to such programs run by a public school system. However, developmental research and program evaluations suggest that starting education even earlier than age four might enhance school achievement, attention, and engagement in learning. Consequently, some pre-K programs are enrolling children as young as three. For example, Head Start serves both three- and four-year-olds. Several early small programs in the 1960s and '70s also tested the efficacy of prekindergarten for both age groups. Therefore, some of the pre-K initiatives

described in this issue include both three-year-olds and four-year-olds. We anticipate that in the coming decade, an increasing number of three-year-olds will be included in pre-K programs. In fact, as more states and cities offer universal prekindergarten for four-year-olds—sometimes called *pre-K for all*—and integrate these programs with elementary schools, it's likely that Head Start will have more slots to offer three-year-olds.

In this issue, we use the term prekindergarten fairly generically—that is, to refer to all programs. But whenever possible, we do make an attempt to be more precise—for example, by specifying state or local prekindergarten.

How many children attend pre-K programs? The most up-to-date information comes from the National Household Education Surveys Program (NHES) and the Early Childhood Longitudinal Study, Kindergarten Class of 2010–2011 (ECLS-K:2012).⁸ The estimates are based on parents' reports of what, if any, early childhood education their children received in the year before entering kindergarten (including four-year-olds and any five-year-olds not yet in kindergarten). In 2012, according to NHES data, 58 percent of these children were enrolled in pre-K programs; an additional 2 percent were in multiple-care arrangements that might or might not include prekindergarten. We see disparities by race and ethnicity in the percentages of children enrolled: 53 percent of Hispanic-American children, 59 percent of white children, 65 percent of African-American children, and 67 percent of Asian-American children. Attendance also varied by family income: the children who attended prekindergarten included 49 percent of

children whose family incomes were below the poverty threshold (about the lowest 20 percent of the income distribution), 51 percent of those whose family incomes were in about the next 20 percent (often termed the near poor), and 65 percent of those whose parents were neither poor nor near poor. In 2012, 71 percent of children whose mothers had a bachelor's degree were enrolled in pre-K programs, compared with 46 percent of those whose mothers hadn't completed high school.

Major Pre-K Evaluations

Much of the debate regarding prekindergarten's effectiveness is based on a series of studies mentioned in many of this issue's articles. To avoid repetition, we'll briefly describe the studies that are mentioned most often.

Perry Preschool and Abecedarian

The Perry Preschool Program and the Abecedarian Program are the best-known small-scale pre-K experiments. Both have demonstrated important positive impacts into adulthood for the participants.⁹ From 1962 to 1967, the Perry Preschool Program enrolled three- and four-year-olds in Ypsilanti, MI. Children participated for one or two years, receiving half-day center-based care and weekly home visits for 30 weeks per year. The children were African-American, lived in low-income families, and had low cognitive competencies. The teachers were highly qualified; their curriculum was the precursor to the Creative Curriculum, now used by a third of all Head Start centers. The 123 children in the evaluation were randomly assigned to receive either treatment or no intervention. So far the subjects have been followed into their 40s; the study will continue until they're in their 60s.

The Abecedarian Program was conducted in Chapel Hill, NC, from 1972 to 1982; the participants were 111 low-income African-American families.¹⁰ Children were enrolled in the program or assigned to a control group in the first three months of life; participating children received full-day center-based care for 50 weeks per year until kindergarten. A curriculum called Learning Games was developed and implemented (and is still used in programs today). When the children entered kindergarten, the two groups were randomized again. Half of them received services in elementary school (unlike the preschool intervention, this aspect of the program produced no effects on the measured outcomes). The Abecedarian children have been followed into their 40s. Because the program began in the first year of life, it isn't included in the article on prekindergarten's efficacy by Hirokazu Yoshikawa, Christina Weiland, and Jeanne Brooks-Gunn. But because it's one of the few evaluations to have followed its subjects into adulthood, Karoly discusses it in her article on benefit-cost analyses.

Head Start

Unlike state and city pre-K programs that focus solely on school achievement and behavior, the federal Head Start program takes a whole-child approach, providing education, nutrition, health, and family support services. Though it was founded in 1965, its first multi-site randomized evaluation—the Head Start Impact Study—didn't begin until 2002; it followed children through 2008.¹¹ Participants were chosen from 383 Head Start centers (which themselves were randomly selected from among 84 randomly selected grantees and delegate agencies). A total of 4,442

children were randomly assigned to treatment or control groups in two age categories, three-year-olds and four-year-olds. All were eligible for Head Start either because their family income was below the poverty threshold or because they had special needs. In each group, about one-third of the children were Hispanic, one-third were African-American, and one-third were white. About one-quarter of the sample were English language learners. The study assessed the children's academic achievement, behavior problems, health, and approaches to learning. Few effects were sustained into the middle of elementary school. Because the children weren't followed past elementary school, no benefit-cost analyses were undertaken.

Researchers have also attempted to estimate the long-term effects of Head Start through several other types of analyses. One type of study compares siblings, one of whom attended Head Start and one of whom did not. Because the children live in the same families, these studies by definition control for many background family characteristics that might influence the measured outcomes.¹² Another approach examines long-term outcomes of children who were affected differently by Head Start's eligibility rules.¹³ One such study took advantage of the fact that when Head Start began in the 1960s, some programs in high-poverty counties got help obtaining funds for their children, while programs in adjacent counties did not. Significant long-term effects have been reported in both of these types of evaluations. A recent study in Tulsa, OK, used matching techniques to compare children who received a high-quality Head Start experience with children who did not, evaluating eighth-grade achievement test

scores gathered by area school districts; it reported significant positive impacts.¹⁴

The Tulsa, Boston, and Tennessee Pre-K Programs

When it comes to state- or city-level pre-K programs, three evaluations are often cited. The first is from Oklahoma, a leader in state pre-K programs for four-year-olds. Oklahoma's program for disadvantaged four-year-olds began in the 1990s; the state initiated a universal program in 1998–99 that continues today. Oklahoma pre-K teachers are paid the same as kindergarten teachers and must meet the same educational requirements. Across the state, programs can last half a day or a full day, and curricula vary. The evaluators compared Tulsa children who just made the pre-K age cutoff with those who just missed it and had to wait a year to attend.¹⁵ This so-called *regression discontinuity* research design accounts for demographic differences between the two groups, since birth date is assumed to be random. Children were followed through their kindergarten year, and the study found positive impacts.

The second evaluation involves the pre-K program in Boston Public Schools. Children were eligible if their fourth birthday occurred by September 1. An estimated 34 to 43 percent of the city's eligible children enrolled in the program.¹⁶ The full-day program used two major curricula—Opening the World of Learning (OWL) and Building Blocks. All teachers had at least a bachelor's degree. Coaches worked with the teachers, an unusual step for such programs.¹⁷ The evaluation covered more than 2,000 four-year-olds in 69 elementary schools that had pre-K classrooms in 2008–09. Again, the evaluators used a regression

discontinuity design, in which children who missed the cutoff for pre-K were compared with children who were eligible. Of the four-year-olds who were too young to enroll in Boston's pre-K program in 2008, 57 percent attended some form of center-based care, according to their mothers. Pre-K attendance was associated with higher achievement scores.

The third evaluation is from Tennessee, where cohorts from 2009–10 and 2010–11 are being evaluated.¹⁸ Children were randomly assigned to prekindergarten or to a control group. Initial analyses found small short-term impacts and no (or negative) medium-term impacts. However, the empirical strategy was compromised—parents' consent to follow a subset of the children was requested only after the randomization, and a very high percentage of parents declined to participate in the follow-up, making it difficult to interpret the results. Researchers are still trying to understand how this problem affected the estimated impacts.

What Have We Learned?

In this issue, the authors present the best available evidence concerning the success of pre-K programs in preparing children for kindergarten and beyond. The 10 articles examine:

- the efficacy of prekindergarten in both the short term and the long run;
- the economic benefits of pre-K programs into adolescence and adulthood, compared to their costs;
- the development and evaluation of curricula focusing on several areas of learning—literacy, mathematics and

science, and attention and behavioral regulation;

- the ingredients of a quality learning experience, and the education, training, and compensation of teachers;
- successful practices for teaching young children with special needs;
- how best to teach English language learners; and
- the effectiveness of integrating parenting programs into pre-K–3 education.

In this section we briefly explore some of the important questions that tie the articles together.

Is Preschool Effective, and If So, for Whom?

In the issue's opening article, Yoshikawa, Weiland, and Brooks-Gunn review what we know about the effectiveness of pre-K programs, looking at short-, medium-, and long-term effects on health, literacy, mathematics, and social-emotional competencies. The article by Karoly examines the economic benefits of pre-K programs compared to their costs, using some of the same evaluations as Yoshikawa, Weiland, and Brooks-Gunn and focusing on long-term outcomes. Both articles highlight pre-K evaluations that have strong research designs, mostly because they randomly assigned children to a treatment group or a control group. Although dozens of researchers have conducted small-scale evaluations, far fewer have followed their subjects into adulthood, or even into late elementary school.¹⁹

At the end of most evaluated programs, researchers find effects on school

achievement, though these effects diminish over elementary school. When program effects are large, they tend to be maintained into elementary school, though they are smaller than the initial impacts. At the same time, we see long-term effects on adult outcomes—for example, a reduction in crime or the completion of more schooling. It's puzzling that during elementary school, the achievement-test scores of children who attended prekindergarten converge with the test scores of children who did not, a phenomenon commonly called *fadeout*. Studies document that those who participate in a pre-K program have a significant advantage in kindergarten in terms of educational achievement. But those assigned to the control group tend to catch up in the first through third grades; in most evaluations, more than half the difference between the two groups disappears by the end of first grade.

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Several theories have been put forth to explain the convergence. One is that the initial pre-K effects may not be sustained if primary school classrooms are of low quality. Another theory suggests that kindergarten and first-grade teachers may concentrate on students who are

performing poorly, focusing on the skills already acquired by children who attended prekindergarten. It may be that the early grades lack challenging curricula, failing to focus on what are called *unconstrained* skills—large domains acquired gradually, such as reading to learn. Or perhaps prekindergarten simply isn't effective at raising academic achievement in anything but the short term. The articles by Catherine Snow and Timothy Matthews; Robert Pianta, Jason Downer, and Bridget Hamre; and Douglas Clements and Julie Sarama all examine one or more of these ideas. We need more nuanced research on children's primary-grade experiences to understand which of these explanations is relevant.

Another problem is that the amount of time children spend in pre-K classrooms, often called the *dose*, isn't well documented in studies. Is it half a day or a full day, one year or two, a full year or nine months? Dose of intervention no doubt makes a difference in sustaining effects on achievement.

It's also possible that prekindergarten may improve competencies that don't necessarily boost test scores, such as behavioral regulation, persistence, motivation, and engagement in school. These so-called noncognitive or soft skills may be important for success later in life, but few evaluations have measured such outcomes in the primary or secondary grades, so we know little about the likelihood of effects on these competencies. Programs that focus explicitly on regulation and executive function are only now being implemented in pre-K programs; Cybele Raver and Clancy Blair review them in their article.

Family involvement may also influence sustained pre-K effects. Parents of children enrolled in pre-K programs might become more engaged in schooling during the primary school years. Such parental differences could possibly be traced to selection—that is, parents who enroll their children in pre-K programs may already be more engaged than those who don't. But the differences could also result from a change in parents' behavior produced by the pre-K experience. In their article, Katherine Magnuson and Holly Schindler suggest that at least for now, changes in parents' behavior are unlikely to play a large role in explaining prekindergarten's longer-run effects. Most interventions that have targeted parents as part of a pre-K program haven't been successful, and those that have had some success haven't been taken to scale.

What Distinguishes High-Quality Programs?

The role of curricula and the quality of the classroom are important for understanding young children's academic growth. All three articles that examine aspects of curricula—literacy; science, technology, engineering, and mathematics (STEM); and executive function—conclude that young children are capable of learning more than we currently teach them. Such content can be delivered in many ways.

Basic research on literacy has a long history, as does the development of literacy curricula. Today, we'd be hard pressed to find a pre-K program that doesn't have both explicit materials for teaching literacy and procedures for training teachers to enhance literacy learning. In their article, Catherine Snow and Timothy Matthews describe the key components of literacy, which include

both constrained skills (such as phonemic awareness and letter knowledge) and unconstrained skills (such as knowledge of the world). Young children are typically taught constrained skills, which are associated with success until second or third grade. Beyond third grade, however, mastery of comprehension is associated much more with unconstrained skills. This distinction is captured by the phrase "learning to read versus reading to learn."

Snow and Matthews suggest that our pre-K–3 approaches to literacy too often ignore unconstrained skills, and this might be one reason that when US children reach eighth grade, their literacy scores drop in both the National Assessment for Education Progress and international comparisons. The authors maintain that teachers need professional development on how to teach unconstrained skills; they end with a description of various curricular and other training interventions that may help boost students' literacy.

Douglas Clements and Julie Sarama argue that STEM subjects, though currently absent from most pre-K experiences, are appropriate for early education because young children think in terms of science and math and are intrigued by these subjects. The good news is that there's increasing interest in STEM activities for young children, and we now have curricula and training approaches to encourage teachers to spend more time on STEM learning and use more effective techniques. Clements and Sarama also argue that teachers need professional development, concentrating on setting goals and using developmental progressions, to teach math and other STEM subjects.

The article by Cybele Raver and Clancy Blair explores how executive function affects a child's learning outcomes. Executive function includes such abilities as attention, working memory, and inhibitory control—all of which are associated with cognitive and behavioral outcomes for both children and adults. Raver and Blair offer research to show that the development of executive function before children enter elementary school predicts their early math and reading skills. The authors also review promising individual and classroom interventions to improve executive function. Research on how to integrate the learning of memory, attention, and planning into the classroom is just beginning. So far, the results from several evaluations of executive function programs are largely positive. However, we need to learn more about effective curricular approaches and how to teach these skills throughout the school day. Some approaches might be difficult to incorporate into professional training, which suggests that we must pay more attention to the design of professional development for executive function.

One innovative line of work involves the cross-fertilization of curricula promoting literacy, STEM, and executive function. Some evidence suggests that incorporating high-quality STEM curricula into the classroom not only promotes STEM learning but also enhances literacy. Similar links are emerging between STEM and executive function. We might envision a classroom of the future where literacy, STEM, and executive function skills are seamlessly taught throughout the day, rather than in separate time slots. After all, that's how learning generally occurs outside the classroom.

Another issue that cuts across the literacy, STEM, and executive function articles is the possible disconnect between the content of curricula and teachers' competency in delivering that content. The article by Deborah Phillips, Lea Austin, and Marcy Whitebook considers the preschool and early elementary workforce. Somewhat surprisingly, we know little about how teachers are trained in the use of specific curricula or how effective such training is. The articles on STEM and executive functioning present exemplars of curricular training approaches. And a few recent pre-K evaluations, most notably the one in Boston, provide detailed information on teacher training and continued feedback to teachers. We hope to see more research in this area.

In their article, Robert Pianta, Jason Downer, and Bridget Hamre discuss overall classroom quality. Definitions of quality vary widely. The lack of agreement on how to define and measure quality makes it difficult to compare quality across classrooms, programs, or states. But a consensus is emerging on the dimensions of quality that are important and ought to be measured; these include structural elements, classroom environment, and teacher-child interactions. The authors note that certain structural elements—smaller class size, longer duration of a program, and teachers' degrees and certifications—are associated with positive learning outcomes. But even when all the structural quality indicators are met, low scores on teacher-child interaction predict smaller gains in learning in pre-K–3 classrooms. The implication is that we must pay much more attention to such interactions in measuring classroom quality, in implementing curricula, and in teacher training. Variation in the effectiveness of pre-K programs may be due in large part to differences in how teachers interact with their children. So ensuring that the structural

elements are in place—for example, that all pre-K teachers have a degree plus early childhood education certification—isn't enough to guarantee positive impacts on learning.

Another question is the continuity of quality. If quality is high in a pre-K program but not in the K–3 classrooms that a child later attends, it stands to reason that sustained achievement gains will likely be low. Pianta's group, at the University of Virginia, has been studying quality across the pre-K–3 range, with a special focus on teacher-child interactions. It's possible that efforts to integrate prekindergarten into the K–3 system will lead to higher quality across the board. We hope to see more such efforts in the coming years.

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Finally, in their article on how best to teach young English language learners, Lisa Barrow and Lisa Markman-Pithers offer evidence that ensuring high-quality classrooms in general may be at least as important as the language of instruction for ensuring academic success.

How Do We Prepare Teachers and Parents?

Phillips, Austin, and Whitebook review what we know about the pre-K workforce and,

to a lesser extent, about K–3 teachers. The proportion of pre-K teachers who have a bachelor's degree and certification for teaching early childhood education has increased over the past 15 years. Still, far fewer pre-K teachers than kindergarten teachers are college graduates, owing to differences in requirements. State and city pre-K programs usually require teachers to hold a bachelor's degree, which has led to disparities between pre-K teachers in programs administered by public school systems and those in Head Start and community programs. Wage differentials are also high. Indeed, many pre-K teachers experience financial hardship and lack health insurance. Several systems are trying to enhance education and wages; in the section on integration below, we discuss an example of innovative policies to advance the status of pre-K teachers in North Carolina.

We know too little about how teachers are educated and trained. Phillips, Austin, and Whitebook find tremendous variation in preparation programs, as well as inconsistency across states regarding what preschool teachers are required to know. So it's not surprising that links between classroom quality and education and training are difficult to ascertain. And even among teachers who have received the required training, the quality of teacher-student interactions varies widely (see the Pianta, Downer, and Hamre article). Until we pay more attention to the links between training and classroom interactions, we can't evaluate the efficacy of current training and education programs. The same is true for implementing curricula in the classroom. How well do current training approaches prepare teachers to use the curricula they encounter? The lack of information on such

issues is somewhat shocking. In essence, we still don't know the best way to prepare teachers to deliver high-quality interactions and learning in their classrooms.

One of the goals of Head Start and other pre-K programs is to provide support, information, and even instruction to parents in the context of prekindergarten. In fact, being in favor of involving parents in their children's pre-K programs seems much like supporting motherhood and apple pie. But even though everyone believes such involvement is necessary, we know little about whether it makes the programs more effective. In fact, Katherine Magnuson and Holly Schindler report that when parenting programs attached to pre-K programs have been evaluated, many have proven to be ineffective. But programs that target specific competencies are more likely to have benefits, especially those that help parents deal with their children's behavior problems. Also, a few programs targeting mothers' literacy and reading have been effective. Clearly, it's time to develop and test new approaches to parental involvement rather than simply assuming that it's beneficial. One promising approach involves using technology to remind parents about reading, math, and language activities. We imagine that many technological applications will be developed in the coming years, and we hope to learn about their impact.²⁰

How to Help English Language Learners Succeed in School

What's the most effective way to teach English language learners? The answer depends on the ultimate goal. Is it to help English learner students become truly bilingual? Or is it to help them become proficient in the English language as quickly

as possible? Although the debate is often framed as a binary of total immersion in English versus dual-language instruction, the article by Barrow and Markman-Pithers describes a number of approaches for teaching English language learners. According to the authors, some evidence suggests that teaching pre-K children in English *and* in their native language might help them retain their native language without slowing their English acquisition. But if English proficiency is the primary goal, other models (namely English immersion) may be equally effective. We need to learn much more about exactly how students are being taught, what combinations of approaches are effective, and how classrooms with children speaking multiple languages can integrate language instruction.

What Works Best for Children with Special Needs?

For decades, Head Start has reserved 10 percent of its slots for children with special needs. Yet experimental evidence on the impact of such inclusion is sparse, because children with special needs can't be randomly assigned to receive a pre-K program or not. Rather, services are mandated for these children, although the services don't necessarily include prekindergarten. For the same reason, we also know little about how including special-needs children in a classroom affects children without special needs. Rather than inclusion, research has focused more on the integration of services as well as the types of services offered to children with various special needs.

In their article, Kathleen Hebbeler and Donna Spiker review the landscape of

education for young children with special needs. They discuss the challenges of identifying such children, such as the difficulty in assessing young children and the variations in state eligibility guidelines. In general, they write, special education has moved away from looking at disability as a condition that resides in the child and toward the idea that disability is an interaction between the child and the environment. This social model recognizes that adapting the environment can either help or impede a child's development. Hebbeler and Spiker highlight effective interventions, such as multi-tiered systems of support that use data to monitor students' progress and to determine the help they need as they move through tiers of instruction. The authors also discuss the challenges faced by children with special needs in making transitions as they move from prekindergarten through third grade.

How Well Are Pre-K and K–3 Education Integrated?

One issue cuts across all these articles: the fact that pre-K and K–3 programs seem to exist in separate silos. Prekindergarten programs are fragmented in terms of funding, approaches to learning, and the state regulatory agencies responsible for them. Sharon Lynn Kagan of Columbia University has written that because the pre-K landscape is a polyglot, it's hard to integrate prekindergarten with early elementary school.²¹ Below we present two case studies, one of a county-level effort and another of a state effort, to build a system that ensures continuity in learning approaches from prekindergarten through third grade.

Maryland's Montgomery County, on the outskirts of Washington, DC, has changed most aspects of its approach to pre-K–3 education. The school district set the goal of having 80 percent of high school seniors ready for college, and worked backward from there to come up with goals for prekindergarten to third grade. Many of the district's extensive series of initiatives are proposed in this issue. For example, prekindergarten was provided for all four-year-olds, prekindergarten and kindergarten became full-day programs, and student-teacher ratios were limited to 15 to 1 for all K–3 classrooms.

Moreover, pre-K teachers were required to hold a bachelor's degree and be certified to teach early childhood education. Pre-K teachers were also categorized as elementary school teachers, making their compensation similar to that of K–3 teachers. Parents received programs in English as a second language and family literacy, and children received after-school and summer programs. Math and literacy curricula were aligned across grades, and kindergarten curriculum guidebooks and welcome packages were offered to parents in six languages. Basically, Montgomery County implemented most of the changes recommended by scholars of early childhood education. This comprehensive approach doubled the proportion of children who were reading at grade level.²² The effects were sustained in elementary school, showing that the answer to the question of whether prekindergarten can have lasting impacts might be yes—as long as early elementary school classrooms and services are also improved.

North Carolina offers a state-level example of integration.²³ In conjunction

with More at Four—the state’s pre-K program—a series of policies seek to enhance pre-K teachers’ education and wages. Several programs encourage early childhood teachers to earn credentials or enroll in a two- or four-year college program. Teachers receive scholarships, and are then required to teach an additional year in prekindergarten. In 2009, 5,400 teachers were awarded these scholarships. Also, when college students who major in early childhood education go on to teach at-risk preschoolers for a year, their college loans are forgiven. The state’s community colleges all offer degrees in early childhood education and have a common course catalog so that credits can be easily transferred. One four-year college has coordinated with the community college coursework so that early childhood education credits all transfer for the bachelor’s degree.

North Carolina has also enhanced compensation. The Child Care WAGES® salary supplement, which is linked to education, has increased the pay of teachers in Head Start and other community programs, who are among the lowest-paid pre-K teachers. Also, subsidies are offered for health insurance. These initiatives have been shown to reduce turnover of early childhood teachers to about 12 percent annually, similar to that of elementary school teachers. Nationally, early childhood education programs report that about two-fifths of their teachers leave each year. The article by Phillips, Austin, and Whitebook provides more information on teacher turnover in early childhood education.

Unlike the evidence for pre-K’s effectiveness, evidence about integration generally isn’t based on rigorous evaluation

methods like random assignment. Indeed, Montgomery County is among the few entities to have evaluated their system-wide initiatives in any way. We need studies of such initiatives that include detailed information on individual students over time; which elements of the systems changed; and how many students, teachers, or classrooms received a particular element. Only through careful data collection and analysis can we understand what works—and doesn’t work—in designing integrated systems.

Conclusions

Although some policymakers still question the value of pre-K education, we believe the weight of the evidence, as reflected in the articles in this issue, indicates that high-quality pre-K programs can indeed play an important role in improving later outcomes, particularly for children from more disadvantaged families. At the same time, significant questions remain. Why do we see a convergence in test scores in elementary school and yet potentially large impacts on other outcomes in the long term? What produces the variation in impacts seen among more recent programs? What’s the best way to train teachers to be effective in the classroom? What are the key components of a high-quality program? These questions highlight the need for sound research that attempts to get inside the black box of a pre-K education.

We also need a better understanding of how to take high-quality programs to scale—the most relevant example being the rollout of city- and state-level pre-K programs. And we must start considering the education of young children to be part

of the educational system, and integrating it with elementary and secondary education. Because learning is cumulative, our educational system—including prekindergarten—will be most effective only when each level builds seamlessly on the previous one.

Current estimates suggest that the social payoff to high-quality pre-K education could place it among the most cost-beneficial investments we as a society can make. The challenge is to design an effective system that gets all children off to a strong start.

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