The Commonwealth of Virginia's Preschool Pilot Initiative:

A Final Report Prepared on Behalf of the
Virginia Department of Education

In Response to Item 135 C.15.f. of Chapter 847 (2006-2008 Appropriation Act)

September 19, 2008

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The Honorable R. Edward Houck, Chairman
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The Honorable Lacey Putney, Chairman
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Dear Governor Kaine, Senators Colgan and Houck, and Delegates Putney and Tata:

I am pleased to submit the Department of Education's final report on the Pre-K Pilot initiative, in response to Item 135 C. 15. f. of Chapter 847 of the 2006-2008 Appropriation Act.

If you have questions or require additional information related to this report, please contact Kathy Glazer, director of the office of early childhood development at kathy.glazer@dss.virginia.gov or (804) 225-2104.

Sincerely,

Billy K. Cannaday, Jr.

BKCJr/LMW/as
Enclosure
c: Laura Wilborn, Division of Legislative Automated Systems

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The Commonwealth of Virginia's Preschool Pilot Initiative
Executive Summary

The Virginia Preschool Pilot Initiative was designed as a one-year experiment to examine the feasibility of offering state-funded prekindergarten to more children at risk for school failure through diverse delivery systems. Central features of the initiative include:

- preschool administration by or through local school readiness collaboratives rather than solely by a school district;
- braiding funding streams to reach more children or provide more wrap-around and support services; and
- partnering with community-based, private preschools.

Approximately 280 children participated in some portion of the pilot program this year. The pilot preschools were located in 44 different classrooms (five in public schools) and in ten family childcare homes. Ten localities across Virginia participated in the pilot initiative.

A central mission of the Virginia Preschool Initiative (VPI), the state's preschool program for at-risk four-year-olds, is to reduce achievement gaps between disadvantaged children and their more advantaged peers upon entering kindergarten. Since its inception in 1994, VPI has mostly been offered by and taught in public schools, in classes of children funded exclusively by VPI. However, some localities have offered VPI in mixed publicly funded classrooms (combining children funded through VPI, Head Start and local funds, for example) or through contracting out VPI to community organizations. As part of the pilot initiative, the 2007 General Assembly designated twelve localities eligible to participate based on their history of providing these alternative delivery systems. At the same time, they were encouraged to try innovative strategies to increase and strengthen their preschool networks and more efficiently provide a continuum of services related to school readiness. Thus, each of the ten localities that elected to participate targeted different strategies based on local needs, resulting in a variety of "pilots." Study limitations include a nonsystematic, small sample with localities piloting multiple strategies with different aims, making the findings suggestive rather than definitive.

Findings overall indicate that diverse preschool delivery as conducted this year is feasible and is associated with documented benefits to children and to programs. Specifically:

Pilot localities increased access to prekindergarten services for at-risk children.

- Through the pilot program, participating localities provided VPI services to approximately ten percent more at-risk children than they had previously. Across the state, 280 (2 percent) more at-risk children attended preschool this year than would have under regular VPI funding. Two hundred thirty-eight children attended the same program for the entire school year. More critically, children who had previously not been able to attend center-based preschool, due to funding stream constraints, parent work hours, or other factors, were able to do so through braiding funding and the increased use of private providers. It appears that in some cases, children received higher quality care

than they might otherwise have had in the same placements, due to technical and material support offered to providers through the pilot program.

Pilot programs delivered reasonably high-quality programs, with considerable variation observed.

- Programs met between 7 and 10 of 10 NIEER program standards, with teacher qualifications the most variable. All public school and 70 percent of private school teachers had a bachelor's or advanced degree, and 76 percent of teachers had pre-K specialization. Forty-five percent of assistant teachers had a Child Development Associate credential or equivalent. Five percent of lead teachers obtained prekindergarten specialization this year. Having a college degree was not related to observed quality in classrooms.
- Two standardized observational instruments found somewhat different patterns of quality. Teachers offered high-quality emotional support and classroom organization, with lower instructional support, with no statistical differences found between public and private pilot schools. The pilot group overall was comparable on these three quality dimensions to a sample of statewide VPI programs, with pilot programs exhibiting higher emotional support than the statewide VPI program sample. Global quality of preschool environments, a measure that assesses program space and provisions, daily structure, and teacher-child interactions, ranged from mid-low to high. Thirty-seven percent of observed programs fell within or close to the good quality range and programs averaged 4.3 on the seven point scale. No programs fell into the inadequate range. Virtually all programs had difficulties with personal care routines. Private schools offered more child choice time on average than did public schools. NAEYC-accreditation was associated with higher global environmental quality.
- Observational measures did not distinguish program type (public vs. private) on average, but a wider range of quality - both higher and lower - was observed in the private schools overall.
- While overall program quality was generally mid-range to high, considerable variability existed, supporting the use of a standard quality rating and improvement tool.
- Teacher morale appeared to be high, with relatively low teacher turnover and high teacher job satisfaction. Lead teacher turnover was similar in public and private schools.
- Forty percent of lead and 55 percent of assistant teachers reported actively working on attaining professional or higher education degrees.
- Lead teacher prekindergarten specialization was associated with more classroom time spent on child-directed activities, a practice recommended by early childhood educators and researchers.

Pilot students appeared to benefit from pilot prekindergarten education.

- Students attending pilot classrooms significantly increased their overall preliteracy and early numeracy counting skills from fall to spring. This gain was over and above gains that could be expected based on more time to be exposed to these concepts outside of preschool, which suggests a specific *preschool effect*. While more advantaged classmates had higher overall preacademic skills, pilot students achieved higher preliteracy *gains* across the year, narrowing the school-entry achievement gap.

- Pilot students made significant preliteracy gains, but gains were less than those made by children attending other VPI programs across the state. Within the pilot program, those operated by and located in public schools, and classroom-based private schools more familiar with VPI delivery, tended to have higher preliteracy gains.
- By spring, 94 percent of pilot students could count out loud to ten or more, and 47.1 percent to 20 or more. Ninety-six percent of pilot students counted beyond five in one-to-one correspondence, exceeding state standards.
- Most (90 percent) pilot students appeared to have social skills in the average range, with no significant differences found between pilot students and classmates or by classroom factors on average. Publicly funded students, including pilot, appeared to be overrepresented in a small subgroup of students with poor social skills.
- Teachers and parents reported that students were enthusiastic about learning and attending their pilot programs. Students' engagement with learning increased across the year, particularly for girls, older children and those without disabilities.
- Pilot students were generally healthy, though they were more likely to have experienced a serious illness in their lifetime and suffered from ill health in the recent past, compared to more advantaged peers.
- Blended classrooms performed similarly to classrooms with all pilot VPI students on preacademic and social skill measures.

Local school readiness groups valued collaborating and often played a vital role in providing quality improvement and resources to programs.

- Local collaborative leaders cited many benefits to coordinating a diverse preschool delivery system, despite its taking time, effort, and resources. These included resource sharing, networking, and providing a means by which to improve preschool quality in their community.
- Some pilot collaboratives appeared to play an instrumental role in crisis and case management. Collaboratives appeared to help providers improve their quality services by offering teacher training, mentoring, more or improved family support services, and/or health and developmental screenings. Approximately 80 percent of pilot program directors stated they planned to implement changes in response to the pilot, with most focused on aligning their programs more closely with state pre-K education, changing curriculum or assessment procedures, and improving program quality.

The pilot demonstrated that diverse preschool delivery is feasible and appears associated with benefits for children at-risk for school difficulties, narrowing the preliteracy achievement gap with more advantaged children. State guidelines and funding for staff positions and technical support appears to be necessary to help localities blend funding, oversee programs, improve and maintain quality, and accurately collect records. These factors will be important to successfully develop a mixed delivery model of high-quality prekindergarten for at-risk children in Virginia.

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CHAPTER ONE
BACKGROUND AND RESEARCH QUESTIONS

Virginia's 2007 General Assembly appropriated funds for a one-year, experimental expansion of the state-funded preschool program, Virginia Preschool Initiative, to test several strategies for delivering preschool to at-risk four-year-olds. The pilot program had three primary goals:

- Expand preschool networks beyond school divisions by strengthening ties among local school divisions, Head Start programs, local child-care provider communities, and other partners in the form of local school readiness collaboratives;
- Examine the feasibility of expanding VPI into more diverse preschool settings, including community child-care centers (nonprofit and for-profit), faith-based programs, and less traditional venues, such as university or military centers, as well as family care providers; and
- Test the feasibility of combining varied public and private funding streams in single classrooms.

The Start Strong Council, a group of state leaders and stakeholders convened by Governor Timothy M. Kaine to recommend research-based approaches to expanding prekindergarten opportunities for Virginia's children, recommended these strategies (Start Strong Council, 2006). The Virginia Department of Education distributed the funding and provided oversight of the pilot program with input from staff of the Governor's Working Group on Early Childhood Initiatives. The 2007 General Assembly allocated $2.6 million in fiscal year 2008 for the pilot initiative. Eligibility was limited to those school divisions that had existing partnerships with private and/or nonprofit providers. The General Assembly required that funds be used to expand the availability of early childhood education programs for at-risk students not already served in those divisions. See Appendix A for the actual Appropriation Act language for the 2007 Budget Bill HB 1650/SB 750 – Item 135 C. 15.

The primary strategy to be tested through the pilots was the use of public and private provider settings. The grant application instructions to localities described the pilot projects in the following way:

> *The pilots will be a feasibility study during 2007-2008 of strategies for models of high-quality preschool network delivery. The pilots will build on the strengths of existing programs but address barriers to serving all eligible children. The initiative will focus on increasing the quality, consistency and strength of Virginia's preschool network, while increasing access for students who will benefit from the school readiness services*. (Virginia Department of Education, 2007).

This report addresses four central questions:

- How did the pilot initiative increase access to preschool and attendant services, such as wrap-around, family, or developmental support services?
- What were the characteristics and quality of the preschool programs?

- What were the student-level outcomes associated with participation in the VPI pilot program?
- How did local school readiness collaboratives facilitate or augment program quality, and what challenges did they face?

The study used multiple sources of data to answer these research questions. A concerted attempt was made to obtain information from all relevant adult stakeholders, including administrators (collaborative leaders, members, and program directors), program staff (including teachers, family child-care providers, mentors) and parents, to best understand the project from multiple and key informant perspectives. We used the following data to address the four central research questions:

Increased access to preschool services

- Program records,
- Attendance records,
- Interviews with collaborative leaders, and
- Interviews with preschool directors.

Preschool characteristics and quality

- Staff interviews,
- Surveys of staff members,
- On-site visits,
- Standards recommend by the National Institute of Early Education Research (NIEER) which assess structural aspects of programs,
- Classroom observations of teacher-child interactions, classroom organization and teaching practices, as measured by the Classroom Assessment Scoring System (CLASS), and
- The Early Childhood Environmental Rating Scales – Revised (ECERS-R) that assesses preschool environments.

Student-level outcomes

- A measure of students' preliteracy skills — Phonological Awareness Literacy Screening for Prekindergarteners, or PALS-PreK (Invernizzi et al., 2004),
- Two measures of early numeracy counting skills (National Center for Early Development and Learning, 2001),
- The Social Skills Rating System (Gresham & Elliott, 1990),
- Teacher ratings of student engagement with learning,
- Classroom observations of global student engagement, and
- Parent reports of students' health and attitude toward preschool.

Ways collaboratives helped pilot preschools

- In-depth interviews at the beginning and end of the pilot year, and
- Collaborative records.

To examine whether outcomes differed meaningfully for different types of students or by classroom characteristics, we used multilevel, multivariate statistics to compare student performance and gains across the different groups of students attending pilot classrooms (pilot, other publicly funded students and students whose parents paid tuition). We also compared preliteracy gains of students participating in VPI through the pilot program to students participating in nonpilot VPI across the state. The great majority of nonpilot VPI students are served in classrooms consisting entirely of VPI students in public schools. These analyses allowed us to explore potential differences between the diverse (i.e., pilot) and more traditional VPI delivery systems. Individual factors that have been found to affect performance, such as family and demographic factors, English proficiency, and student disability status were accounted for to the extent possible. Further details on study procedures, statistical tests, and measures are provided in the relevant chapters and appendices. The Virginia Tech Institutional Review Board for research involving human subjects approved the research procedures.

Strengths of the evaluation design include data from multiple stakeholders, in-depth and rigorous program quality assessments, assessment of student gains in several domains across the year, and inclusion of data from all levels considered important to a mixed preschool delivery system: the local steering group, the programs, and the students. In addition, the ten localities involved in the pilot initiative used different strategies to address the program's goals. The heterogeneity of "pilots" provides opportunities to explore important policy questions regarding the use of particular strategies of preschool delivery. Such questions may include whether or not different types of programs, the compositions of students and classrooms, and/or the degree to which programs are well established with respect to provision of VPI services make a difference in program quality or to student outcomes.

Limitations of the study include only one student outcome comparison measure between the pilot and regular VPI programs and more critically, the lack of a random control group and the non-systematic, relatively small sample size. Further complicating sampling design, different consent processes were used according to whether or not students in pilot classrooms or family care provider placements were funded by state education monies or other sources. For pilot and other students funded by state education monies, passive consent was used – that is, parents could opt out (one parent did). For students funded through other public monies or parent tuition, active consent was obtained (parents of 66 percent of these pilot student classmates granted permission). Finally, while the heterogeneity of the program provides richness, it also makes generalization difficult. Given the lack of a random control design, the nonsystematic nature of the pilot groups, and the relatively small number of participants, findings should be interpreted as suggestive, rather than definitive.

The remainder of this chapter describes the pilot initiative in more detail. First, we provide a brief history of VPI to contextualize the pilot initiative. We then describe ways that pilot localities tailored their approaches to fit particular needs and ways they differed from one another and from nonpilot VPI programs. Chapters Two through Five each address one of the four evaluation questions; Chapter Six discusses findings from a unique pilot program that focused on improving quality of family child-care providers; and Chapter Seven concludes with recommendations, should there be interest in the Commonwealth to bring a mixed

prekindergarten delivery system to scale or for localities to increase the use of mixed delivery systems as allowed under the existing VPI program.

Virginia Preschool Initiative: The Pilot Initiative in Context

Since its start in 1994, VPI has been offered largely in and through public schools (Start Strong Council, 2006). In FY 2000, 90 percent of VPI programs were based in public schools and run by local school divisions (Gilliam & Ripple, 2004). Less commonly, local departments of social or human services or community nonprofit agencies, who subcontract with school divisions, administer VPI programs in community settings. The majority of VPI programs serve children in classrooms comprised exclusively of VPI students, whether in public or private settings. As with elementary school instruction, VPI programs select curricula based on local decisions. School divisions apply annually for funds to the Department of Education and certify compliance with VPI requirements. A recent evaluation of the VPI program found positive child preliteracy outcomes (Rotz, Bearse, Rest, & Sarte, 2007). Statewide, preschoolers who attended VPI programs increased their preliteracy skills over and above expected age-related gains during prekindergarten, and benefits extended into kindergarten. Teachers and principals also reported positive social and behavioral skills in kindergarteners who had attended VPI programs. These results mirror many statewide and national prekindergarten studies that generally find that preschool has positive, short-term academic benefits, with longer-term benefits for disadvantaged children (Magnuson, Ruhm, & Waldfogel, 2007) and for children in higher-quality programs (Bryant et al, 2003; Gormley, Gayer, Phillips, & Dawson, 2005; Mashburn et al., 2008; Peisner-Feinberg et al., 2001).

Virginia currently serves approximately 13,000 children who qualify as at risk for school failure; however, another 6,000 eligible at-risk children are left unserved (Virginia Department of Education, 2007b), resulting in an access gap (Start Strong Council, 2006). Barriers to full VPI participation include local match requirements, other funding constraints, and a lack of space (Start Strong Council, 2006). To partially offset these impediments, pilot funding was allocated to expand preschool delivery mechanisms (General Assembly 2007 Budget Bill (HB 1650 / SB 750) Item 135 C. 15), resulting in the pilot initiative. The initial implementation report from December 2007 described the pilot program as starting well, with the initial goals of an expanded preschool network having been met (Bradburn, Hawdon, & Sedgwick, 2007). Ten invited localities participated, employing a number of preschool delivery or training strategies to increase access to high-quality early education opportunities for disadvantaged preschoolers. Participation requirements included localities having a collaborative steering group that included, but went beyond local school districts; operating at least half-day for 180 days of the year; serving at-risk families not already enrolled in publicly funded preschool programs; conducting a preliteracy screening in the fall and spring, using PALS-PreK (Invernizzi, Sullivan, Meier, & Swank, 2004), and participating in the pilot program evaluation.

Some local VPI requirements were waived or modified for the experimental purposes of the pilot program. For instance, one locality requires that all VPI centers are accredited by the National Association for the Education of Young Children (NAEYC), according to local staff personnel. This requirement was waived in order to focus on quality improvement support to other preschool programs who serve at-risk students. Training these new providers for future NAEYC

accreditation met the needs of this locality for greater VPI expansion and for providing at-risk families with more locality-approved preschool choice. Another locality established a regular school-based program for a portion of the locality formerly served only by a mobile classroom that did not meet daily. As illustrated in these examples, different localities implemented an array of strategies to best suit the constraints they experience in expanding VPI.

Besides the mandated criteria, programs were encouraged to try creative strategies to use resources most efficiently, improve preschool quality, engage providers and eligible families who have not been served in the past by VPI, and to expand community capacity to offer a continuum of services to families that can bolster children's successful entry into kindergarten. Placing VPI children in classrooms with tuition-paying peers is done in only a few localities in Virginia, and offers the opportunity to examine whether attending the same preschool as perhaps more advantaged children helps at-risk children – the pilot VPI students – narrow or close the achievement gap, a central goal of VPI.

Local school readiness coalitions involved in the pilot initiative (referred to as *collaboratives*) shared some characteristics in addition to having some history of offering nontraditional VPI. All used low income as a primary eligibility criterion (Virginia Department of Education, 2008). Nine offered blended classes, thereby also braiding funding streams. However, in many ways the pilot initiative represents a collection of case studies, rather than any one standardized intervention program. For example, six localities focused particularly on professional development, seeking to upgrade quality and bring more private providers into a viable VPI preschool network. In other cases, localities focused on expanding preschool networks or access by involving private programs that could provide before and afterschool care (known as *wrap-around services*) to families who might not otherwise be able to enroll in VPI due to shorter hours of operation (the typical VPI program is at most six hours per weekday). [1] Other localities, with more established VPI programs, focused on improving quality by upgrading classroom materials, equipment, or introducing a new curriculum. While the central goal of all localities was to increase access to high-quality preschool for more at-risk children, the particular strategies to do so were dictated by local conditions. Importantly, the degree to which local pilot programs were experienced with administering VPI varied considerably, from well-established programs to those with no prior experience with VPI. The majority of private providers, as well as a cohort of family child-care providers, fell into the latter group. The way in which private providers were recruited also varied considerably by collaborative, from specific invitations to open community solicitations.

Another source of variation between pilot programs is that “risk” and VPI eligibility are locally determined. In Virginia, state funding for VPI is based on free-lunch eligibility. At the local level, however, localities determine additional risk factors to define student eligibility for VPI. Based on interviews with program leaders, common risk factors used by pilot localities to determine VPI eligibility are listed in Table 1.

[1] Statewide, some school-based VPI programs offer wrap-around services, while many do not.

Table 1: Common Risk Factors Pilot Localities Used to Determine VPI Eligibility

Low Income and/or Free/Reduced Lunch	Single Parent Family or Other Family Instability
Parent Low Educational Obtainment (No High School Diploma or GED)	History of Substance Abuse
History of Crime in Family	History of Family Violence
Parent Incarceration	Homelessness
Limited English Proficiency Household	Developmental Delays
Child or Parent has Disability	Under- or Unemployment
Teen Parent	Transience Due to Military Service
History of Mental Illness	Extreme Rural or Isolated Household
History of Child Abuse or Neglect	Child has Foster Parents or Non-Biological Caregiver

All ten pilot localities used income as an eligibility criterion, as well as family factors, to determine eligibility, but the specific risk factors varied across localities and individual children.

In summary, pilot programs had some similarities but also differed according to local needs and decisions.

CHAPTER TWO
HOW PILOT PROGRAMS INCREASED ACCESS TO PRESCHOOL AND SUPPORT SERVICES FOR AT-RISK STUDENTS

The way that pilot programs increased access to preschool for at-risk four-year-olds was examined in several ways. First, we report numbers of students served across the state and effects at the local level. Next, we describe strategies used by different localities to access populations that may not have been served by VPI before. Last, we examine how provision of particular supports enabled families to enroll in VPI who may not have been able to do so before.

Two hundred eighty students received VPI services through the pilot program, with 238 remaining enrolled throughout the year. Thus, access to some degree of prekindergarten services increased by approximately 2 percent (or by 1.8 percent, for children receiving a full-year of state-funded prekindergarten). Based on attendance records from these classrooms and family child-care homes, 27 of the 265 children (10.2 percent) left their programs before May 30, 2008.

The overall pilot numbers are small, reflective of a pilot program, but according to collaborative leaders, the increase in publicly funded prekindergarten "slots" enabled one of the pilot localities to reach full capacity and eliminate its waiting list, while another four localities also used all their allotted VPI slots. As a group, prior to the pilot initiative, the ten participating localities filled 2,604 of the 5,042 (51.6 percent) VPI seats allotted to them. After adding students through the pilot initiative, the participating localities increased their VPI participation rates by 10.2 percent. Many of the 238 pilot children who attended preschool for the entire year appeared able to attend due to the pilot initiative. As one key leader put it, the pilot "allowed us to enroll more kids who wouldn't have gotten in otherwise." Another said, "We got more kids in preschool because of the pilot program."

Arguably as important as raw numbers are the ways that localities addressed barriers to prekindergarten access. These included:

- expanding slots by using additional providers;
- reaching into populations that normally did not apply for VPI, either due to preference for a certain type of program (faith-based, specific private provider, local alternative, family childcare) or convenience of location;
- providing daily center-based prekindergarten for at-risk populations who previously had access only to less frequent home-based or mobile classroom services; and
- accommodating families who normally could not enroll in VPI due to lack of on-site wrap-around services.

As one program director observed,

> The fact that the kids could stay before and after school in one program was critical for so many of our parents. Many parents are interested in our VPI program [at another site and not part of the pilot program] but simply can't do it because of their work schedules. So they may pay someone to watch their kid

> instead. The pilot let their kids come here all day, so they got the school part and the childcare part all in one, and it cost them only five dollars [for wrap-around services]. So many of our parents are single and not making much money and they were so happy about this.

Increasing Access to Wrap-Around, Family, Health, and Developmental Support Services

Central to providing high-quality prekindergarten programs to disadvantaged children is offering instrumental support to families and screenings that facilitate early detection of physical deficits or developmental delays (American Public Health Administration & the American Academy of Pediatrics, 2002). For young, disadvantaged children in particular, services that support their health, nutrition and families are a vital part of supporting their ability to learn (National Research Council, 2001; Barnett, Hustedt, Hawkinson, & Robin, 2006). As discussed above, wrap-around services allow more working families to enroll their children in VPI. The "one-stop" model, in which children remain in the same site with similarly-aged children all day, offers particular advantages for families and the continuity of preschool care and education. Seven localities were able to provide wrap-around services for their pilot families by partnering with private providers.

Family factors, such as socioeconomic status and parental education, account for the largest part of children's development and school achievement prior to and into elementary school (Zaslow, Calkins, & Halle, 2000; Zill, 1996). Preschool offers an avenue to reach families and help them stay or become involved in their children's education, a pattern associated with higher student outcomes. Preschool programs with active family support can also help parents advance their own education or find employment, both factors that contribute to children doing better in elementary school, as well as learn to advocate for their child. Family support can assist families in becoming "school ready."

VPI requires that programs provide some family support services (Virginia Department of Education, 2007c), but the nature of the supports can vary widely, from offering regular parent conferences to more active assistance. At least four localities were able to offer more comprehensive family support services to all or some pilot students than they were through their regular VPI program by partnering with Head Start [2] or private providers who employ family service providers. Another five localities had this form of intensive support through their VPI programs already and extended it to more students through the pilot initiative.

Similarly, Head Start, as well as some private schools, put considerable resources toward health and developmental screenings, and two localities were able to offer more extensive services in this vein than they had been able to do in the regular VPI program. On the other hand, most localities already had an array of developmental screenings in place, and in these cases, private providers benefited from partnering with their local school readiness collaboratives. These examples illustrate a substantial advantage of combining programs within classrooms – such as

[2] Head Start requires and offers particularly rich and comprehensive family services, as well as mandating some parent involvement in the classroom (Administration for Children and Families, 2006). When partnering with VPI, all students in the classroom receive these services.

Head Start and VPI – in that students may benefit from the highest level of quality required for each program, including access to the rich comprehensive services offered by Head Start.

Overall, more at-risk children received wrap-around, family support, and developmental screenings through the pilot program, with some children benefiting particularly from wrap-around and more comprehensive family support through the expansion of VPI into less traditional venues. In other cases, particularly regarding developmental screenings, more children received these services due to the expansion of the number of students served through state-funded prekindergarten.

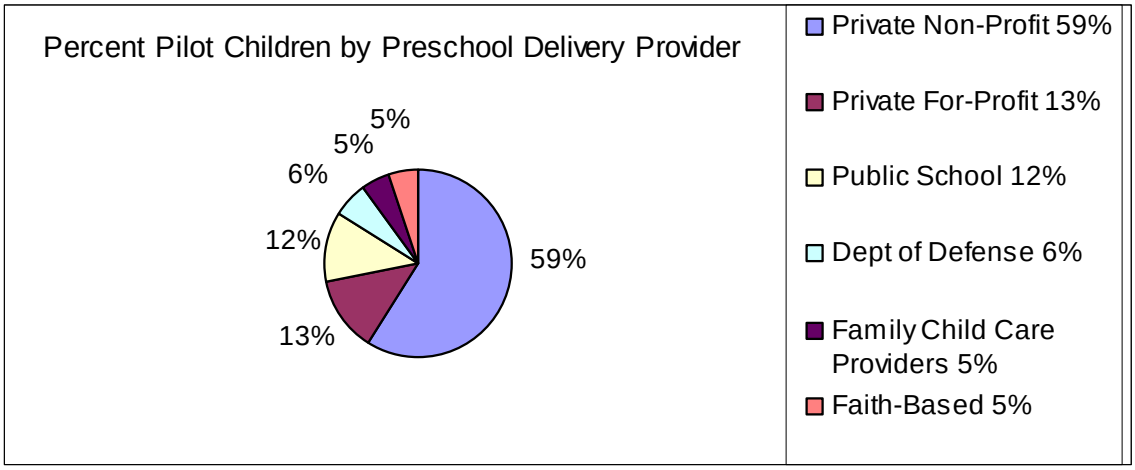
CHAPTER THREE
PRESCHOOL PROGRAMS: CHARACTERISTICS AND QUALITY

In this chapter, we briefly describe the range of pilot programs and report on three indicators of quality: structural features, represented by minimum standards recommended by the National Institute of Early Education Research (NIEER); teacher-child interactions, classroom management and teaching practices, using a standardized behavioral observation system that has been linked to children's outcomes in several national studies (Classroom Assessment Scoring System (CLASS); Pianta, Hamre, & La Paro, 2006); and preschool environments, using a standardized observational tool widely used in state Star Quality rating systems, the Early Childhood Environment Rating Scale – Revised (ECERS-R; Harms, Clifford, & Cryer, 1998, 2005). Information is derived from surveys with directors and teachers, program director interviews, and on-site observations. First, we describe the range of preschool settings for the entire pilot initiative, to demonstrate the wide variety of placements and how many students participated in each type. Next, because preschool delivered in classrooms differed in many respects from preschool delivered in family child-care placements, we present evaluation results for these different delivery mechanisms separately, with the rest of this chapter and the next devoted to results for preschools delivered in classroom settings. Chapter Six reports findings for family child-care providers. See Appendix B for more details on program characteristics and examples of instructional practices.

Program Characteristics

Twenty-three different organizations or schools and 12 family providers participated in the pilot program, comprising 44 classrooms (43 in the fall) and ten family placements (two family providers left the pilot program in the fall). Of the 23 classroom-based programs distributed across 29 different physical sites, seven programs (30 percent) were located within a public school building, two operated within public-school property, and another program was housed in modular units on public school grounds. The rest were located within apartment complexes, churches, community action spaces, government buildings, a YMCA, or had their own buildings. The types of programs varied from public to private (for- and nonprofit) schools, to faith-based and military-based, to family-based. Figure 1 shows the distribution of students attending each kind of placement.

Figure 1: Percentage of Pilot Children by Preschool



Source: Bradburn, Hawdon, & Sedgwick, 2007. Note: Four of the five public school classes were administrated jointly by the school division and other partners, including Head Start or local department of social/human services. In two classrooms, ECSE children were blended with pilot and other children whose services are funded from other sources. Although one classroom was added and two family home providers left the program since the fall, the percentage of pilot children in these types of placements did not change.

For the remainder of this chapter, we focus exclusively on the 95 percent of the pilot sample that participated in classroom-based placements. Pilot classrooms were mostly (89 percent) prekindergarten classes, with the rest a mix of three- and four-year olds at school entry. Pilot children attended prekindergarten in settings that ranged in size from small (16 students) to large schools (537 students), with half of pilot settings responsible for teaching and tending 70 children or fewer.[3] Thirteen (30 percent) of the pilot classrooms consisted exclusively of VPI students, while the majority of pilot classrooms were blended classrooms – that is, they consisted of at-risk students funded through a variety of mechanisms, often together with students funded by parent tuition. In fact, most programs relied on a mix of funding sources, including federal, state, local, and private, illustrating some of the complexities of fiscal management in mixed preschool delivery systems. To understand the range of families served by different preschools, and thus indirectly, the kinds of peer culture pilot students may have been exposed to, we asked directors to estimate the socioeconomic range of students they typically served Only half felt able to do so. Based on this information, it appeared that pilot students were served in classrooms together with classmates who were mostly middle-class/affluent, to entirely economically disadvantaged. [4]

Most private centers or schools had a director (who may have been the executive or site director) and an assistant director or equivalent. Forty-two percent also reported having access to family caseworkers as a regular feature of their program delivery; these staff members typically worked to develop life-plan goals with families, connect families with services, assist with housing or

[3] The smallest school represents a single pilot classroom located in a rented space; the largest is part of an elementary school.

[4] Half of reporting programs estimated 26 percent or more economically disadvantaged prekindergarteners in their programs, while the average across all reporting programs was 35 percent economically disadvantaged. These figures should be considered approximate, as only half of pilot directors reported on this question.

entitlements, and encourage and facilitate parent development, health, and employment. Prekindergarten classes usually consisted of a lead and an assistant teacher. Three programs (equaling five pilot classrooms) had three teachers in a classroom, and others (two programs, three classrooms) augmented staff with student or foster grandparent volunteers. Three programs considered all classroom teachers co-teachers. Five classrooms had ten or fewer children. Further details of schools and classroom characteristics, including the diversity of funding sources relied upon by preschool providers, are provided in Appendix B.

Quality Indicators: Structural features

Several widely used measures of quality were used to evaluate the pilot program. We begin by describing structural programmatic features that have been associated with better child outcomes, using the NIEER standards, as mandated by the General Assembly for the pilot initiative. These features are listed in Table 2. We also compare them to state VPI requirements, which are more rigorous than NIEER in terms of student-staff ratios and class sizes. Other differences between VPI requirements and NIEER standards lie in teacher qualifications. VPI requirements specify that lead teachers in public schools and/or who are paid by state funds hold a licensure approved by the Virginia Board of Education and do not specify assistant teacher qualifications. Minimum qualifications for teachers in private settings not paid by state funds have been based on child-care regulation standards and/or more stringent local requirements. In practice, 98 percent of VPI lead teachers throughout the Commonwealth held a bachelor's degree in FY 2008 (Rotz et al., 2007, p. 46).

NIEER standards are geared toward state policy rather than program implementation (Barnett et al., 2007). In 2007, Virginia extended its curriculum requirements to include physical and motor development, and personal and social development (Virginia Department of Education, 2007b), thereby meeting NIEER's first standard for requiring comprehensive curriculum at the state level. By director report, all pilot programs met the previous VPI comprehensive curriculum standard, and most are moving toward implementing the two new areas. Details on curricula can be found in Appendix B. The last NIEER standard, regular site monitoring, falls within the purview of the state, not individual programs. In effect, all pilot programs complied with this requirement by allowing the evaluation team to collect data on their programs.

Due to staff and classroom changes, the number of lead teachers possessing a bachelor's degree or higher fell slightly from the fall. Public school teachers continued to all have a bachelor's degree or higher, while 70 percent of teachers in private programs held at least a bachelor's degree (compared to 73 percent in the fall). Percentages of lead teachers with bachelor's degrees for both public and private schools are higher in the pilot sample than those reported in a national study of publicly funded prekindergarten, in which 81 percent of pre-K teachers in public schools had at least a BA, and 57 percent of pre-K teachers in private settings had a BA (Clifford et al., 2005).

Table 2. Percentage of Pilot Programs that met NIEER and VPI requirements

NIEER Standards [1]	Percent[2] that met the Standard	VPI Requirements	Percent that met the Requirement
Comprehensive curriculum	100[3]	Introduced summer, 2007	100
Class size 20 or less	100	Class size 18 or less	92
Child-to-staff ratio 10:1 or better	100	Child-to-staff ratio 9:1	92
Minimum 15 hrs annual training	100	Minimum 15 hrs annual training	100
At least one meal provided	96	At least one meal provided	96
Health screenings and family support	100	Health screenings and family support	100
Lead teacher BA[4]	73	Lead teacher requirements differ by personnel funding	N/A
Lead teacher Pre-K specialization[5]	76	Lead teacher Pre-K specialization	76
Assistant teacher CDA or equivalent[6]	45	Requirements differ by locality	N/A
Bi-annual monitoring	N/A[1]	Bi-annual monitoring	N/A

1. See Appendix A for the General Assembly authorization.
2. Note that the seventh through ninth standards are reported for teachers, while the other standards are reported for programs.
3. Based on 2007 curriculum standards. As noted in the text, programs are in the process of implementing the two new areas. Details on curriculum are described in Appendix B.
4. Based on 49 teachers (ten are co-lead teachers); percentages are rounded to the nearest integer. Center-based refers to teachers working in childcare and education or preschool settings. NIEER standards are geared toward center-based programs (Barnett et al., 2006). The number of teachers is slightly higher than the fall due to addition of a new classroom with two co-teachers and another classroom in which two teachers are considered co-lead teachers.
5. Includes associate, college or post-baccalaureate concentration in early childhood education; and/or state PK/NK license/certification; and/or CDA or equivalent. CDA equivalence may consist of a minimum of 120 clock hours of formal training in early childhood (J. Hustedt, personal communication, November 12, 2007).
6. CDA = Child development associate credential. Information is based on 38 assistant teachers. Two programs had multiple assistant teachers across the year and are not reported.

Two private school lead teachers obtained formal prekindergarten specialization this year – through obtaining Pre-K licensure or a CDA - representing a five percent increase among teachers who remained with the pilot program. Forty-six percent of lead teachers held a minimum of a bachelor's degree with specialization in preschool. Another 40 percent of lead teachers reported that they were pursuing educational advancement, with professionally oriented degrees expected in fall 2008, or in 2009 (with one expected in 2010).

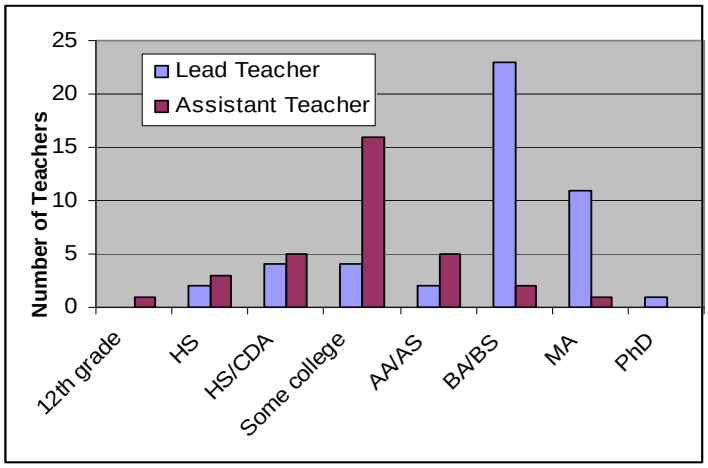
Assistant teachers were less educated on the whole, with most holding a high school degree supplemented by some college coursework. Like lead teachers, however, a sizable percentage (55 percent) reported pursuing educational advancement, toward a CDA, AA or BS degree in early childhood education or a related field. Figure 2 reports the range of educational attainment for lead and assistant teachers.

Lead teachers also tended to be experienced, having worked professionally an average of eight years with children younger than kindergarten age (range from no prior experience to 22 years prior experience). Half of lead pilot teachers worked in early childhood education for nine or more years. At the same time, a sizeable minority are new to the field: twenty-three percent have

worked for one year or less in early childhood education. As with their educational attainment, assistant teachers had less experience, on average, than did lead teachers.

In summary, pilot programs met most of the NIEER standards, with teacher qualifications and specialized training in prekindergarten remaining the most variable. Slight changes from the fall were found, reflecting mostly personnel changes, although the modest increase in lead teacher prekindergarten specialization is partly attributable to a culmination of professional training received by pilot staff. At the same time, pilot teachers appear impressively motivated to increase their professional training and educational levels, suggesting that this particular work force may show increased educational attainment commensurate with NIEER standards within the next few years.

Figure 2: Highest Level of Education of Pilot Teachers, by Number of Teachers, June 2008



HS = High School; HS/CDA = High School/Child Development Associate
AA/AS = Associate's degree; BA/BS = Bachelor's degree
MA = Master's degree; PhD = Doctoral degree

Quality Indicators: What happens inside classrooms

Some experts argue that what actually happens in classrooms, or process indicators, are the factors that actually make the difference in children's experiences and preschool outcomes, once family factors are accounted for. For example, a large national study of state-funded prekindergarten found the number of NIEER standards programs met was not associated with children's preacademic or social skill outcomes, but observational measures of classroom process were linked to specific student outcomes (Mashburn et al., 2008). Accordingly, we focus on these "process oriented" markers of classroom quality to gauge the extent to which preschools provide an environment and instructional practices conducive to preschool children's learning and development, and to target points for possible future quality improvement efforts.

Classroom observations: Teacher-student interactions, measured by the CLASS

An increasingly widely used tool to measure classroom quality is the Classroom Assessment Scoring System (CLASS), developed by Pianta and colleagues at the University of Virginia. Research with the CLASS shows links between classroom processes and student outcomes

(Howes et al., 2008; Mashburn et al., 2008). For this evaluation, trained raters observed how teachers interacted with their students, including how warm, sensitive, and child-centered they were (i.e., the *emotional support* teachers offered students); how well teachers managed students' behavior, used time productively, and provided interesting lessons or activities (i.e., teachers' *classroom organization*); and how much and the ways in which teachers focused on facilitating students' conceptual and language development, and provided clear, responsive feedback (i.e., the *instructional support* teachers offered students). The degree of student interest and involvement in classroom activities was also rated (i.e., *student engagement*). Observations were conducted from January through the first week of April by observers certified as CLASS raters. Details on procedures, training and reliability is provided in Appendix C.

The CLASS consists of 11 dimensions[5], shown in Table 3, below. Observers watched for 20 minutes, and then rated across all dimensions for 10 minutes, for a minimum of four cycles. Each cycle score was averaged with others of the same dimension to yield a composite, or average, dimensional score. Several dimension scores were then combined to create domain scores (Pianta, Hamre, & La Paro, 2006). Scores from 1-2 are considered low, 3-5 mid-range, and 6-7 high quality, with the exception of the Negative Climate dimension scale, in which low scores are best (Pianta, Hamre, & La Paro, 2006). We report both dimensional and domain scores for 37 classrooms (86 percent of the pilot group).

Table 3: Means, Standard Deviations, and Ranges of CLASS Domains and Dimensions[1]

	Mean	Standard Deviation	Minimum	Maximum
Emotional Support	5.43	0.745	3.42	6.67
Positive Climate	5.72	0.793	4.00	7.00
Negative Climate[1]	1.40	0.397	1.00	2.60
Teacher Sensitivity	5.30	0.742	3.50	6.50
Regard for Student Perspectives	5.26	1.000	2.75	7.00
Classroom Organization	5.34	0.593	3.77	6.67
Behavior Management	5.61	0.905	3.40	7.00
Productivity	5.51	0.710	3.50	6.75
Instructional Learning Format	4.89	0.760	3.25	6.50
Instructional Support	3.65	0.690	2.00	5.38
Concept Development	3.56	0.804	2.00	5.25
Quality of Feedback	3.30	0.772	1.75	4.75
Language Modeling	4.09	0.804	2.25	6.38
Student Engagement	5.76	0.677	3.75	6.75

Note: Domain titles are in italics. Student Engagement is a separate dimension that is not included in domain scores.

1. High scores on Negative Climate indicate high classroom negativity, unlike all other scales in which high scores reflect better quality. Although this scale is often included in the Emotional Support domain, reverse scored (Pianta, Hamre, & La Paro, 2006), we removed it from the Emotional Support domain because the scale was more statistically robust without it (see Appendix C for details). The statewide JLARC study also reported Negative Climate separately from the other three scales in this domain (Rotz et al., 2007).

[5] The most recent edition of the system, released after this study's training, features 10 dimensions.

Several central findings emerged from these analyses. First, on average, classrooms were doing quite well with creating positive climates and teachers interacted sensitively to their young students (Emotional Support mean = 5.43, *SD* = 0.745). Teachers also managed their classrooms well, often using proactive strategies to encourage children's self-controlled behavior, and presenting materials or lessons in an engaging, creative manner (CO mean = 5.34, *SD* = .593). Teachers sometimes employed strategies to encourage higher-order thinking and language development, but this area was considerably less well-developed overall (IS = 3.65, *SD* = .690). Student Engagement, reflecting an average of how much students were interested and involved in classroom activities, was also high. Table 3 reports the summary statistics on the CLASS domains and the distinct dimensions that together comprise the domain scores.

Within the Instructional Support domain, teachers did best modeling language (LM = 4.09, *SD* = .804) and least well providing quality feedback (QF = 3.30, *SD* = .772); this scale also had the lowest ceiling (maximum score for any teacher across cycles = 4.75). As can be seen from Table 3, considerable range was found for most dimensions, ranging from low (1-2) to high (7) quality. Children in pilot classrooms were also observed to be generally highly engaged (mean 5.76, *SD* = .677).

Comparisons between pilot public and private school classrooms did not find significant differences, but inspections of individual classroom domain scores show a consistent pattern across all three domains. Classrooms in the public schools were neither the highest nor the lowest scoring classrooms, but they tended to cluster more closely together toward the upper end of mean scores. Private schools show a larger range in quality overall. The figures below illustrate these points.

Figure 3: Classroom Variation in Emotional Support for Public and Private Schools

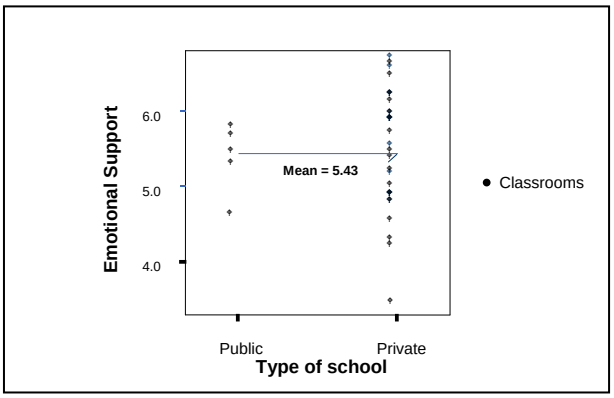


Figure 4: Classroom Variation in Classroom Organization for Public and Private Schools

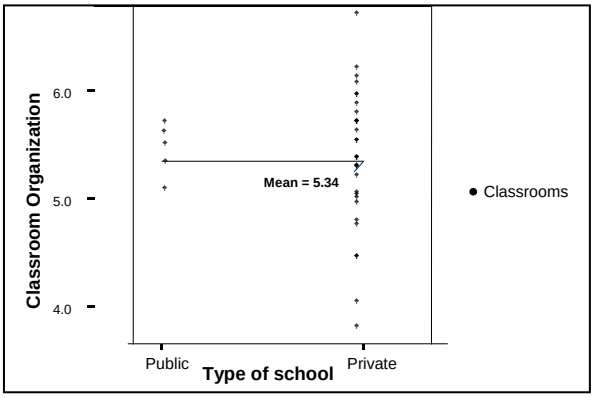
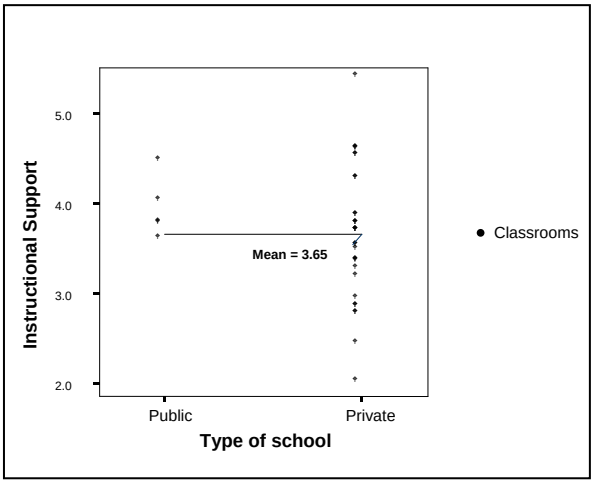


Figure 5: Classroom Variation in Instructional Support for Public and Private Schools



To explore whether characteristics of programs or teacher qualifications predicted classroom quality, a series of *t*-tests were conducted. To minimize the possibility of chance findings due to the number of analyses conducted, domain scores were used instead of individual scale scores.

First, we examined the central comparison of how pilot program quality compared with that of VPI programs across the state. We compared CLASS scores of all observed pilot classrooms (*n*=37, 86 percent of the sample), to those reported by the statewide VPI evaluation study (*n*= 33, Rotz, et. al., 2007). In the pilot sample, 14 percent of classrooms were in public schools, and 86 percent were in private placements. In the statewide evaluation, 94 percent of classrooms were in public schools and six percent were in private placements. Because no reliable differences on CLASS dimensions emerged between pilot public school and private programs, we combined them in one pilot group to compare to the largely public school sample as assessed in the state-wide VPI evaluation (Rotz et al., 2007).

As shown in Table 4, pilot programs demonstrated quality as measured by the CLASS on par with the state-wide evaluation which included mostly public school VPI classrooms. Table 4 reports mean scores for each CLASS dimension for the two groups of observed classrooms. Pilot classrooms did not differ reliably from the statewide classrooms on classroom organization, instructional support, or student engagement. Pilot classrooms showed significantly higher emotional support than the statewide classrooms.

Within the pilot sample, there were no statistically significant differences between public and private school teacher-student interaction quality at the group level. Consistent with some prior research (Early et al., 2007; Pianta et al., 2005), no significant differences were found on quality as measured by the CLASS between lead teachers with and without qualifications as measured by NIEER standards, such as having a college degree and/or having prekindergarten specialization. Years of experience in the field also did not correlate with CLASS domain quality. Some of these findings may reflect the small sample size.

Table 4: CLASS Domain and Student Engagement Scores for Pilot Classrooms Compared to VPI Classrooms Statewide

	Average for Pilot Classrooms	Average for JLARC Classrooms [a]	*t*	Significance (probability)
Emotional Support (without Negative Climate)	5.43	4.83	4.86	< .001
Classroom Organization	5.34	5.40	0.64	.528
Instructional Support	3.65	3.78	1.13	.268
Student Engagement	5.76	5.60	1.44	.158

[a] Source: Rotz, et. al., 2007, p. 67

Given that higher quality instructional support has been particularly associated with children's preacademic gains in prekindergarten (Mashburn et al., 2008; NICHD 2002; Pianta, Cox, & Snow, 2007), we describe qualitative findings from observer records to illustrate some strengths demonstrated in this area, as well as common shortcomings.

The most common form of concept development observed included sequencing and contrasts. Often these concepts were curriculum-driven, but many teachers also seized opportunities during routines or other parts of the day to review higher-order concepts. A review of observer CLASS notes revealed that teachers often gave hints to help children observe connections or solve problems, repeated and extended children's words or phrases, explained vocabulary, and described their own actions while performing them (e.g., "I'm putting this red square on this black dot…"). Teachers were also often good at starting more engaged inquiry into children's learning processes (e.g., "What are you making?" "What do you think is going to happen?"), but were much less likely to follow up with more complex questioning or continuing conversations to deepen exploration of an activity (such as following up prediction comments with discussion about the children's expectations and reasoning with observed activity results). Teachers often made nonspecific encouraging feedback (e.g., "good job"), were somewhat likely to give slightly more elaborated feedback (e.g., “I like the way you used a lot of colors”) but were less likely to be highly specific in their comments. Raters observed that most teachers tried to interact at least briefly with most children and to allow many children to participate during group activities, which may have made extensive back and forth with one child or a few children more difficult. Center time, which typically involved smaller groups of students actively engaged in child-directed different activities, represented a prime opportunity for more intensive exchanges that not all teachers took advantage of. Focused training in how to provide more extended or deeper follow-up feedback and language modeling, perhaps particularly in small group situations, may be particularly useful.

Classroom observations: ECERS-R

The Early Childhood Environmental Rating Scale – Revised (ECERS-R) (Harms, Clifford, & Cryer, 2005), is a widely used instrument to rate preschools and childcare and education centers on a variety of dimensions considered important to children's health, safety, cognitive and social development within a multicultural society. Unlike CLASS scales, ECERS-R scale scores are most often reported in aggregate, yielding a global quality score. Higher ECERS scores are associated with better child outcomes across a range of studies of child-care centers. Many of these studies have been conducted with the earlier version of the measure. A comparison study found little difference in results between the two versions (Sakai et al., 2003), but a recent study of state-funded prekindergarten classrooms, encompassing an estimated 80 percent of children in state-funded programs across the country, found that a higher global ECERS-R score predicted only greater scores in children's expressive language by the end of prekindergarten (Mashburn et al., 2008). The VPI evaluation (Rotz et al., 2007) did not use ECERS-R in their classroom observations, so we cannot directly compare to most Commonwealth-funded pre-kindergarten programs. However, the ECERS-R yields rich information regarding a wide range of preschool classroom and school characteristics. ECERS-R ratings were made on the same day as CLASS ratings, during the winter months. Thirty-five classrooms were rated on this scale. Due to time constraints, both CLASS and ECERS-R could not be both administered for half-day programs. Two classrooms in the pilot sample consisted of half-day programs. Details of training and procedures to ensure high inter-rater reliability during classroom observations are described in Appendix C.

Unlike the CLASS, which averages observations across a specified time, the ECERS-R requires discrete criterion codes for scoring items. To move up on each scale, earlier items must all be rated positively. This system thus weighs some items heavier than others. Conventionally, scores lower than 3 are considered poor or inadequate care; 3 - 4.9 is considered minimal to medium range quality (Bryant et al., 2003), whereas scores of 5 and above are considered to reflect good to excellent quality (Harms, Clifford, & Cryer, 2005). Using this anchoring metric, no programs fell into the poor or inadequate range. Four pilot programs (11.4 percent) fell into the "Good" quality range, with another 26 percent approaching "Good" (scores above 4.5). Figure 6 depicts the distribution.

Figure 6: ECERS-R Global Scores by Number of Pilot Classrooms (n=35)

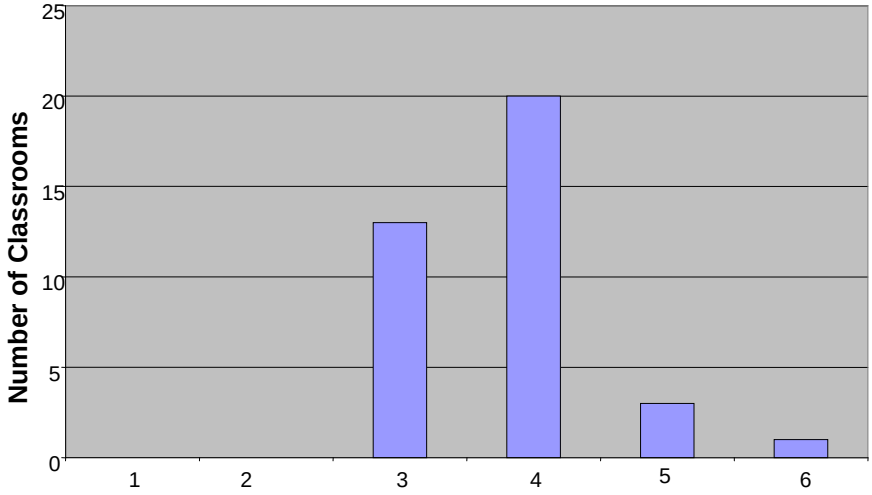


Table 5 represents average ECERS-R scales and summary scores. Average scale scores ranged from 2.7 for Personal Care Routines, to 4.87 for Structure. Summary ECERS-R scores, which are most widely reported in the literature on program quality, ranged from 3.12 to 6.12, with an average score of 4.3. The average ECERS-R score in the VPI pilot classrooms was higher than the average for the Multi-Site study of national state-funded programs (mean ECERS-R = 3.85, *SD* = .82, *n* = 671; Mashburn, et al., 2008). This difference was statistically significant (t (34) = 3.65; p = .001).

Table 5: Means, Standard Deviations, and Ranges of ECERS-R Summary Scores

	Mean	Standard Deviation	Minimum	Maximum
Space and Furnishings	4.54	0.772	3.13	6.38
Personal Care Routines	2.71	0.797	1.83	4.50
Language and Reasoning	4.70	0.919	2.75	6.25
Activities	4.13	1.081	2.00	6.50
Interaction	4.83	1.299	2.40	6.80
Structure	4.87	1.228	2.67	7.00
ECERS	4.30	0.731	3.12	6.12

Environmental Quality: Does It Differ by Program or Teacher Characteristics?

Some dimensions of classroom environment as assessed by the ECERS-R differed according to program and teacher dimensions. On average, private schools structured their schedules to allow

more time for student choice of activity and peer grouping than did pilot public schools. However, the range was also much greater among private schools, indicating that as a group, pilot public schools resembled one another in daily set-up to a greater extent than did the private schools.[6]

As was true with the CLASS, higher ECERS-R scores were not associated with lead teachers having college degrees. However, lead teachers with pre-K specialization provided statistically significantly greater access to rich developmental activities (means 4.39 vs. 3.37), and provided more developmentally appropriate structure (means 5.12 vs. 4.16), than other teachers. This finding may reflect teaching practices consistent with more extensive training in early education. Another interpretation is that this finding reflects program-level commitment to higher quality. Because materials provision, curriculum and daily schedules are often set not by teachers but by program administrators (or administrators in conjunction with teachers), the differences in ECERS-R scores reported above may not reflect the importance of teacher prekindergarten specialization *per se*. Rather, the findings may reflect characteristics of the program philosophy or provision of good teacher training, reflecting program-level commitment to higher quality. Both interpretations may also be valid.

To test whether overall program commitment to high quality might account for these findings, we examined a program-level quality indicator: accreditation by National Association for the Education of Young Children (NAEYC), a professional organization that sets high standards for program quality. Accredited programs (n = 4, or 11.4 percent of the programs observed) provided significantly higher quality as measured by the ECERS-R total score, compared to others (mean no accreditation = 4.14; mean accreditation = 5.47; t (330 = 4.17, $p < .001$).

Summary of Classroom-Based Preschool Quality Indicators

Structural quality indicators showed that almost all pilot programs met at least seven of 10 NIEER benchmarks. As was true in the fall, teacher qualifications represented the greatest variation, with approximately three-quarters of lead teachers and slightly less than half of assistant teachers meeting NIEER benchmarks. Classroom observations indicated that preschools in the pilot initiative offered quality educational experiences to the pilot children on par with teachers observed in the state VPI evaluation (Rotz et al., 2007). Consistent with previous studies, teachers generally provided emotionally supportive and well-organized classrooms, but had greater difficulty offering high-quality instructional support. Preschool environmental quality as measured by the ECERS-R was higher for the pilot classrooms compared to a national sample of prekindergarten programs, and averaged in the mid-range. Programs showed particular difficulties with personal care routines. [7] Teachers with specialized prekindergarten training provided greater exposure to center-based educational activities and more opportunities for students to choose activities in a structured routine through the day than others. NAEYC-accreditation was associated with better environmental quality. Teacher quality in pilot public classrooms was equivalent on average to teacher quality in private classrooms.

[6] Structure means: private school = 4.99 (*SD* = 1.278), public school = 4.15 (*SD* .487). Larger SD (standard deviation) indicates greater variation around the mean.

[7] See Appensdix D for a detailed discussion of personal care routines. Difficulties mostly focused around washing techniques and playground protections.

Perhaps the most impressive finding, consistent with other prekindergarten studies, is the variation in program quality. These findings strongly support the use of a system that monitors classroom quality in addition to structural program features. The quality rating and improvement system (QRIS) currently being developed in Virginia may provide one such needed tool. [8]

[8] Virginia's Star Quality Rating Initiative http://www.education.virginia.
Gov/Initiatives/EarlyChilhood/GovWorkingGroup.cfm

CHAPTER FOUR
STUDENT OUTCOMES

This chapter assesses student-level outcomes for students who attended pilot programs. Students' performance on components of two preacademic domains central to many current conceptions of school readiness -- preliteracy and early numeracy -- was assessed in the fall and again in the spring. Components of personal and social development, a recent addition to Virginia's Foundation Blocks for Early Learning (Virginia Department of Education, 2007c), were assessed by measures of students' social skills and engagement with learning, including their attitude toward attending school. Students' health was also measured. These areas have also been identified as central aspects of school readiness (National Education Goals Panel, 1995).

As noted earlier, we used the following tools to evaluate student-level outcomes:

- *Preliteracy*: Phonological Awareness Literacy Screening for Prekindergarteners, or PALS-PreK (Invernizzi et al., 2004)
- *Early numeracy*: Counting and One-to-One Correspondence (National Center for Early Development and Learning, 2001). This measure was adapted for administration by teachers.
- *Social skills*: The Social Skills Rating System (Gresham & Elliott, 1990)
- *Student engagement with learning* is measured by teacher ratings, parent surveys and classroom observations.
- *Students' health*: Adapted RAND Health Index parent report (Eisen, Ware, Donald, & Brook, 1979).

Throughout this chapter, we focus on pilot-funded students in particular; however, we also report findings for their classmates and other children served by traditional VPI when applicable. A central goal of VPI is to reduce or close achievement gaps between less and more advantaged students, so we compared pilot student gains to peers whose parents pay tuition, using funding source as a proxy for home environment. The proxy measure assumes that families paying tuition have greater economic resources than children served with pilot funds. Support for the use of "private pay" as a socioeconomic indicator is reflected in fall child outcomes and parent surveys, which showed the children funded by parent fees ("private pay") had higher fall preliteracy scores and more educated mothers, patterns typically associated with greater home advantages (Zaslow et al., 2000). Pilot students were combined with their classmates funded by VPI for these analyses.[9] We also compared pilot students' preliteracy skills to those of VPI students in nonpilot classrooms. Individual factors that may affect outcomes, such as maternal education (another indicator of socioeconomic status), race/ethnicity, limited English or disability status, were included in some analyses to better understand differential results. Hierarchical linear models that account for locality or classroom effects were the primary

[9] We checked to see if pilot students differed from regularly funded VPI students. There were no significant differences between these two groups of children on any of the outcomes.

statistical tool used for the analyses. Because we have the strongest comparison data for preliteracy skills, we focus more of our discussion on this aspect of school readiness.

Several factors contributed to incomplete datasets or differing numbers of participants, depending on the analysis. These include student attrition over the year, the reliance in some analyses on information provided by parents, for which we had incomplete data, and related factors. Details of statistical procedures are described in Appendix E. Because missing data were assumed to be nonrandom, we did not impute missing values, but rather, conducted analyses on actual data only.[10] The nonrandom, nonsystematic character of the data underscores that results are suggestive and should not be considered definitive findings.

Preliteracy Skills

Preliteracy refers to discrete skills that have been associated with later reading ability. Almost all VPI programs and a majority of Virginia school divisions currently use the Phonological Awareness Literacy Screening (PALS), a tool developed at the University of Virginia in collaboration with the Virginia Department of Education. Originally developed to identify children who may need additional reading instruction, the tool also offers a method to measure students' progress. For example, a recent evaluation of VPI used the PALS as the child outcome measure (Rotz et al., 2007).

PALS-PreK (Invernizzi et al., 2004), the prekindergarten version of the screening instrument, assesses prekindergarteners' developing knowledge of literacy fundamentals across eight components: name writing, upper-case alphabet knowledge, lower-case alphabet knowledge, letter sound awareness, beginning sound awareness, print and word awareness, rhyme awareness, and nursery rhyme awareness (Invernizzi et al., 2004).[11] Unlike the elementary school version, no "cut-off" benchmark exists for the PALS-PreK, although developmental ranges are reported in the manual. We report gains based on raw scores rather than developmental ranges, following the recommendation of the authors (Invernizzi et al., 2004). All skills except lower-case alphabet knowledge and letter sound awareness – components that require a student to "pass" an earlier subtest – are included in a summed score.[12] The PALS-PreK is typically administered in the fall to provide teachers with a sense of children's relative strengths and needs so that they can plan appropriate literacy instruction. While the tool can be given midyear, most pilot programs repeated it only in the spring. We limit our report to the fall and spring scores. We make three comparisons using the summed scores from fall 2007 and spring 2008: (1) student gains in pilot

[10] See Little and Rubin (1987) and Schafer (2000) for a discussion of the "missing at random" assumption, techniques for handling missing data, and the problems with imputing missing data when the data are not missing at random.

[11] While the skills assessed are core components of preacademic school readiness as currently defined, they do not constitute the entire compendium of important skills. Other aspects of language, including vocabulary and expressive ability, as well as other aspects of early numeracy and mathematical concepts, such as computation, measurement, geometry, and comparative processes, are also central. Resource limitations and concerns regarding student and teacher burden, as well as lack of comparison assessments with more traditional VPI programs, drove decisions regarding child outcome measures.

[12] Summed scores were included in earlier versions of PALS-PreK, but not recommended for teachers in the current version (Invernizzi et al., 2004, p. 48). We sum scores to compare to other VPI cohorts and to yield a more robust composite preliteracy measure. In fact, the six summed components were highly intercorrelated, providing statistical justification for summing (fall alpha = .811; spring alpha = .836).

classrooms from fall to spring; (2) pilot students' gains compared to gains of their nonpilot classmates; and (3) pilot students' gains compared to scores of VPI students throughout the state who attended nonpilot VPI programs this year.

Gains from fall 2007 to spring 2008 for students in the pilot initiative

Pilot children in classrooms and their nonpilot classmates whose parents gave consent showed significant gains in all eight PALS-PreK subtasks. Table 6 reports the average fall and spring scores and the average gain for each dimension of the PALS-PreK. Comparing the fall and spring scores of the 393 students who took both screenings, all of the gains were substantial and statistically significant ($p < .001$). The overall test score improved from 35.1 in the fall to 55.6 in the spring. This 20-point gain represents a 43 percent (or 1.14 *SD*) increase over the fall scores. In addition to average gains, students exhibited less variability on all subtests in the spring, indicating that students were performing more similarly to each other than in the fall.

Table 6: PALS Averages and Average Gains for Students in Pilot Classrooms (n=393)

	Fall Average (standard deviation)	Spring Average (standard deviation)	Average Gain (standard deviation)
Name Writing	3.98 (2.15)	6.15 (1.40)	2.16 *** (1.97)
Upper-case Alphabet	10.60 (9.94)	18.69 (8.50)	8.21 *** (7.77)
Beginning Sound Recognition	4.45 (3.50)	7.43 (3.17)	3.04 *** (3.34)
Print and Word Awareness	5.35 (2.56)	7.79 (2.08)	2.44 *** (2.18)
Rhyming Awareness	4.49 (2.82)	7.11 (2.86)	2.71 *** (2.69)
Nursery Rhyme Awareness	4.49 (2.82)	7.30 (2.35)	2.51 *** (2.30)
Total PALS Score	34.60 (17.84)	54.79 (15.65)	20.19 *** (12.48)

*** $p < .001$.

Students might be expected to score higher in the spring simply due to having more exposure to preliteracy concepts outside of preschool. In the absence of a no-preschool control group, we used hierarchical linear modeling (HLM) to predict expected scores due to time and nonschool exposure effects.[13] Similar to the statewide VPI evaluation (Rotz et al., 2007), the statistical technique estimated that on average, children can be expected to gain 7.16 points due to time and nonschool exposure effects. Students in pilot classes averaged 20-point gains. The resulting significant gain (13 points over and above the potential effect of time) demonstrated by students in pilot classrooms can reasonably be considered a *preschool effect*.

[13] Detailed descriptions of this analysis is provided in Appendix F.

Pilot students' gains compared to nonpilot classmates' gains: Narrowing the achievement gap

Using similar HLM techniques, we compared students funded through pilot/VPI to classmates funded through other public sources and peers whose parents paid tuition. In these analyses, funding type represents a proxy factor for background factors that may make children different from one another. For example, included in the "other publicly funded" group are children funded through Head Start, child subsidies or other state and local funding, representing socioeconomic disadvantage, as well as children funded through Early Childhood Special Education funds, which means a child has an identified disability. Parent surveys on a portion of the sample revealed that children whose parents paid tuition had more highly educated mothers on average, suggesting more socioeconomic advantage, than are children funded through the pilot initiative.[14]

Results indicate that (1) all students made significant preliteracy gains from fall to spring, and (2) pilot-funded students posted higher average gains than did other students. Table 7 reports the estimated average gain in preliteracy skills for the three groups.

Table 7: Average Gains in Preliteracy Skills from Fall to Spring by Funding Type (n=393)

	Average Gain in PALS Score, Fall to Spring
Pilot Children	21.19
Private-Pay Children	18.11
Other Publicly Funded Children	20.63

Of particular interest is whether the difference between pilot and private-pay students reflects a narrowing of an achievement gap. Inspection of fall and spring scores by group suggests this is the case. In the fall, pilot children averaged a total PALS-PreK score of 33.2, compared to 42.3 for the private-pay students, whereas in the spring, pilot students averaged 54.5 and private-pay students averaged 60.3. The initial nine-point gap in the fall was narrowed to less than a six-point gap in the spring.[15]

To further investigate what accounts for student gains in preliteracy skills, we examined whether individual student factors that could affect gains (such as maternal education, ethnicity, gender, disability status, and limited English proficiency) as well as classroom effects (including school and teacher factors) predicted gains in PALS-PreK from fall to spring. Maternal education was the only factor significantly related to student gains in the multivariate model (n=148 b = -1.90; p = .047). Specifically, when controlling for other factors, students whose mothers had lower educational attainment started the year with lower PALS-PreK scores, but these students gained significantly more in preliteracy fundamentals than did students whose mothers had more education, thus narrowing an earlier achievement gap in preliteracy. While more disadvantaged

[14] Approximately 77 percent of the pilot students and 63 percent of nonpilot students' parents returned surveys, which asked for mother's highest education level, a variable strongly related to socioeconomic status and often used as a proxy for income level. The sample of private-pay students was further truncated due to some parents not returning permission forms to use their children's information in this study, and two program directors choosing not to ask nonpilot parents for their permission to participate in the evaluation.

[15] It is often more difficult to improve scores substantially if the baseline score is already high (i.e., the maximum score limits the amount of upward movement children can make at the top of the scale).

students narrowed the gap, they did not close it; students of better-educated mothers still scored higher on overall spring scores than did others.

Comparing students in pilot classrooms to VPI students in nonpilot classrooms: Mixed delivery compared to mostly public school delivery

A policy question addressed in this study is whether different prekindergarten delivery systems—for example, classrooms consisting of students all funded by VPI ("all-VPI"), compared to mixed-funded (blended) classrooms, or public compared to private school delivery—yield any reliable differences in student outcomes. We pursued this question in two ways. First, we compared pilot student preliteracy gains to VPI students not involved in this study. Second, we examined classroom characteristics within the pilot sample as they relate to student outcomes.

The majority of children who participate in VPI across Virginia attend classrooms in public schools that are comprised only of other children in the state-funded VPI program. That is, the majority of statewide VPI classrooms do not serve children in Head Start or other publicly funded programs, nor do they serve children whose parents pay tuition for instructional services. Because a primary question addressed in this study is whether providing VPI programs in other settings or with blended classrooms is a viable option in the Commonwealth, we compared the PALS-PreK results for students who participated in VPI through the pilot program to the outcomes of all other students who participated in VPI in the 2007-2008 academic year. While this comparison has the merit of providing a kind of "business as usual" comparison model, it is not without complexities. Approximately 20 percent of VPI students reside in localities that offer some form of mixed preschool delivery, which may include both public and private school options (Virginia Department of Education, 2007). More critically, a confound exists in that, while most of the statewide programs are located in and administered by public schools, they are also more established with VPI, on average, than the pilot programs.

In the fall, pilot students performed equivalently to VPI students across the state. In the spring, however, VPI students attending nonpilot classrooms scored significantly higher than did pilot students on all PALS-PreK tasks. Table 8 reports these scores and the results of the one-sample *t*-test comparisons. All differences are statistically significant ($p < .05$). The overall scores were also significantly different between the two groups ($t\ (177) = 5.09$, $p < .001$). The average summed score for pilot students was 54.06; the average summed score for children in nonpilot classrooms was 60.78. As previously reported, pilot students improved their scores between fall and spring by approximately 22 points. By comparison, VPI students in nonpilot classrooms improved their scores by nearly 28 points. The 28-point improvement is similar to the improvement reported in the 2007 study of VPI (Rotz, et. al., 2007). Thus, it appears that while pilot students significantly improved their preliteracy skills, they improved less than did children attending nonpilot VPI classrooms.

Reasons for the difference in gains are not clear. As a group, nonpilot VPI programs across the state are more likely to be better established with VPI, located in and administered by public schools, and consist of nonblended classrooms – that is, classrooms that consist of students funded exclusively by VPI. These factors were not the case for most of the pilot classrooms,

which tended to be less established or familiar with VPI, located in private schools, and to offer blended classrooms. This evaluation cannot determine which of these factors or combinations of factors may account for the differences in average preliteracy gains. Other factors may also play a role. For instance, localities use different criteria for determining VPI eligibility. Below, we examine program and classroom effects that may offer insight into differences in preliteracy gains.

Table 8: Average Scores on Spring PALS-PreK Tasks for Pilot Students and VPI Students Statewide, Academic Year 2007-2008

	Children Attending Pilot Classrooms			Children Attending Nonpilot Classrooms		
	N	Spring Mean	Standard Deviation	N	Spring Mean	Standard Deviation
Name Writing (range 0 – 7)	180	6.13	1.40	10,400	6.48	1.06
Alphabet – Uppercase (range 0 – 26)	180	18.81	8.51	10,400	21.62	7.03
Beginning Sounds Awareness (range 0 – 10)	180	7.60	2.94	10,400	8.31	2.69
Print and Word Awareness (range 0 – 10)	180	7.92	1.81	10,400	8.22	1.91
Rhyme Awareness (range 0 – 10)	180	7.18	2.86	10,400	7.88	2.58
Nursery Rhyme Awareness (range 0 – 10)	180	7.13	2.47	10,400	8.27	2.09

Source: PALS Office, University of Virginia.

Classroom differences

Student preliteracy gains differed by classrooms. Comparing pilot classrooms in which all students were pilot/VPI - which is more typical across the state, as noted above - to blended classrooms, no differences emerged, whether using a full range of gain scores or whether groups were split into higher and lower performing groups. These results suggest that blending classrooms does not by itself yield a beneficial or negative effect for preliteracy learning. Likewise, when other classroom and teacher factors (school type, lead teacher qualifications, the three CLASS domain scores and Student Engagement) were examined in relation to the continuum of gain scores, no reliable differences emerged. However, when classrooms were bifurcated into two groups, one that approximated gains found in the statewide VPI sample

(gains of 26 or more points, $n = 8$) and a second group with gains of less than 26 points ($n = 35$), some classroom factors appeared associated with higher gains.[16] This *post hoc* analysis revealed three findings:

(1) Classroom composition was not associated with differences in average classroom gains. That is, classrooms that blended private-pay and pilot children were no more likely to have high average classroom gains than are classes that blended VPI and other publicly funded children or those that included only VPI children.
(2) Programs more experienced with VPI preschool delivery were more likely to have *average classroom gains* in the higher range, regardless of school type (public or private).
(3) Public schools fell disproportionately into the higher performing group (4 of 5 public schools fell in the higher performing group, while 4 of 38 private schools fell into the higher performing group).

Table 9 reports the partial correlations from this *post hoc* analysis.[17]

Table 9: Partial Correlations between High Performance and Classroom-Level Factors

	Correlation with High-Performing Classroom	P-value	Controlling For
Program More Familiar with VPI	.479	.012	Public School, Lead teacher with BA, Pre-K Specialization, 3 CLASS domains, Student Engagement
Public School	.394	.042	VPI-familiar Program, Lead teacher with BA, Pre-K Specialization, 3 CLASS domains, Student Engagement

Early Numeracy Skills

Teachers assessed students' early emerging numeracy skills through two measures used in previous research on publicly funded prekindergarten (National Center for Early Development and Learning, 2001).[18] In the first assessment, teachers asked children to count out loud. The second is a criterion-referenced measure of the ability to count objects. Children were asked to count pictured teddy bears to demonstrate one-to-one correspondence. The highest consecutive number was recorded to a maximum of 40. This task correlates significantly with a broad-based measure of early mathematics, the Woodcock-Johnson Applied Problems standard score

[16] One classroom was added late, so no fall PALS scores were available. The family child-care providers are not included in this analysis; however, students in these settings scored comparably to pilot students in these analyses. See Chapter Six for information on the family provider pilot program.
[17] It should be kept in mind that these factors were not associated with student gains at the individual child level, but with overall *classroom average* gains. Within these classrooms, substantial individual variation remained.
[18] In previous studies, outside assessors administered these tasks as part of a larger battery of preacademic tests. We gratefully acknowledge NCEDL for granting us permission to use the materials and adapt the procedure for use with teachers. Due to differences in administration procedures, results may not be directly comparable.

(Clifford et al., 2005). Teachers administered numeracy tasks in the week following the PALS-PreK screening in both the fall and spring.

Table 10 presents descriptions of students' fall and spring counting and one-to-one correspondence performance. Substantial range existed across both time periods. By spring, average counting ability exceeded the minimum state standard of counting to 20 and demonstrating one-to-one correspondence with five objects.

Table 10: Fall and Spring Early Numeracy Skills

	Fall Verbal Counting (n = 474)	Spring Verbal Counting (n = 413)	Fall One-to-One Correspondence (n = 474)	Spring One-to-One Correspondence (n = 413)
Mean	15.52	28.85	13.63	22.10
Standard Deviation	13.63	25.43	8.20	11.32
Minimum	0	0	0	0
Maximum	109	202	40	40

Note: The maximum possible score on the one-to-one correspondence test is 40.

Using the same analytic procedures as described in the preliteracy section, the following results were found; Tables 11 and 12 present scores and gains by student funding type for those students with both fall and spring scores.

(1) Students in pilot classrooms significantly improved in their ability to count consecutively, both verbally and in demonstrating one-to-one correspondence.
(2) Gains significantly exceeded those expected from nonpreschool exposure, by 8 in verbal counting and by 4.5 in one-to-one correspondence.
(3) Unlike preliteracy gains, family background was not associated with differences in early numeracy counting *gains*. However, more advantaged students demonstrated better pre-numeracy skills in the spring than did pilot and other publicly funded students.
(4) Controlling for individual child factors, average gains on both tasks did not differ among pilot, private-pay, or other publicly funded students.
(5) Ninety-four percent of pilot students could count out loud to ten or more, and 47.1 percent to 20 or more. Ninety-six percent of pilot students counted beyond five in one-to-one correspondence, exceeding minimum state standards.
(6) A sizeable percentage of differences in early numeracy skills are attributable to classroom effects, but only lead teacher prekindergarten specialization appeared clearly associated with these differences.

Other improvements were also found. In the fall, 22 of the 474 children (4.6 percent) could not count independently. In the spring, only 9 of 427 children (2.1 percent) could not count independently. Similarly, three percent of the students in the fall appeared not to understand the prenumeracy instructions, according to teachers, whereas only 1.4 percent appeared not to understand the instructions in the spring.

Table 11: Average Fall and Spring Verbal Counting Scores for Pilot Students and Classmates (n = 398)

	Average Fall Verbal Counting (standard deviation)	Average Spring Verbal Counting (standard deviation)	Average Gains from Fall to Spring
Pilot and Other Publicly Funded Students	15.3 (13.1)	27.6 * (25.2)	12.3
Private-Pay Students	16.4 (13.3)	34.9 * (26.1)	18.5

Spring scores between the two groups differ, *p < .05.

Table 12: Average Fall and Spring One-to-One Correspondence Scores for Pilot Students and Classmates (n = 398)

	Average Fall One-to-One Counting (standard deviation)	Average Spring One-to-One Counting (standard deviation)	Average Gains from Fall to Spring
Pilot and Other Publicly Funded Students	13.4 (8.4)	21.5 * (11.3)	8.1
Private-Pay Students	14.4 (7.4)	25.0 * (11.3)	10.6

Spring scores between the two groups differ, *p < .05.

Summary of Preacademic Skill Gains

The pilot initiative appears associated with positive preacademic benefits for pilot students, with all students on average showing gains in preliteracy and early numeracy over and above what might be expected by growing older and more exposed to these concepts without preschool. Findings suggest that a mixed delivery model can narrow preliteracy gaps between less and more advantaged students, while not proving detrimental to any one group of students in a classroom. Similarly, average preacademic gains in blended classrooms, in which students are funded from different sources, did not differ from all-VPI classrooms. Pilot students' preliteracy gains were significant but lower than a statewide VPI comparison group. In the pilot sample, substantial differences were found between classrooms, with better-established VPI programs, regardless of school type, and public schools both associated with higher performing classrooms in preliteracy. Lead teacher prekindergarten specialization was associated with higher gains on early numeracy skills.

Personal and Social Development that Supports Academic Learning: Social skills, Student Engagement with Learning, and Health

The ways that children interact with others, assert themselves appropriately, and exhibit behavioral self-control in the classroom, how engaged they are in school and how healthy they are, are all considered important to student learning in elementary school (Pascoe, Shaikh, Forbis, & Etzel, 2007; Raver, Garner, & Smith-Donald, 2007; Zaslow, Calkins, & Halle, 2000).

Social skills—including being able to follow directions and work cooperatively as well as independently—are among the top skills kindergarten teachers rate as important to successful school entry (Rimm-Kaufman, Pianta, & Cox, 2000). Students' attitudes toward school and active engagement with learning are associated with higher achievement. These facets of personal and social development have recently been added to Virginia's Foundation Blocks for Early Learning (Virginia Department of Education, 2007c). In addition, severe or chronic ill health can debilitate a child and cause frequent absences, reducing instructional exposure. The next section focuses on these foundational components to successful early learning.

Student social skills

Social skills were measured through the Social Skills Rating System (Gresham & Elliott, 1990), a standardized teacher report of student behavior in the classroom. Administered in the spring, teachers recorded whether students exhibited a variety of social skills according to a three-point scale ("Never," "Sometimes," and "Very Often.") Three broad types of social skills were assessed: cooperation, appropriate assertiveness, and self-control. The total social skill scores were used in these analyses.[19] Ninety percent of pilot students exhibited social skills within the average range. No differences in mean standardized scores were found based on student funding type, race/ethnicity, maternal education, or disability on average. Thus, most pilot-funded students were doing as well as their peers on social skills, according to their teachers.

On a separate survey administered at the end of the year, teachers also estimated individual student behavioral changes over the time period they had known the student (for 92 percent, this equaled all or most of the school year). Teachers assessed change across the year in students' abilities to get along with peers, follow directions, control their behavior in class, and finish tasks. As expected, teachers reported that most students improved, and a small percentage of students deteriorated in their behavior during the year, particularly with regard to behavioral control skills. Table 13 reports these percentages.

Table 13: Teacher's Assessment of Changes in Pilot-Initiative Students' Abilities (*n*=419)

	Percent Worsened Behavior	Percent Behavior Stayed the Same	Percent Improved Behavior
Child's ability to get along with peers	3.6	21.2	75.2
Child's ability to follow directions	4.5	19.3	76.2
Child's ability to control his or her behavior in class	7.1	26.0	66.9
Child's ability to finish tasks	1.0	22.0	77.0

No differences were found between students by funding source or other individual-level variables.

[19] The high inter-correlation between subscales and high total alpha (.89) supports this approach.

Although most students exhibited social skills in the average range, a subgroup appears to have difficulty in the area of social and self-control skills near the end of prekindergarten, with ten percent of pilot students reported as having limited social skills, and six percent estimated as showing behavioral deterioration over the year. Consistent with literature on at-risk children, pilot and other publicly funded students were overrepresented in the small group of students in pilot classrooms with limited social skills (of the students with limited social skills, 10 percent were private-pay students). Students with disabilities were more likely to be in this lower-functioning group as well, but the difference was not statistically significant. Using the same classroom variables as for the preacademic analyses, no classroom effects emerged. This study cannot compare these rates to students in traditional VPI classrooms, but no differences were found between public and private schools in this sample. Thus, while most pilot students appear to be functioning in the average or above average range in their social skills, a small group exhibited difficulties in this area, highlighting the need for explicit classroom attention to social skills (which most pilot classrooms provided), and perhaps additional resources beyond the classroom dedicated to helping children improve their behavioral skills necessary for success in kindergarten.

Student engagement with learning

Two measures – one teacher report, one observational – focused on assessing how engaged students were in the prekindergarten learning process. In the fall and spring, teachers rated individual students on four items related to engagement, excitement about learning, and interest in learning new things. These items were combined into a summative index of student engagement. The questions comprising the index and the reliability statistics can be found in Appendix F. At the classroom level, observers rated how engaged students appeared overall.

Teachers viewed students as actively engaged in prekindergarten learning, with average fall scores being high (16.1 out of a possible 20). Table 14 reports the summary statistics for the student engagement scale in the fall and spring. Using a paired-sample *t-test*, which compares the student to him or herself from fall to spring, students' engagement significantly but slightly increased from the fall to the spring (t (404) = 3.86; $p < .001$). Controlling for maternal education, ethnicity, age, gender, and disability status, pilot students did not differ on this dimension compared to others. Girls (b = 1.02; $p = .032$), older children (b = .161; $p = .047$), and children without a disability (b = 1.25; $p = .024$) were significantly more engaged in both the fall and the spring, but gains did not differ by funding source or other individual characteristics.

Table 14: Spring and Fall Averages for Student Engagement Index (n = 405)

	Mean	Standard Deviation	Median
Fall Student Engagement	16.13	2.98	16.0
Spring Student Engagement	16.72	2.68	17.0

Note: Index ranges from 4 - 20

Teachers' estimates of average high levels of student engagement in learning were supported by classroom observer ratings on the CLASS scale, Student Engagement, which showed high levels of engagement in most classrooms (mean = 5. 76, *SD* = 0.68). In addition, while not measuring

engagement with classroom learning *per se*, parents were asked how well their child enjoyed preschool. Ninety-five percent of parents responded to this survey (*n*=345) and reported that their child liked preschool "fairly well" (21 percent) or "a lot," (74 percent). Together, these indices point to a generally high level of school engagement by students attending pilot classrooms, and suggest that for most students, "school" has positive associations, which may support their transition into kindergarten.

Current and recent health and chronic conditions

Student health was assessed by parent report, using a short version of the RAND Health Index. By parent report, students in pilot classrooms were quite healthy. Responses for health in the spring, children's resistance or susceptibility to illness, and reports of prior illness all show means and medians toward the highest end of the scales, indicating that, overall, preschoolers are and have been in good health. At the same time, approximately one-third of students have some type of chronic health condition, and some differences were found between pilot students and classmates whose parents paid tuition.

A sizeable minority (34.3 percent) of students had some type of chronic condition that may interfere with optimal school functioning. Table 15 lists the types of conditions reported by parents. Other conditions – primarily allergies and eczema – and asthma, were the most commonly reported, with approximately 15 and 13 percent reporting these conditions, respectively. Pilot-funded students were no more likely to have these conditions than were their peers.

Table 15: Percentage of Student Health Conditions, by Type (n=344)

Condition	Frequency	Percentage
Asthma	44	12.8
Diabetes	0	0
Chronic Ear Infections	10	2.9
Other Condition	51	14.8
Combination of Conditions	13	3.8
No Answer/No Condition	226	65.7

Note: Other conditions are primarily allergies and eczema. Combinations include some combination of asthma, chronic ear infections, or other condition.

However, pilot-funded students (as well as other publicly funded students) were more likely to have had a serious illness in their lives compared to students whose parents paid tuition (14.3 percent *vs.* 4.6 percent). They were also more likely to have experienced "pain or distress" regarding illness during the winter months (i.e., three months prior to the spring survey), than were children whose parents paid tuition (11.4 percent *vs.* 1.5 percent). Consistent with national trends (Zaslow et al., 2000), at-risk children in the pilot sample appeared somewhat more prone to physical vulnerability. These findings underscore the importance of prekindergarten programs catering to at-risk populations playing a role in ensuring that, at a minimum, students have regular health care. At the same time, the great majority of pilot students enjoyed good health and were no more likely than their peers were to suffer from chronic health conditions.

Summary of personal and social developmental foundations for learning

Most students in pilot programs appear "ready to learn," as gauged by their social skills, engagement with learning, and general health. Pilot students did not differ from more advantaged classmates on these capacities, on average, with two exceptions. Although the great majority of pilot students exhibited average-level social skills and mean social skill proficiency did not differ by group, a subgroup that had poor social skills was composed mostly of publicly funded students, including pilot-funded students. Pilot-funded students were also more likely to have had a serious illness in the past and to have experienced discomfort more recently due to health problems, compared to private-pay students. However, most students from all groups were reported healthy and equally likely to suffer from chronic health conditions, most notably asthma and allergies.

Summary of Student-Level Outcomes

Findings document benefits for students' learning and that most students in pilot classrooms show personal and social school readiness skills. An apparent *preschool effect* was found, in that students learned more over the year than they might have without preschool. Further, pilot students' preliteracy gains across the year narrowed the original gap between their skills at the beginning of the year and those of more advantaged classmates by approximately one third. As reducing achievement disparities between more and less advantaged children is a primary mission of VPI, this represents an important accomplishment.

Whether or not classrooms were blended was not associated with differences in preacademic gains or personal and social development. Pilot students gained less in preliteracy skills than a statewide comparison group of nonpilot VPI students. Within the pilot sample, classrooms in which the average preliteracy gains approximated those by nonpilot VPI tended to be more experienced with VPI or in a public school. By the end of the year, pilot students exhibited positive personal foundations for learning, including average social skills, high engagement with learning, positive feelings about school, and current good health that did not differ from more advantaged peers or by school type. Parents also reported high levels of satisfaction with their children's school readiness skills and with their pilot preschool. The mixed delivery model piloted this year appeared to offer benefits to children and their families.

At the same time, a small subgroup of mostly publicly funded students, including pilot students, exhibited difficulties with social skills, and pilot students were more likely to have experienced serious illness or distress about recent illness compared to more advantaged peers. These findings support the importance of focusing on social development and developing healthy habits in classrooms, but also underscore the critical importance of extra-classroom supports for at-risk students and their families. Local school readiness collaboratives can play a role in providing or augmenting such supports for at-risk students as part of a mixed preschool delivery system.

CHAPTER FIVE
HOW LOCAL SOCIAL SCHOOL READINESS COLLABORATIVES SUPPORT A MIXED DELIVERY SYSTEM OF STATE-FUNDED PREKINDERGARTEN

This section describes local school readiness coalitions' (referred to as *collaboratives*) experiences over the year and ways they appear to have instrumentally helped programs provide higher quality services to at-risk children and their families. Earlier we reported ways that collaboratives worked to increase access to programs and services for at-risk four-year olds. We focus here on the types of infrastructure and support that collaboratives provided, as well as leaders' reported experiences. First, we identify features of the collaboratives themselves that are associated with successful collaboration. Next, we discuss how features of the pilot program may be sustained beyond the pilot year. Last, we describe specific supports some collaboratives offered and collaborative leaders' reflections on the year, with the goal of elucidating promising practices and guidance for future mixed-delivery systems.

Pilot Collaboratives

A primary goal of the preschool pilot initiative was to strengthen preschool networks and to broaden prekindergarten administrative capacity from school divisions alone to a more comprehensive group of local stakeholders invested in school readiness. Pilot collaboratives generally met this objective. Key collaborative partners included personnel from school divisions, county and city governments, local nonprofit community agencies, local colleges and universities, local YMCAs, local departments of social services and health, local Head Start programs, Department of Defense personnel, and private child education and care settings, among others, and the collaboratives were centrally involved in the initiative. They designed their local pilot programs, implemented them under the direction of a lead agency, and helped the evaluation team collect data. The initial report on the pilot initiative found these groups to be well poised to deliver a complex mixed preschool delivery system within the assets and constraints of their local situations (Bradburn et al., 2007).

Results at the end of the year supported initial findings. Surveys with collaborative members, reviews of collaborative meeting minutes and program logs, and in-depth interviews with lead agency and collaborative leaders in the fall and spring converged to show that pilot collaboratives had the requisite leadership, communication, and organizational structure associated with successful collaboratives (Mattessich & Monsey, 1992; Mattessich et al., 2001; McCaffrey et al., 1995; Mizrahi & Rosenthal, 2001; Rog, et al., 2004). Details on ways collaboratives met benchmarks for successful collaboration are provided in Appendix G.

As noted earlier, a central goal of six collaboratives was to increase the quality of early childhood education in their communities. One group did this by introducing a new home-school reading curriculum. Another partnered with a local community college and enrolled all pilot teachers in a three-credit early childhood education course. Yet another supplied mentors who led trainings and coached teachers and family child-care providers. Three others provided more circumscribed workshops or developed steering committees of lead agency staff and program directors to share resources, including information on training opportunities**.** One

collaborative leader commented on how these efforts will continue next year even without pilot funding. She said:

> [The pilot] certainly has started something that we would hope to continue, and that is to collaborate with providers within our [locality], especially along the lines of professional development, training, giving some kind of mentorship, leadership, those are things that are critical that we want to bring the quality of learning across the [locality] and across the state to a higher standard.

One focus of many collaboratives working with private providers was on helping providers align their curriculum with Virginia's Foundation Blocks for Early Learning and Standards of Learning (Virginia Department of Education, 2007c). Efforts appear to have resulted in planned changes across a range of programs. Approximately 80 percent of directors noted in interviews or surveys that the pilot experience had been instrumental in helping them decide to adjust or make substantial changes to their preschool programs. Most changes centered around curriculum and assessment, helping teachers see closer links between them, being more systematic about assessment, changing the type or schedule of assessments, and aligning their curriculum more closely with the Virginia Foundation Blocks for Early Learning. Increasing or accelerating staff development was another area for future intervention; one program plans to send a staff member to CLASS training. Another program plans to increase activities to involve families.

As one director put it:

> We are in the process of re-evaluating our curriculum and assessment procedures. We want to get on the same page as the public school system so that what we do here is the start of a process that can follow the kids into elementary school. For instance, we use High/Scope, but not to its full extent. I think taking bits and pieces as we have been doing is not doing it full justice. We have started to adjust our teaching practice, and we will continue to do that, working with the [local collaborative] group that we started through the pilot - the coordinator and the other directors.

Thus, it appears that the pilot experience has galvanized program directors to pay closer attention to their program's curriculum and assessment processes, in line with the state's guidelines for prekindergarten, as well as to increasingly emphasize teacher training.

In addition to technical assistance, another substantial "value added" component of the pilot program for several private schools was that they received additional family services from their school readiness collaborative. For instance, one collaborative joined with a parent and health promotion organization to offer parent resources and regular workshops. Others were able to hire a family liaison worker or, in joining forces with Head Start, provide more expansive family support. Seventy-one percent of programs reported that pilot families had or would be visited at least once at home by a program staff member.

Many collaboratives played an instrumental role in providing or facilitating another critical aspect of early childhood education, early identification and treatment of children's developmental delays and disabilities (American Public Health Association & American Academy of Pediatrics Collaborative Project, 2002), by ensuring that every pilot child received vision and hearing screening, a pediatric check-up, and up-to-date immunizations. Programs affiliated with Head Start tend to be particularly rich in resources to identify and serve children with developmental delays. These programs have access to mental health workers who conduct twice-yearly classroom observation screenings as well as speech/language and occupational therapy screenings.

In some cases, in fact, support provided by the collaborative lead agency appeared to make the difference between some students being able to remain in preschool or not. In a few programs, some children's behavior was extremely disruptive to the classroom. In several instances, collaborative lead agencies provided resources that helped the children adjust and remain in prekindergarten. For example, collaborative leaders helped parents seek evaluation and ultimately therapeutic services or brought in a social worker to assist teachers in the classroom. Programs reported that these services greatly helped children improve their behavior, and attributed their success in keeping the children in school to the prompt availability of the outside services.

Thus, local collaboratives have a valuable role to play in augmenting programs' resources if they keep close contact with the programs throughout the year.[20] Systemized resource deployment appears critical. The provision of one or more well-trained family or child development specialists for case and crisis management appeared to make the difference between some children being able to continue receiving preschool intervention and appropriate outside therapeutic services, or not. Particularly in localities that lack therapeutic preschools, these augmentations would appear vital.

Collaborative Leaders Valued the Pilot Initiative and Identified Difficulties and Areas for Continuation

Interviews with key collaborative personnel identified three main benefits of collaboration: (1) networking to facilitate resource and information sharing; (2) reducing competition for scarce resources; and (3) fostering an increased awareness of and consensus about the meaning of "kindergarten readiness." As one informant said about collaborating, "the benefits are endless." Another put it this way:

> The whole preschool network that we're a part of really has as an underlying basis that yes, we can support one another, we've pooled funds and we support each other in that way, but you know if something were to happen and say Head Start

[20] One collaborative that was relatively less involved in direct services may have had some difficulties in helping students receive service evaluations, according to teachers. Two teachers in different programs within different collaboratives also commented on what they perceived as a lack of resources to handle children with special needs or otherwise support teachers in executing high-quality preschool, underscoring the need for collaborative lead agencies to keep in close touch with program providers and for prekindergarten for at-risk children to be sufficiently funded.

were to go away or VPI were to go away, that each of us would have a quality preschool established in our [locality]."

While key personnel found collaboration rewarding, they also identified barriers to partnership. Several noted that collaboration is "hard work." Three collaborative leaders specifically noted how much time was needed to coordinate and manage their groups. According to monthly logs, collaborative lead agency staff communicated frequently with pilot providers, with eight collaboratives making contact at least several times a month, and others considerably more. Table 16 reports the amount of contact collaborative leaders had with different types of service providers.

Table 16: Average Monthly Contact between Collaborative Leaders and Service Providers

	Number of Collaboratives with Average Monthly Contact with Preschool Directors or other Preschool Personnel	Number of Collaboratives with Average Monthly Contact with Family Service Workers or Support Service Agencies	Number of Collaboratives with Average Monthly Contact with Other Pilot-related Individuals Involved with Pilot Classrooms
Less than Once a Month	0	0	1
Once a Month	2	5	5
Several Times a Month	3	3	2
Once a Week	3	0	2
Several Times a Week	2	1	0
Not Applicable	0	1	0

Another collaborative leader cited "logistics" as a drawback of collaboration; however, she believed this difficulty was well worth the benefits the collaborative approach afforded.

One of the most commonly cited difficulties with operating the collaboratives and delivering the pilot program was the practice of braiding funding streams. Braided funding refers to combining funding streams to maximize resources by allowing localities to pay for services they otherwise could not afford. An example of braided funding is using VPI and Head Start funds to cover instructional expenses, federal early childhood special education (ECSE) funds to cover IEP services, and federal child-care subsidy funds to cover wraparound services. Three collaborative leaders noted that, while they thought braiding funds was a good strategy, doing so created difficulties. One leader said that braiding was very complex and challenging. They recommended braiding funds only if a staff member is devoted to this task. Another leader believed that better guidelines are needed to braid funds successfully and legally. A third leader noted that this strategy is "easier said than done"; however, she also believed it provides "more bang for the buck." Despite these noted difficulties with braiding funding streams, the collaborative leaders overwhelming believed the strategy was an effective means of providing preschool services to at-risk children. As one leader said, "we wouldn't be able to operate without it."

All of the key leaders believed the benefits of the pilot initiative collaborative approach outweighed the drawbacks, and they cited numerous benefits to this approach for providing

comprehensive preschool services. Thus, it appears that local pilot leaders valued a collaborative approach, and many instrumentally raised program quality through providing teacher training and education, and/or health, crisis management and family support. At the same time, leaders wanted more guidance from the state regarding technical aspects of implementing a mixed delivery system, particularly regarding braiding funding streams.

CHAPTER SIX
FAMILY CHILD-CARE PROVIDER PILOT: A CASE STUDY

We report on one part of one locality's pilot program separately because it differed substantially from all other programs by focusing on intensive quality improvement with family child-care providers. These service deliverers provide childcare and education in their homes, generally to small, mixed-aged groups that can include infants as well as prekindergarteners. These providers are sometimes referred to as offering family daycare, family home care, or family childcare. The latter is the term we use in this report.

This pilot was undertaken, according to local agency staff, because local data gathered on childcare and school readiness indicated (1) most prekindergarten children in the locality spent most of their weekdays in family care, and (2) school principals complained that children coming from family home providers tended to be less ready for kindergarten. The goal of the pilot was to enhance providers' understanding of school readiness and increase the quality of their services to help more families who use home childcare help prepare their children to succeed in kindergarten.

Primary features of the pilot involved bimonthly in-home mentoring from an experienced early childhood educator; regular trainings, including training in a comprehensive developmental curriculum; provision of materials; and supporting pilot families by providing a medical home and offering family support. Appendix H describes the pilot in more detail. The family provider pilot is most appropriately considered a case study, due to its unique nature and the very small number of providers and students involved: 12 providers and 15 students originally. In this chapter, we report results for the four main research questions including (1) How did this pilot program increase access to high-quality preschool and attendant services? (2) What were the program characteristics and quality? (3) What were students' outcomes? and, (4) How did the local collaborative improve or augment school readiness services?

Increased Access to High-Quality Preschool and Attendant Services

Using family childcare providers increased access to high-quality preschool services for families primarily through improving the quality of the family providers' programs. Providers were selectively chosen because they operated in neighborhoods with high levels of at-risk children, and most pilot students in these settings had been with the family child-care provider prior to the pilot year. Providers offered extended hours of care, tended to have long-standing relationships with the families they served, and often spoke the same language as the pilot child's family. By targeting quality improvement, the local collaborative aimed to reach the sector of their population that uses family childcare and to provide them with higher-quality services more specifically focused on kindergarten readiness. The training and enrichment services offered to pilot providers were designed to enhance quality and promote providers' facilitating more active, developmentally informed learning than had previously been the case. In addition, the lead agency administering this pilot supplemented preschool services with health and family support services. By participating in the pilot program, preschoolers' families received many more kindergarten readiness supports than were previously offered by these family providers.

Program Characteristics and Quality

Two providers dropped from the pilot program in the fall; one closed her business, and in the other case, the parent of the pilot student refused to allow the child to be assessed. Ten family childcare providers remained throughout the year. All family childcare businesses were licensed. They ranged from new (1-2 years) to well-established (more than five years) businesses. Providers were all women. Four employed assistants.

Two of the quality indicators, the NIEER standards and the CLASS, were not designed to apply to family provider settings. The CLASS was not conducted with family providers. However, due to the support provided by the collaborative, the family providers also met many of the same standards met by preschool programs. Providers received training and materials to implement a comprehensive, developmental curriculum and were regularly monitored by local licensing staff. They easily met the child-staff ratios and class size limits, with most programs offering a 1:4 ratio (due to the younger age of the pilot peers). Family providers received more than 15 hours of targeted prekindergarten training this year, provided meals, and mentors ensured that all pilot students had a medical home and annual pediatric visits that included vision and hearing screenings. Families were offered support through regular conferences, a home-provider notebook that charted daily activities, and a workshop on transitioning to kindergarten. While family providers met the nonteacher NIEER structural features, they were considerably less educated than classroom teachers. Three of ten had a bachelor's degree, and one had a CDA in the fall. By the spring, another provider had received her CDA, and three others were expecting their CDA by the end of 2008. In sum, with the exception of notably lower teacher qualifications, family providers met structural standards equivalent to classroom-based pilot preschools.

Observational measures of quality

The revised Family Child Care Early Environmental Rating Scale (FCCERS-R), which parallels the ECERS-R, was used to assess family provider program quality (see Table 17). Unlike the single observation conducted for preschool classrooms, providers were rated in the late fall or early winter and then again in the late spring. An independent rater hired by the locality, not supervised by the evaluation team or otherwise involved in the pilot initiative, performed the observations. Details are provided in Appendix H.

Providers improved their scores on the FCCERS-R significantly across each dimension, such that by the spring, all dimensions fell into the "good" quality range, on average. Two scales particularly relevant to student learning, Talking and Listening, and Activities, moved from low to high quality during the six months of mentored training. Without a random control group we cannot know if the mentoring *caused* these improvements, but it clearly was associated with dramatic improvements.

Table 17: Family Child-Care Provider Fall and Spring Mean Scores on the Family Child-Care Environment Rating Scale-Revised *(N=10)*

	Fall Mean (standard deviation)	Spring Mean (standard deviation)	Paired-Sample T (probability)
Space and Furnishings	4.04 (1.35)	5.95 (0.57)	4.39**
Personal Care Routines	5.63 (1.08)	6.52 (0.45)	2.86*
Listening and Talking	3.83 (0.96)	6.07 (0.99)	10.30***
Activities	2.97 (0.85)	6.01 (0.65)	14.16***
Interaction	4.80 (1.58)	6.18 (1.05)	4.37**
Program Structure	4.72 (1.83)	6.62 (0.58)	4.02**
Parents and Providers	5.00 (1.01)	6.33 (0.44)	5.48***
Total Score	4.43 (0.99)	6.24 (0.57)	8.47***

Source: Office for Children from the pilot locality. Differences between fall and spring scores, * $p < .05$, ** $p < .01$, *** $p < .001$

Student-Level Outcomes

Student attrition led to some groups being too small to meaningfully report specific data; from an evaluation perspective, even the original total group – 15 students – is too small to provide robust, reliable findings. Instead, these data represent more of a case study that can provide suggestions for future research. Fluctuations in student composition further complicate the interpretation of findings. Fifteen pilot students were initially enrolled with family providers, but only 11 completed the year, and due to some movement in or out of the family provider program, some data are not complete for all eleven. Thirteen students in the fall and ten students in the spring had useable PALS data; only nine were the same students. We report specific data for analyses that include ten or more students. The very small numbers underscore the importance of viewing this as an exploratory case study, with data suggesting possible trends but no definitive conclusions.

Preliteracy

As shown in Table 18, pilot students in family care placements began the year with significantly lower mean preliteracy skills, compared to both pilot and private-pay students in preschool classrooms. However, by spring, the means are not significantly different for family care students and classroom pilot students. The family care students scored significantly lower than private-pay students, on average. Given that nine of 10 spring PALS scorers were included in the fall data collection, it appears that students in family care eliminated the gap between themselves and their pilot peers in classroom placements. The sample is too small to conduct

provider-level analyses or to statistically examine individual factors that may account for differences. However, one-third of the students were early English language learners, which may at least partially account for the lower fall scores.

Table 18: Fall and Spring Mean Summed PALS Scores, by Student Group

	Family Pilot	Classroom Pilot	Classroom Private-Pay
Fall PALS Summed Score	26.5 * (19.5)	33.3 * (17.3)	42.1 * (18.8)
Spring PALS Summed Score	48.9 (15.37)	54.4 (16.1)	60.2 * (13.5)

Standard deviations in parentheses. Differences between all fall groups are significant * $p < .05$. Classroom private-pay students spring scores are significantly different from both pilot groups.

Early numeracy counting skills

Table 19 depicts the highest number that pilot students in family placements counted to verbally, and the highest number of objects correctly counted, demonstrating one-to-one correspondence. In the fall, these pilot students could count to and correctly count objects up to approximately nine. In the spring, all students increased their verbal counting by an average of eight and their one-to-one correspondence by approximately seven. Applying the age effect, these students gained four numbers in both verbal counting and one-to-one correspondence over and above what might have been expected by having time to have been exposed to counting without family childcare. These averages are statistically lower than those exhibited by pilot students in classroom placements and private-pay students in classroom settings.

Table 19: Fall and Spring Mean Highest Counting Scores, by Student Group

	Family Pilot Means	Classroom Pilot	Classroom Private-Pay
Fall Verbal Counting	8.7* (3.9)	14.6 (13.2)	16.3 (13.4)
Spring Verbal Counting	17.0* (10.3)	27.8 (28.5)	34.9 (26.1)
Fall One-to-One Correspondence	8.7* (4.1)	12.7 (8.0)	14.3 (7.3)
Spring One-to-One Correspondence	15.5* (7.9)	21.1 (11.4)	25.0 (11.3)

Note: Standard deviations in parentheses. Family pilot students' scores are significantly different from both classroom pilot and private-pay students, * $p < .05$.

Personal and social development foundations for learning: Social skills, student engagement and health

Due to low numbers, specific social skills data will not be be reported, but results mirror those found in the classroom pilot sample. Social skills of students in family placements, in which

they may be the sole prekindergartener or one of two, are difficult to meaningfully compare to students in classrooms of ten or more same-age peers. Student engagement, as with classroom pilot students, was high (mean = 15.8, standard deviation = 4.9) and increased across the year (spring mean = 17.4, standard deviation = 2.6). These students' health data can only be summarized by saying that in general, pilot students in family placements did not appear to differ from other pilot students.

In summary, data suggest that this small group of pilot students in family placements showed preliteracy gains and social and learning engagement skills comparable to pilot students in classroom placements, while posting lower gains in counting skills. Although students in family placements began the year with lower preliteracy skills than pilot peers did, they largely made up the difference by the spring. Whereas by spring pilot students in classroom placements could count out loud to 28, on average, and count 21 objects correctly, students in family placements reached lower thresholds (17 and 16, respectively). Like pilot students in classroom placements, pilot students in family placements showed lower average preliteracy and counting skills compared to students whose parent paid tuition for them to attend preschool. The small numbers of students in this type of placement, coupled with the different amount of instruction received based on student attrition, render these findings tentative and suggestive only. Replication with a larger sample is necessary to draw any firm conclusions regarding the character of student learning in this type of placement.

Local Collaborative Support was Associated with Improved Quality in Multiple Ways

The collaborative that designed and executed the family child-care mentoring pilot appeared to instrumentally support family providers and provided tangible quality improvements by offering families medical and school transition support. Without the collaborative infrastructure, family providers would likely have met fewer NIEER standards (concerning curriculum, training, health, and family supports).

Lack of a control group prohibits causal statements regarding whether the mentoring program helped providers achieve measurably better quality by the end of the year. However, the observed improvements in a relatively short period suggest that targeted training may well have yielded benefits. Nine of ten providers rated the mentoring program as "useful" or "very useful," and most providers interviewed (five of six) attributed their improvement specifically to the pilot program. They credited mentors with helping them interpret the Portage curriculum, helping them understand the importance of appropriate environmental stimulation, and modeling successful interaction practices with the children. One provider was particularly effusive, showing the interviewer a child's portfolio that the parents plan to share with the child's kindergarten teacher. Another described how her mentor helped her observe children's development better. She said, "Now I see, I watch them, I really *look*." All believed their mentors helped them prepare their students better for kindergarten, and four providers noted on surveys that parents expressed enthusiasm for changes they had made, one noting "even parents have noticed a change." Several providers also noted that the younger children in their care will benefit from what they have learned this year.

This intensive mentoring pilot program appears associated with several positive results for children and their families, as well as for family providers. As with other pilot interventions, targeted collaborative support directed toward training, medical and family support appears to have instrumentally enhanced prekindergarten services offered to families through this type of delivery system. While the concept is new to Virginia, family child-care providers are eligible to offer state-funded pre-K in at least 13 other states (Schumacher, Ewen, Hart, & Lombardi, 2005). Given the intensive resources needed for such a program, it would be useful to follow-up with providers who do and do not continue with the mentoring program to examine whether those who discontinue the mentoring program still use training and materials they received through the pilot initiative.

CHAPTER SEVEN
CONCLUSIONS AND RECOMMENDATIONS

The pilot initiative used a number of strategies to increase access to high-quality prekindergarten for at-risk children. There are several key findings of the evaluation:

- The pilot initiative increased access to preschool and support services for 238 at-risk children, and it provided additional support services to pilot students' classmates who were less-at-risk.

- Preschool quality differed depending on how quality was measured. Classroom-based programs generally met between 7 and 10 of 10 structural NIEER standards, with teacher qualifications the most variable. Using the observational measure CLASS, pilot classrooms offered mid-range to high-quality education, although considerable variation in quality was observed. Classroom practices quality was similar to a sample of VPI classrooms across the state not involved in the pilot initiative. Teachers generally provided students with high levels of emotional support and well-organized classrooms, but had more difficulty with instructional practices that focused on conceptual and language development. Classrooms in private settings had more variable levels of quality than did classrooms in public settings. Virtually all programs had difficulties with personal care routines.

- Pilot students in classroom settings made significant gains in their preliteracy and early numeracy preacademic skills.

- Pilot students narrowed the preliteracy gap between themselves and their more advantaged classmates from fall to spring.

- Average gains in preliteracy skills by pilot students in classroom placements were lower than those of VPI students attending nonpilot classrooms. Pilot programs that were more familiar with VPI, and classrooms in public schools, were more likely to post gains similar to VPI students across the state who were not involved in the pilot initiative.

- On average, pilot students had social skills consistent with their developmental level by teacher report. However, publicly funded students were disproportionately represented among a small group of students with limited social skills.

- In general, pilot students exhibited high levels of learning engagement and were healthy. Pilot students were more likely to have had a serious illness in the past and to have been distressed by illness in the recent past, compared to classmates whose parents paid tuition.

- Pilot collaboratives provided critical support for the pilot programs, particularly in the areas of training and providing support services to the students and their families. The

collaboratives used a variety of methods to provide these services and to implement a complex diverse model of preschool delivery.

- In an individualized mentoring model, family child-care providers made substantial improvements in the quality of their services across the year, ending with overall high quality.

- Pilot collaboratives met the identified benchmarks necessary for successful collaboration. Although few collaborative leaders believed the program was sustainable without additional funding, aspects of the program—including supplies, materials, and professional development—may yield sustained benefits in improved teaching and in helping program directors align their curriculum and assessments with state standards to prepare at-risk students for kindergarten.

Given these findings, a locally tailored, mixed delivery system as practiced during the pilot appears feasible and is associated with important benefits to at-risk children and families and to local preschool communities. Yet, mixed delivery is complex and requires resource commitment to support programs, ensure and improve quality, and standardize data collection. We offer the following recommendations for future development of a diverse preschool delivery system:

- Use an on-site quality rating tool, such as the Quality Rating and Improvement System (QRIS), to monitor quality, identify areas for targeted improvement, and document progress. Consider establishing a rating at which programs can qualify for VPI funding.

- Provide targeted teacher training in supporting students' conceptual and language development, as well as in proper handwashing techniques and other personal care routines across all settings. Results from the individualized family provider mentoring pilot case study suggest that with targeted assistance, family providers can make significant improvements in their preschool environments in a relatively short amount of time. Investments in high-quality professional development for classroom providers and family providers has the potential to benefit students long after funds are used.

- Further research into differences between VPI programs across the state may yield greater insight into why some programs yielded higher preliteracy gains than others. Factors to be examined should include, at a minimum, how VPI eligibility is determined, program history with providing VPI, features of program administration and setting, and teacher and classroom characteristics, including teacher qualifications, curriculum used and how days are structured.

- Because programs more familiar with VPI tended to have higher preliteracy gains than did less well-established programs, we recommend that localities beginning mixed delivery prekindergarten start with a planning year to conduct a needs assessment, identify and coordinate with local preschools, establish relationships and expectations, and coordinate funding and data collection tools and procedures. Training or other technical start-up assistance should be provided.

- Consider a similar "pre-enrollment" period for schools interested in joining an established local preschool network.

- Provide statewide technical assistance and clear guidelines on ways to combine multiple funding streams to meet all legal requirements. Pilot collaborative leaders recommended dedicating a single staff member to this task.

- To track services and quality, establish a standardized system for collecting routine information, such as child attendance, teacher training, provision of health services, and therapeutic and support services provided to students and families. Templates for agreements between lead agencies and community service providers have been suggested (Governor's Working Group on Early Childhood Initiatives, 2008) and similar templates for data collection might usefully be developed and publicized.

- Liaison staff that bridged lead agencies and programs were identified as critical to managing the pilot preschool networks well. Depending on the size and scope of the local mixed delivery system, a dedicated staff position or a dedicated percentage of time devoted to network coordination is recommended.

- Findings regarding a subgroup of mostly publicly funded students showing limited social skills and greater health vulnerability underscore the importance of a comprehensive preschool system for at-risk students offering family, health and developmental support services in addition to high-quality classroom environments and instruction. Mechanisms for assisting these children need to be developed across a range of preschool settings. Having a well-trained staff member who can provide services and coordinate evaluations and referrals is important. Funds should be dedicated to this position, which could also serve as a family support worker.

- Establish a communication mechanism among Virginia school divisions and localities attempting to blend partners (both public and private) so participants can share information about how to successfully anticipate and handle challenges.

- Consider providing a nominal financial incentive for pilot school readiness collaboratives beyond this year. Local leaders valued the benefits of collaborating, but many do so as one of many components of their overall job function. Continuing to collaborate enhances the likelihood of sharing resources, which increases cost-effectiveness, and overall increases the quality and knowledge of all partners involved in providing the preschool experience. In addition, many collaboratives established new relationships with private providers in their area and expressed a desire to continue those relationships to continue to improve the quality of instruction for preschoolers in their communities.

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APPENDIX A
APPROPRIATION ACT
(2007 BUDGET BILL (HB 1650 / SB 750) ITEM 135 C. 15)

Appropriation Act language within the Virginia Preschool Initiative item (2007 Budget Bill (HB 1650 / SB 750) Item 135 C. 15) states:

"*Out of this appropriation, $2,557,266 is provided to the Department of Education to enter into agreements during the 2007-08 school year with school divisions to pilot early childhood development programs. Eligibility shall be limited to those school divisions that have existing partnerships with private and/or nonprofit providers as of the 2006-07 school year. School divisions that elect to participate under the pilot shall use the funding to expand the availability of early childhood education programs for at-risk students not served in those school divisions. Participating school divisions will be required to evaluate the providers using the Quality Standards checklist recommended by the National Institute for Early Education Research. The Department of Education shall compile and submit an interim report by December 1, 2007, to the Governor, and the Chairmen of House Committee on Appropriations, House Committee on Education, Senate Committee on Finance and Senate Committee on Health and Education that includes, but is not limited to, the number of school divisions participating, number of students served, and the benchmarks used to evaluate the pilot; and the final findings of these evaluations shall be submitted within ninety days after the completion of the school year."*

APPENDIX B
ADDITIONAL DESCRIPTIONS OF PRESCHOOL PROGRAM CHARACTERISTICS

This appendix describes classroom-based pilot programs in greater detail than provided in the body of the report. The details provide more information on structural features of programs, including whom they appear to serve, curricula used, and examples of teaching practices that illustrate some of the many creative methods that pilot teachers used to teach preacademic and social skills in developmentally appropriate ways.

Structural features: Funding

Programs received funding from a variety of sources, reflecting a diversity of child populations. Table B-1 shows the kinds of funding received by programs. Slightly less than half (46.2 percent) reported typically receiving state VPI funds, prior to the pilot initiative. Federal and local sources are also well represented. Most programs rely on a mix of funding sources, illustrating some of the complexities of fiscal management in mixed preschool delivery systems.

Table B-1. ***Types of Funding Typically Received by Pilot Programs, by Director Report (n=23)***

Funding Source	Percentage
State	
Virginia Preschool Initiative	46.2
Early Childhood Special Ed	11.5
State Head Start	11.5
Title I	3.8
Federal	
USDA	53.8
Child-Care Subsidy Funds	26.9
Head Start	15.4
Other Federal Education Support	7.7
Local	
DSS-Childcare	50.0
Local Taxes	26.9
Other Local Support	15.4
Parent Fees	61.5
Fundraising Events	46.2
Community Agency Grants	26.9
Sponsoring Organizations	7.7

Half of the preschool directors had difficulty estimating average socioeconomic and family characteristics of their preschoolers, as this information is not typically gathered by many private preschools. Parent surveys add some additional information, although the data should be treated cautiously, as only slightly more than half of parents returned surveys (63 percent of pilot

families). The education level of the mother of the average pilot child is a high school diploma, with some college but no degree. This is also true for other publicly funded children. Mothers of private-pay peers tended to be somewhat more educated, averaging a two-year college degree. Slightly less than half of the pilot children (47.7 percent) live with both their mother and father, while 40 percent live with just one parent (0.02 percent, or three children, live with only their father). Another 9.1 percent of children live with parents and grandparents. The educational levels reported here for publicly funded children are comparable to those of families participating in Head Start (Family and Child Experiences Survey (FACES); Administration for Children and Families, 2006), and lend strength to the interpretation that pilot students were socioeconomically disadvantaged, on average.

Program staff

Most private centers or schools had a director (who may have been the executive/program or site director) and an assistant director or equivalent. Forty-two percent also reported having access to family caseworkers as a regular feature of their program delivery; these staff members typically worked to develop life-plan goals with families, connect families with services, assist with housing or entitlements, and encourage and facilitate parent development, health, and employment.

Prekindergarten classes usually consisted of a lead and an assistant teacher. Three programs (hosting five pilot classrooms) had three teachers in a classroom, and others (two programs, three classrooms) augmented staff with student or foster grandparent volunteers. Three programs considered all classroom teachers co-teachers. At least four classrooms had ten or fewer children; all ended the year with a lead teacher only.

Staff qualifications and characteristics

Directors and pilot lead teachers were for the most part well educated. Seventy-four percent of directors and seventy-three percent of lead teachers held bachelors' or advanced degrees. Assistant teachers were less educated, with most having a high school diploma with some college courses, but no degree. Directors tended to be experienced in early childhood education, averaging 18.65 years in the field (range 0-40 years) and 10 years administering early childhood programs specifically (range: 0 - 23 years). Half of the pilot directors reported working at their current agency at least 5 years. As reported in the body of the report, lead teachers also tended to be experienced, though a sizeable group (23 percent) have worked in the field one year or less. Approximately 76 percent of lead teachers had specialized training in prekindergarten or preschool education; those who did not tended to have training in related fields (psychology, secondary education, social work, speech and language pathology). Forty-six percent of lead teachers held both a minimum of a bachelor's degree with specialization in preschool.

Lead teachers were both young and middle-aged, ranging from 22 to 60 (average age, 41 years). Like most elementary school teachers, they were overwhelmingly female (98 percent). They were ethnically and racially diverse. Approximately forty-seven percent identified themselves as white/Caucasian, 35 percent as African-American, 9 percent as Hispanic/Latina, and 11 percent as either Native American, Asian, Pacific Islander, or multiracial.

Wraparound and support services

Pilot programs provided a range of services to their children and families, as shown in Table B-2.

Table B-2. ***Types of Services Received by Pilot Programs, by Director Report (n=23)***

Services Provided	Percent
Parent Education or Family Literacy Programs	88.0
Extended Year Care	76.0
Special Services for Children with Special Needs (speech, Physical Therapy, service coordination)	72.0
Before School Care	64.0
Afterschool Care	64.0
Transportation	56.0
Healthcare or Social Services offered collaboratively by Service Agencies	44.0
Family Case Workers	40.0

Approximately one quarter of the private schools contracted with other providers for enrichment, special needs, or screening services, while some others relied on volunteers or free community screenings (i.e., Lion's Club). A substantial "value added" component of the pilot program for several private schools was that they received technical assistance and special services (particularly, health and speech screenings) from their school readiness collaborative, ensuring that every pilot child received vision screening and vision care, a pediatric check-up, and up-to-date immunizations.

Eighty-eight percent of programs reported offering some kind of parent education, training or family literacy programs. Most often, this training consisted of regular, sometimes monthly, workshops, with topics often suggested by parents themselves.

Another critical aspect of early childhood education is early identification and treatment of children's developmental delays and disabilities (National Association for the Education of Young Children, 2005). The pilot programs in general were doing relatively well in this regard. Eleven programs (46 percent) administered a formal screening test to all children prior to or upon enrollment, while another two programs benefited from region-wide developmental screenings conducted in the community on a volunteer basis every spring. Five programs conduct their own formal screenings (80 percent use the Denver II), whereas one locality conducts screening tests for all children as part of the eligibility process for state- and local-funded pre-K slots. Thus, pilot children in private schools in this collaborative all received developmental screening. Another program asked parents to complete a developmental questionnaire**.**

Seventy-two percent of pilot programs reported that they offered some type of special or therapeutic services to their students. Programs affiliated with Head Start tend to be particularly

rich in resources to identify and serve children with developmental delays. These programs have access to mental health workers who conduct twice-yearly classroom observation screenings, as well as speech/language and occupational therapy screenings. Two private schools put a particular premium on this feature of their preschool mission, and hired consultants to conduct therapy and consult with staff on a regular basis in speech and language, occupational therapy and behavioral health. In other programs, family workers, who help families become enrolled in needed services and may provide one-on-one classroom time with children, fulfilled the need of verifying that pediatric health screenings had been done and recommendations for health treatment have been followed. Local intervention services also worked with children in some classrooms.

All programs had procedures in place to identify and refer children and their families for evaluation. Twelve programs (50 percent) relied predominantly or exclusively on teacher observations to trigger an evaluation process. Most commonly, teachers would discuss their concerns with their director or other clearly identified staff member, who might also observe or initiate a more formal log to document their observations. If concern appeared warranted, the teacher and director would call a parent conference to discuss their observations and suggest a pediatric, or, if they had the resources, a more specialized evaluation. While most teachers reported this system working well, several expressed frustration with a lack of program resources to help children access evaluation and services. In other cases, pilot collaboratives were able to add staff or augment services to provide more support to both students and teachers. Recognizing the need for increased staff in classrooms with children who may exhibit more difficulties, three programs regularly employed three teachers in each classroom.

Working conditions

Staff turnover is an endemic problem in early childhood education and in the child-care field generally (Whitebrook & Sakai, 2003). The Bureau of Labor Statistics estimates an average 30 percent annual departure rate for lead directors and teachers in child-care centers (cited in Whitebrook & Sakai, 2003). Frequent center staff changes have been linked to poorer quality care, poor education, and negative impacts on children's development. Reasons for frequent turnover noted in the literature include low pay and poor benefits, stressful working conditions, and poor management.

Teacher salary and benefits

Pilot teachers who worked full-time earned an average of $29,525 annual salary before taxes, and assistant teachers who worked full-year reported earning an average of $16,659 (range: $9,744 – $32,900). Considerable difference existed between public and private school salaries. Salaries for pilot lead public school teachers ranged from $30,000 to $50,401, whereas the lowest private school salary was $16,000 per year, and 10 percent of private school teachers earned less than $20,000 per year. The best-paid private school teacher who reported income[21] earned $47,040. These differences in public and private school salaries reflect patterns found in other studies of state-funded prekindergarten programs (Clifford et al., 2005).

[21] Twenty percent of teachers who completed surveys declined to report salary information.

By director report, virtually all programs (96 percent) offered paid sick leave, and 81 percent of programs offered their teachers paid vacations. Eighty-five percent at least partially paid for health insurance, and 82 percent offered staff retirement plans. About half (52 percent) reimbursed professionally-related tuition expenses, and 42 percent offered at least partially funded dental coverage. Paid family and maternity leave were rarer: only about 31 percent of programs reported offering these benefits. More programs (39 percent) accepted unpaid maternity leave**.** Paid vacation was substantially higher in this group than the Multi-Site prekindergarten study (58 percent of teachers had paid vacation), but this again may reflect sample differences. That study had many half-day programs, as well as programs that did not run throughout the year, which may have affected vacation benefits. The pilot programs as a whole had slightly lower rates of retirement benefits compared to the larger study (Clifford et al., 2005).

Table B-3. ***Types of Benefits offered by Pilot Programs, by Director Report (n=23)***

Benefits	**Percent**
Paid Sick Leave	96.2
Fully or Partially Paid Health Insurance	84.6
Retirement Plan	80.8
Paid Vacation	80.8
Tuition Reimbursement	53.8
Fully or Partially Paid Dental Insurance	42.3
Unpaid Maternity Leave	38.5
Paid Family Leave	30.8
Paid Maternity/Paternity Leave	30.8

Job and position turnover

We estimated job and position turnover rates in three ways. First, we examined rates of director and teacher change across the ten months of the pilot project (September 2007 – June 2008). Next, we report director estimates of changes in their programs in relation to previous years. Finally, we report lead and assistant teacher reports of their intentions to stay or leave their job. Job turnover refers to a staff member leaving their position, though not necessarily the child-care field. Position turnover means that a staff member changes positions within the agency (Whitebrook & Sakai, 2003).

Director and teacher turnover during the pilot year

Two site (of 9) and three program (of 18) directors changed jobs over the year. One site director was dismissed, one left voluntarily, and two program directors moved to different positions within their organizations. It is not clear whether the third program director left voluntarily or was dismissed.

Six lead and 12 assistant teachers changed jobs or positions over the year; therefore, turnover rates are 13 percent (6/47) for lead and 29 percent for assistant teachers (12/41). Two lead teachers with elementary teaching licenses left due to difficulties working with younger children,

according to program directors who participated in the decision to change the teacher. One lead teacher moved from the locality, another was moved to a different classroom due to inexperience and a difficult class, and two teachers were moved for unknown reasons. We also generally do not know the reasons for assistant teacher changes. In one case, the lead teacher reported the assistant wanted to stay but made too little money. In another case, the assistant teacher moved with her colead teacher to a different classroom. A third assistant teacher moved into a lead teacher position.

Teacher turnover in the pilot initiative was lower than the annual national average for lead teachers, though about average for assistant teachers. When public and private pilot sites were examined separately, turnover was similar: 17 percent (1/6) of public and 12 percent (5/43) of private pilot sites changed lead teacher jobs or positions. Compared to the past three years, most directors (57 percent) felt their program lead teacher staff turnover was comparable, while 29 percent reported it was higher and 14 percent reported it was lower. Similarly, 67 percent of directors reported that this year's assistant teacher turnover rates were equivalent to the past three years, while 14 percent reported higher rates and 19 percent reported lower rates for the pilot year compared to previous years. Most lead (60 percent) and assistant (78 percent) teachers who participated in the pilot program plan to stay in their positions next year, according to director and teacher surveys**.** Seventeen percent of lead teachers planned to leave, 15 percent were undecided, and 4 percent reported that the choice was not theirs to make. Overall, the pilot lead staff appears relatively stable, at least for the next year.

Staff satisfaction

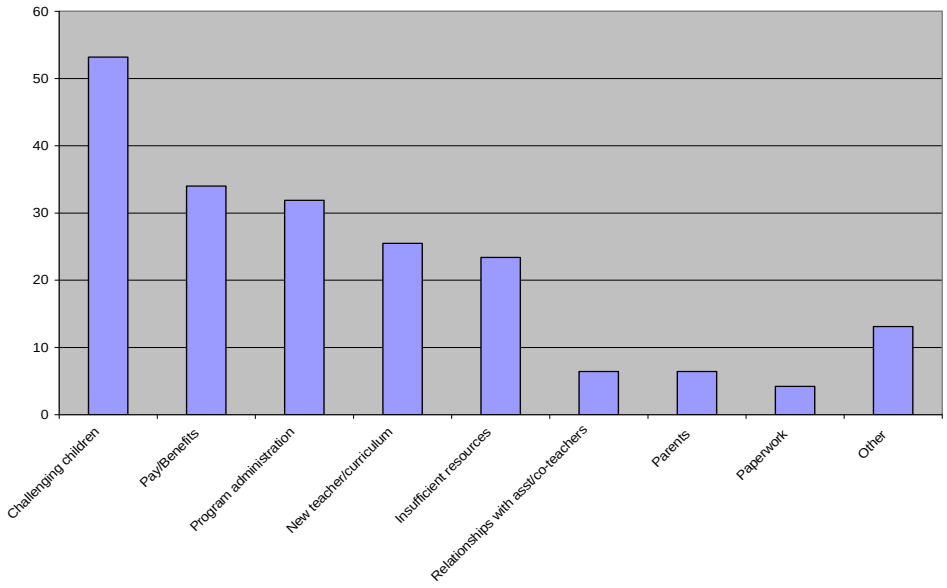
These results suggest reasonable stability for the pilot teachers who may have benefited from their experience this year. One reason for the relative stability may be that teachers reported themselves quite satisfied with their positions. This does not mean teachers did not find the job stressful (this is discussed below), but may be a promising reason for their relative stability.

Staff stress: How much and what causes it?

"Burnout" is a common problem in the educational field and in early childhood education in particular. The pilot teacher longevity and retention rates reported above suggest that programs may be buffering staff from this burnout to some extent. Pilot lead teachers reported relatively moderate stress levels this year, although 34 percent reported finding the job "quite" or "very" stressful. Figure B-1 illustrates how many teachers reported different types of stressors.

The greatest challenge teachers experienced was in working with challenging children (53 percent), followed by low pay and benefits (34 percent). Program management was also a common source of stress (31.9 percent). Being new on the job or to the curriculum was stressful to about a quarter of the teachers (25.5 percent), and about a fifth noted insufficient resources. Relationships with coworkers and parents were not overly stressful for most, with only 7 percent indicating this was a source of stress for them.

Figure B-1: Sources of Lead Teacher Stress, by Percent



Consistent with the literature, the other most stressful aspects for preschool teachers reflected relatively low pay and benefits, and conflicts with program administration. Addressing both of these stress points will be important in designing a high-quality preschool delivery system, as these factors are highly associated with higher teacher turnover, including teachers choosing to leave the field (or never join it, due to low wages and benefits).

Staff Training

According to program directors, staff received annual training ranging from 8 to 93 clock hours in 2006-2007, with an average of 36 hours (*SD* = 22.562). During the pilot year, teachers reported receiving from 0 (*n*=2) to 120 hours of professional training, independent of their own educational pursuits (*M* = 31.3, *SD* = 26.26) and not including medical or routine health trainings. Not including routine medical training (such as First Aid or CPR), 46.2 percent received 24 or more hours of professional training by teachers report.

Forty-one percent of programs had prior recent experience with VPI, according to director surveys, and 4 percent of pilot teachers had previously administered PALS-PreK. Most programs, then, received PALS-PreK training as well as training more specifically tailored to their program or locality. Training ranged from new staff orientation, to health and safety requirements (CPR/First Aid, MAT, Blood Borne Pathogens – not included in above estimates of professional development), to curriculum and assessment, to child development and how to work with families, cultural diversity, difficult behavior and special populations. Some programs featured special art or preacademic enrichment trainings or brought in a specialist to teach children – and teachers – particular techniques, most commonly art or music.

Staff also demonstrated continued professional educational enhancement across the pilot year. Examining the 37 classrooms in which lead teachers remained the same from midfall to the end of the academic year, two teachers received prekindergarten specialization, one through licensure

and the other through earning a CDA. This represents a five percent increase in formal pilot prekindergarten qualifications from the fall. Of assistant teachers who remained in the same classroom and who completed surveys, one earned her CDA this year and two expect to earn it by fall of 2008. Forty-one percent of pilot lead teachers reported continuing their professional education, as did 55 percent of assistant teachers, with most degrees expected by December 2008, May 2009 or in 2010. The teachers in this sample appear to be largely motivated to increase their professional development.

Pilot classrooms: Characteristics of students, activities, and curricula

Children funded by pilot revenue attended a variety of programs and classrooms with a variety of peers. Classes were ethnically diverse for the most part, although this varied by locality and school. Twenty-three percent of classrooms (9/40, with three classrooms not reporting) had exclusively minority children, approximately seven percent were exclusively majority (White), and five percent were exclusively African-American.

Sixty-one percent of pilot classrooms consisted exclusively of children who spoke English as their home language. Four classrooms (10.5 percent) contained almost half (eight) or almost all (14/17) children who were English language learners, though not all of these children were necessarily pilot-funded. One pilot classroom, however, was designed as an English-immersion class for non-native speakers, and all pilot children in that classroom were English-language learners while their peers were native English speakers. Besides English, home languages included Spanish (37.2 percent), Arabic, Vietnamese, Italian, and Japanese.

Two pilot classrooms were designated as special needs inclusion prekindergarten programs, and each had one child with a severe disability. Other classrooms also reported having children with special needs or disabilities, most commonly speech and language disorders or difficulties, though at least one private school classroom had a student with a severe disability, by teacher report. Those programs that had students with Individualized Education Plans (IEPs) or who were receiving services ranged from one child to six children per classroom, with a teacher in one classroom reporting during the winter classroom observation that more than half her class (10 students) received some kind of special service or had a disability. The great majority of IEPs were for speech and language delays, followed by attention deficit, hyperactivity disorder and general developmental delays. Most of these children received services in the classroom or in a separate room in their school. A minority were transported for some part of the day to a special education school for more intensive services and specialized instruction.

Curricula and the Virginia Foundation Blocks for Early Learning

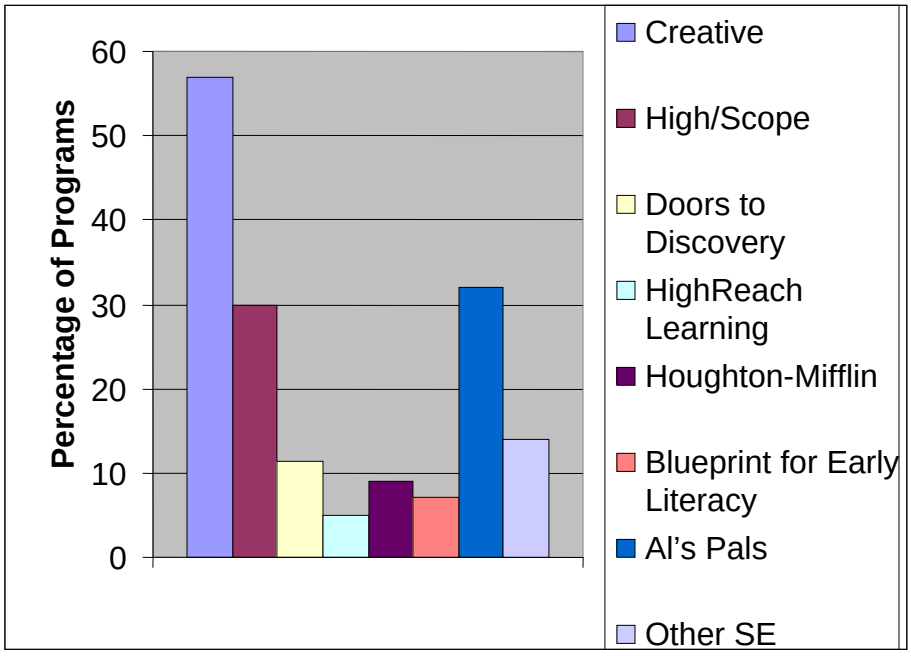
Who determines the curricula?

Some pilot localities mandated particular curricula, in whole or in part, that corresponded with a coordinated VPI, Head Start, or family provider instructional program. Others provided guidance, technical assistance or mentoring to help programs align their curriculum with state standards. Local school divisions ultimately sanction curricula for VPI that meet program

requirements: comprehensiveness and alignment with the *Foundation Blocks for Early Learning* (Virginia Department of Education, 2007c).

Figure B-2 depicts curricula used by programs, according to directors and teachers. Pilot programs used a variety of curricula, and localities differed in the extent to which they approved private school instruction prior to implementation. Some private schools adopted local VPI curricula, whereas others retained their previous curricula. Three classrooms used curriculum and were trained by a regional Head Start consortium that collaborated with but was largely independent of school divisions. In all, seven programs, or 29 percent, changed their curriculum in the fall due to pilot participation.

Figure B-2. ***Pilot Program Curriculum, by Percentage***



Note: Programs may use more than one curriculum. SE = socio-emotional/personal development curriculum

Creative Curriculum, a comprehensive, developmentally focused program widely used by child-care centers and Head Start, topped the list, with 57 percent (25/44) of pilot classrooms using it. High/Scope was another popular comprehensive, developmentally oriented curriculum used in 30 percent of classrooms. Doors to Discovery, described as a comprehensive literacy and learning curriculum, was taught in five classrooms, or 11.3 percent of the sample. Two classrooms (5 percent) used other comprehensive curricula, such as HighReach Learning (Passports: Experiences to PreK Success), while one used A Beka. Several programs reported adapting comprehensive curriculum to align with the Virginia's *Foundation Blocks for Early Learning* or using the *Foundation Blocks for Early Learning* to design local curriculum. Two programs (four classrooms) noted that they used the philosophy and aspects of the Reggio Emilia pedagogy, which builds curriculum through student-teacher interests and ongoing projects, while one program also used tenets of Montessori teaching.

Only one program reported using an explicit mathematics curriculum (Growing with Mathematics), and three programs used an explicit literacy curriculum, Blueprint for Early Literacy (though in practice, it appears to cover other preacademic areas, as well). Science and social science, like literacy and math, were generally taught through the comprehensive curricula, augmented by field trips or special events (such as learning about different cultural traditions through holidays). Two programs taught a foreign language (Spanish and American Sign Language). Ten classrooms had explicit curricula devoted to motor skill development, and several programs in addition reported teaching yoga movements to the children for use on rainy days. Others incorporated music and movement skill development within their morning routine, often using CDs designed for this educational purpose.

Programs employed a range of curricula and instructional methods to teaching personal and social skill development. Al's Pals, a personal development, social skills and health curriculum developed by researchers at Virginia Commonwealth University, was used in 14 classrooms (32 percent). One program used parts of several personal and social skill curricula, such as PATHS/Turtle, Shure's I Can Problem Solve, and Al's Pals. Individual programs used other curricula or learning formats, such as Becky Bailey's Loving Guidance/Conscious Discipline program and Marva Collins' Daily Affirmations. Social and self-regulation skills are also incorporated into Creative and High/Scope curricula and an important part of their assessments.

Music, art and motor skills were most commonly taught through comprehensive curricula that focused much instruction through learning (or "work") centers, through small group projects using art to teach motor and thinking skills, through subcontracted specialists, or through arts instruction taught in schools. A few programs also hired artists to come for extended periods, as a sort of short-term teaching residency, and provided intensive art or music instruction. One program had a long-standing, staff-developed music program. Virtually all programs incorporated music and movement into daily circle time routines or movement periods, as well as transitions or listening music during naptime. Art was a particular passion of several program directors, who worked closely with their staff to develop appropriately challenging art projects, sometimes extended over several days. One director regularly reviewed children's drawings to assess their cognitive and motor development, stating this was her most effective means of assessing their development and progress, and several teachers commented they felt drawings of children’s selves were highly useful and recommended their use in statewide assessments.

Most teachers received training specific to their curriculum (86 percent) and reported receiving ongoing training and supervision on it (83.7 percent). Approximately one-third of staff across programs had at least one and sometimes more than one new curriculum to learn this year, with 25.5 percent identifying this as a significant stressor. While some teachers were observed to adhere strictly to a prespecified daily lesson plan based on the curriculum, others used it more as a general guide and planned activities around children's developing interests that coincided with themes or content extended in the curriculum. Alternatively, some teachers relied on packaged curricula exercises for some content areas.

Although programs used comprehensive curricula, many directors noted in interviews or surveys that the pilot experience had been instrumental in helping them decide to adjust or make substantial changes to how they use their curricula. Approximately 80 percent of program

directors stated they were in the process of making changes due to their pilot experience. Most changes centered around curriculum and assessment, helping teachers see closer links between them, being more systematic about assessment, changing the type or schedule of assessments, and aligning their curriculum more closely with the *Virginia's Foundation Blocks for Early Learning*. One program that had relied mainly on the *Foundation Blocks for Early Learning* for its comprehensive curriculum plans to purchase a comprehensive curriculum (Houghton-Mifflin) for next year. Increasing or accelerating staff development was another area for future intervention; one program plans to send a staff member to CLASS training. Another program plans to increase activities to involve families.

Thus, it appears that the pilot experience has oriented program directors to pay closer attention to their program's curriculum and assessment processes, in line with the state's guidelines for prekindergarten. While we cannot say for certain what aspects of pilot participation spurred these decisions, it seems likely that participating in a local school readiness collaborative or becoming more formally part of a preschool network may have contributed to this positive outcome.

In the fall, teachers reported that they hoped to learn more about early childhood education from the pilot program, and many noted in the spring that they had enjoyed the extra trainings or working with a different population. Several teachers also reported on surveys frustrations or concerns that their program lacked sufficient resources or focused excessively on "rote" preacademic learning at the expense of more focus on social development. Some teachers also expressed concern regarding the cultural appropriateness of an aspect of the student-level assessment (the nursery rhyme portion of the PALS-PreK screener), and a handful of assistant teachers expressed frustration with not being perceived as competent (by whom it was not clear) if they did not hold a college degree.

Examples of observed teaching practices

Below we list some ways teachers set up the classroom environment to stimulate children's engaged learning, and methods of teaching specific concepts. While grouped into general content areas to reflect the *Foundation Blocks for Early Learning*, in practice considerable overlap existed within single activities.

Language and literacy

Language activities took place throughout the day, in formal lessons and more richly, through informal interactions and conversations. Center time, in which children chose or were assigned to different activity stations, were typically occasions for lots of talk, particularly between peers. All classrooms had specific language-based centers, such as reading and listening areas (where books could be "read" while listened to on tape), writing, and dramatic play areas. Most classrooms also featured at least one computer, which typically featured letter-sound or related phonics software games.

In all classrooms but one, teachers read to children as a group at least once and often more than once per day; children also usually had numerous opportunities to look at books on their own and

this was frequently encouraged during transitions (for instance, to start off nap time while peers were brushing teeth or otherwise getting ready). Fewer instances of informal reading to children were observed, and mostly took place in early morning prior to the official start to the day, often when fewer children were in attendance. Observers noticed teachers frequently building children's vocabularies by adding synonyms or explaining new words. Specific curricula taught language and literacy skills in a variety of ways, such as through themes, cycling through the alphabet (e.g, "Today we focus on the letter B…"), small group exercises, and shared reading. Below we describe some examples of creative ways that teachers taught language and literacy skills:

- A teacher placed an enormous white "mitten" in the center of the circle. She read aloud *The Mitten*. For each animal in the story that crawls into the story boy's mitten, a child could volunteer to go inside the sewn mitten in the circle center. As the mitten grew tighter with more children inside, they enacted the story, with some being "prickly" like the hedgehog, others blind like the mole, and others big and furry, like the fox, badger and bear.

- Children took turns enacting key roles in a community helper scenario. The lead teacher set the stage (a policeman discovers a child has lost a toy) and asked questions to encourage the children to talk and solve the problem. Audience children could participate by making suggestions to the actors.

- At morning circle time, each child was encouraged to share a thought with her or his peers. If a child did not speak, the teacher asked a question, such as, "Can you tell us about a dream you had?"

- Children pretended they were cars on a road, using tricycles during outdoor play. Following a child's stopping by her, a teacher set up a "gas station," with herself as the attendant. Children were encouraged to tell her what they needed, exchange "money," and say why they needed the gas. In this playful interchange, children and teacher both shaped the game, with the teacher scaffolding language development by insisting and encouraging children's verbalization of their needs and interests.

- Children initiated conversations at mealtimes, often facilitated by teachers offering alternative possibilities or asking questions.

- Children danced to an alphabet version of the "Macarena."

- Children wrote or drew in personal journals each day. Teachers reviewed them with the children weekly and wrote the children's words describing some aspect of what they had done, which teachers placed into the journals.

- Children were required to write their names on their artwork, which the teacher reviewed and corrected.

Mathematics and science

In addition to standard exercises described by curricula that classrooms used (for example, sorting shapes into sizes and verbally identifying bigger and smaller, or estimating beans in a jar, or stringing together plastic link-chains to measure table lengths; conducting circle time routines that often included observing the weather and using a calendar), classroom observers witnessed many instances of creative lessons or ways that teachers "seized opportunity" to introduce or expand children's understanding of mathematical and scientific concepts. Some examples are described below.

- As children are about to put toys into a balance beam during free time, a teacher passing by asked: "*Which is going to be heavier*?" Children each pointed to their own side of the scale. They all observed the scale swing in favor of one object. T: "*Which is heavier?"* Children point to the weighted side of the scale. "*Yes – see how that car weighed it down lower than this one? That means it's heavier*."

- A teacher spread plastic hoses of different lengths on the floor during center time for three children who had been dressing up as firefighters but were not engaged in meaningful play. She asked them to sort the hoses by length, from shortest to longest. Two of the three children did so, and she returned later to review it with them.

- Children lined up to go outside to play. The teacher asked a child to count how many classmates were in the line. The child counted correctly but did not include herself. T: *"Are you part of the class?"* When child nodded, the teacher told her she needed to count herself in too and asked her to recount, which she successfully did.

- At lunch, a boy acted very concerned. "*Ms. ----, I just swallowed my apple seed! Will I have a apple tree growing in my stomach just like you told us seeds grow into trees*?" The teacher asked him what seeds needed to grow. "*Sun*?" (Other children also chimed in: "Water," "Dirt".) The teacher used this occasion to review concepts related to the growing cycle while reassuring the child that the seed would not harm him and praising his understanding of cause and effect.

- During circle time, all children and the teacher held hands and collectively made shapes from their movements.

- The teacher showed the class three objects and named them. She passed them around so each child could feel and smell them and asked them to guess which tasted sweet, which salty and which sour. She asked children to taste the objects and report what they thought, then recalled for the class what they thought and if or how they changed their minds when they tasted the objects (M&M, popcorn and pickle). She encouraged the children to repeat the taste names and talk about how the taste made their mouths feel.

- During daily circle time, the teacher asked children to react to classmates' estimates of the weather outside with a thumbs-up or thumbs-down signal. If the child's signal varied

from the "weather-helper's" guess, she asked them to explain their reasoning and invited other children to chime in.

- Children built a hibernation cave from a cardboard box, painted it and put in stuffed bears with a sign, "Closed for winter." When observers returned on a second visit, the cave was gone and the teacher explained that with spring, the class "released" the bear to find food after the long winter hibernation.

- Children were each given a long piece of yarn to take onto the playground with them. They were asked to measure their shadows in different places on the sunny playground. Teachers asked the children why they thought shadows got bigger or smaller when the children moved to different spots or moved their bodies.

- Several programs had spring gardening projects to teach life cycle and ecology principles.

- Several programs featured weekly cooking projects.

In summary, pilot classrooms were generally complex, rich environments with well-stocked centers and hands-on activities. Didactic, teacher-driven whole group instruction time was short in most instances, less than 15 minutes on average, with some notable exceptions. At the same time, as reflected in the ECERS-R Activities and Structure scores, children in most programs spent less than a third of their day in child-chosen, center-based activities. Observers noted that some teachers spent little time with the children during center time, appearing to regard it as "free time" rather than opportunities for learning that they could help enhance. As illustrated above, other teachers were skillful at enriching play to extend learning and using centers as educational centerpieces. Targeted training on how to most optimally use centers to enhance children's learning might prove beneficial.

APPENDIX C
CLASSROOM OBSERVATIONS, TRAINING AND PROCEDURES

Three raters were trained on both the CLASS and ECERS-R observational measures; one rater served as a back-up rater in case of illness or other emergency and did not complete any pilot observations. CLASS training took place in late August 2007. A certified CLASS trainer came to Virginia Tech for a two-day workshop, after which the two pilot raters were certified as trained CLASS coders (reliabilities were 92 percent and 89 percent; pass rates are scoring 80 percent of all dimensions scores exactly or within one of the master codes). The raters practiced together locally during the fall.

In October, both raters participated in the QRIS portion of the ECERS-R training administered by Child Development Resources. In December, Dr. Thelma Harms, an ECERS-R author, conducted three live observations with all three raters in Blacksburg. All raters achieved acceptable reliability with the master coder, scoring above 85 percent exactly or within one scale score point with Dr. Harms' ratings. (Eighty-five percent matching with a master coder is the ECERS-R standard reliability pass rate; T. Harms, personal communication, December 6, 2007).

In order to maintain good reliability between themselves, raters observed classrooms together at least once per week during the primary rating season (late January through March), and never more than three consecutively independently. In total, raters observed 13 classrooms together (35 percent of the observed sample), averaging 86 percent inter-rater reliability within one point on each measure (with two classrooms removed, CLASS reliability averaged 91 percent agreement). Each observer rated independently and raters compared scores immediately following each joint observation. Differences were discussed and, in all but two instances, averaged together to create a final score. To minimize halo or impressionistic effects, total scores were not tallied, but recorded in a database and scored by computer program.

For efficiency, the same rater completed both observational rating systems at the same visit. In all-day programs or those with beforeschool programs, observers spent the earliest part of the day conducting ECERS-R ratings. When the academic or main part of the program day began (usually between 8:30 and 9 a.m.), raters switched to the CLASS and completed four consecutive observational cycles. Observers followed CLASS guidelines in stopping cycles if the class went onto the playground or if a significant interruption occurred (for instance, two classrooms had fire drills). Due to interruptions, in two classrooms five CLASS cycles were conducted, with one cycle truncated. After two hours with the CLASS, observers completed the ECERS. A typical visit took five to six hours and covered most of the classroom day. Observers stayed in the classroom for as long as it took to complete all scales from all measures. Teachers were interviewed regarding procedures not observed, per ECERS-R instructions (Harms, Clifford, & Cryer, 1998, 2005).

Eighty-four percent of classrooms were observed by at least one rater (86 percent of the original sample). One classroom was observed twice, as the lead teacher called in sick the morning of the observation. Each program site had at least one classroom visit, and most had all their classrooms observed. Five classrooms in one program were not observed due to insufficient resources (this site had a single pilot child in each of ten classrooms); half of all classrooms at

each of this program's sites were observed. One classroom was being painted when observers arrived, and a pilot child was added to a new classroom, which we did not learn about until after observations were completed.

To minimize potential confounds of timing with locations or schools, localities and schools with multiple classrooms were observed at least several weeks apart in all but one case. That is, a subgroup from a locality or school was rated early and another subgroup rated later.

APPENDIX D
A DISCUSSION OF PROGRAM PERSONAL CARE ROUTINES

Pilot programs operating in classrooms averaged ECERS-R scores around four or five for all scales except for Personal Care Routines, which fell into the low range. Because virtually all programs scored low in Personal Care Routines (PCR), we discuss this scale in particular, to account for this result.

Personal Care Routines: Areas of particular difficulty

Analysis of PCR scale scores indicate that most programs scored relatively poorly on this dimension due chiefly to three factors: (1) inadequate table washing technique; (2) children and staff not consistently or correctly washing hands after activities or coming into the classroom; (3) insufficient mulch or otherwise inadequate fall zones on playgrounds.

Inadequate table washing technique

The ECERS-R system bases health and safety standards on published public health and playground safety standards (T. Harms, personal communication, December 6, 2007). According to these standards, tables need to be washed first with soap and water; dried; then sprayed or wiped with a bleach-water or other sanitizing solution and air-dried for at least 10 seconds prior to children coming to the table. Raters observed this procedure followed consistently by very few programs. Virtually all programs washed tables in the classrooms, particularly prior to meals. Most common errors were sanitizing without washing first, and/or wiping off sanitizing solution immediately following application (thereby canceling out its effects). These errors resulted in overall low scores (generally "1" or "2") on the relevant subscale (Meals/Snacks). As meals tended to be nutritious and mealtimes were often pleasant and conversationally rich, many observed programs would have scored substantially higher on this subscale if proper procedures had been followed.

Hand washing

Reduction of germs and the resultant spread of illness in childcare and education settings are an important public health goal, and one that most private programs receive regular training on as part of licensing requirements. Virtually all private school teachers reported they had taken "Blood Borne Pathogens" within the past year, and health education is a prominent part of many preschool trainings. The ECERS-R places particular emphasis on hand washing, with three subscales containing handwashing items.

Pilot teachers appeared aware of the importance of hand washing, as indicated by the fact that at least 80 percent of children washed their hands prior to meals, and raters observed many teachers talking to children, formally and informally, about why hand washing is important ("to keep you from getting sick,"; "to keep us all healthy,"; "so you don't eat germs off your hands."; etc.). Where programs had difficulty lay in the frequency of hand washing and following recommended procedures.

To pass this indicator on the ECERS-R, three-quarters of children and staff must wash their hands under a variety of conditions, including entering the classroom, after sneezing or exposure to contaminants, and after messy activities (hand washing after using the toilet is another important criterion, contained on a different scale). Programs that involved several transitions in and out of the classroom had a higher handwashing burden, and although all classrooms engaged in hands-on activities, not all insisted that children wash their hands after art or other messy activities. While most children washed their hands upon entry, this was more rare upon re-entry after outdoor or other activities, unless re-entry directly preceded snack or lunch. Many programs directed small groups of children to wash hands before eating, but allowed them to return to circle or otherwise recontaminate their hands before sitting down to eat. Classroom observers seldom saw staff wash their hands throughout the day, except prior to serving or eating food.

Correct hand washing procedures were also a challenge. To minimize spread of germs, soap and water are to be used, washing for approximately 20 seconds, and using a paper towel or other implement to turn off the faucet or activate a hand-drier (Cryer, Harms, & Riley, 2003). Few classroom staff observed or instructed children in all these procedures, except through charts on the wall. When staff did observe and instruct, typically comments focused on the use of soap or reminders to dry hands, and ignored recontamination through contact with faucets or driers. Other programs passed out hand sanitizer that children squeezed into their palms. This is not recommended, as young children's skin detrimentally absorbs excessive amounts of the active ingredient (T. Harms, personal communication, December 6, 2007). While it was clear in some classrooms that children had been taught proper hand washing techniques – raters observed many students in these classes independently using paper towels to turn off faucets after washing, for instance – these classrooms were the exception.

Examples of ways to minimize germ contamination were observed in some classrooms, and include:

- Use of a foot-pedal trash can with a lid
- Assembly line hand washing, in which a teacher handles water taps and hands out paper drying towels, which children deposited into a basket, later emptied.
- Ensuring easy access to paper towels so that children handled only the towels
- Leaving the tap running between children successively washing hands

It is not surprising that programs had difficulties adhering to the proper hand washing procedures, given the amount of time and supervision hand washing can take up in a day already packed with activities. Programs that lack toilets or easily supervised sinks in the classrooms face a particular challenge in this regard.

Playground safety: Mulch and other matters

Another area that the great majority of programs had difficulty with was in providing the highest standard of playground safety. Pilot programs scoring well on this dimension tended to do so because they lacked stationary playground equipment – using a field with portable materials, such as balls, hoola-hoops or tricycles – or, in one case, because they had had a shipment of

mulch within a few days prior to the classroom observation. Providing an appropriately stimulating physical outdoor environment while maintaining standards set by U.S. Consumer Product Safety Commission, as used by the ECERS-R (Cryer, Harms, & Riley, 2003), appears to be a considerable challenge.

The most common difficulty, by far, was insufficient fall zones. Fall zones are described as padding or other absorptive materials placed beneath high play equipment that minimize injury should a child fall from the equipment. For play equipment five feet higher or less, a minimal depth of six inches of mulch or similar material is required (Cryer, Harms, & Riley, 2003). As prekindergarten children typically require equipment higher than this for age-appropriate physical development, programs that provided this (the majority of pilot programs) also had to keep up considerable padding material. With heavy and enthusiastic daily use, mulch becomes easily compacted. Mulch depths typically ranged from less than one inch, to three inches (one program had four inches and one met the six inch criteria). Observers did notice a few children falling from play equipment during observations. Despite the inadequate depth of padding, only one child appeared distressed by falling and none were clearly hurt.

Most of these and related deficiencies in personal care routines can be relatively easily remedied with additional targeted training and attention to schedule to minimize routine need for extra hand washing. Were these difficulties alleviated, many programs would quickly score much higher on this scale, as many already followed higher-order items. Attention to reducing transitions, particularly in and out of the classroom, would help reduce handwashing burden, as well.

APPENDIX E
ANALYSES OF PREACADEMIC AND SOCIAL SKILLS TECHNICAL INFORMATION

This section describes statistical, particularly Hierarchical Linear Modeling (HLM), analyses used in the report.

Student preacademic gains.

In the absence of a control group, to estimate a possible preschool effect we employed the technique used in the Joint Legislative Audit and Review Commission (JLARC) Report (Rotz, et al., 2007) to obtain predicted gains in PALS-PreK scores that may not be simply the result of being older and having more time to be exposed to preacademic concepts outside of preschool. First, because students are clustered in different classrooms, we cannot assume students' observations are independent. That is, students who attended classes in the same classroom may be more similar than students from different classrooms. If this is the case, a necessary assumption of linear regression analysis (the assumption of independence) is violated, and any results from such an analysis will be biased.

We therefore began by testing for the possibility that students in the same classroom are similar by fitting a basic variance components model with classroom as a random effect. This model indicated that, indeed, the clustering effect of classrooms must be taken into account. The intra-class correlation coefficient for the fall PALS-PreK score model was 0.187 and statistically significant (Wald Z = 2.27; p = .008). This indicates that approximately 19 percent of the variance in fall preliteracy skills is due to differences between the classrooms within the pilot program. The fact that this is a substantial and significant amount of the variance clearly indicates that we cannot treat the observations as being independent (see Norusis, 2005; Raudenbush and Bryk, 2002). Therefore, the use of Hierarchical Linear Modeling is necessary to account for this clustering effect and correct for its biasing influence.

We first regressed the fall PALS-PreK scores on a number of factors while including classroom as a random effect to correct for the clustering effect of classroom. We then used the coefficients from this analysis to calculate the predicted spring scores for each student. The results of this analysis are presented in Table E-1.[22]

Since all the factors in the analysis have the same value in the fall and spring except for the students' age, the difference between the two predicted scores is the result of students being older at the time the spring test was administered. By estimating the expected difference, the effectiveness of the preschool programs can then be determined by calculating the difference between mean actual improvement and mean expected improvement.

[22] Throughout these analyses, maternal education and age were centered to make the results more interpretable. That is, the mean age and mean mother's education is set to zero (see Aiken & West, 1991).

Table E-1: Results for Hierarchical Linear Model Predicting Fall PALS-PreK Scores

	B	Standard Error	T	Significance
Constant	-61.056	20.09	3.04	.003
Age (in months)	1.094	0.28	3.84	< .001
Male	-4.060	2.12	1.91	.057
Hispanic	-10.195	3.69	2.76	.007
African American	2.656	2.91	0.91	.364
Asian	-5.713	6.97	0.82	.413
Other Race	1.527	3.93	0.39	.698
Disability Status	-7.963	3.37	2.36	.019
Mother's Education	3.306	0.61	5.43	< .001

Classroom fit as a random effect. ICC = .174

Using this technique, we estimate that the average gain in PALS-PreK scores from fall to spring would be 7.16 simply due to the natural effects associated with the children aging. This estimate of the "age effect" is nearly identical to that found in the JLARC study (Rotz, et. al., 2007). While maturation effects would likely improve their scores by approximately seven points, the pilot initiative students improved their scores by more than 20 points. Therefore, the preschool experience improved children's scores by approximately 13 points beyond what might otherwise be expected.

Predicting Gains in Preliteracy Scores

We used hierarchical linear modeling (HLM) techniques to analyze the gains in preliteracy skills so we can account for the significant clustering effect reported earlier. We conducted the analysis on a sample of the 132 students for whom both fall and spring scores were available, data were complete, and, for private-pay children, whose parents gave consent for their child to be included in the study. We included individual-level and classroom-level predictors in the analysis and tested for several interactions both within and between these levels. In addition to the funding distinction of private-pay, pilot, and other funding, we included gender, ethnicity (a series of indicator variables for African-American, Hispanic, Asian, and other races with White as the comparison category), disability, mother's education, child's age, and Limited English proficiency (LEP) status. At level two (i.e., classroom level), we included if the lead teacher had pre-K specialization (yes equal 1, no equal 0), the type of school (private equals 1, public equals 0), if the lead teacher had a bachelor's degree (1 equals yes, no equals 0), and the four CLASS measures of emotional support, instructional support, classroom organization, and student engagement. We also tested all two-way interactions involving funding-type and the level-two variables to determine if pilot children performed differently than their classmates in various types of preschool settings. None of the interactions was statistically significant; therefore, these were eliminated from the model.

The only variable to achieve statistical significance in the model was mother's education (b = -2.57; p = .013). When controlling for other factors, those students whose mothers were more educated improved their scores less than did those students whose mothers were less educated.

This effect again reflects that students who perform well on the PALS screening tool have limited room to improve their score. As a screening instrument, the PALS assessment was not designed to distinguish performance for children who are well established on their path towards proficient reading. As such, there is a limited range of possible scores for higher performing students. We emphasize that mother's education is positively related to the spring scores; therefore, well-educated mother's children do better, but their children improve less. The intra-class correlation coefficient for the model was .353, indicating that approximately 35 percent of the variance in preliteracy gains was due to between classroom effects.

Numeracy Analysis

As reported, students made significant improvements on both their verbal counting and one-to-one correspondence counting from fall to spring. While these improvements in early numeracy skills represent significant advances from the fall, once again, students may score higher in the spring simply due to being older and having had more time to be exposed to these concepts outside of preschool. To detect a possible preschool effect, we repeated the analytic strategy described above, first testing for classroom clustering effects. The HLM model indicated that, indeed, we must take into account the clustering effect of classrooms. The intraclass correlation coefficient for the verbal counting model was 0.298 and statistically significant (Wald Z = 2.24; p = .025). This indicates that approximately 30 percent of the variance in verbal counting scores is due to differences between the classrooms within the pilot program. Once again, this high intraclass correlation indicates that we cannot treat the observations as being independent (see Norusis, 2005; Raudenbush and Bryk, 2002). The variance components model for the one-to-one correspondence counting indicated that 18.7 percent of the variance in one-to-one correspondence counting is due to differences between the classrooms. While this intraclass correlation was only marginally significant at conventional statistical levels (Wald Z = 1.82; p = .068), the Wald Z statistic can be misleading, especially with relatively small samples (Norusis, 2005). Given the intraclass correlation, we treat these data as clustered also.

Accordingly, we regressed student fall verbal counting scores and fall one-to-one correspondence scores on individual factors while including classroom as a random effect to correct for the clustering effect of classroom.[23] We then calculated students' predicted spring scores from the models' coefficients. By calculating the difference between mean actual improvements and mean expected improvements, we derived an estimate of a *preschool effect*, beyond the influence of age/nonpreschool exposure. Results of these analyses are presented in Tables E-2 and E-3.

[23]The factors included in the model were included as fixed effects. We include factors similar to the JLARC study to make our analysis as comparable as possible. The factors we include are age, ethnicity (included as a series of dummy variables for African American, Asian, Hispanic, and other races with white as the reference category), mother's education, learning disability status (0 = no, 1 = yes), and gender (male is coded as the reference category).

Table E-2. ***Results for Hierarchical Linear Model Predicting Fall Verbal Counting Skills***

	B	Standard Error	T	Significance
Constant	-52.672	18.48	2.85	.005
Age (in months)	0.714	0.25	2.78	.006
Male	-0.626	1.88	0.33	.740
Hispanic	-5.628	3.46	1.62	.106
African American	-2.896	3.05	0.95	.344
Asian	-5.154	6.15	0.84	.403
Other Race	-7.737	3.72	2.08	.039
Disability Status	-4.969	2.82	1.76	.080
Mother's Education	1.390	0.55	2.52	.012

Classroom fit as a random effect. ICC = .298

Based on this analysis, scores between the fall and spring verbal counting tests were predicted to increase by slightly more than four points due to students being older at the time the spring test was administered. Actual average gains, however, were nearly 13 points; therefore, the pilot preschool experience appeared to produce gains of nearly eight and a half additional points in verbal counting over what would be expected due to age/exposure. Similarly, the predicted average gain in one-to-one correspondence counting was less than four, while the actual average gain in one-to-one correspondence counting was slightly more than eight. Preschool therefore increased the average gain over the expected gain by more than four and a half points.

Table E-3. ***Regression Results for Fall One-to-One Correspondence Counting Skills***

	B	Standard Error	T	Significance
(Constant)	-28.563	10.21	2.80	.006
Age (in months)	0.657	0.14	4.59	<.001
Male	-1.253	1.06	1.18	.240
Hispanic	-1.736	1.85	0.94	.350
African American	-0.648	1.63	0.40	.691
Asian	4.178	3.42	1.22	.223
Other Race	-0.810	2.02	0.40	.689
Disability Status	-1.917	1.59	1.21	.228
Mother's Education	1.01	0.30	3.28	<.001

Classroom fit as a random effect. ICC = .187

Next, we compared the gains in math skills for pilot children compared to their classroom peers. We began by testing for differences by student status (pilot child, private-pay child, or other funding source child) in actual math scores in the fall and spring. Students whose parents paid tuition (and who granted permission to use the information) generally scored higher than did publicly funded students. In the fall, no statistical differences were found between groups based

on funding type for verbal counting, but private-pay students counted higher in the fall one-to-one correspondence test ($p = .063$). In the spring, differences between private-pay and other students on both tests were statistically significant. Pairwise comparisons for private-pay versus pilot students were significant ($p = .045$) on the verbal counting test and on one-to-one correspondence ($p = .015$). Pairwise comparisons between other-funded students and private-pay students were also significant ($p = .023$, $p = .040$ for the respective tests). Despite these differences, the *gains in verbal counting from fall to spring* were equivalent for private-pay and public-pay students. Therefore, preschool benefitted all students equally; however, it was unable to close the gap between at-risk children and their less at-risk peers.

Predicting Gains in Early Numeracy Skills

To account for differences in average gains we again used HLM analyses, thereby accounting for classroom clustering effects. We included individual-level and classroom-level predictors in the analysis and tested for several interactions both within and between these levels. In the first analysis, the actual difference between the spring verbal counting scores and the fall verbal counting scores is the dependent variable. The second analysis analyzes the difference between actual fall and spring one-to-one correspondence scores.

In addition to the funding distinction of private-pay versus pilot/other funding, we included gender, ethnicity (a series of indicator variables for African-American, Hispanic, Asian, and other races with White as the comparison category), disability, mother's education, child's age, and limited English proficiency (LEP). At level two (i.e., classroom level), we include if the lead teacher had pre-K specialization (yes equals 1, no equals 0), the type of school (private equals 1, public equals 0), if the lead teacher had a bachelor's degree (1 equals yes, no equals 0), and the four CLASS measures of emotional support, instructional support, classroom organization, and student engagement. We also tested all two-way interactions involving funding-type and the level-two variables to determine if pilot children perform differently than their classmates in various types of preschool settings. We also tested if any level-one two-way interactions with funding type achieved significance. We removed any interactions that did not achieve statistical significance and re-estimated the model. The only level-two (classroom) variable to achieve statistical significance in any analyses was lead teacher pre-K specialization. For sake of clarity and parsimony, the other level-two variables were removed from the model. We included the nonsignificant level-one variables because of their substantive importance.

The full model was conducted on 157 students because some of the predictor variables had missing values. For example, we collected information about mother's education and disability status from the parental surveys, and not all parents returned the survey.[24] We combined pilot children with other-funded children for two reasons. First, there were no significant differences between these students in any analysis; therefore, this distinction became irrelevant for the analysis. Second, when some of the level-one by level-two interaction terms were fit, there were some classrooms that did not have "other-funded children" available to analyze (e.g., there were no classrooms with other-funded children and lead teachers with pre-K specialization). Thus, combining the two groups avoided computational problems. Given the lack of significant differences between the groups and the lack of specific combinations of factors when the groups

[24] We also used PALS data to supplement information from the parent survey to determine disability status.

are not combined, pilot and other publicly funded students were combined in the following analyses and referred to as "pilot students."[25]

Results: Gains in Verbal Counting

Based on the model, no significant differences between private-pay and pilot students were found for verbal counting. All else held constant, private-pay children increased their verbal counting between the fall and the spring by an average of 27 numbers. By comparison, pilot children increased their verbal counting from fall to spring by 23 numbers on average. This difference is not statistically significant (p = .291). No main effect significantly predicted gains in verbal counting from fall to spring, although attending class in a classroom with a lead teacher who had pre-K training approached statistical significance.

Results: One-to-One correspondence counting

Disability status significantly predicted changes in one-to-one correspondence counting from fall to spring (b = -5.78; p = .015). Students without a disability gained an average of six numbers more in their one-to-one correspondence counting than did students with a disability. No other variables were statistically significant; thus, public-pay and private-pay children made similar gains. The lack of significance for predictors other than disability status coupled with the significant average gains made by the students indicate that preschool benefits all children equally; however, since no interaction terms were statistically significant either, we cannot conclude that the gaps between pilot and nonpilot children are closing. The intraclass correlation coefficient of .179 indicates that between classroom differences account for 17.9 percent of the variance in the changes in one-to-one correspondence counting from fall to spring. This coefficient indicates the data are clustered by classrooms, and that this effect should be modeled.

Personal foundation skills

Table F-4 presents results of student spring social skills, using the 30-item social skills portion of the teacher report of the Social Skills Rating System (SSRS) (Gresham & Elliott, 1990). Standard scores, with a mean of 100 and standard deviation of 15, represent the standardized comparison distribution. Norms were set so that 16 percent of children in the standardization sample had scores at the upper and lower ends of the distribution, that is, scores greater than 115 and lower than 85. The means, standard deviations, and ranges for each subgroup of student involved in the pilot are presented in table E-4.

[25] The analyses were also conducted removing other-funded children. The substantive conclusions of the analyses with and without these children included were identical. We retained the other-funded children to increase the sample size and statistical power of the analysis.

TABLE E-4: Descriptive Statistics for Social Skills Scale by Funding Type

	N	Mean	Standard Deviation	Minimum	Maximum
Pilot	185	103.8	13.53	52.0	130.0
Other Funded	139	106.2	16.48	54.0	130.0
Private	52	105.0	12.95	77.0	130.0
Total	376	104.8	14.62	52.0	130.0

As can be seen from the table, the mean scores for all three funding types are above the standardized mean of 100, indicating that on average students in all funding groups have social skills within the average range. The differences among the groups are not statistically significant ($F_{2, 373} = 1.06$; $p = .348$). However, the range for private-pay students is narrower, with the lowest score higher than that for the publicly funded groups. As noted in the report body, pilot and publicly funded students were overrepresented in the low functioning group.

We now turn to a multivariate analysis of the differences in the social skills to determine what factors place pilot-initiative students at risk of not possessing appropriate social skills. We again begin with a variance components analysis to determine if the data are clustered. As in the PALS and numeracy analyses, there is evidence of relatively strong clustering effects (ICC = .135; Wald Z = 2.52; $p = .012$).

Our primary focus of this analysis was to determine if pilot children and other at-risk students are significantly different in their social skills development than are private-pay students. We used the student's funding status (private-pay, pilot, and other public sources) to predict the social skills scales while controlling for race/ethnicity (a series of indicator variables for African American, Hispanic, Asian, and other races as compared to White), gender, age, and disability status. We also included several classroom-level variables in the model such as the four CLASS domains, school type (public or private), and lead teacher qualifications (pre-K specialization and Bachelor's degree). We used HLM with classroom as a random effect to control for the clustering of students by classroom. Based on this analysis, age is the only significant predictor (b = 2.86; $p = .020$). Pilot, other-funded, and private-pay students appear to be similar with respect to their social skills on average (pilot vs. private-pay students, $p = .603$; pilot vs. other-funded students, $p = .809$). However, when examining only those with low skill levels, publicly funded students are much more likely to be in this group than are private-pay students. Of those students with low skill levels, 90 percent are publicly funded students. Once again, the reader is cautioned to take these comparisons as estimates, given the nonsystematic character of the sampling for this index in particular.

A NOTE ON SAMPLING ISSUES

Throughout the analyses, we frequently compare pilot students to private-pay students. Families of state-funded students were sent letters home explaining the study; if a parent objected, they were instructed to inform their preschool director who would inform the evaluation team (a process known as passive consent). One parent did so and that child was not included in the study. Students who received only federal or local funding, or whose parents paid tuition, however nominal, were enrolled if parents gave their active consent to participation. Parents of

103 entirely private-pay students gave permission (out of 145, or 71 percent). Parents of 219 mixed funding, local or federally funded students (out of 234, or 93.6 percent) granted permission to enroll their children in the study. In four classrooms (across two programs), parents of nonpilot students were not given the option of participation, based on director decision (totaling approximately 58 students). The fact that we did not have permission to sample all students in pilot classrooms introduced a sampling bias into analyses comparing pilot students with their private-pay peers.

APPENDIX F
OPERATIONALIZATION OF KEY QUANTITATIVE VARIABLES

Survey Items Measuring Collaborative-Level Benchmark Concepts

All of the following items range from 1 (strongly disagree) to 5 (strongly agree). The data are from 47 collaborative members from all 10 collaboratives in the fall and 39 members in the spring. Results of this survey are summarized in Appendix G.

Appropriate members

1) The organizations that we need to be members of this collaborative have become members of the group.

Decision-making Structure **(alpha = .711)**

1) There are sufficient community institutions (e.g., schools, social service agencies, etc.) involved in the collaborative's leadership

2) When the collaborative makes major decisions, there is enough time for members to take information to their organizations to confer with colleagues about what the decision should be.

3) I have the authority to speak for my organization at collaborative meetings.

4) There is a clear process for making decisions among the collaborative partners.

5) People in this collaborative are open to different approaches to how we can do our work. They are willing to consider different ways of working.

6) People at collaborative meetings listen to the views of everyone involved.

Development of Clear Roles and Guidelines

1) People in this collaborative have a clear sense of their roles and responsibilities.

Leadership **(alpha = .838)**

1) The people who lead this collaborative communicate well with the members.

2) The people in leadership positions for this collaborative have good skills for working with other people and organizations.

3) The collaborative has effectively coordinated the efforts of all the organizations involved in this partnership.

4) Our collaborative regularly assesses its program successes and failures.

Well-Known Goals and Goal Commitment **(alpha = .715)**

1) Generally speaking, I have a clear understanding of what our collaborative is trying to accomplish.

2) Our collaborative has established reasonable goals.

3) The Preschool Pilot Program has established reasonable goals.

4) This collaborative has tried to take on the right amount of work at the right pace.

5) The level of commitment among the collaborative participants is high.

6) I feel I am viewed as a valued member of this collaborative

Members Investment in Process and Outcome

1) The organizations that belong to our collaborative group invest the right amount of time in our collaborative efforts.

Communication **(alpha = .804)**

1) People in this collaborative communicate openly with one another.

2) People involved in our collaborative are willing to compromise on important aspects of our project.

3) The collaborative has a clear mission so members know where the group is headed.

Social Capital: Mutual trust and Shared vision **(alpha = .837)**

1) People involved in our collaborative trust one another.

2) I have a lot of respect for the people involved in this collaborative.

3) I feel comfortable in the group

4) There is a shared vision among the collaborative members.

Collaborative Sustainability **(alpha = .698)**

1) This collaborative would likely survive even if it had to make major changes in its plans or add some new members to reach its goals.

2) This collaborative is able to adapt to changing conditions, such as fewer funds than expected, changing political climate, or change in leadership.

Pilot Preschool Initiative Sustainability **(alpha = .706)**

1) We are currently able to keep up with the work necessary to coordinate all the people, organizations, and activities related to the Preschool Pilot Project.

2) Our collaborative has developed the capacity to sustain the Preschool Pilot Program

3) Our collaborative has adequate funds to do what it wants to accomplish in the Preschool Pilot Program.

4) Our collaborative has adequate "people power" to do what it wants to accomplish in the Preschool Pilot Program.

CHILD-LEVEL MEASURES

Preacademic skills

Phonological Awareness Literacy Screening - PreKindergarten (PALS-Pre-K) (Invernizzi, Sullivan, Meier, & Swank, 2004). This eight-subtest screener covers the following components of early literacy: Name writing, uppercase alphabet, lower-case alphabet, letter sounds, beginning sounds, print and word awareness, rhyme awareness, and nursery rhyme awareness. Scores are tallied for each subscale. Lower-case alphabet and letter sounds are only administered if students correctly identify a specified number of upper-case letters. Collaboratives or programs trained teachers who had not previously administered the measure using a videotape instruction and practice kit.

Counting: Students are asked to count out loud as high as they can count. The highest correct consecutive number is recorded.

Counting with One-to-One Correspondence (National Center for Early Development and Learning, 2001). Students are shown a sheet with 20 identical printed teddy bears and asked to count the bears. Teachers can help the child up to the first three items to orient the student. If a child correctly counts the 20 bears, another identical sheet is presented. The highest number correctly counted is recorded. This measure was originally used by assessors and adapted to use by teachers for this study, with permission. Collaboratives or programs trained teachers who had not previously administered the measure by having a member of the evaluation team review procedures with teachers prior to initial administration.

Personal and social development and student health

Social Skills Rating System (Gresham & Elliott, 1990). This is a nationally standardized instrument in which scores assess three aspects of social skills (cooperation, assertion, and self-control), by teacher report. Responses for all variables range from 0 "never," to 1 "sometimes," to 2 "very often." Mean is 100 and standard deviation is 15. Total Social Skills are generally reported. Total scale 30 items (alpha = .844). Due to the measure being copyrighted, items cannot be reported.

Child Engagement in Learning Scale
Items were based on research literature and adapted from the Child Adaptive Behavior Inventory (Cowan, Cowan, & Heming, 2005), with permission. The index consisted of four Likert scales, ranging from 1 "strongly disagree" to 5 "strongly agree." **(**Alpha fall = .905; spring = .874)

1) During the counting task, this child was engaged.
2) During most preschool activities, this child was engaged.
3) This child likes to explore or play with new things.
4) This child is enthusiastic about learning.

General Health Perceptions (RAND Health Index, adapted by Eisen et al., 1979)

Three scales comprise the general health perceptions including current health, resistance/susceptibility, and prior health. All responses for questions in this section contained a 5-point Likert scale, with the categories definitely true, mostly true, don't know, mostly false, and definitely false. Parents completed this survey in the spring of 2008.

Current Health

1) My child's health is excellent.
2) My child seems to be less healthy than other children I know.

Resistance/Susceptibility

1) My child seems to resist illness well.
2) When there is something going around, my child usually catches it.

Prior Health

1) My child has never been seriously ill.

APPENDIX G
PILOT COLLABORATIVES AND COLLABORATIVE-LEVEL BENCHMARKS

A central goal of the pilot program was to increase preschool network capacity by using local planning coalitions, or collaboratives, that include multiple stakeholders beyond school divisions. This appendix focuses more closely on characteristics of the pilot collaboratives, examining in particular factors associated with successful groups, and ways pilot collaboratives may have changed over the year. If local collaboratives are to play a central role in a mixed preschool delivery system, by guiding local priorities and directing and managing resources, it is important to understand how successful groups operate and how this might "look" within different localities with diverse assets as well as differing needs.

A collaborative is a network of agencies and individuals that pursue a common goal. In the case of the pilot initiative, collaboratives pursued the goal of early childhood education and related concerns. Collaboratives may consist of partnerships between various government and community entities involved in providing early childhood services, as well as community or auxiliary agency representatives who bring particular expertise, funding, or other resources to the group mission. A full-fledged school readiness collaborative might include the local school superintendent, city or county manager, Head Start director, local school board members, directors of social services departments, private child-care providers, medical personnel, business and religious leaders, community foundation members, and parents.

The collaboratives involved in the pilot project were either large umbrella groups that contained a number of more specialized sub- or steering groups, or smaller groups with a more narrowly focused mission. The structure for planning and implementing the pilot lay within a collaborative network invested in the community's ability to have every child enter kindergarten ready to learn (Start Strong Council, 2006; 2007), which might be led by school, social service or early childhood agencies of local government.

Preliminary indicators suggested that the pilot collaboratives were well positioned to implement a complex model of preschool service delivery (Bradburn et al., 2007). All of the collaboratives had experience working together delivering complex preschool services, and key collaborative members expressed high levels of satisfaction with the collaboratives' membership. They generally believed there were high levels of trust and a shared vision among the collaborative members. The key members were also optimistic that the pilot model would be sustainable, at least if adequate funding existed. Researchers have identified these factors as strong predictors of collaborative success (Mattessich & Monsey, 1992; Mattessich et al., 2001; McCaffrey et al., 1995; Mizrahi & Rosenthal, 2001; Rog et al., 2004).

The collaboratives used a number of strategies to facilitate well-coordinated and high-quality preschool. These include strategies aimed at providing services more efficiently and cost-effectively, maintaining or improving the preschool work force, managing a complex network of services and providers, and using network resources to sustain program viability. Specific strategies included:

- combining, or braiding, funding sources and blending classrooms to combine children funded by pilot funds with children whose parents pay tuition or whose preschool services are funded by other public sources;
- defining ways to more efficiently provide or oversee health screenings or other support services to all preschool programs;
- providing opportunities for preschool staff professional development;
- using a single point of entry into the preschool education system to maximize placement efficiency and increase visibility of preschool options and opportunities for parents and the community;
- designating a specific coordinator to oversee the implementation of the pilot program; and
- using the collective resources of the collaborative to increase funding for future preschool opportunities and expansion.

At the collaborative level, our main questions were (1) did the collaboratives increase access to preschool services for at-risk children, and how; and (2) to what extent did they increase their preschool network capacity and otherwise strengthen sustainability? We identified several "process" benchmarks at the collaborative level that, based on existing literature, would likely increase the probability of the collaboratives meeting their goals. The process benchmarks focus on structural factors that are associated with successful collaboration and the functional operation of the collaborative that are predictive of successful collaboration. We also identify "outcome" benchmarks, which are the results, or outcomes, of the collaborative effort. We analyze the outcome benchmarks later in the chapter. There are eight specific "process" benchmarks at the collaborative level:

- **Size and Membership:** The extent to which important stakeholders are members of the collaborative.

- **Decision-Making Structure:** The existence of a formalized process for reaching decisions about future activities, including the extent to which the opinions of all involved parties are considered.

- **Clearly Defined Roles:** The extent to which collaborative members are aware of the roles they are to perform and to which they are held accountable for performing these roles.

- **Leadership:** The extent to which key collaborative leaders provide guidance for achieving goals, coordinate the activities of partners, effectively manage resources, and manage conflicts within the collaborative.

- **Well-specified Goals:** The extent to which the goals of the organization are well articulated and appropriate for the level of organizational resources.

- **Member Investment:** The extent to which members are committed to achieving the organizational goals and performing their roles to achieve these goals.

- **Communication:** The extent to which partners openly discuss ideas about, and information regarding, the program.

- **Mutual Trust and Shared Vision:** Features of social organizations, such as networks, norms, and trust that facilitate action and cooperation for mutual benefit.

Data for these process benchmarks were derived from two Web surveys of collaborative members then compared to interviews with key collaborative informants in the fall and spring to yield richer, more robust information. The Web survey was fielded in September 2007 and the second in June 2008. Forty-seven collaborative members from the 10 collaboratives responded to the survey in the fall, and thirty-nine members responded in the spring. Reflecting the varying sizes of the collaboratives, the number of respondents per collaborative per wave of the survey ranged from two to 13. Survey and interview data strongly converged, lending confidence to the results. Appendix G provided details of how the quantitative variables were measured.

In addition to the Web survey of members and key informant interviews, we used the following data sources:

- collaborative records, including copies of bylaws, meeting minutes, annual reports, and contracts with preschool and related service providers,
- a contact log documenting the number of times the collaborative leaders were in contact with the preschools, service providers, and other partners each month, and
- documentation of health, support, teacher professional development and related services provided by collaboratives or preschools, and for whom.

Collaborative-Level Findings

1. Collaboratives members effectively worked together in their attempts to deliver preschool and wraparound services to children and their families. There is consistent evidence from multiple data sources that all ten collaboratives met or exceeded the process-oriented benchmarks, in that they had:

a. The appropriate members involved in the program.
b. An effective decision-making process in place.
c. Adequately defined roles.
d. Quality leadership.
e. Well-established goals.
f. High levels of member commitment.
g. Effective communication processes.
h. Requisite stock of social capital.

2. All ten collaboratives met the outcome benchmark of providing increased access to preschool services for at-risk children, in that they:

a. Delivered preschool services to students who otherwise would have likely not have received them.

b. Provided wraparound and support services to the children and families in their programs

3. Six of the collaboratives met the benchmark of increasing the number of partners involved in the delivery of preschool-related services or strengthening the relationships among current partners.

4. The collaboratives partially met the benchmark of sustainability. Funding constraints hampered collaboratives' abilities to continue to increase and in some cases, partner with private providers, although several noted ways they would continue working with local preschool directors to share resources and knowledge and generally promote improved quality services in the their communities. Several key informants noted that teacher training and the materials and equipment that the pilot provided will have positive ripple effects toward enhanced pre-K quality. The greater involvement in and alignment with state prekindergarten efforts reported by preschool directors also suggest that aspects of the pilot initiative may have sustaining effects. However, direct mixed service delivery without substantial state support, technical and financial, appears difficult for most localities.

APPENDIX H
FURTHER DESCRIPTION OF THE FAMILY CHILD-CARE PROVIDERS MENTORING PILOT PROGRAM

This appendix provides greater detail on the mentoring program initially described in Chapter Six. We reported on one part of one locality's pilot program separately because it differed substantially from all other programs by focusing on intensive quality improvement with family home providers. This pilot was undertaken, according to local agency staff, because local data gathered on childcare and school readiness indicated (1) most prekindergarten children in the locality spent most of their weekdays in family care, and (2) school principals complained that children coming from family home providers tended to be less ready for kindergarten.

Indeed, research indicates that on average, informal, nonmaternal care arrangements, including family childcare, is not associated with child preacademic or cognitive skill gains (Magnuson, Ruhm, & Waldfogel, 2007). Evidence regarding family childcare and children's behavior is mixed, with some studies showing increases in problem behavior and others showing that, compared to children who attended center or school-based preschool, these children showed better behavioral self-control at school entry (Magnuson & Waldfogel, 2005). Moreover, high-quality informal care *is* associated with better cognitive and social development (Magnuson & Waldfogel, 2005; National Institute of Child Health and Human Development (NICHD) Early Child Care Research Network, 2002, 2003; Phillips & Adams, 2001). These nonexperimental, observational studies cannot prove that family care *causes* such outcomes. Nonetheless, the positive association between high-quality family daycare and positive child outcomes suggests increasing quality may boost at-risk children's school readiness.

The mentoring model was designed by the local county Office for Children, originally part of an Early Head Start mentoring design for younger children adapted from a family home provider model from Infant Toddler Family Day Care, Inc., according to agency personnel. Key components consist of (1) provision of a mentor to each provider, who visits the home at least twice monthly and offers technical assistance, coaching and reviews of child and family care provider assessments; (2) training home providers in the Portage developmental curriculum, a curriculum from birth to age 6; (3) mandatory enrollment in and completion of a local School Readiness Certificate, which consists of 40 hours of coursework offered by the locality; (4) tracking of children's access to and regular use of a pediatric care (sometimes referred to as having a "medical home"); (5) individualized improvement plans developed together by the mentor and the provider. The latter might include increasing educational or professional training and/or certification, provision of materials, working on a business model, or other individually tailored supports. Providers received Portage curriculum materials to keep, as well as developmentally appropriate educational materials. The transition to kindergarten was also emphasized, through parents and provider workshops, providing information about kindergarten orientation and encouraging providers to make portfolios for parents to share with their child's kindergarten teacher.

Mentors also provided hands-on training in the Portage curriculum, modeling its use with children in care and working with providers to make it useful to them. Mentors assessed pilot children in care on the evaluation preacademic measures (PALS PreK, early emerging

numeracy) and helped to collect surveys. Detailed narrative reports sent to local pilot administrators described each mentor-provider session.

Twelve family child-care providers (hereafter designated as *providers*) were initially enrolled in the pilot program, serving 15 pilot children. Providers were invited to participate based on their location and a recommendation from the local licensing staff. Neighborhoods with children eligible for pilot participation were canvassed for licensed family providers; those who were also recommended by local licensing staff were invited to participate. A mentor went to each provider's home to explain the pilot and its requirements. Twelve of 15 invitees agreed to participate and signed contracts agreeing to attend pilot trainings, participate in bimonthly mentoring visits, be observed twice for formal assessment, and allow mentors to conduct child assessments in their homes. Providers were also required to complete a 40-hour local school readiness certification program if they had not already done so.

An initial study of the prototype of this model showed impressive improvements in family care provider environments and interactions, according to agency personnel, who reported that mentored family child-care providers were all rated as providing high-quality care and education by the end of the mentoring program. However, mentors themselves conducted formal ratings in the early model. For the pilot, an independently trained rater observed each home provider in the fall and spring of the pilot program.[26] Two family providers withdrew from the pilot in late fall 2007.

Two female mentors worked with all home providers (as well as teachers in private preschools who were also part of the local pilot). Both were well qualified for this work. They both have advanced degrees in early childhood education and extensive experience in early childhood development and education, including experience teaching and working with child-care providers. Each mentor was allowed to approach providers in her own way. One mentor focused more on working with individual pilot children during visits, while the other worked mainly with providers.

Although members of the evaluation team did not conduct formal observations, six provider homes were visited on a more informal basis. Family providers completed survey data as well as behavioral assessments just as did teachers in preschool classrooms. The evaluation team provided a translator for two providers most comfortable speaking Spanish who completed the social skills and student engagement with learning assessments with these providers. All parent communications were also translated into Spanish. Mentors assessed children's preacademic skills. Program quality results and suggestive findings from student-level outcomes were reported in Chapter Six.

[26] The rater was hired by the locality, and was not supervised by the evaluation team. The rater was trained on the ITERS and the FCCERS-R in 1998 and maintained expertise through videotape updates, according to the rater.