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Building Blocks for a Strong Preschool to Early Elementary Education System

LYNN A. KAROLY

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Building Blocks for a Strong Preschool to Early Elementary Education System²

**Before the Committee of the Whole
Council of the District of Columbia**

February 16, 2012

Introduction

Experts in child development have long known that the earliest years of a child's life are a critical period of development across a range of domains: physical, socio-emotional, behavioral, and cognitive (Shonkoff and Phillips, 2000). Advances in brain science further demonstrate that there are important physiological processes taking place, starting in utero and continuing through the first years of life, that shape the neural networks in the brain responsible for cognition, emotions, and executive function (Center on the Developing Child at Harvard University, 2007, 2011). This process of early development lays a critical foundation for school readiness and educational progress in elementary school and beyond. These strands of research have prompted leaders in government, education, and business to take notice of policies that support or hinder children's development during these critical early years.

One area of attention has been the opportunities children have for high quality early learning experiences to help prepare for school entry. Although parents naturally serve as children's first teachers, the increased labor force participation of women and the growing prevalence of single-parent households has meant that children increasingly spend time being cared for in a home or center-based setting by someone other than their parent. For example, as of 2005, half of all two-year-olds are regularly cared for by someone other than their parent, a figure that rises to about 80 percent as of age four (National Center for Education Statistics, 2011). Thus, in the last decade, states and localities have strengthened their efforts to provide enriched child care and formal preschool or prekindergarten programs to supplement the early learning experiences children have at home. Recognizing that these early investments in children's developments need to be sustained as children begin formal schooling, a growing number of school systems

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are focusing on building well-integrated preschool through third grade (P–3) education systems (Takanishi, 2010).

In the remainder of this testimony, my goal is to highlight what we know about differences in school readiness, the potential for high quality early learning experiences to prepare children for success in school, and the core building blocks of strong P–3 systems that address readiness gaps and support children’s development as they progress through the early elementary grades.

School Readiness Gaps Start Early and Persist

We have a confluence of new nationally representative data sources that tell us about the developmental skills children have from the earliest years, prior to the ages when we start to assess their academic achievement through standardized tests in the elementary grades. In several cases, the data collection efforts follow children from soon after they are born to kindergarten entry and from kindergarten entry into the middle school years. From these rich cross-sectional and longitudinal data, we are learning that school readiness gaps have earlier roots and that the gaps in readiness at kindergarten entry have a tendency to persist into the school years.

These data such as those from the Early Childhood Longitudinal Study (ECLS) or the National Household Education Survey (NHES) show that children display a range of knowledge in terms of early literacy and math skills when they first enter kindergarten, from the number of letters they recognize and their proficiency with the beginning and ending sounds to words, to their understanding of shapes and relative sizes (Denton and Germino-Hausken, 2000; O’Donnell, 2008; Denton and McPhee, 2009). Likewise, children start school with differing competencies with respect to positive social attributes like the ability to form friendships or comfort others, as well as skills often labeled “approaches to learning,” such as their eagerness to learn and their persistence at a task.

While such variation is to be expected, what is more striking are the large differences in school readiness between different subgroups of children according to both cognitive skills and socio-emotional measures. These readiness gaps—evident for both national data and data for specific states and localities—have been confirmed between groups of children defined by race and ethnicity, by the language spoken at home (English versus some other language), by measures of socio-economic status such as parental education, and by family income (Denton and Germino-Hausken, 2000; Cannon and Karoly, 2007; O’Donnell, 2008; Denton and McPhee, 2009).

With new data assessing children's developmental status as early as nine months, we are learning that the readiness gaps we see at kindergarten entry emerge much earlier. Based on data from the cohort of children born in 2001 sampled in the ECLS, for example, there are significant differences between white and black children and between children in high versus low socio-economic status families in developmental measures as early as nine months, such as whether the child jabbbers expressively (Synder, 2010). The gaps in children's developmental progress are even larger by two years of age on such skills as expressive vocabulary and listening comprehension. Differences by race-ethnicity and socio-economic status are equally large, if not larger, on measures of early reading and math skills as of ages four and five (Snyder, 2010).

Other research also shows that the same groups of children that start out behind in terms of school readiness—English language learners, students from economically disadvantaged backgrounds, African Americans and Latinos—are the same groups that remain behind in measures of academic achievement obtained in the early elementary grades and beyond (Cannon and Karoly, 2007; Reardon and Robinson, 2007). The District of Columbia is no exception to these patterns, whether evidenced by differential achievement scores on the DC assessments in math and reading given in third grade and higher or by the scores for District public school students on the National Assessment of Educational Progress (NAEP) (Office of the State Superintendent of Education, undated; NCES, undated). Nationwide, as of 2011 according to the NAEP, about one-third of fourth graders are performing at grade level. That share reaches just 19 percent for fourth graders overall in the District of Columbia, only 12 percent for African American fourth graders, and a scant 10 percent for fourth graders eligible for free or reduced price lunches (NCES, undated). Assessments in mathematics tell a similar story.

Although there is some debate in the literature as to the degree to which achievement gaps across groups of children defined by demographic or socio-economic characteristics narrow or widen as children progress through school, the academic subjects that are affected, and the role that school and family factors play, these achievement differences are a persistent feature of the U.S. education landscape. Moreover, other research shows that not achieving proficiency in reading by third grade, coupled with other risk factors like low family income, increases the chances of later school failure, including dropping out of school (Hernandez, 2011).

High Quality Early Education Can Improve Readiness and Success in School but Access and Quality Must be Addressed

Just as we know more about school readiness gaps and their early roots, we also have a growing body of rigorous research that demonstrates that high quality early learning programs can

improve school readiness, particularly for disadvantaged children (Cannon and Karoly, 2007; Karoly, 2009). This evidence comes from evaluations of the state-funded preschool programs that serve four-year-olds operating in several states, including Oklahoma's acclaimed universal preschool program (see Karoly, 2009 for a review). These programs have been shown to generate significant increases in pre-reading and pre-math skills at kindergarten entry, relative to children who did not attend the programs. Several studies with longer-term follow-up, including the Chicago Child-Parent Centers program operated by the Chicago Public School System, also demonstrate that a high quality early learning program for one or two years can generate longer-term gains in academic achievement as well as improvements in other educational outcomes such as grade repetition, special education use, and high school graduation. While such programs are unlikely to fully erase the achievement gaps currently in evidence, they have the potential to raise the achievement of the lowest performing students and narrow the differences between less and more advantaged students (Karoly, 2009).

Although public sector investments in early learning programs are growing, access to such programs is uneven. For example, nationally representative data show that at age four, 55 percent of children whose mother is a high school dropout are in a preschool compared with 87 percent of their counterparts whose mother has a college degree (Barnett and Yarosz, 2007). Our research at RAND for California, a state with the largest state-funded preschool program, shows that even for a program targeted at the most disadvantaged children, those who could benefit most—children whose parents have low education or low income, Latinos, English learners—are the least likely to participate in a center-based early learning program before entering kindergarten (Karoly et al., 2008). Even more important is that the quality of existing programs is often uneven. Nationally, for example, just over one in three four-year-olds in a center-based care or education program is in a setting that would be rated as “high quality” (National Center for Education Statistics, 2011). Our analysis of center-based programs in California showed that at best, 10 to 15 percent of the children who could benefit most from a high quality early learning program are in settings that would be expected to produce the range of educational benefits that have been demonstrated in the literature (Karoly et al., 2008).

Given these gaps in access to high quality early learning programs, states and localities have been working to increase participation in early learning programs and to raise the quality of the programs that currently exist (Barnett et al., 2010). The District of Columbia is in line with that strategic approach to investing in early learning programs. In terms of access, the District has consolidated a number of preschool programs across sectors into the unified Pre-Kindergarten Enhancement and Expansion Program, which has an enrollment rate among four-year-olds that exceeds any other state (Barnett et al., 2010). On the quality front, the preschool program meets

eight of the ten research-based standards for high quality programs established by the National Institute for Early Education Research (NIEER) (Barnett et al., 2010). In addition, the District's *Going for the Gold* quality rating system, administered through the Department of Human Services, is designed to provide more transparent information to parents about the quality of child care centers and licensed family child care homes where they might enroll their children (Tout et al., 2010).

States and Localities are Making Investments In Integrated P–3 Education Systems

Recognizing that high quality early learning systems will have the greatest benefit when children are able to transition to equally strong early elementary education programs, the next educational frontier is building high quality integrated P–3 education systems (Takanishi, 2010). There are a number of challenges in developing an effective P–3 education system, but systems in other states and localities—including the neighboring Montgomery County Public School system in Maryland—demonstrate how early learning programs can be successfully integrated into the K–12 system with the aim of preparing children to enter school ready to succeed in the early elementary grades and beyond. Although those designing and implementing P–3 systems are still learning how to make these systems as effective as possible, the emerging literature identifies a number of best practices that states and localities are adopting (Schultz, 2008; Marietta, 2010; National Association of Elementary School Principals (NAESP) Foundation Task Force on Early Learning, 2011).

The common components in P–3 systems include integrated and aligned learning standards, curricula, assessment tools, and workforce professional development. For example, a cornerstone of the K-12 education reform movement, including the 2002 No Child Left Behind (NCLB) Act, was the establishment of rigorous academic content standards that specify the knowledge, concepts, and skills that students should attain in each subject in each grade. Likewise, states have been articulating a set of parallel early learning standards for the prekindergarten years (Daily, Burkhauser, and Halle, 2010). The remaining step is to see that those two sets of standards are aligned with one another so that there is a clear transition from the preschool standards in each developmental domain to those specified in kindergarten and beyond.

Likewise, the curricula and assessment tools used in the preschool settings need to be aligned with the early learning standards, as well as the curriculum that follows in the kindergarten to third grade years. In this regard, kindergarten readiness assessments are being used to provide kindergarten teachers with information about a child's developmental progress and to identify developmental gaps that can be remedied through improvements in preschool programs (Daily,

Burkhauser, and Halle, 2010). The workforce professional development system also must support the education and training of teachers that have the competencies required to be effective in their work with children across the early learning stages. Finally, longitudinal data systems need to be extended to capture child characteristics and enrollment across the P–3 years, child or student assessments, and the characteristics of the workforce. Such data systems support program monitoring and evaluation that in turn fosters continuous program improvement. Other infrastructure elements that may require alignment are the governance systems and funding streams, especially in settings where early care and education programs have been administered by agencies other than the public schools and financed through other funding mechanisms.

States and localities seeking to fully align early learning systems that encompass the preschool years and early elementary grades should draw upon the lessons learned in jurisdictions that have already made advancements toward effective P–3 systems (Marietta, 2010). Based on current models, implementing integrated and aligned systems would be expected to incorporate the core building blocks articulated above: early learning standards, curricula, assessments, professional development, data systems, governance, and funding. These elements also provide the needed information—through assessments and data systems in particular—to monitor and evaluate the effects of system change on levels and gaps of school readiness and academic achievement. This feedback mechanism in turn supports a process of continuous improvement to ensure that the early learning system is as effective as possible in supporting the development of children who enter kindergarten ready to learn and to succeed in the early elementary grades and beyond.

References

Barnett, W. Steven, Dale J. Epstein, Megan E. Carolan, Jen Fitzgerald, Debra J. Ackerman, and Allison H. Friedman, *The State of Preschool 2010: State Preschool Yearbook*, New Brunswick, N.J.: National Institute for Early Education Research, 2010.

Barnett, W. Steven, and Donald J. Yarosz, *Who Goes to Preschool and Why Does It Matter? (Updated)* New Brunswick, N.J.: National Institute for Early Education Research, policy brief 15, November 2007.

Cannon, Jill S. and Lynn A. Karoly, *Who Is Ahead and Who Is Behind? Gaps in Student Achievement in the Early Grades for California's Children*, TR-537, Santa Monica, Calif.: RAND Corporation, 2007.

Center on the Developing Child at Harvard University, *The Science of Early Childhood Development: Closing the Gap Between What We Know and What We Do*, Cambridge, Mass.: Center on the Developing Child, Harvard University, 2007.

Center on the Developing Child at Harvard University, *Building the Brain's "Air Traffic Control" System: How Early Experiences Shape the Development of Executive Function*, Working Paper No. 11, Cambridge, Mass.: Center on the Developing Child, Harvard University, 2011.

Daily, Sarah, Mary Burkhauser, and Tamara Halle, "A Review of School Readiness Practices in the States: Early Learning Guidelines and Assessments," *Early Childhood Highlights*, Vol. 1, No. 3, June 2010.

Denton, Kristin and Elvira Germino-Hausken, *America's Kindergartners*, NCES 2000-070, Washington, DC: National Center for Education Statistics, 2000.

Denton Flanagan, Kristin and Cameron McPhee, *The Children Born in 2001 at Kindergarten Entry: First Findings From the Kindergarten Data Collections of the Early Childhood Longitudinal Study, Birth Cohort (ECLS-B)*, NCES 2010-005. Washington, DC: National Center for Education Statistics, 2009.

Hernandez, Donald J., *Double Jeopardy: How Third-Grade Reading Skills and Poverty Influence High School Graduation*, Baltimore, Maryland: Annie E. Casey Foundation, 2011.

Karoly, Lynn A., *Preschool Adequacy and Efficiency in California: Issues, Policy Options, and Recommendations*, MG-889, Santa Monica, Calif.: RAND Corporation, 2009.

Karoly, Lynn A., Bonnie Ghosh-Dastidar, Gail L. Zellman, Michal Perlman, and Lynda Fernyhough, *Prepared to Learn: The Nature and Quality of Early Care and Education for Preschool-Age Children in California*, TR-539, Santa Monica, Calif.: RAND Corporation, 2008.

Marietta, Geoff, *Lessons for PreK-3rd from Montgomery County Public Schools*, New York: Foundation for Child Development, 2010.

National Association of Elementary School Principals Foundation Task Force on Early Learning, *Building and Supporting an Aligned System: A Vision for Transforming Education Across the Pre-K–Grade Three Years*, 2011.

National Center for Education Statistics, *Digest of Education Statistics*, NCES 2011-015, Washington, DC, 2011.

National Center for Education Statistics, *National Assessment of Educational Progress (NAEP) Data Explorer*, Washington, DC, undated.
<http://nces.ed.gov/nationsreportcard/naepdata/>

O'Donnell, Kevin, *Parents' Reports of the School Readiness of Young Children from the National Household Education Surveys Program of 2007*, NCES 2008-051, Washington, DC: National Center for Education Statistics, 2008.

Office of the State Superintendent of Education, *District of Columbia Assessment and Accountability Data Reports*, Washington, DC, undated.
<http://nclb.osse.dc.gov/index.asp>

Reardon, Sean F., and Joseph P. Robinson, "Patterns and Trends in Racial/Ethnic and Socioeconomic Academic Achievement Gaps," in Helen A. Ladd and Edward B. Fiske, eds., *Handbook of Research in Education Finance and Policy*, N.J.: Lawrence Erlbaum Associates, 2007.

Takanishi, Ruby, "PreK-Third Grade: A Paradigm Shift," in Valora Washington and J.D. Andrews, eds., *Children of 2020: Creating a Better Tomorrow*, Washington, DC: Council for Professional Recognition and the National Association for the Education of Young Children, 2010.

Schultz, Tom, "Tackling PK-3 Assessment and Accountability Challenges: Guidance from the National Early Childhood Accountability Task Force," *The State Education Standard*, June 2008.

Shonkoff, Jack P., and Deborah A. Phillips, eds., *From Neurons to Neighborhoods: The Science of Early Child Development*, Washington, D.C.: National Academy Press, 2000.

Snyder, Thomas D., "Emergence of Gaps in Early Academic Skill Acquisition among Kindergartners," paper presented at the 2010 Head Start National Research Conference, 2010.

Tout, Kathryn, Rebecca Starr, Margaret Soli, Shannon Moodie, Gretchen Kirby, and Kimberly Boller, *Compendium of Quality Rating Systems and Evaluations*, Washington, D.C.: Administration for Children and Families, Department of Health and Human Services, Mathematica Policy Research, Inc., and Child Trends, 2010.