

Democrat Tim Kaine, the current governor of Virginia, campaigned on a platform that included universal pre-K education. In Hartford, Connecticut, Mayor Eddie Perez established an Office for Young Children within his cabinet. At the federal level, perhaps the most prominent early-childhood initiative that has come from the Bush administration is “Early Reading First,” a national effort to deliver effective reading instruction to young children. Providing early learning experiences to children has found a place on political agendas nationwide. Why? Increasingly, early childhood education is viewed as a point of leverage for addressing low levels of, and gaps in, K–12 achievement.

What do we know about the quality of existing early-childhood programs? What does the research tell us about designing public policies to improve outcomes for children? Two recent large-scale studies of the early education system provide a contemporary perspective: the National Institute of Child Health and Human Development Study of Early Child Care and Youth Development (NICHD SECCYD) and the National Center for Early Development and Learning (NCEDL) Multi-State Pre-K study.

What We Know

1. Prior to entering kindergarten, American children spend time in a wide assortment of settings. Enrollment of 3- and 4-year-olds in early education programs now approaches 70 percent of that population and is growing annually. The disparities in educational opportunity before kindergarten are dramatic and easily explain many of the achievement gaps seen later on.
2. Despite extensive participation, too few of the students who are in the greatest need of high-quality early education experiences receive them, and the few who do are unlikely to receive them consistently once they enter the K–12 system.
3. Demand for early childhood education has grown far faster than the system’s capacity to staff expanding programs. Universal pre-K programs for 4-year-olds will require at least 200,000 teachers, with estimates of 50,000 additional teachers needed by 2020. If high-quality services are to be provided, many more early-childhood educators need to be attracted into the profession and trained appropriately.

BY ROBERT C. PIANTA

Preschool Is School, Making early childhood education matter



PHOTOS / GETTY IMAGES

Sometimes

The Research

The National Institute of Child Health and Human Development Study of Early Child Care and Youth Development (NICHD SECCYD) collected detailed information on achievement, social development, family experiences, child-care quality, and schooling for roughly 1,300 children at regular intervals from birth on, yielding data that have resulted in numerous influential papers on child care and family background effects on early achievement and social adjustment. The National Center for Early Development and Learning (NCEDL) work

involved assessments of 750 pre-K classrooms and 2,500 children in 11 different states, with a focus on children's achievement and social competence in pre-K with follow-ups to 1st grade. (The NCEDL sample represents 80 percent of pre-K programs serving 4-year-olds in the United States.)

Both studies relied on direct, live observations in child care, preschool, and the early grades using standardized, objective measurements that provide a window on classroom settings and teachers in more than half the 50 states. The statistical meth-

ods employed to analyze these data are among the more sophisticated quasi-experimental approaches to isolating cause and effect in nonexperimental data.

The Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K), a study of a nationally representative sample of children in the United States, also provides insight into variations in achievement among children as they go through school.

The findings described here are drawn from published, peer-reviewed empirical papers.

4. Rapid enrollment growth is intensifying the need for evidence-based training and ongoing support of early childhood educators. The approach that appears most promising provides teachers with extensive background in child development and focused, regular, individualized feedback about their classroom interactions with children.
5. Nearly every single piece of legislation, policy, or program design requirement involving early education and child care states that such programs must be of high quality. But the measures of quality are often limited to program components; they are seldom direct assessments of children's instructional and social experiences in classrooms. Estimates of "quality" that rely on these proxies may not correspond to the experiences that produce social and academic skill development.

How Can We Best Measure Quality in the Early Education Classroom?

The evidence is quite clear that it is the teacher's *implementation* of a curriculum, through both social and instructional interactions with children, that produces effects on student learning. Classroom observations thus provide the most valid information on the educational experiences of young children. Structural indicators, such as the curriculum being used, teacher credentials, and other program factors, are only proxies for the instructional and social interactions children have with teachers in classrooms. Yet many states and localities measure program "quality" only in terms of proxies—the credentials of teachers, the size and spaciousness of the facilities, the amount of learning material available, and the length of the preschool day. Except for the last characteristic, these "quality indicators" do not measure what programs offer young children that is educationally important. Still, these indicators often drive program design and policy.

Even the value of experimental studies of program quality can be limited, especially when going to "scale." For example,

experimental work can identify effective approaches to teaching literacy for the relatively small group of teachers who participate in such studies. Yet when these approaches are disseminated to large groups of preschool teachers through districtwide training or college courses, such approaches typically have a much-reduced effect on outcomes, often because the quality of implementation is low. In short, teachers' implementation of instruction through their interactions with children is a critical and typically underemphasized aspect of early childhood program quality. Judging accurately the quality of implementation requires observing what is happening in classrooms.

What Does a High-Quality Early-Childhood Education Classroom Look Like?

The best early childhood teachers are opportunists—they know child development and exploit children's interests and their interactions with them to promote developmental change—some of which may involve structured lessons and much of which may not. To be effective, teachers of young children must strategically weave instruction into activities that give children choices to explore and play. Several aspects of teachers' interactive behaviors appear to uniquely predict gains in young children's achievement:

- explicit instruction in certain key skills
- sensitive and emotionally warm interactions
- responsive feedback
- verbal engagement/stimulation
- a classroom environment that is not overly structured or regimented.

My colleagues and I examined whether children at risk of low achievement in the early grades would benefit from being exposed to high levels of observed instructional and emotional support from teachers. We studied the effects on two groups of at-risk children: those whose mothers had less than a four-year

college degree and those who had displayed significant behavioral, social, and/or academic problems. Both groups were, on average, behind their peers at age 4 and further behind by 1st grade. When the children at risk were placed in high-quality classrooms, these gaps were eliminated: children from low-education households achieved at the same level as those whose mothers had a college degree, and children displaying prior problem behavior showed achievement and adjustment levels identical to children who had no history of problems. At-risk children who did not receive these supports did not show these gains.

The results are consistent with other studies that show a substantial return (up to 50 percent of a standard deviation on standardized achievement tests) to achievement from observed classroom quality, with greater effects often accruing to children with higher levels of risk and disadvantage. (The size of the well-known racial gap in test-score performance is between one-half and one standard deviation.) Experimental studies, although few and involving small numbers of children, show similar effects. In fact, findings are almost uniform in demonstrating significant and meaningful benefits for enrollment in early education settings in which teacher-child interactions are supportive, instructive, and stimulating. These “effects” studies, however, do not provide information on the prevalence and distribution of supportive, “gap closing” classrooms within the system of early education and care, or how to produce gap-closing settings.

How Good Is the System We Have?

Most children in pre-K, kindergarten, and grade 1 classrooms are exposed to quite low levels of instructional support and only moderate levels of social and emotional supports—levels that are not as high as those in the gap-closing, effective classrooms described above. The quality of instructional interactions, particularly the dimensions that appear to matter most for children’s achievement, is particularly poor (see Figure 1).

In nearly every study that includes a large number of classrooms, there is also wide variability in the opportunities that contribute to improved achievement. Observations of child-care settings and pre-K, kindergarten, and 1st-grade classrooms show that some children spend most of their time engaged in productive instructional activities with caring and responsive

adults who consistently provide feedback, challenges to think, and social supports. Other children, *even in the same program or grade*, spend most of their time passively sitting around, having few if any interactions with an adult, watching the teacher



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deal with behavior problems, exposed to only boring and rote instructional activities. While children in some classrooms are exposed to few, if any, literacy-focused activities, youngsters in other classrooms receive more than an hour of exposure to literacy-related activities, including narrative storytelling, practice with letters, rhyming games, and listening. In some cases, even in classrooms right next to one another that share the same materials and curriculum, the exposure of children to high-quality learning and social supports is so dramatically different that one might conclude the difference was planned.

Among the state-funded pre-K classrooms in the NCEDL study, we found that only about 25 percent of classrooms serving 4-year-olds provided students with the high levels of emotional and instructional support that are needed. No less troubling is the equally strong evidence that preschoolers lucky enough to have such support in pre-K are not likely to be enrolled in similarly

high-quality classrooms in kindergarten or 1st grade. In those grades as well, only about one-quarter of classrooms are providing the instructional and emotional nurturing that young children require. Unfortunately, exposure to gap-closing classroom quality, although highly desirable from nearly every perspective imaginable, is not a regular feature of early schooling and even less likely for children in poverty. In other words, the odds are stacked against children getting the kind of early education experiences that close gaps. This is not to say that early education does not work—evaluations of universal pre-K in Oklahoma, for example, show that enrollment produced gains for children’s achievement. The challenge is determining how to strengthen and improve the early childhood education system as it expands.

Training the Teachers

The uneven distribution of high-quality early education classrooms in the United States reflects several factors. First, teaching young children is often difficult and uniquely challenging. Second, teaching in early education programs that

target children who live below the poverty line can be even more challenging, especially if the class includes many youngsters who need extra support. Teachers in these programs may require even more assistance than is generally assumed. Third, the system of early education operates on a shoestring of support: it is for the most part less well funded than K–12, with classrooms housed in trailers, basements, or makeshift locations with fewer resources. Finally, early childhood teachers describe themselves as alienated from and lacking the supports available in K–12. This is a fragile and vulnerable system that is increasingly being asked to ameliorate social, economic, and educational disparities.

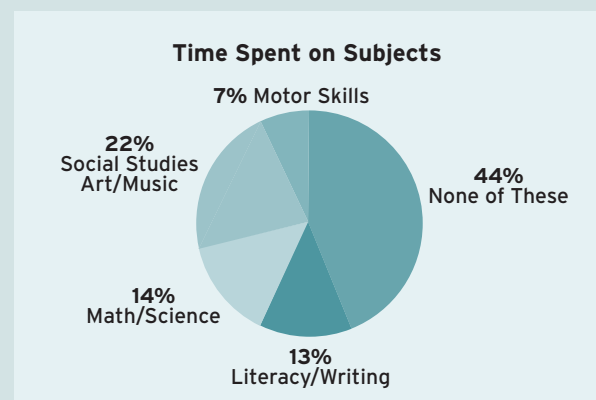
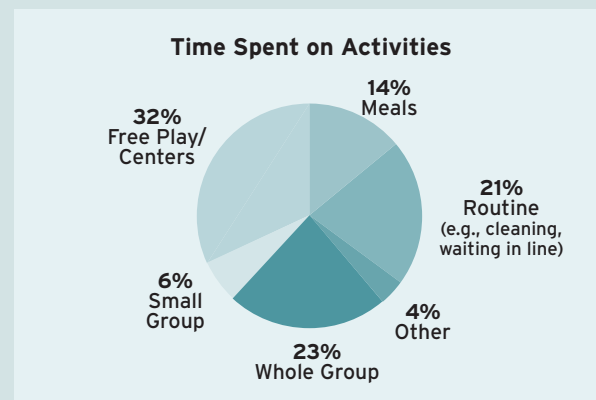
Given the early education system in place, what can be done to make sure those children who most need high-quality experiences will have them? An obvious place to look for leverage is in the preparation teachers receive. Unlike the K–12 system, in which the supply chain for teachers is regulated by a single state entity, training of the early education and child-care workforce is widely distributed and loosely regulated. Ninety-five percent of the workforce in formal preschool and early education programs come from four-year and two-year early childhood training programs or are certified teachers from the K–12 system. Much less is known about the training and skills of adults who staff family-based child care and informal care. In short, there is no easily identifiable and easily regulated pipeline for training the early education workforce, a clear challenge for policymakers.

Further, as with program quality, the standard measures of teacher quality (degrees, experience) are not reliable proxies for what teachers do in the classroom. So policies that mandate the accumulation of course credits, advancing in terms of degree status (e.g., from A.A. to B.A.), or attending workshops, by themselves are not likely to produce teachers with high-quality classroom skills or necessarily contribute to children’s achievement. In fact, the NCEDL 11-state pre-K study demonstrated that even in state-sponsored pre-K programs with *credentialed* teachers with bachelor’s degrees (many of which are located in school buildings), variation in observed curriculum implementation and quality of teaching was considerable. Similar conditions prevail in K–12. Even if the entire early education workforce had four-year degrees, classroom quality would remain uneven.

What we do know is that pre-K teachers’ training in child development, experience in working with young children, and support systems focused on their instructional behaviors and classroom management do matter—for the quality of both of teachers’ social interactions with children and their implementation of curricula. Knowledge of child development and application of that knowledge in preschool settings are emphasized as much in two-year training programs as in four-year programs, if not more. Thus, when teacher training focuses on knowledge and skills involved

Behind the Pre-K Veil (Figure 1)

A six-state study of state-funded pre-kindergarten programs conducted between 2001 and 2003 found that many children spent very little time on the activities known to have the most value—hearing stories and developing early reading skills.



SOURCE: National Center for Early Development and Learning, “NCEDL Pre-Kindergarten Study,” *Early Developments* (Spring 2005)

in interacting with young children, it will likely have more beneficial consequences than simply requiring teachers to add a course here or there.

Regardless of how they get into the classroom, or whether they meet state certification, teachers in early education programs will continue to require training and support if these programs are to live up to their promise. Thoughtful and effective policies for developing a professional workforce will have to include a mix of incentives for pre-K teachers that may be different from those designed for teachers in K–12; provide training that is focused on classroom practices and the specific challenges of teaching young children; and improve the alignment of early childhood education with K–12.

The Challenges Ahead

Findings about the nature and quality of children's experiences in early education settings should spark an interest in raising the quality of classroom supports broadly available to young children, particularly in settings funded with public dollars. One option is to focus on structural features of schools and classrooms, such as teacher education and certification, class size, and curriculum, and enact policies to ensure that these proxies for quality are uniformly in place. The available data do not provide compelling support for this strategy, although it should not necessarily be discarded altogether. Some core components of the infrastructure may be essential to a system of educational programming that is both accountable and linked to K–12.

Another option is to focus on what teachers do in classrooms and find direct ways to measure and improve the instructional and social interactions teachers have with children. A first step in that direction would be to standardize descriptions of teacher-student interactions. A second step would be to design more-effective professional development and training systems for teachers, a project that could also benefit K–12. Such systems, if organized around direct assessments of teacher and classroom quality, based on strong and valid metrics and tied to new or existing incentive systems, could be a cost-effective means of producing real change for teachers and children.

Recent work suggests that direct training methods, such as mentoring and coaching and constructive feedback based on observation of teachers, can improve early education practice and children's performance. My colleagues and I are developing technologies for conducting classroom observation at scale—in many hundreds of classrooms. This research involves measurement of settings to provide data that can support decisionmaking. For example, we find that repeated observations of the same teacher are highly consistent from day to day and hour to hour. Thus we suspect any given classroom and teacher may only need to be observed for a few hours to achieve a reliable description of practice that could serve as the basis for a professional development plan. We are also experimenting with alternatives, such as remote observation, that may keep costs down while ensuring a high degree of reliability in measurement. It may soon be feasible to observe teachers and classrooms on an annual basis using an instrument that assesses the dimensions of classroom experience that contribute to



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child achievement. Because these measurements are predictive, we can create video-based models of “high-quality practices.” These can serve as the basis for courses, coaching, and mentorship of teachers within systems of professional development designed specifically to improve teachers’ interactions with children.

Along with observing classrooms and measuring social and instructional interactions, it is essential to design and test models for improving teachers’ provisions of opportunities to learn. My colleagues and I plan to conduct a program of experimental research through the new National Center for Research on Early Childhood Education. Although limited at present, such efforts can systematically build knowledge of the factors that contribute to teachers’ skills in providing strong instructional and emotional support in the classroom. Daunting challenges remain, but the science of early education holds considerable promise for further development and scaling up of effective approaches for training and supporting the teachers of our youngest, and often most vulnerable, citizens.

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