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PK-3: What Is It and How Do We Know It Works?

Bill Graves

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Advancing PK-3

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PK-3: What Is It and How Do We Know It Works?

As evidence mounts, more and more American political and education leaders are concluding it's wise to invest in Prekindergarten (PK) education. Economic analyses show prevention of poor educational performance costs less than its remediation. And the promise PK shows for boosting student achievement appeals to leaders under increasing pressure from state and federal education accountability measures required by No Child Left Behind. Without early education programs, children growing up in low-income households lose ground to their middle-class peers, a gap that only widens as they advance through elementary school.

Most leaders, however, continue to view early childhood education narrowly as an initiative to prepare children for Kindergarten. This brief argues that policy makers can reap a better return on their PK investments if they adopt a more expansive view of this first stage of education as a period extending from PK through third grade.

Studies show investing solely in PK is not enough. While well-designed PK does improve children's social and cognitive skills, these gains frequently fade as children advance beyond Kindergarten.

This does not have to happen. A growing body of research shows that children continue to make gains in schools that connect PK to a full-day Kindergarten and primary grades with aligned standards and curriculum in a coherent PK-3 education program. In these schools, which remain rare, fade-out is much less common.

Studies show that a PK-3 strategy includes the following five components:

Alignment

- Standards, curriculum, instruction, and assessment are aligned within and across grades from PK through third grade.
- Standards, curriculum, instruction, and assessment focus on social competence and self-discipline as well as academic skills.

School Organization

- Voluntary, full-school-day Prekindergarten is provided for all three- and four-year-old children.
- Full-school-day Kindergarten that builds on PK experiences is required for all children.

- School districts provide principals and teachers with ongoing professional development and planning time to ensure alignment.

- Principals foster teamwork among PK-3 teachers.

- Principals connect elementary schools with families, communities, and all early childhood programs.

Qualified Teachers

- All teachers have at least a Bachelor's Degree with relevant specialized training.

- Preparation and certification enable teachers to teach at any grade level from PK to third grade.

- Teachers are capable of assessing students' achievement and enabling each student to make progress.

Classrooms as Learning Environments

- Instruction balances child-centered approaches with teacher-directed approaches.

- Classes are staffed by a well-qualified teacher and assistant teacher.

- Assessment practices are used to improve instruction in classrooms.

- Student-teacher ratios allow each child to receive individual attention and foster strong relationships with adults in the school.

Accountability to Parents and Community

- Teachers and families work to set educational goals for children.

- Schools are responsible for reporting students' progress to families, communities, the school district, and the state.

In communities where resources are lacking, PK-3 schools should also provide counselors, nurses, social workers, nutrition and other social supports to ensure students have the stability they need to learn.

All good schools embody many of these characteristics. What differentiates a PK-3 approach is alignment. This continuity of supports, particularly curriculum, instruction, and assessment, for the first five years of school is what distinguishes PK-3 schools from other effective schools.



Evidence Supporting PK-3

Studies on a PK-3 approach to early childhood education are rare because PK-3 programs are still scarce. But experts are building a growing body of evidence that shows children reach higher achievement levels in programs with PK-3 components. And the components have a cumulative positive effect on student achievement. Three recent reports by researchers and policy analysts at the University of Wisconsin-Madison, the Foundation for Child Development, and Georgetown University have pulled together old and new evidence showing coherent PK-3 programs build on the gains children make in PK.¹

Four studies are particularly useful in shedding light on the merits of a PK-3 strategy. Two are well-known, small-scale studies of specific experimental, high-quality PK-3 interventions: The Carolina Abecedarian Project and the Chicago Child-Parent Center and Expansion Program. The other two are large-scale studies. One is an analysis of data from the U.S. Department of Education's Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K), a nationally representative sample of children who attended Kindergarten in the fall of 1998. The other focuses on an experiment to connect Head Start with elementary schools called the National Head Start/Public School Early Childhood Transition Demonstration Project.

The Abecedarian Project

The Abecedarian Project, launched in 1972 in Chapel Hill, N.C., had many key PK-3 components: qualified teachers, school organization, classrooms as learning environments, parent and community accountability, and social support. It provided children from low-income African American families with year-round, full-time care and education for their first five years of life, beginning when they turned four months old. The comprehensive program served the children from 7:30 a.m. to 5:30 p.m., five days per week, 50 weeks per year. Teachers had bachelor's degrees and were well paid; classes were small.

The children in the program had IQ scores equal to the national average by age five, whereas a control group's scores lagged behind significantly. The program continued to provide family support, including a home school resource teacher, to 25 children as they advanced through second grade. Twenty-four other children received no intervention after their five years in the Abecedarian program. The children who received extended support in the primary grades had higher intellectual and academic performance at age eight than did those who stopped receiving help after Kindergarten. By age 15, however, the extended group surpassed the others only in reading achievement.

The study results show that intervening early, often and effectively with key PK-3 components can eliminate most or all the differences in learning and IQ between disadvantaged and middle-class children by age five. They also show that intervening only at home in the primary grades is not enough to sustain and exploit these gains. As studies below suggest, the Abecedarian program probably would have benefited by ensuring it sustained other PK-3 components — an aligned and coordinated curriculum and instruction, student-teacher ratios that allow for personal attention, and quality teachers with scheduled time to interact across grade levels — through the first three years of elementary school.

Chicago's Child-Parent Centers

Chicago's Child-Parent Centers, established with Title I federal funding in 1967 to serve children in high poverty areas, have all of the key components of a strong PK-3 strategy. The program, which spread to 25 centers in the mid-1980s and still operates in 15 centers today, provides an integrated, aligned curriculum with a structured language and basic skills instructional approach from PK through full-day Kinder-

garten into the primary grades. Teachers all have bachelor's degrees and support from aides, nurses, speech therapists and school psychologists. Class sizes are small. Parents are drawn into the program with classes, activities and their own resource room at each school site. The CPC rationale is that a stable, enriched, coherent learning program for children from ages three through nine combined with intensive parental involvement improves children's prospects for academic success.

Arthur J. Reynolds, a University of Minnesota researcher, tracked 1,150 children who attended Kindergarten in the Child-Parent Centers in 1985-86 over 15 years and compared their educational outcomes to 389 other kindergartners who attended other Chicago schools without PK-3 programs. He found children in the full PK-3 program had higher academic achievement than children who received only preschool. Children with four or more years in the Child-Parent Centers had higher achievement in the eighth grade and better high school graduation rates than children with no intervention.

Those children who stayed in the CPC program through second grade had a seven-month advantage in reading and math

PK-3 Studies

PROGRAM	TIME AND PLACE	PARTICIPANTS
<i>Carolina Abecedarian Project</i> : Experimental full-time care and education for low-income African American children for first five years of life, with extended family support for some in primary grades.	1972-1980: Rural North Carolina near Chapel Hill.	111 children from low-income homes. Fifty-four in control, 57 in preschool, 25 for preschool and three years of elementary.
<i>Chicago Child-Parent Center Study</i> : A PK-3 program serving low-income Chicago public schools since 1967. Still operates in 15 schools.	Study tracked Chicago students enrolled in 1985 and 1986 through 2000.	1,539 children, 389 from other Chicago schools for a control group.
<i>Early Childhood Longitudinal Study — Kindergarten Cohort</i> : Analysis of data on a national sample of children who entered Kindergarten in fall of 1998. Data was from fall of Kindergarten and spring of Kindergarten, first grade and third grade. Analysis focused on how PK-3 components of teacher quality, ample time and home ties related to achievement.	1998-2002: National sample of 1998 Kindergartners.	Representative sample of 22,000 children from across the nation.
<i>National Head Start/Public School Early Childhood Transition Demonstration Project</i> : Large-scale experiment to extend Head Start-like services into the primary grades.	1991-1998, with participants nationwide.	12,000 children in 30 states.

performance and lower rates of grade retention and special education placement compared to peers who did not participate. Those who stayed through third grade showed similar but even bigger advantages that persisted through age 15. A follow-up study of the youth at age 24 showed that the more time children spent in Child-Parent Centers, the higher their rates of high school completion and full-time employment and the lower their rates of arrest for violent crimes.

The CPC study results show that intervening early with key PK-3 components improves student achievement. It also shows the components have a cumulative effect. The longer students were in the Chicago PK-3 programs, the higher their level of school success.

Early Childhood Longitudinal Study-Kindergarten Cohort

University of Wisconsin at Madison researchers Arthur Reynolds, Katherine Magnuson and Suh-Ruu Ou recently gathered more evidence supporting a PK-3 strategy by analyzing data from the Early Childhood Longitudinal Study-Kindergarten

ten Cohort (ECLS-K), a nationally representative sample of children who attended Kindergarten in the fall of 1998.² The U.S. Department of Education, designer of the study, produced four waves of data collected on these children during the fall and spring of Kindergarten as well as the spring of first and third grade. The researchers explored PK-3 components and how they related to patterns of student performance by studying achievement data and surveys of children’s parents, teachers and school administrators. The research focused on key aspects of PK-3 components: organization for full-day preschool and Kindergarten, appropriate student-teacher ratios as measured by class size, high-quality teachers as measured by teacher certification and reading instruction, and accountability as measured by sustained parental involvement.

The analysis found that children who experience PK-3 components perform better in third grade than those who do not. Their analysis also demonstrates the importance of receiving multiple PK-3 components over time. Those who experience all components perform better than those who experience only half, and those who experience half perform better than those who experience none. Children who missed out on all

RESULTS	PK-3 Components				
	ALIGNMENT	SCHOOL ORGANIZATION	QUALIFIED TEACHERS	CLASSROOMS AS LEARNING ENVIRONMENTS	ACCOUNTABILITY TO PARENTS AND COMMUNITY
Children had average IQ by age 5. Those with extended services in primary grades led those who didn’t in reading. Compared to control group, those in program had higher IQ’s as adults, 2.5 higher college entrance rates, less drug use, and fewer arrests.	X	X	X	X	X
Children with four years or more in the Child-Parent Centers had higher achievement, high school graduation and employment rates, and lower rates of arrest than the control group.	X	X	X	X	X
Children who experienced PK-3 components scored higher on math and reading tests, had more positive attitudes about school and were less likely to be retained or put in special education programs.		X	X	X	X
Disadvantaged, low-income children were performing at the national average in math and reading by the end of third grade.	X	X	X	X	X

components were more than three times more likely than other children to be retained, and they fell behind their peers on math and reading tests and on teacher reports of student performance. They also had less positive attitudes about school.

The analysis does not prove that PK-3 leads to better student outcomes, but it does reinforce other evidence that shows frequent, effective intervention with key PK-3 components sustains student achievement. It also suggests that the components have a cumulative power on student performance. As Nobel Prize-winning economist James Heckman observes: Skill begets skill.³

National Head Start/Public School Early Childhood Transition Demonstration Project

The U.S. Department of Health and Human Services sponsored a project to extend Head Start's comprehensive services into the elementary grades between 1991 and 1998. The National Head Start/Public School Early Childhood Transition Demonstration Project involved 12,000 children in 30 states and one American Indian Nation. Because the 450 schools involved carried out the project with various levels of vigor, and because some of the control schools adopted

project school practices, evaluation of the project found little difference between project and control schools. Nevertheless, the former Head Start children showed large and early gains in mathematics and reading by third grade that brought them to the national average.

"The achievement gap was gone," observed Edward Zigler, Yale University Professor Emeritus and one of the designers of Head Start. "I would challenge anybody to show me some other place where poor kids looked as good as middle-class kids by the end of the third grade."

The transition project offers compelling evidence that the PK-3 approach sustains and enhances the achievement gains that begin in quality PK. That lesson is reinforced by the fact that the project schools adopted key PK-3 components: school organization including full-time PK and K, accountability with strong parental involvement, an aligned curriculum, qualified teachers, classrooms with learning environments characterized by the use of individualized or developmentally appropriate instructional practices, and nutritional and social support for children and their families. The project again reflects the cumulative power of key components in a PK-3 strategy; the more components, the better children fare and achieve.



Recommendations

Research shows that the PK-3 approach can improve student achievement, reduce the need for costly special education services, and produce a more educated, skilled, and competitive workforce. It not only can lift student achievement dramatically, but also multiply the benefits of investments in PK.

This conclusion is supported by random assignment studies, such as Abecedarian, and assessments of larger programs, such as the study of the Chicago Child-Parent Centers. Most recently, the Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K) finds that children participating in educational programs that include PK-3 components perform better in school than their peers who did not.

It makes sense. Aligning Prekindergarten with the standards, curriculum, and assessment children will experience in K-3 assures that the skills children learn at one level form a solid foundation for the skills they'll learn at the next.

To realize the potential of PK-3 requires an organization that makes quality full-school-day Prekindergarten available to all children, followed by required full-school-day Kindergarten. Many states are increasing their investments in PK and in full-day Kindergarten, but the additional dollars needed to provide universal access to PK remain a formidable obstacle. State departments of education and local school boards, however, can do much to incorporate a PK-3 approach into existing programs at a relatively low cost.

State Departments of Education Can:

- Establish standards and assessment tools that are aligned from PK through Third Grade.

- Require that the elementary education certification includes a PK-3 specialization.
- Require that schools of education develop programs to prepare teachers for PK-3 specialization.
- Support scholarships for the existing early education workforce to achieve PK-3 specialization.

Local School Boards and School Districts Can:

- Identify ways to braid existing funding streams (Title I, IDEA, Head Start, and child care subsidies) with sliding fee scales to expand Prekindergarten opportunities for all children.
- Encourage principals to reach out to community programs and families to coordinate their roles in the achievement of third grade outcomes.⁴
- Provide ample time for teachers to meet regularly, both within and across grades, to implement aligned learning experiences for children.
- Adopt curricula for literacy and math that incorporate the entire PK-3 learning span.
- Encourage school-university partnerships to support professional development.

Building a quality PK-3 program for all children demands that America make big investments in both time and money. But there is much that we can do right now. Settling for the status quo and doing nothing will cost the most.

Endnotes

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3. Cunha, F., Heckman, J., Lochner, L., and Masterov, D. (2005). Interpreting the evidence on life cycle skill formation. In E. Hanushek and F. Welch (Eds.), *Handbook of the Economics of Education* (pp. 1-86). North Holland: Elsevier.

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About the Author



Bill Graves has worked as a reporter for 28 years, the last 16 at The Oregonian in Portland, Oregon. He has covered education for 18 years. He co-authored a book on education reform, *Poisoned Apple*, in 1996. He served on the board of the Education Writers Association for a decade, and as president in 1998 and 1999. He was a Nieman Fellow at Harvard University in 1998-99.



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145 EAST 52ND STREET
NEW YORK, NY 10016
WWW.FCD-US.ORG