

Tackling the achievement gap through Project Early Kindergarten

Evaluation report after the first three years of a Saint Paul Public Schools initiative

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Saint Paul Public Schools initiative*

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Executive summary

Locally and nationally, a gap in academic achievement separates American Indian, Asian, Black, Latino, and White students, and lower- and higher-income students regardless of their race and ethnicity. The gap begins before students even start school. In 2005, Saint Paul Public Schools piloted Project Early Kindergarten (PEK) to bolster the school success of children at risk of poor academic performance. The program reaches out to English Language Learners, low-income children, and children needing Special Education services. In practice, most participants also represent racial or ethnic minorities.

PEK aligns pre-kindergarten education with the district's K-12 curriculum model, the Project for Academic Excellence. The model emphasizes standards-based education and extensive professional development. With sensitivity to young children's developmental needs, PEK extends this model to early education, bringing children's preschool experience into alignment with the educational experience they will have in later years.

PEK takes a community-wide approach to strengthening early education, involving both school and child care settings. The program was first implemented in fall 2005 at Saint Paul district schools. Implementation in child care settings began a year later, in fall 2006. As of fall 2007, 10 Saint Paul schools, 6 child care centers, and 13 family child care homes offer PEK to 3- and 4-year-olds in Saint Paul.

PEK is funded by Saint Paul Public Schools and The McKnight Foundation, which provided an initial three-year grant in 2004 and renewed funding in 2007.

Rigorous evaluation

The program participates in a rigorous, independent evaluation conducted by Wilder Research. Children are tested over time and in developmentally appropriate ways. Evaluators compare children's skills in kindergarten and early elementary years to those of peers who did not participate in the program.

School results

Preliminary results for students participating at school sites in 2005-06 are promising. If results are replicated with students attending in future years, and if students show advantages through early elementary school, researchers will have a stronger basis for making claims about the program's impact. On average, students at PEK schools in 2005-06 experienced the following initial changes:

- In the year before kindergarten, they made faster progress than their peers nationally in vocabulary and early reading and writing skills.
- When they started kindergarten, they were ahead in vocabulary and early reading, writing, and math skills compared to demographically similar children who had not attended PEK.
- They were also ahead in vocabulary and early reading, writing, and math skills compared to their kindergarten classmates, who came from a variety of backgrounds.
- Kindergarten teachers rated former PEK students significantly higher than their classmates in social skills and academic competence.
- Principals and parents provided very positive feedback about the program.

Child care results

Data is not yet available for children participating in child care programs, but structured site observations show the beginning of standardization among child care settings, and between child care sites and schools. While maintaining characteristics unique to their environment, these diverse settings are coming together in their approach to how they prepare Saint Paul children for kindergarten.

In phone interviews, all of the parents with child care children starting kindergarten in the fall said the child care teachers helped prepare their children for kindergarten. Child care teachers also reported that PEK made a significant impact on their teaching practices and in their program's ability to prepare children for school. Evaluators are in the process of assessing the kindergarten-readiness skills of children who participated during this first year.

Issues to consider

As the program moves into its second three-year grant period, evaluation results provide insights staff can use in planning. For example, initial results from PEK schools showed weaker gains for White students, who generally started the program with stronger skills. Therefore, the program may want to look at ways to strengthen differentiated instruction in small groups of students.

Additionally, gains in early math skills did not appear to be accelerated. With the introduction of a new math curriculum this year, future results should be monitored for whether children attending in later years experience larger gains.

Principals now see kindergarten as needing to address higher skill levels of incoming students. Schools are working to create greater linkages between PEK and kindergarten teachers.

In both school and child care settings, implementation varies across sites. Program coaches can use feedback from structured site observations to target their support to the needs of individual classrooms. At some child care sites in particular, coaches can help teachers more fully implement some of the basic program components now in place. Turnover among child care teachers also presents an ongoing challenge, and the program is working to strengthen recruitment and retention.

Looking ahead

Data gathered over the next few years will enable evaluators to draw inferences about changes that can likely be attributed to the program. The study's design and its use of nationally validated assessment instruments also allow researchers to compare PEK results with those of similar preschool programs around the country.

This information should be valuable as the district pursues a larger initiative to ensure consistency and quality across early childhood programs. The district's 2006-2011 Strategic Plan for Continued Excellence now specifies consolidation of all district 4-year-old programs in alignment with the Project for Academic Excellence as a key action step.

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1. Introduction

“Addressing the achievement gap through the provision of high-quality early education can have large impacts, and it should be an important component of education reform.”

—(Ewen & Matthews, 2007, p.2)

Locally and nationally, statistics show a striking gap in student academic achievement. Differences in test scores and graduation rates separate American Indian, Asian, Black, Latino, and White students, and lower- and higher-income students regardless of their race and ethnicity. The gap begins before students even start school, with different groups of children beginning kindergarten with different levels of readiness (Mueller, 2006b). For example, a 2003 Minnesota Department of Education study found that kindergartners from families with lower incomes or less-educated parents were behind peers in personal and social development, language and literacy, mathematical thinking, the arts, and physical development (Minnesota Department of Education, 2004).

Studies of high-quality, center-based preschool programs provide promising evidence that such programs can help close the school-readiness gap that contributes to the achievement gap seen in later years (studies cited in Mueller, 2006b). Project Early Kindergarten (PEK) strives to join the ranks of those programs. PEK intends to bolster the school success of children at risk for underachievement in Saint Paul Public Schools. Ultimately, the program intends to narrow Saint Paul’s achievement gap and to serve as a catalyst for structural and systemic changes in Saint Paul’s early childhood education environment.

1.1 *Program overview*

PEK applies a rigorous academic approach to early education. The program aligns Saint Paul’s pre-kindergarten education with the district’s K-12 curriculum model, the Project for Academic Excellence. In this way, the program brings children’s preschool experience close to the educational experience they will have in kindergarten and beyond. The program emphasizes standards-based learning, extensive professional development, and parent education and support. Because parents use a variety of care arrangements for their pre-kindergarten children, PEK promotes a community-wide approach involving both schools and child care programs.

The program targets services to English Language Learners, low-income children, and children needing Special Education services. In practice, most participants also represent

racial or ethnic minorities. Participating children either attend a half-day, five-day-a-week school year program at one of the participating Saint Paul schools, or receive similar curricular support at their child care center or family child care home. PEK schools began serving 4-year-olds in fall 2005, and child care programs extended the program to 3- and 4-year-olds in fall 2006. As of fall 2007, 10 Saint Paul schools, 6 child care centers, and 13 family child care homes offer the program. The 10 schools include Ames, Como Park, Dayton's Bluff, Four Seasons, Hayden Heights, Maxfield, Prosperity Heights, Wellstone, and World Cultures/American Indian Magnet, two schools which share a building and classroom. PEK extends the program to child care settings through a partnership with Resources for Child Caring, a community agency working to improve the quality of early childhood care and education (Resources for Child Caring, n.d.).

Wilder Research serves as the independent evaluator. Researchers use a quasi-experimental research design to assess impacts on children's academic success, and follow school children into third grade to see if program effects are sustained through early elementary school. Child care children are assessed in kindergarten.

The program operates primarily through funding from Saint Paul Public Schools and The McKnight Foundation. In 2004 The McKnight Foundation provided a three-year, \$2.8 million grant for program development and implementation, and in 2007 McKnight contributed an additional \$3 million for efforts through the 2009-10 school year. The Minnesota Early Learning Foundation also contributes funds to the child care portion of the program. Another facet of PEK, Early Reading First, operates under a federal grant and provides services at an additional two child care centers and two schools. Wilder Research can provide additional information on the evaluation of Early Reading First, which is funded and evaluated separately and therefore not covered in this report.

1.2 *Saint Paul's achievement gap*

Many district students fall into at least one of PEK's three target categories. In 2006-07, 69 percent of district students came from low-income families, defined here as eligible for free or reduced-price lunch. Forty percent of students were English Language Learners, and 17 percent received Special Education services (Saint Paul Public Schools, 2007a).

Results on the Minnesota Comprehensive Assessments-II provide a glimpse of the achievement gap these students face. These tests measure progress toward state academic standards and are used to determine proficiency under No Child Left Behind, a federal law requiring school districts to achieve proficiency in reading, math, and science for all students by 2014 (Mueller, 2006b). Results presented here reflect district students in

grades 3 through 8 and 11 for math, and 3 through 8 and 10 for reading. District results for 2006-07 include the following (Minnesota Department of Education, 2007):¹

- 32% of low-income students were proficient in math, compared to 70% of higher-income students.
- 37% of low-income students were proficient in reading, compared to 76% of higher-income students.
- 76% of White students were proficient in reading, compared to 36% of Black, 39% of Asian or Pacific Islander, 42% of Latino, and 43% of American Indian or Alaskan Native students.
- 67% of White students were proficient in math, compared to 26% of Black, 32% of American Indian or Alaskan Native, 44% of Latino, and 56% of Asian or Pacific Islander students.

Graduation rates provide another sign of the achievement gap. In 2006, 73 percent of White students graduated on time, compared to 76 percent of Asian American, 49 percent of Black, 48 percent of Latino, and 39 percent of American Indian students (Saint Paul Public Schools, 2007a).

1.3 Contents of the report

This report comes at the conclusion of the initial grant and beginning of the second three-year grant period. During the initial grant period, researchers from Wilder Research, Saint Paul Public Schools, and the University of Minnesota's Center for Early Education and Development prepared a number of different reports on different components of the program. This report synthesizes information available in these separate reports, some of which were prepared for internal use. The intent is to provide an overview of the program and a non-technical summary of early results. Individual reports summarized here are listed at the end of the report. More detailed information on research methods can be found in individual technical reports.

The following sections describe PEK goals and components, and illustrate a model PEK classroom. The report then summarizes early evaluation results, first for the school component and second for the community child care component. The final section of the report explores PEK's implications for early childhood education in the school district and larger community. The Appendix provides more detailed tables and figures on student characteristics and outcomes.

¹ Results from the alternate Mathematics Test for English Language Learners are not included here.

2. Program goals and components

“Quality pre-kindergarten is necessary, but not sufficient, to raise the educational achievement of all children. For children to get the most out of growing public investments in early learning, we must align standards, curriculum, and assessment from pre-kindergarten through kindergarten and into the early elementary grades.”

—Foundation for Child Development (as quoted in Ewen & Matthews, 2007, p. 2)

PEK’s goals include providing programming aligned with the district’s K-12 curriculum model and using a research-based approach to delivering services. Key program components include alignment with the Project for Academic Excellence, involving extensive professional development; parent education and support; and participation in a rigorous evaluation. This section describes program goals and components. As previously described, PEK ultimately intends for its programming and approach to address Saint Paul’s achievement gap, and to serve as a catalyst for structural and systemic changes in the district’s and larger community’s approach to early childhood education. Implications for the larger community are explored in the final section of the report.

2.1 *Central goals*

PEK’s central goals, as stated by the program, follow (Henton et al., 2005-07):

1. School-based: To develop optimal, developmentally and academically focused early childhood programming aligned with the District’s K-12 standards-based comprehensive reform model, Saint Paul’s Project for Academic Excellence, for 4-year-old English Language Learner students, Special Education students, and students who qualify for free and/or reduced-price meals.
2. Community-based: To use a research-based approach to deliver accurately targeted specialized services and support to early learners (primarily 3- and 4-year-old children), families, child care providers, and the greater local community that aligns with the district’s standards-based comprehensive reform model and creates a smooth transition into kindergarten.

2.2 Alignment with the Project for Academic Excellence

With differences based on young children's developmental needs, PEK brings children's preschool experience into alignment with the educational experience they will have in kindergarten and beyond. This educational experience centers around the Project for Academic Excellence. The district introduced the Project for Academic Excellence in 2001 as a comprehensive academic reform model. Since that time, the Project for Academic Excellence has expanded from a pilot project in selected elementary schools to a district-wide approach implemented in every grade level. The district remained committed to the model through a change in superintendents. A 2005 report by the University of Minnesota's Center for Applied Research and Educational Improvement addressed what appears to be strong support within the district for the model, describing ownership of the reform by district staff, teachers, and principals as an accomplishment (Freeman, 2005). District efforts to expand PEK's model across 4-year-old programs provide further testimony of internal support for the Project for Academic Excellence.

The Project for Academic Excellence model emphasizes standards-based education and extensive professional development. It aligns the district's curriculum model with state and national standards in reading, writing, math, and science. It also provides ongoing training for teachers and administrators based on national standards for effective training. Professional development includes best practices in standards-based instruction of core academic subjects. The model also emphasizes on-the-job coaching to help teachers develop lessons with clearly defined learning goals. Principals play an important role as instructional leaders who are involved in classrooms and oversee classrooms' implementation of the model (Saint Paul Public Schools, 2005).

In the district's own language, following are the 10 core components of the Project for Academic Excellence (Saint Paul Public Schools, n.d.):

1. Standards-based curriculum and instruction as the foundation of reform;
2. Extensive continuing professional development for teachers and administrators;
3. Focus on a small number of core academic skills;
4. Demonstration sites to promote replication;
5. A shared sense of instructional leadership across the school and district;
6. Content-based coaching of teachers, principals, and district leaders;
7. Availability of essential materials for learning;
8. Peer support for teachers;

9. Standards-based assessment to monitor progress; and
10. Increasing to scale across the district.

Early Childhood Workshop

Local and national experts in early childhood development and education developed a preschool curricular model for PEK aligned with the Project for Academic Excellence. This “Early Childhood Workshop” combines the Project for Academic Excellence’s Reader’s and Writer’s Workshops. Contributors included the district’s Reader’s and Writer’s Workshop professional development trainer and her consultant group, the California-based Foundation for Comprehensive Early Literacy Learning (CELL); the University of Minnesota’s Center for Early Education and Development; English Language Learner, School Readiness, and Special Education staff; and Project for Academic Excellence and PEK staff.

Materials are geared toward the developmental needs of young children and are based on best practices in early childhood education. They emphasize specific standards in personal and social development, language and literacy, mathematical thinking, and physical development and health. The Early Childhood Workshop model is presented in a comprehensive implementation manual for teachers. Manuals also provide information on the Project for Academic Excellence and underlying Principles of Learning, PEK core content and early childhood standards, standards-based instruction, using standards-based assessment to monitor progress, and other topics relevant to program goals. Teachers moving to higher levels of implementation receive a Level II version of the manual (Saint Paul Public Schools, 2007b).

Participating child care programs received their implementation manual in fall 2007 following the initial year of implementation and learning in child care settings. Reflecting their unique needs and operations, participating child care centers use the manual in conjunction with Doors to Discovery, a complete literacy-focused curriculum.² School teachers received the third version of the manual for the school component this year. This fall school classrooms also introduced Everyday Mathematics, a curriculum used in district kindergarten through sixth-grade classes.

² One child care center uses its own literacy-rich curriculum.

Professional development

Consistent with the Project for Academic Excellence, PEK emphasizes extensive ongoing professional development and on-the-job coaching for participating school and child care teachers. For school teachers, this training builds on the required educational credentials of teaching licenses and preschool certification. As an indication of the program's investment in training, it supports three full-time literacy coaches, national literacy consultants, a "master coach" consultant, and a community and family specialist who promotes the program's parent education efforts. At the beginning of the second grant period, the program also hired two additional part-time parent educators supported by the Minnesota Early Learning Foundation.

During the program's first two years, teachers received training on the following: the role of rituals and routines; standards-based instruction; progress monitoring to guide data-driven instruction; reading and writing strategies, including read alouds, shared reading, interactive writing, active learning, and guided oral reading; the Principles of Learning, which underlie the Project for Academic Excellence; and parent education. A PEK-organized workshop on the Principles of Learning marked the first time professional development was provided jointly to all district early childhood staff, as well as the first time district staff and child care teachers participated in professional development together. Most of the training has been offered by the district's chief professional development consultant from CELL. Training on the Principles of Learning is offered by the University of Pittsburgh's Institute for Learning (Henton et al., 2005-07).

In addition to participating in formal training, teachers meet in study groups to problem-solve, discuss early childhood issues, and explore ways to use student data to inform instruction. Program coaches visit their classrooms weekly or biweekly to help them implement best practices and align their classes with the Project for Academic Excellence. These coaches, in turn, participate in regular master coaching sessions. Teachers, principals, and coaches also participate in cluster visits with the district's consultant from CELL. During these visits, they observe classrooms at each other's schools and discuss their observations and professional development needs. The consultant also provides principals and administrators with training in emergent literacy. Additionally, before the program opened in schools, training introduced principals and assistant principals to the curricular framework and provided them with an overview of child development in early education (Henton et al., 2005-07).

Principals as instructional leaders

Aligning PEK with the Project for Academic Excellence requires integrating the program with schools, and establishing formal relationships between PEK teachers and their kindergarten counterparts. School principals play an important role in this area. They involve PEK teachers in school-wide programming and training, and create opportunities for interactions between pre-K and kindergarten staff. As with the Project for Academic Excellence, PEK emphasizes the principal's role as an instructional leader with active involvement in the classroom.

Program coaches provide monthly memos to guide principals in making classroom observations. These memos describe instructional best practices from the latest professional development that should be evident in the classroom. Beginning in fall 2007, program administrators, principals, and child care center directors are also conducting "Progress Monitoring Walks" to check fidelity with the Project for Academic Excellence. Principals also meet with each other, and plan to meet four times in 2007-08 for professional development and problem-solving.

Progress monitoring

The Project for Academic Excellence emphasizes ongoing progress-monitoring. PEK teachers also use developmentally appropriate tools to monitor progress in children's skills and their growth toward developmental milestones. Work Sampling System assessments and Individual Growth and Development Indicators help teachers understand changes in individual children. They also alert teachers when a child may require more intensive interventions. As with their K-12 counterparts, PEK teachers use information gathered through ongoing assessments to inform their instruction.

2.3 Parent education and support

"When researchers measuring school readiness gaps control for parenting differences, the racial and ethnic gaps narrow by 25-50 percent. And it is possible to alter parenting behavior to improve readiness"

—(Brooks-Gunn & Markman, 2005, p. 139).

Research indicates that center-based early childhood programs involving parents can improve both parenting and children's school readiness. The spring 2005 issue of *The Future of Children* discusses racial and ethnic differences in parenting behaviors. For example, differences are found in how frequently mothers talk with and read to their children. The authors conclude that strong center-based programs involving parents can impact parenting in ways that affect school readiness (Brooks-Gunn & Markman, 2005).

PEK emphasizes parent involvement in their children’s learning and in school activities. Program supports work to increase parents’ understanding of the skills children need for school, and parents’ engagement with their children in literacy activities at home. PEK teachers communicate with parents about their children’s learning in a variety of ways. The program also offers parenting events and parent-education sessions at the schools, and sends home parent-education materials and information on community resources. During 2006-07, parents received information on the following topics: helping children transition to school; motivating children to learn; building vocabulary skills and talking with children; supporting reading skills and reading with children; bedtime routines; helping children with math; physical development, nutrition, and exercise; social emotional development; the importance of play; transitioning to kindergarten; and supporting learning throughout the summer. To facilitate home learning over the summer, teachers also distributed summer writing kits to 430 PEK school and child care children in 2006-07 who were going to kindergarten (Saint Paul Public Schools, 2007c-e).

The program also helps parents navigate the school system. PEK staff contributed to a district Transition to Kindergarten Team, which developed a parent checklist of tasks to complete in preparation for their children to attend kindergarten. During 2006-07, the program also offered PEK parent orientations at every school and provided welcome packets with information about transitioning to school. Additionally, “Understanding School Choice” sessions took place at participating child care centers for the first time, during which district student placement staff answered parents’ questions and helped them register their children for kindergarten (Saint Paul Public Schools, 2007c-e).

The program expanded efforts for the 2007-08 school year with the development over the summer of extensive parent-education materials, titled “School and Home—Partners in Learning.” Parent kits were developed with materials for engaging children in literacy activities at home. Twice a month, take-home information in different languages will reinforce skills being taught and explain how to use the literacy materials. In addition to a community and family specialist promoting parent education efforts, the program also recently hired two additional part-time parent educators to help connect child care families with neighborhood schools.

2.4 *Evaluation*

PEK participates in a rigorous evaluation. The program views evaluation as an important sustainability strategy in that ultimately, the evaluation will provide evidence of whether the model warrants replication. The evaluation includes two components: an implementation evaluation and an outcomes evaluation. Wilder Research and Saint Paul Public Schools’

Department of Research, Evaluation and Assessment conduct the evaluation, with Wilder Research serving as the independent evaluator.

Program implementation

Saint Paul Public Schools evaluators assess how the program is being implemented. They address the question, Does PEK provide a high-quality preschool program that is aligned with the Project for Academic Excellence and integrated into the school system? Researchers gather information on the children served and the extent to which schools and child care settings are implementing the program. Outside observers use structured questionnaires to gather information about how the program is implemented in each setting. Principal interviews and teacher surveys provide information on principals' perceptions of PEK implementation and teachers' interactions with parents. Teachers also use formal tools to monitor individual children's progress over the course of the year.

Program outcomes

Wilder Research's evaluation focuses on the program's outcomes. It answers the key question, Does a high-quality preschool program aligned with the Project for Academic Excellence improve students' educational outcomes? To answer this, evaluators need to know the following:

- Are children better prepared for kindergarten because they participated in PEK?
- Do they perform better in elementary school (kindergarten through third grade)?
- What are the benefits for children, families, and teachers of having pre-K programs integrated with schools?
- Is it cost-effective?

Wilder Research addresses these questions through a quasi-experimental research design. Children are tested over time and in developmentally appropriate ways to see how they progress academically and socially, and whether program effects are sustained through early grade school. The study compares a treatment group of children who received PEK services with a comparison group who did not. Experimental research, involving random assignment to treatment and control groups, can be difficult to attain in education research. This quasi-experimental approach presents a rigorous alternative. While the study will not be able to prove absolutely that PEK causes specific outcomes, researchers will be able to draw reasonable inferences about the changes that can be attributed to the program.

The study's design and its use of nationally validated assessment instruments also allow researchers to compare PEK results with results from other public school-related preschool programs around the country. The Peabody Picture Vocabulary Test III measures receptive vocabulary, and three subtests of the Woodcock-Johnson Tests of Achievement III measure early skills in reading, writing, and math. Wilder Research staff administer these tests one-on-one with children at the school sites each fall. Teachers also complete assessments of individual students in the fall. They assess students' social skills, problem behaviors, and academic competence on the Social Skills Rating System (Mueller & Gozali-Lee, 2007). More detailed information about the evaluation design can be found in the *Project Early K evaluation plan* (Mueller, 2006a).

Comparisons to peers

Using these assessments, children attending PEK schools are compared to two different groups of peers. First, they are compared to children who are similar but who have not attended the program. These children were chosen for PEK but just missed the program's September 1 birthday cut-off date. This provides a comparison of children with similar characteristics, and eliminates the selection bias that can occur if families who choose to enroll their children in the program differ in important ways from those who do not. Because children develop rapidly at this age, Wilder Research uses a statistical model that minimizes the age differences between the two groups. Therefore, the groups are essentially the same age but one has completed the program and the other has not. This comparison reveals how developmental skills of children who attended PEK compare to skills of similar children who did not attend the program.

Second, once PEK children reach kindergarten, they are compared to their kindergarten classmates. These classmates may differ in some ways from PEK children. They have had a range of prior preschool and child care experiences, and some have had no formal preschool or child care experiences at all. This comparison reveals how developmental skills of PEK children compare to skills of kindergartners coming from a variety of backgrounds.

Comparisons over time

To see whether program effects last over time, PEK children and their classmates are assessed in subsequent years as well. Children participating in PEK in 2006-07 (Cohort 2) and 2007-08 (Cohort 3) and their classmates will be followed through third grade.

Because program development is ongoing and implementation has increased over time, children participating in 2005-06 (Cohort 1) are followed into first grade only.³

Children attending PEK child care programs are assessed when they reach kindergarten but not in future years. The Peabody, Woodcock-Johnson, and Social Skills Rating System assessments are completed in the fall of their kindergarten year only. This allows evaluators to compare their developmental skills when they start kindergarten with those of PEK school children and other kindergarten classmates.

Other measures

Wilder Research's evaluation also looks at parents' involvement in their children's learning and school activities, and parents' satisfaction with PEK. Parent surveys provide this information. In addition, once sufficient data are available, Wilder Research's chief economist plans to conduct a benefit-cost analysis based on placing PEK findings in the context of other studies following participants over longer periods of time.

Program guidance

In addition to the program's formal evaluation, a leadership team meets bimonthly to discuss program policies and provide feedback on their implementation. Members of the leadership team include district administrators and professional development staff as well as representatives from community-based early childhood organizations, the University of Minnesota, The McKnight Foundation, the City of Saint Paul, and Wilder Research.

³ The Peabody, Woodcock-Johnson, and Social Skills Rating System assessments will be used in PEK, kindergarten, first grade, and second grade. In third grade, the Minnesota Comprehensive Assessments–Series II (MCA-II) will be used. Evaluators may also examine Cohort 1 students' MCA-II results when they reach third grade.

3. Inside a classroom

“The quality of life an adult enjoys and the contributions he or she makes to society can be traced, in part, back to his or her first few years of life. From birth through age five, if a child receives support for development in cognition, language, motor skills, adaptive skills, and social emotional functioning, he or she is more likely to succeed in school and in the workplace. However, if a child doesn’t have support for healthy development at an early age, the child is more at risk for dropping out of school, committing crime, and receiving welfare payments as an adult.”

—(Burr & Grunewald, 2006, p. i)

This section illustrates a model PEK school classroom. With the goal of providing standards-based education aligned with the Project for Academic Excellence, PEK strives to provide classrooms with an environment focused on literacy and learning, purposeful interactions between teachers and students, and clear routines and expectations. This description was developed from project documents used for training and other purposes. In practice, implementation varies among classrooms and has increased over the life of the grant. Here is the goal:

3.1 *Environment focused on literacy and learning*

The model PEK classroom environment makes it clear that literacy is important. Books and tools for practicing reading and writing are found in area learning centers. Print is visible throughout the room. Children’s names appear on the walls, and areas of the room and equipment have labels at children’s height. A “word wall,” which children will see in their elementary classrooms, displays words at children’s height. Children can remove portable name cards from the wall as they practice writing their name. Other posted words may tie into the current area of study or show children the written version of words they commonly use. Children’s writing and artwork is also evident.

The room is divided into clear areas to guide children’s learning. There are areas for small-group and independent activities, and a large-group space that provides enough room for everyone to sit together during community circle. Appropriate-sized displays and equipment encourage children’s independent exploration.

3.2 Purposeful interactions

Interactions are purposeful, with children verbally engaged in their learning. Teachers use “accountable talk” that encourages children to recognize their own responsibility in their learning. Teachers may ask students for help figuring out a classmate’s question, or may draw the class’s attention to a student’s observation. Teachers also verbally summarize for students what they have learned and the ideas the students contributed. They watch, wait, and listen to encourage children to think for themselves and draw their own conclusions. Children are also encouraged to participate in conflict-resolution.

Classroom sizes provide children with the attention they need. No more than 20 students are in a room, and each room has a teacher and at least one assistant. Rooms with four Special Education students have a second assistant.

3.3 Clear routines and expectations

Children know what to expect, and what is expected of them. They have a clear idea of what is being taught and what they are expected to learn. Artwork and materials tie into the current area of study, and the teacher has posted a clear description of this theme in child-friendly language.

Their day also follows a clear routine, introducing students to the structure they will see in kindergarten. Each day students sign in as they arrive, giving them an opportunity to practice early writing skills. Every class includes community circle time, active learning time, small group time, and a closing meeting. During the community circle, the teacher leads a brief lesson tied to PEK standards. The lesson gives focus to the day. To deliver lessons, teachers read aloud to students and engage them in interactive activities. For example, teachers may read together with students’ help, lead group discussions, write with students’ help, and use calendars and other props to deliver lessons. After community circle time, teachers help students engage in hands-on learning through independent and small group activities around the room. Activities relate to the lesson of the day. Small groups also enable children to practice cooperation and problem-solving skills, and provide teachers with opportunities to target their teaching based on information gathered through student assessments. Students then gather for the closing meeting, where the full group of children regroups and revisits the day’s lesson and their work.

The day’s routines intentionally provide experiences with varying levels of teacher support and student independence. Based on the Reader’s Workshop, these levels include “I Do, You Watch,” “I Do, You Help,” “You Do, I Help,” and “You Do, I Watch.” For example,

during read alouds, teachers primarily lead and students primarily observe. During shared reading, teachers lead but students also help. During small groups, students lead discussions with teachers helping to facilitate. At active learning centers providing opportunities for independent activities, children lead their own learning with teachers observing. Other activities built into daily routines also provide experiences in each of the varying levels of teacher and student support. Students also share responsibility for classroom operations by rotating classroom jobs.

3.4 Child care settings

In child care settings, PEK looks somewhat different based on differences in the environment. For example, family child care teachers need to factor the needs of younger children into daily routines and the placement of reading and writing materials. Although some aspects of the program may be incorporated in different ways, a model child care site also offers an environment focused on literacy and learning, purposeful interactions, and clear routines and expectations. As with a school room, learning is evident inside a model PEK child care setting.

4. Progress summary: School-based PEK

This section looks at academic and social changes experienced by children attending PEK schools during the program's first year, 2005-06. It also explores program efforts that likely contributed to these changes, and describes issues for consideration in program decisions during the second grant period. A later section provides information on children participating in PEK's child care sites.

4.1 Overview

Results show promising progress for children attending PEK schools in 2005-06 (Cohort 1). It is important to keep in mind that these are preliminary findings based on the first year of program implementation. If findings are replicated with the second group of students attending the program, evaluators will have a stronger basis for making claims about the program's success. On average, 2005-06 students experienced the following changes:

- In the year before kindergarten, PEK students made faster progress than their peers nationally in vocabulary and early reading and writing skills.
- When they started kindergarten, former PEK students were ahead of their peers in vocabulary and early reading, writing, and math skills.
- Compared to demographically similar children who had not attended PEK, former participants were 12 months ahead in vocabulary, 8 months in reading, 9 months in writing, and 6 months in math after completing the program.
- Compared to kindergarten classmates—who came from a variety of backgrounds—PEK participants were 5 months ahead in vocabulary, 3 months in reading and writing, and 2 months in math.
- Even compared to only those classmates with prior preschool or child care experience, former PEK children had higher scores. Differences were statistically significant in vocabulary and math.
- Kindergarten teachers rated PEK students significantly higher than their classmates in social skills and academic competence.
- Compared to publicly funded preschools in other states, the estimated effect of PEK tended to be larger based on its initial results.
- Principals and parents provided very positive feedback about the program.

These initial results are likely related to the program’s strong implementation efforts. Overall, school sites are in alignment with the Project for Academic Excellence, and teachers are comfortable using the Early Childhood Workshop. Principals have worked to integrate the program into their schools, and teachers engage parents in a number of ways.

There are also several areas with room for growth during the second grant period. For example, results indicate a weaker impact on White students and on math skills in general. Individual schools also vary to some extent in their alignment with the Project for Academic Excellence and their linkages between PEK and kindergarten teachers. A complete list of issues for consideration is provided at the end of this section.

This section primarily presents results for students participating in the program’s first year, 2005-06, and information on student demographics and program implementation for the program’s first two years, 2005-06 and 2006-07. It is important to keep in mind that program implementation increased over the course of the first year, and student results reflect only those attending year one. Data being collected in fall 2007 will enable evaluators to see how changes in children attending the program’s second year compare to the changes seen in first-year participants. Future data will also tell evaluators if program benefits observed when children reach kindergarten continue into first grade and beyond. To guide the reader, the following table summarizes data that is provided in this section.

Summary of data provided for PEK school students

Cohort 1 (2005-06)	Cohort 2 (2006-07)
<i>Demographics</i>	<i>Demographics</i>
<i>Results</i>	<i>Results</i>
Peabody and Woodcock-Johnson tests <ul style="list-style-type: none"> - Academic progress in year before kindergarten - Academic progress compared to national norms - Skills at kindergarten entry compared to Cohort 2 (birthday cutoff method) - Program effect (birthday cutoff method) compared to other programs - Skills at kindergarten entry compared to kindergarten classmates Social Skills Rating System <ul style="list-style-type: none"> - Skills at kindergarten entry compared to kindergarten classmates 	Teacher Work Sampling System ratings of academic and social skills
<i>Implementation efforts</i>	<i>Implementation efforts</i>

4.2 Characteristics of Cohort 1 and 2 children

Ten Saint Paul elementary schools began offering PEK to 4-year-olds in fall 2005. Between morning and afternoon sessions, the nine classrooms can serve a total of 360 children. In September 2007, all PEK school classrooms had waiting lists.

Demographics

As intended by the program, children attending PEK school classrooms have typically been those at risk of facing the achievement gap. During 2005-06 and 2006-07, most came from low-income families, defined here as eligible for free or reduced-price lunch (65-73% in Cohorts 1 and 2). More than 40 percent were English Language Learners (44-47%), more than 1 in 10 needed Special Education services (13-14%), and most were from racial or ethnic minorities (79-82%) (Mueller & Gozali-Lee, 2007). Approximately 80 percent of fall 2005 students and 88 percent of fall 2006 students fell into one or more of the program's three target categories, meaning they were low-income, English Language Learners, or needed Special Education services. In 2006 the district introduced a new application process for 4-year-old programs that collects applicants' demographic information.

Home life

Most PEK school children participating the first two years lived with both parents (70-73% in Cohorts 1 and 2), and more than 1 in 10 lived with their mother only (15-17%). Quite frequently other adult relatives also lived in the household. A majority of their parents graduated from high school or attended some college but did not receive a four-year degree (67-69% of mothers and female caretakers, and 63-68% of fathers and male caretakers) (Gozali-Lee & Mueller, 2007; Mueller, Heinrichs et al., 2006).

School experience

Children often enrolled in PEK without any prior preschool or child care experience. About 4 in 10 had attended preschool, Head Start, or a child care center before they started PEK (39-40% in Cohorts 1 and 2). English Language Learners were less likely to have such experience. Children also were typically not in another preschool or child care program while they attended PEK. When not in their PEK class, children were most commonly cared for by parents (45% in Cohorts 1 and 2). Other common arrangements involved—sometimes in combination with parental care—care from relatives, neighbors, or friends (Gozali-Lee & Mueller, 2007; Mueller, Heinrichs et al., 2006).

4.3 Academic and social progress of Cohort 1

Accelerated academic progress for Cohort 1

In the year before they started kindergarten, PEK students made significant progress in vocabulary and early reading, writing, and math skills. Using the Peabody and Woodcock-Johnson tests, researchers compared students' scores when they started PEK (fall 2005) with their scores when they started kindergarten (fall 2006).

Children develop rapidly at this age, so researchers also looked at how much they progressed compared to how much children of this age would be expected to progress based on national norms. This analysis found that PEK students made accelerated progress in English vocabulary, early reading, and early writing skills. That is, they made faster progress over the course of the year than their peers nationally in these areas. PEK students made normative progress—the level of progress expected for that time period based on their peers nationally—in math (Mueller & Gozali-Lee, 2007). This is not surprising given that math was not a focus during the program's first year of implementation. The program implemented the Everyday Mathematics curriculum in fall 2007, which may affect future years' math scores.

Students made significant advances overall, but how did specific groups targeted by the program fare? On average, English Language Learners had significantly larger gains than others in vocabulary, reading, and math. Low-income students made larger gains than their peers in vocabulary and reading. Asian and Latino students had significantly larger gains than their White peers in vocabulary, and Asian students had significantly larger gains than White students in reading and math. Although some of their peers made more progress, White students and higher-income students still scored higher on average than other groups (Mueller & Gozali-Lee, 2007).

Teacher ratings of academic and social skills for Cohort 2

Comparable data on student progress are not yet available for children who participated in PEK during 2006-07. However, there are teacher ratings available for this second cohort, and they show progress over the course of the year. PEK teachers conducted Work Sampling System assessments three times over the course of the year to look at students' growth in personal and social development, language and literacy, and mathematics. These assessments are curriculum-embedded, meaning they are based on teachers' observations and documentation in the context of regular classroom activity. Results show progress from fall to winter to spring in each of the three domains. Across the domains, only 2 to 3 percent were rated as not yet demonstrating the skill or knowledge in the spring. In each domain, most students were rated proficient in the spring. Mathematical thinking had the

lowest proficiency rate, with 72 percent proficient and 26 percent in process in the spring (Heinrichs, 2007b).

4.4 Kindergarten readiness of Cohort 1 compared to similar children

Students made substantial progress, but were they ready for kindergarten? Results suggest this progress did translate into kindergarten readiness. Compared to their peers, PEK students were found to have advantages in vocabulary, reading, writing, and math skills when they started kindergarten.

This section compares first-year PEK participants (Cohort 1) with those who were selected for the program but who just missed the birthday cutoff date for enrollment that year (Cohort 2). A child who is almost 6 is at a different developmental stage than a child who just turned 4, so Wilder Research uses a statistical model that minimizes the age differences between the two groups. The model estimates the difference in scores right at the birthday cutoff between the groups, where they are essentially the same age. The main difference between these two groups is that one has participated in PEK and the other has not.⁴

Academic advantages

There were statistically significant differences in vocabulary, reading, writing, and math test scores at the birthday cutoff date. Vocabulary scores were estimated to be 31 percent higher for Cohort 1 due to participation in PEK, reading scores were 50 percent higher, writing scores 28 percent higher, and math scores 27 percent higher (Mueller & Gozali-Lee, 2007).

Translating results into age-equivalency scores provides another meaningful way of looking at them. This analysis found a difference of 12 months between the two groups in their vocabulary scores. This means that children who attended PEK were estimated to be 12 months ahead of where they would have been without attending the program. Children who attended PEK were estimated to be eight months ahead in reading, nine months ahead in writing, and six months ahead in math. Compared to national norms, these children were still about three months behind in vocabulary when they started kindergarten, which is not surprising given that almost half came from families where English was not the first language. A look at the impact within individual demographic

⁴ Analyses summarized here incorporate adjustments for demographic differences between the two groups as well as when in the fall each child was tested. Adjustments were also made for differences in baseline writing and math scores in the birthday cutoff analysis.

groups again suggests White students benefited less from the program than other students (Mueller & Gozali-Lee, 2007).

Comparisons to other programs

Wilder Research compared PEK results with those of state-funded preschool programs in seven other states.⁵ Overall, the estimated effect tended to be larger for PEK based on these initial results. The proportion of English Language Learners in the study may account for some of the difference in results, and evaluators will continue to examine the implications of the large English Language Learner population as the study progresses (studies cited in Mueller & Gozali-Lee, 2007).

4.5 Kindergarten readiness of Cohort 1 compared to classmates

PEK students showed academic advantages over similar children who did not attend the program, but were they as prepared for kindergarten as their classmates? Test results suggest they were ahead of this peer group as well. Comparing their fall 2006 Peabody and Woodcock-Johnson scores to those of their kindergarten classmates, former PEK students were ahead in vocabulary, reading, writing, and math skills.⁶

Academic advantages

Cohort 1 children had an estimated five-month advantage over their kindergarten classmates in vocabulary, a three-month advantage in early reading and early writing skills, and a two-month advantage in early math skills. These differences are smaller than those found using the birthday cutoff method, likely because about 60 percent of kindergarten classmates also had previous preschool or child care center experiences according to their parents (Mueller & Gozali-Lee, 2007).

Even after separating the kindergarten classroom group into those with prior preschool or child care center experience and those without, former PEK students had the highest adjusted average scores, followed by the kindergarten classmate group with preschool or child care center experience, and then the group without such experiences. Differences between PEK participants and classmates with prior preschool or child care center experience were statistically significant for the vocabulary and math tests. These results suggest that PEK provides benefits beyond those received by most kindergarten children in their pre-kindergarten experiences (Mueller & Gozali-Lee, 2007).

⁵ Studies of these other programs also used the birthday cutoff method to determine the program's effect on children's test scores when they reached kindergarten.

⁶ Analyses summarized here incorporate adjustments for demographic differences between the two groups as well as when in the fall each child was tested.

Teachers' perceptions

Teachers' perceptions support these results. Using the Social Skills Rating System, kindergarten teachers gave former PEK participants higher ratings for academic competence than their kindergarten classmates. They also gave higher ratings for social skills, another sign of kindergarten readiness. The two groups appeared about the same on problem behaviors, with both groups exhibiting fewer behavior problems than would be expected based on national norms. Teachers' ratings of former PEK participants were similar regardless of whether those students attended kindergarten at PEK schools or other Saint Paul schools (Mueller & Gozali-Lee, 2007).

Principals' perceptions

Spring 2007 principal interviews also validate the improvements observed in kindergarten readiness. They say PEK participants are well-prepared for kindergarten and ahead of their peers (Heinrichs, 2007a).

"[The kindergarten] teachers can absolutely tell who was previously in [PEK] and who was not; these children are models for the other kids (for how you sit on the rug; for how you handle materials appropriately; how you hold your lunch tray; how you answer questions in the classroom). Routines and rituals are so similar between the grades, they know what to do. And it really helps ... the rest of the class get on board faster. What used to take a month of just getting to know the routines and rituals take[s] much less time, and [as a result the children are] getting into deeper learning activities."

—PEK school principal, spring 2007 (as quoted in Heinrichs, 2007a)

In fact, principals perceive kindergarten as now needing to change to address higher skill levels of these incoming students (Heinrichs, 2007a). PEK leaders also recognize that kindergarten teachers are seeing a gap between former participants and those who have not benefited from PEK, and that more differentiated instruction is needed to meet the needs of all children.

Increasing linkages between PEK and kindergarten teachers will facilitate adjustments in this area. Schools are at different stages in their efforts to foster communication between the two levels. Some have already formalized this connection through concrete activities such as regularly scheduled meetings, common planning time, and a formalized team that works together during staff development. Kindergarten and pre-kindergarten teachers also observe each other's classrooms. Other schools have plans to build closer relationships (Heinrichs, 2007a). PEK leaders are also discussing ways to promote pre-K and kindergarten integration, such as through combining pre-kindergarten and kindergarten teachers in professional development breakout sessions. Discussions are also underway about

kindergarten teachers possibly using the Early Childhood Workshop model rather than the Reader's and Writer's Workshops, which they currently use. This could create additional linkages between the two levels.

4.6 *Implementation efforts in years 1 and 2*

Understanding why participants may have progressed requires understanding what the program looked like in reality. This section describes implementation successes in the first two years of the program. Some of these successes may have contributed to the changes seen in 2005-06 participants. It is important to keep in mind, however, that program development is ongoing and implementation has increased over time. In future years, evaluators plan to examine whether differences in individual classrooms' implementation are linked to differences in children.

Alignment with the Project for Academic Excellence

To determine classrooms' alignment with the Project for Academic Excellence, Saint Paul Public Schools evaluators conduct classroom observations, principal interviews, and teacher surveys. The picture emerging from these results is one of classrooms generally integrated into the school and in overall alignment with the Project for Academic Excellence. Teachers generally manage the classroom well and seem comfortable teaching from the program's curricular model (Heinrichs, 2007a).

Structured observations found that in many ways, PEK school rooms look like the model room described earlier. These annual observations are based on a tool developed by program coaches and the evaluator. With variations among sites, classrooms generally provide a positive learning environment with teachers who are comfortable implementing the Early Childhood Workshop and children who are engaged in learning. During 2005-06, all classrooms were found to have fully or partially implemented a majority of indicators used to determine their alignment with the Project for Academic Excellence. The 2007 observations found that classrooms achieved a higher level of implementation during the second year (Heinrichs, 2007a).

Areas with a particularly high rate of implementation include the following: clear evidence of an area of study; displays of children's artwork throughout the room; opportunities for read alouds; clear classroom expectations and a posted daily schedule; time for students and teachers to "ease into the day," including greeting each other, signing in, and sharing quiet activities; community circle time; and small group time. A few indicators do not have a high rate of implementation at even the basic level. These include evidence of accountable talk, interactive writing opportunities, and evidence of children practicing reading skills independently (Heinrichs, 2007a).

Classroom management

Observations also found improvements between the two years in children's engagement in the class and their behavior. First-year observations found children not always engaged in learning and frequent behavior problems. In 2007, all classrooms were found to have a positive environment and children were found to be highly engaged throughout the class in all but one room, and mostly engaged in that room (Heinrichs, 2007a).

Language and literacy supports

Evaluators also specifically look at the extent to which classrooms promote literacy and language development. To this end, they conduct observations in the fall and spring using a research-based tool for preschool classrooms, the Early Language Literacy and Classroom Observation (ELLCO). Based on these observations, PEK classrooms are generally at or slightly above a basic level on these standards for promoting language and literacy in the classroom, and teachers are using classroom management strategies that respect and encourage children's engagement (Heinrichs, 2007a).

There are variations among schools, however, as well as room for growth in moving beyond a basic level of the standards. Between spring 2006 and spring 2007, there was also a slight drop in the overall average score in the language, literacy, and curriculum subscale, although schools are meeting basic standards in this area. Activities within this subscale that may warrant additional attention include facilitating home support for literacy, actively using classroom diversity as a basis for learning, and using ongoing assessment techniques to evaluate learning and adjust instruction. There also appears to be room for growth in the extent to which classrooms support children's engagement in self-directed activities, with all but one classroom at the basic level in this area (Heinrichs, 2007a).

School integration and principal support

Interviews with the 10 school principals in spring 2007 also indicated that schools are making progress toward integrating the PEK classroom into the school overall. Principals visit classrooms, involve program staff in school meetings and professional development, and involve students in school-wide activities (Mueller, Heinrichs et al., 2006). Principals were highly enthusiastic about the program. They perceive participants as learning the routines and rituals of the Project for Academic Excellence, and gaining important social skills and early academic skills. They also emphasized the importance of the support and professional development they receive from the program. They expressed a desire to continue the PEK principals' meetings, and many reported that the professional development provided by the district's lead consultant from CELL was very useful (Heinrichs, 2007a).

Principals also expressed a desire to have more of their PEK graduates move into kindergarten at their schools (Heinrichs, 2007a). When asked where their child would attend kindergarten, 62 percent of Cohort 2 parents said their child would go to the same school or another PEK school (Gozali-Lee & Mueller, 2007b). A few principals commented that having PEK at every school would decrease movement to a different school when children start kindergarten (Heinrichs, 2007a).

Several principals commented that student attendance continues to be a problem, and several indicated problems with registration. As one principal commented, “[The] placement process has been difficult. We sat with openings through a large part of the year. And there were children waiting to get in” (Heinrichs, 2007a). Steps are being taken to improve placement, with The McKnight Foundation supporting a position at the Student Placement Center dedicated to placing students in 4-year-old classrooms and streamlining the placement process.

Teachers’ communication with parents

The program’s efforts to engage parents may have also contributed to student changes, although it is difficult to know the extent to which program efforts affected parent behaviors. Evaluators gather feedback from parents through surveys completed at spring parent-teacher conferences the year their child attends PEK.

Almost all parents reported asking their child about what he or she is learning at school every day or most days (92-93% in Cohorts 1 and 2). Most also said they read with their child every day or most days (67-72%). Almost all parents reported that their child’s experiences in the program were “excellent” or “very good” (96-97%). Additionally, almost all indicated the school does “OK” or “very well” on all areas of school-home communication listed (95-100%). Parents gave the highest ratings in both years to how well the teacher or someone else at school sends home notices, sends home news about things happening at school, and tells them how their child is doing in school (Gozali-Lee & Mueller, 2007b).

Although parents are happy with the communication they receive, the types and extent of communication vary among teachers (Gozali-Lee & Mueller, 2007; Heinrichs, 2007a). To some extent, these differences reflect differences in style among individual teachers and schools. Responding to a spring 2007 questionnaire, all teachers reported communicating with parents by telephone, but the number of calls varied widely. Some teachers reported sending home homework or activities to help extend the learning at home, and others reported providing suggestions through newsletters or at conferences. All teachers reported sending home the parent resource information provided by the program, but they were generally unaware of how parents used the information (Heinrichs, 2007a). The program has taken

steps to increase parent education efforts for 2007-08 by expanding parent-education materials for use in its school and child care settings.

Parent involvement in school activities

In addition to extending learning at home, parents' involvement in their children's learning also encompasses participating in school activities. PEK parents are involved in school activities in some key ways, such as attending conferences, although again the extent of their involvement varies among schools (Gozali-Lee & Mueller, 2007; Heinrichs, 2007a). Almost all reported that they had attended a parent-teacher conference (98-99% in Cohorts 1 and 2). More than 60 percent had attended an open house, and roughly half of the parents indicated that they had attended a family social or educational event (51-54%) or a student performance program (47-53%) (Gozali-Lee & Mueller, 2007b).

4.7 Issues for consideration

Study results provide insights that can inform programming during the second grant period. These results should be considered in relation to the experiences of staff who work directly with the program and teachers who work directly with the children. All provide important perspectives that should be used to inform any program changes. In several of these areas, program leaders and staff have already made adjustments in services.

- *Early math skills.* Gains in early math skills did not appear to be accelerated, as opposed to gains in other academic skill areas. With the implementation of a math curriculum in fall 2007, future years' results should be monitored to see whether future cohorts experience larger gains in this area (Mueller & Gozali-Lee, 2007).
- *White students' progress.* White students tended to start PEK with stronger skills in the areas assessed. They appeared to benefit less from the program, although were still above national norms when they entered kindergarten. These results raise the question of whether there needs to be more differentiated instruction in small groups to meet the needs of all children in PEK (Mueller & Gozali-Lee, 2007).
- *Further alignment with the Project for Academic Excellence.* Indicators that do not have a high rate of implementation and that may warrant additional attention include evidence of accountable talk, interactive writing opportunities, and evidence of children practicing reading skills independently (Heinrichs, 2007a).

- *Additional language and literacy supports.* Classroom observations placed classrooms at or slightly above a basic level of the ELLCO indicators. Program leaders and staff may want to discuss whether moving beyond this basic level should be emphasized as a goal for classrooms (Heinrichs, 2007a).
- *Specific supports to address.* As indicated by ELLCOs, there are some specific language and literacy supports that may warrant additional attention in particular. They include facilitating home support for literacy, actively using classroom diversity as a basis for learning, using ongoing assessment techniques to evaluate learning and adjust instruction, and supporting children’s engagement in self-directed activities (Heinrichs, 2007a).
- *Variations among schools.* ELLCOs and observations for alignment with the Project for Academic Excellence indicate some individual schools may require more assistance than others in aligning with the K-12 model and achieving and moving beyond a basic level of language and literacy supports (Heinrichs, 2007a).
- *Attendance.* Several principals expressed concerns over student attendance (Heinrichs, 2007a).
- *Registration.* Several principals also expressed concerns over issues with program registration, including open spots and waiting lists, and issues placing children into the program mid-year (Heinrichs, 2007a). Improvements may be seen with the creation of a new position that involves streamlining the placement process for 4-year-olds. Program leaders have also initiated conversations about busing challenges.
- *School mobility.* Principals would like to see more of their PEK graduates moving into kindergarten at their school. Program staff might consider working with principals on strategies in this area (Heinrichs, 2007a).
- *PEK/kindergarten linkages.* Schools are at different stages of forging relationships between PEK and kindergarten staff, and many have plans to build closer relationships. Continuing to formalize these linkages will help create smooth transitions between the two, and also feeds into the following suggestion (Heinrichs, 2007a)
- *Kindergarten content.* Early on, principals anticipated that kindergarten would need to change to address higher skill levels of incoming students. Today they perceive that to be the reality. PEK staff, principals, and kindergarten teachers now need to address the program’s implications for kindergarten classrooms to ensure gains made in PEK are sustained over time (Heinrichs, 2007a).

- *Efforts to involve parents.* The types and extent of teachers' communication with parents—and the extent of parents' involvement in the school—varies by school. The program is already taking steps to strengthen parent education efforts by piloting expanded materials developed over the summer. While differences in communication in part reflect the different styles of individual teachers and schools, it may also be instructive for schools with lower levels of parent involvement to consider ways other schools are working to involve parents (Heinrichs, 2007a).
- *Parenting sessions.* It may be instructive to review the ideas teachers offered for future parenting sessions, including potential topics, feedback on their timing, and ways to increase attendance (Heinrichs, 2007a).
- *Parent suggestions.* It may be instructive to review transcripts of parents' responses to an open-ended question asking for suggestions for improving the program. Suggestions offered included extending the hours, having more contacts with parents, safe and better transportation, and inviting parents to participate or volunteer at school, for example (Gozali-Lee & Mueller, 2007b).

5. Progress summary: Community-based PEK

This section looks at the program's experience during its first year in child care settings, 2006-07. As described earlier, PEK extended the program to Saint Paul child care settings in recognition that parents use a variety of care arrangements for their children. The program considers this component a pilot, with the intent that a community-wide approach will help more children enter school with the skills needed to succeed.

Evaluators look at child care children's skill levels, and those of their classmates, when they reach kindergarten. Wilder Research is currently in the process of administering Peabody and Woodcock-Johnson tests to children who participated during the first year in child care settings. Because these data are not yet available, at this point evaluators are mainly able to discuss implementation efforts during 2006-07. It should be noted that both child care center teachers and family child care home providers are referred to here as "teachers." Also, whereas "Cohort 1" in school settings refers to children participating in 2005-06, "Cohort 1" in child care settings refers to children attending during 2006-07.

5.1 Overview

Results show the beginning of standardization among child care sites, and between child care and school settings. While maintaining characteristics unique to their environments, these diverse settings are coming together in their approach to how they prepare Saint Paul children for kindergarten. On average, 2006-07 classroom observations, parent interviews, and teacher surveys show the following results:

- In phone interviews, all of the parents with children starting kindergarten in the fall said the child care teachers helped prepare their children for kindergarten (Gozali-Lee, 2007).
- Structured observations found increasing standardization across child care sites, with more consistent routines and greater alignment with the Project for Academic Excellence (Hawley, 2007).
- Observations also found improvements in the extent to which the physical environment and teacher strategies promote child care children's language and literacy development. Many of the gains reflect areas emphasized in professional development (Hawley, 2007).
- Teachers reported that PEK professional development has made a significant impact on their teaching practices and in their program's ability to prepare children for school (Gozali-Lee & Mueller, 2007a).

- Parents generally reported that they used the parenting information provided by the program (Gozali-Lee, 2007).

Information gathered during 2006-07 identified a number of strengths as well as areas the program can continue to address as it moves forward with implementation. In some cases, basic components are now in place, and ongoing training and coaching can help teachers use them to the full extent possible. Issues for consideration are summarized at the end of this section.

5.2 Characteristics of Cohort 1 children

Co-chaired by staff from PEK and Resources for Child Caring, a PEK child care alignment committee developed the program format for child care sites. The committee targeted programs serving low-income children and English Language Learners. By April 2006, the committee had selected a total of 6 centers with 11 classrooms and 15 homes for participation in the program. Due to attrition unrelated to PEK, the number of participating family child care homes has fluctuated. As of fall 2007, 13 family child care homes participate in the program (Hawley, 2007; Henton et al., 2005-07).

This section presents information on the 137 PEK child care children between September 1, 2006, and August 31, 2007. Twenty-seven of these children attended 8 family child care homes, and 110 attended the 6 centers during this time (Gozali-Lee, 2007).

Demographics

PEK participants are those ages 3 and 4 in the child care homes and classrooms, although children of other ages are likely exposed to elements of the program as well. In both family child care homes and child care centers, the percentages of participants ages 3 and 4 were roughly equal during 2006-07. At homes, 48 percent of participants were age 3 and 52 percent age 4 as of September 1, 2006. At centers, 47 percent were age 3 and 53 percent age 4 (Gozali-Lee, 2007).

Fifty-four percent of the children in family child care homes and 91 percent in child care centers were in the PEK target population, meaning they were either English Language Learners, came from low-income families, or needed Special Education services. More center than home care children came from low-income backgrounds (87% and 50%, respectively). In contrast with school participants, all of the children in family child care homes (100%) and most of the children in child care centers (86%) spoke English as their primary language. Two children in family homes (8%) and three children in centers (3%) received Special Education services (Gozali-Lee, 2007).

Attendance

Participating family child care homes offered between 129 and 252 days between September 1, 2006, and August 31, 2007. Some of the homes did not participate in PEK during this entire period. The number of days offered by child care centers varied less, ranging from 250 to 253 days. A majority of the PEK children attended 160 or more days during this time (63% of home care and 59% of center children). None of the children in family homes and only 6 of the children at centers attended 80 or fewer days (Gozali-Lee, 2007).

The number of 3- and 4-year-old children participating at any given site varied. Family child care homes served between one and eight 3- and 4-year-olds. Centers served between 6 and 30 center-wide, with smaller numbers in the 11 individual classrooms (Gozali-Lee, 2007).

5.3 Teachers' assessments and parent perceptions of Cohort 1 progress

This section presents results from teachers' assessments of individual children, as well as feedback provided during parent interviews. The Peabody and Woodcock-Johnson tests currently being administered will provide a more complete picture of children's skills following their participation in PEK child care programs.

Early language and literacy development

Teachers use Individual Growth and Development Indicators (IGDIs) to monitor individual children's early language and literacy development over time. Preschool IGDIs measure children's progress in three areas: picture naming, alliteration, and rhyming. During the assessments, teachers hold up cards with pictures and ask children to name pictures, identify pictures starting with the same initial sound, and identify pictures that rhyme. The assessments provide teachers with feedback on individual children's progress over time toward developmental outcomes, and alert teachers when additional interventions may be needed (ECRIMGD, 1998; Get It! Got It! Go! website, n.d.).

During 2006-07, PEK child care teachers administered IGDIs three times, in November, March, and July. Results show that on average, children improved on all three indicators of early language and literacy development.⁷ Children experienced the biggest improvement in picture naming. PEK established target scores based on scores achieved by children entering kindergarten in Minneapolis schools. Twenty-three percent of 4-year-olds met

⁷ Due to the small number of children in family child care homes, results are not separated for family child care home children and center children.

the program's target score for picture naming at pretest, and 60 percent at posttest. Seventeen percent of 3-year-olds met this same target score for picture naming at pretest, and 50 percent at posttest. Rhyming and alliteration experienced smaller increases between the percentages of children meeting targets at pretest and posttest. Seven percent of 4-year-olds met the target for rhyming at pretest, and 25 percent at posttest. For alliteration, 7 percent of 4-year-olds met the target at pretest, and 31 percent at posttest. Looking at 3-year-olds' progress toward these same targets, 2 percent met the target at pretest and 17 percent at posttest for both rhyming and alliteration. Smaller percentages meeting the rhyming and alliteration targets may reflect the program offering these lessons later in the year (Gozali-Lee, 2007).

At this point, evaluators are not yet able to compare child care IGDIs with those of children at PEK schools, although it may be noteworthy that program staff perceive results to be similar for the two groups. Evaluators are also pursuing additional information on the program's target scores to aid in the interpretation of results.

Parents' perceptions of kindergarten readiness

Parents perceived the program as improving their children's school readiness. In phone interviews conducted by Wilder Research, a majority of parents reported that their children would enroll in kindergarten in the fall (65% of parents with children at homes and 68% with children at centers). All of those parents said the child care teachers helped prepare their children for kindergarten (Gozali-Lee, 2007).

5.4 Implementation efforts in year 1

This section describes the program's implementation efforts during its first year of operation in child care settings. The program achieved a number of successes during this initial year, and is on its way to a unified approach between schools and child care settings. PEK provided training and coaching to teachers, information to parents, and materials to help teachers provide literacy-rich instruction aligned with the Project for Academic Excellence.

Changes that are beginning to emerge should be appreciated in light of programming challenges in child care environments. One challenge is the staff turnover often seen in child care settings. While all 6 original child care centers remain with the program, there was teacher turnover in 4 of the 11 classrooms during 2006-07. Additionally, only 8 of the original 15 family child care homes were still with PEK in the spring, and several new ones have been added. Overall gains at family child care homes come despite the loss of some enthusiastic partners (Hawley, 2007).

The diversity in child care environments and teacher backgrounds also present programming challenges. Environments range from homes with multiple ages of children all together in a daily living environment, to centers with separate rooms for separate ages. Child care teachers also vary widely in the education and experience they bring to the program, as well as in the administrative context in which they operate. For example, some manage their own business, while others work in corporate settings with set protocols (Hawley, 2007).

While working to increase standardization, PEK also respects differences intrinsic to these diverse environments. One example of how PEK staff take into account environmental differences is their approach to curricular support. In schools, teachers receive an implementation manual that illustrates the Early Childhood Workshop model. These licensed teachers use the manual to develop lesson plans, and to integrate lesson themes throughout the classroom environment. Child care teachers receive more extensive lesson-planning support. For centers, this means a complete literacy-focused curriculum, *Doors to Discovery*. For homes, this means a theme-based curricular model developed specifically for them. The family child care coach extended a curricular model that involves reading the same book for five days with a different teaching point each day. The coach also provided ideas for integrating lessons into active learning and vocabulary development. In fall 2007, child care settings also received a version of the PEK implementation manual, which complements the other supports already in place.

Alignment with the Project for Academic Excellence

Researchers conduct structured observations to determine how well child care settings align with the Project for Academic Excellence. They also conduct separate observations to specifically look at how well child care settings support language and literacy. To assess language and literacy supports, observers use the Early Language Literacy and Classroom Observation tool (ELLCO) in center classrooms and the similar Child/Home Early Language and Literacy Observation (CHELLO) tool in family child care homes. Spring 2007 observations found overall growth between 2006 and 2007. They identified a number of strengths as well as areas the program can emphasize as it moves forward with implementation. As would be expected, implementation varied among individual sites. In some cases, basic components are now in place, and future training and coaching support can help teachers use them to the full extent possible (Hawley, 2006, 2007).

Improvements include changes in the physical environment as well as increasing standardization in classrooms' daily routines. Within these areas, there was room for growth in encouraging more children to use book and writing areas now in place, posting lesson plans and explicitly referring to class schedules with children, and carrying the area of study into active learning centers. Some center teachers also face challenges with

classroom management and climate, and with integrating Doors to Discovery throughout the environment and in some cases with other curricula in use at the center (Hawley, 2007).

Observations also found improvements in teachers' interactions with children. There was evidence of teachers setting clear expectations and of their intentional use of accountable talk, strategies to promote language and literacy, and transition strategies to help children move from one activity to another. There was also room for teachers to expand their repertoire and to move beyond more basic strategies. Additionally, despite gains, some teachers in both settings did not seem clear on program goals for using information gathered from their assessments of children, and for communicating to parents about literacy (Hawley, 2007).

There also appear to be changes in teachers' attitudes that are not directly measured by formal evaluation tools. For example, a few family child care teachers indicated they experienced a change in their perception of their value and role in children's learning. As one teacher explained, "I never thought I could do this. ... I mean plan and stuff. Just look at that pocket chart on my door with those words in it—that's the best thing for me. I sit down on Sunday night, and I think, 'I am a teacher,' and it almost gives me goose bumps" (Hawley, 2007).

Professional development

As with their school counterparts, PEK provides child care teachers with professional development to enhance teaching practices, instructional content, and learning environments, and ultimately to align teaching strategies with methods used in the Project for Academic Excellence. During 2006-07, child care teachers participated in monthly professional development workshops as well as the program's two-day summer institute on the Principles of Learning. They also received ongoing coaching support. The program's school coaches worked with child care center teachers, and a coach hired by Resources for Child Caring worked with family child care teachers (Henton et al., 2005-07).

Teachers and coaches completed surveys following teachers' participation in training. During a 14-month period from spring 2006 to summer 2007, the program provided a total of 12 training sessions. Nineteen family child care teachers and 32 child care center teachers attended the trainings (Gozali-Lee & Mueller, 2007a).

Twenty teachers completed a survey asking about their overall experience with PEK professional development. Almost all were satisfied with all aspects of professional development. They indicated they "agree" or "somewhat agree" with a series of statements relating to its overall impact, helpfulness with setting goals, and support for building literacy-rich environments. For example, all of the respondents reported that PEK

professional development made a significant impact on their teaching practices and in their program's ability to prepare children for school. Teachers were also generally satisfied with the specific skills and topics emphasized, including literacy skills; PEK components; and SEEDS school readiness, a training program that helps early childhood educators create literacy-rich environments (Gozali-Lee & Mueller, 2007a; Lizakowski, 2005).

Consistent with the classroom observations, teachers' feedback suggests the program's emphasis on ongoing training will be important as it pursues higher levels of implementation. More than half of the respondents agreed that they need additional information and support in the specific literacy skill areas of conversation skills, phonological awareness, book and print rules, alphabet knowledge, and vocabulary and background knowledge. While most respondents, and in some cases almost all, indicated they had received enough training or support in goal setting, specific PEK teaching practices, and SEEDS school readiness, a fair number gave ratings of "somewhat agree" and a couple indicated they needed more information in specific areas. More family child care teachers than center teachers seemed to want additional information and support from the program (Gozali-Lee & Mueller, 2007a).

Implementation of teaching strategies

Teachers also completed a self-assessment survey following professional development, rating how much they used the PEK teaching strategies. The survey covered five program components: environment and routines, interactions, literacy skills, parent involvement with Saint Paul Public Schools events or activities, and efforts or engagement with PEK practices. Coaches rated teachers' implementation of these strategies on a separate survey. Surveys asked teachers and coaches to rate each item on a scale of 1 to 5, ranging from "low use or low levels of implementation" to "high use or high levels of implementation." Nineteen teachers and three coaches completed the surveys (Gozali-Lee & Mueller, 2007a).

Coaches and teachers differed in their ratings. Average ratings for teachers were typically in the 3s and 4s, and mostly in the 4s. Average coach ratings varied more and tended to be lower, with more 2s and 3s and fewer 4s compared to teachers' average scores. It is possible that differences in teachers' and coaches' backgrounds and educational attainment contributed to differences in their perceptions of strategies presented in the training.

Teachers generally rated themselves higher than did coaches in their routines and environment, interactions with children, and implementation of literacy skills. In some cases, teachers and coaches also differed in what they rated the highest and what they rated the lowest. Coaches and teachers provided fairly similar ratings for teachers' efforts or engagement with PEK practices, especially in the areas of regular attendance in coaching, teachers' initiative, and accomplished goals. Only family child care teachers and one coach were asked

questions about teachers' efforts to involve parents in Saint Paul Public Schools activities. The coach rated the teachers higher than the teachers rated themselves on three of the five items, and rated them lower on the other two (Gozali-Lee & Mueller, 2007a).

In their responses to open-ended questions, teachers seemed satisfied with the support they received from PEK staff and families. As benefits of partnering with Saint Paul Public Schools, teachers mentioned helping children become ready for kindergarten, support from PEK staff, and improvements in teaching skills. Some teachers mentioned a lack of time as a challenge to participating in professional development, and some mentioned limited resources to buy materials as a challenge to implementing program components (Gozali-Lee & Mueller, 2007a).

Teachers' parent education efforts

In spring 2007, Wilder Research conducted telephone interviews of parents whose 3- and 4-year-olds participated in PEK during its first year in child care settings. To be interviewed, parents' children had to have been enrolled for at least two months from September 2006 to March 2007. Parents of 20 children who attended family child care homes and 64 children who attended child care centers participated in the interviews. Respondents' children were demographically similar to the whole group. Interviews found that parents generally knew of their child care teachers' partnership with PEK, and found information provided by the program to be useful. During 2006-07, this parent information was primarily in the form of written materials sent home on a monthly basis (Gozali-Lee, 2007).

All interviewed parents whose children were in family child care homes (100%) and most whose children were at centers (78%) knew that their teachers participated in the program. Seventy-nine percent of family child care parents and 58 percent of center parents reported talking to their provider every day or most days about what their children are learning, and over half of the remaining parents in both groups reported talking about it once a week. Asked about information sent home by the program, parents typically reported using the information they received (Gozali-Lee, 2007).

Interviews also presented parents with a list of community services and asked which they would like to learn more about. These services included the following, listed in order of the percentage of all parents wanting to learn more: free or inexpensive places for families with young children to go (93%); Operation Joy, a community organization that distributes toys and food during the holidays (61%); free tax services (52%); family counseling (49%); Coats for Kids (45%); job training services for adults (41%); and health care for children and families (38%) (Gozali-Lee, 2007).

Interviews also presented parents with a list of potential workshop topics and asked which they would like to attend. These topics included the following, listed in order of the percentage of all parents interested in attending a workshop on the topic: helping children learn to read (61%), helping children learn to write (61%), preparing children for kindergarten (60%), information on Saint Paul Public Schools (48%), and normal 3- and 4-year-old development (38%). Three-quarters were interested in family fun nights (75%). Asked about their preferred time for attending parent meetings, most parents preferred the evening (80%) (Gozali-Lee, 2007).

During 2006-07, PEK offered a number of workshops to school and child care children's parents, but parents of child care children attended only two workshops. As described earlier, the program expanded parent education efforts for 2007-08 with the development of more extensive materials and hiring of two additional part-time parent educators. Each of the two new part-time staff will focus on one school, working to build connections with the surrounding child care community. They will also focus on developing relationships with parents and informing parents of school events. The program also plans to offer literacy-related parent education programs in 2007-08.

Parent involvement

In addition to talking with the teachers and using the information they provide, parents indicated they are involved in their children's learning in a variety of other ways as well. All of the parents interviewed said they ask their children about what they are learning in child care every day or most days. Most also said that every day or most days, they read or look at books with their children (95% of home care and 81% of center parents), teach their children new words (90% of home care and 75% of center), provide their children with writing materials (95% of home care and 88% of center), and monitor the TV shows or programs that their children watch (95% of both home care and center parents) (Gozali-Lee, 2007).

Parents are also involved in their children's kindergarten preparations. PEK sent home materials to help parents complete tasks required for enrollment, and offered Understanding School Choice sessions at child care centers. Eighty-five percent of the parents with children starting kindergarten in the fall said their children had had a preschool screening or had an appointment scheduled for a screening. Most also reported that their children had been registered for kindergarten in a school (85% of home care and 88% of center parents), and most of those with registered children said their child would attend a Saint Paul district school (64% of home care and 81% of center parents). Additionally, most parents with children registered for kindergarten said they had visited the school with their child (82% of home care and 88% of center parents) (Gozali-Lee, 2007).

5.5 *Issues for consideration*

As they plan program efforts during the second grant period, staff can consider the following evaluation insights along with insights gained from their own experience working directly with the program.

- *Variations among sites.* Child care sites vary in their implementation of program components. Coaches can use individual centers' and homes' ELLCO and CHELLO results to target supports to the different needs of individual sites. It may also be instructive to explore what factors lead to higher rates of implementation at some sites than others, and whether there are additional ways of promoting consistency amidst environmental differences (Hawley, 2007).
- *Moving to higher levels of implementation.* Coaches can help teachers more fully implement some of the basic program components they now have in place. At some sites, there is room for growth in encouraging children to use book and writing areas, connecting active learning centers to lesson themes, and expanding teachers' repertoire of strategies for promoting children's oral language development (Hawley, 2007).
- *Teachers' understanding of teaching strategies.* Coaches and teachers differed in their ratings of teachers' implementation of PEK teaching strategies. Clearer definitions of teaching strategies and activities related to these strategies may need to be communicated to the teachers (Gozali-Lee & Mueller, 2007a).
- *Teachers' understanding of parent communication and child assessment goals.* Although the spring 2007 observations found overall improvements, some home and center teachers did not seem clear on program goals for using child assessments and facilitating home support for literacy. Teachers may need more support in understanding how and why to communicate with parents about literacy, and in using data to inform their teaching (Hawley, 2007).
- *Professional development.* Child care teachers' diverse backgrounds and environments, along with implementation differences across sites, present challenges for establishing training and coaching goals. As they plan future professional development, program staff can review results from classroom observations (Hawley, 2007). They can also reference teachers' feedback on training topics where they need additional information or support (Gozali-Lee & Mueller, 2007a).

- *Financial and time constraints.* Several teachers mentioned a lack of time as a challenge to participating in PEK training, or limited resources for materials as a challenge to implementing program components. Finding solutions may help teachers participate longer in the program (Gozali-Lee & Mueller, 2007a).
- *Recruitment and retention.* Turnover among teachers and participating family child care homes presented a challenge during 2006-07, and the program is working to strengthen recruitment and retention so more children will participate longer (Gozali-Lee, 2007).
- *Parent workshops and information.* Parent interviews provide valuable feedback on the workshop topics they are interested in, and the time of day that is most convenient. Parent interviews also provide useful feedback on the types of community services parents would like to learn more about (Gozali-Lee, 2007).

6. School system and community implications

“These increasing skills and awareness have the potential to spread and develop a community of practice across St. Paul. [They can develop] a learning community around successful strategies.”

—staff from the University of Minnesota’s Center for Early Education and Development, in a report on PEK child care implementation (Hawley, 2007, p. 16)

PEK was undertaken amidst a larger Saint Paul Public Schools effort to improve its system for delivering early childhood education. This effort involves streamlining programs under a common administrative structure, aligning programs with the Project for Academic Excellence, and linking them with community care providers. PEK emerged from this initiative, and also serves as a catalyst within it by providing programming and professional development that is being shared across programs. Over the next few years, PEK will also inform these efforts through its evaluation results. PEK results can help determine whether program strategies warrant replication within and beyond Saint Paul.

6.1 *School system change*

Before PEK, Saint Paul Public Schools’ early childhood programs reflected varying funding sources and populations served. In some cases, programs overlapped in their target populations and program goals, and in others they offered specific services for specific populations. Different departments administered the programs, and programs differed in their curricular approach. School programs also operated in a separate sphere from community child care programs, with no formal attempts to link curriculum or instructional practices (Saint Paul Public Schools, 2004, 2006).

In 2005, the district established a planning committee to improve consistency and quality across programs for 4-year-olds. With the goal of aligning early childhood education with the Project for Academic Excellence, the committee established district standards for 4-year-old programs. The district’s 2006-2011 Strategic Plan for Continued Excellence now specifies early childhood program consolidation in alignment with the Project for Academic Excellence as a key action step. One of the plan’s strategies aims to “ensure all students and all student groups meet or exceed district targets in reading, writing, math, and science.” To achieve this strategy, the plan’s implementation guide states the district will “consolidate all four-year-old programs under elementary education within the Office of Academics” (Saint Paul Public Schools, 2007f).

Progress has been made toward program standardization, with efforts continuing. All programs for 4-year-olds now operate under the Office of Academics. These include PEK, PEK Early Reading First, Community Kindergarten, School Readiness, Early Childhood Special Education classes, Montessori pre-kindergarten and kindergarten combination classes, and classes initiated by principals that operate at a single school. Programs are also moving toward alignment with the Project for Academic Excellence, with PEK serving as the catalyst. With the exception of Montessori, all programs will be unified in their curricular and instructional resources, professional development, and progress monitoring. PEK marks the first time a group of schools in the Saint Paul district has offered a consistent early education curricular approach and professional development model, and its framework is now being promoted across other early childhood programs. For example, teachers in other programs now receive PEK's implementation manual and participate in some of the same professional development. Over the next few years, results from PEK's evaluation can also contribute valuable information about strategies that may warrant replication (Henton et al., 2005-07).

In addition to standardizing programs, the district is working to make policy and procedural improvements to better meet the needs of families and staff involved with 4-year-old programs. PEK staff contribute to these efforts. Improvements to date include clarifying the attendance policy, collecting demographic information during program enrollment, and standardizing the length of the school day across programs. PEK staff also helped revise the job description for teaching assistants in 4-year-old programs (Henton et al., 2005-07).

6.2 *Child care community implications*

In addition to pursuing change within the district, Saint Paul Public Schools is working to create linkages between schools and other community child care providers. Again, PEK serves as a catalyst by unifying instructional methods and content across schools and child care programs. Most PEK child care staff visited a PEK school classroom last year to see program implementation in a school setting. PEK also organized a two-day workshop on the Principles of Learning that marks not only the first time professional development was provided jointly to all district early childhood staff, but also the first time district and community child care staff participated in training together. PEK staff also arranged for children attending affiliated child care programs to receive a student-identification number that will stay with them while in public or private schools in Saint Paul (Henton et al., 2005-07).

6.3 Implications beyond Saint Paul

If PEK's evaluation continues to show program strategies to be effective, results may support replicating the program beyond Saint Paul. Even in the absence of conclusive results, efforts are already underway to replicate PEK's child care model in other communities. In 2007, Resources for Child Caring hired four coaches to work with other school districts to strengthen connections between schools and community child care providers, and to offer a more unified community-wide approach to preparing children for kindergarten.

Ultimately the PEK evaluation will enable researchers to draw conclusions about the effectiveness of high-quality early childhood education aligned with the Project for Academic Excellence, and to compare results with those of similar publicly funded preschool programs in other states. Results can inform Saint Paul's efforts to streamline its own early childhood education programs, and can provide valuable information to other communities considering similar models.

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Appendix

School-based PEK: Student characteristics and outcomes

Community-based PEK: Child characteristics

School-based PEK: Student characteristics and outcomes

A1. Demographic characteristics of PEK Cohort 1 and Cohort 2 school students

Characteristics		PEK Participants Assessed ^a		
		2005-06 (Cohort 1) ^b n=263	2006-07 (Cohort 2) n=319	Significance test ^c
Gender	Female	52%	47%	Not significant
	Male	48%	53%	
Race/ethnicity	American Indian	3%	4%	Not significant
	Asian	27%	24%	
	Latino	18%	13%	
	Black	31%	40%	
	White	21%	18%	
Free/reduced-price lunch eligibility	Eligible	65%	73%	p<.05
	Not eligible	35%	27%	
ELL	Yes	47%	44%	Not significant
	No	53%	56%	
Special Education	Yes	14%	13%	Not significant
	No	86%	87%	

^a Refers to students assessed on the Peabody Picture Vocabulary Test III and the Woodcock-Johnson Tests of Achievement III by Wilder Research staff (fall 2005 and fall 2006 for Cohort 1 and fall 2006 for Cohort 2). Excludes students assessed in Spanish (n=17).

^b Includes only students who attended kindergarten in the Saint Paul school district.

^c Test of significance for difference between Cohort 1 and Cohort 2.

Source: Mueller & Gozali-Lee, 2007.

A2. Demographic characteristics of PEK Cohort I school students and their kindergarten classmates

Characteristics		Kindergartners 2006-07		Significance test ^c
		PEK 2005-06 (Cohort 1 ^a) n=263	Classmates ^b n=333	
Gender	Female	52%	51%	Not significant
	Male	48%	49%	
Race/ethnicity	American Indian	3%	6%	Not significant
	Asian	27%	23%	
	Latino	18%	15%	
	Black	31%	39%	
	White	21%	18%	
Free/reduced-price lunch eligibility	Eligible	65%	88%	p<.001
	Ineligible	35%	12%	
ELL	Yes	47%	39%	p<.05
	No	53%	61%	
Special Education	Yes	14%	11%	Not significant
	No	86%	89%	

^a Includes only students who attended kindergarten in the Saint Paul school district and were assessed by Wilder Research staff in fall 2005 and fall 2006.

^b Kindergarten classmates of PEK Cohort 1 students in the 10 PEK schools who were assessed by Wilder Research staff.

^c Test of significance for difference between Cohort I and classmates.

Source: Mueller & Gozali-Lee, 2007.

A3. School-based PEK: Fall 2006 assessment groups

Groups	Number assessed^a
Kindergartners 2006-07	
PEK 2005-06 (Cohort 1) ^b	264
Classmates ^c	333
PEK 2006-07 (Cohort 2)	320
Total	917

^a Refers to students assessed on the Peabody Picture Vocabulary Test III and the Woodcock-Johnson Tests of Achievement III by Wilder Research staff (fall 2005 and fall 2006 for Cohort 1 and fall 2006 for kindergarten classmates and Cohort 2). Excludes students assessed in Spanish (n=17).

^b Includes only Cohort 1 students who attended kindergarten in the Saint Paul school district. Of all Cohort 1 students, 85 percent attended kindergarten in the Saint Paul school district (i.e., 56 percent attended PEK schools and 29 percent attended other schools in the Saint Paul district). The remaining 15 percent attended kindergarten at schools outside the Saint Paul district and were not assessed.

^c Kindergarten classmates of PEK Cohort 1 school students in the 10 PEK schools.

Source: Mueller & Gozali-Lee, 2007.

A4. Standard score change for PEK Cohort I school students: Fall 2005 (PEK) to fall 2006 (kindergarten)

Test	N	Mean standard score ^a		
		Fall 2005 (PEK)	Fall 2006 (Kindergarten)	Change ^b
Peabody Picture Vocabulary Test III	253	88.1	91.9	+3.8***
Woodcock-Johnson Tests of Achievement III				
Letter-Word Identification (reading)	250	97.5	102.2	+4.7***
Spelling (writing)	251	99.6	102.8	+3.2***
Applied Problems (math)	245	95.1	94.4	-0.7

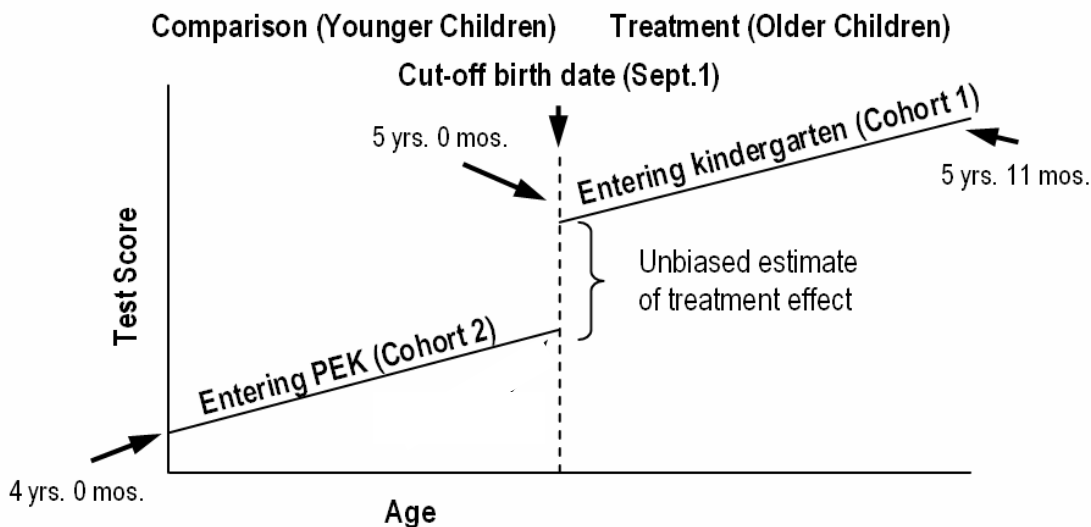
^a Standard scores have a mean of 100 and a standard deviation of 15 in the national normative sample. These scores are age-standardized, meaning that no change in scores from one year to the next indicates normative progress, positive change indicates accelerated progress, and negative change indicates slower progress in comparison to one's peers.

^b Fall 2006 score minus fall 2005 score.

*** $p < .001$.

Source: Mueller & Gozali-Lee, 2007.

A5. “Birthday cutoff” method illustration, assuming effective treatment



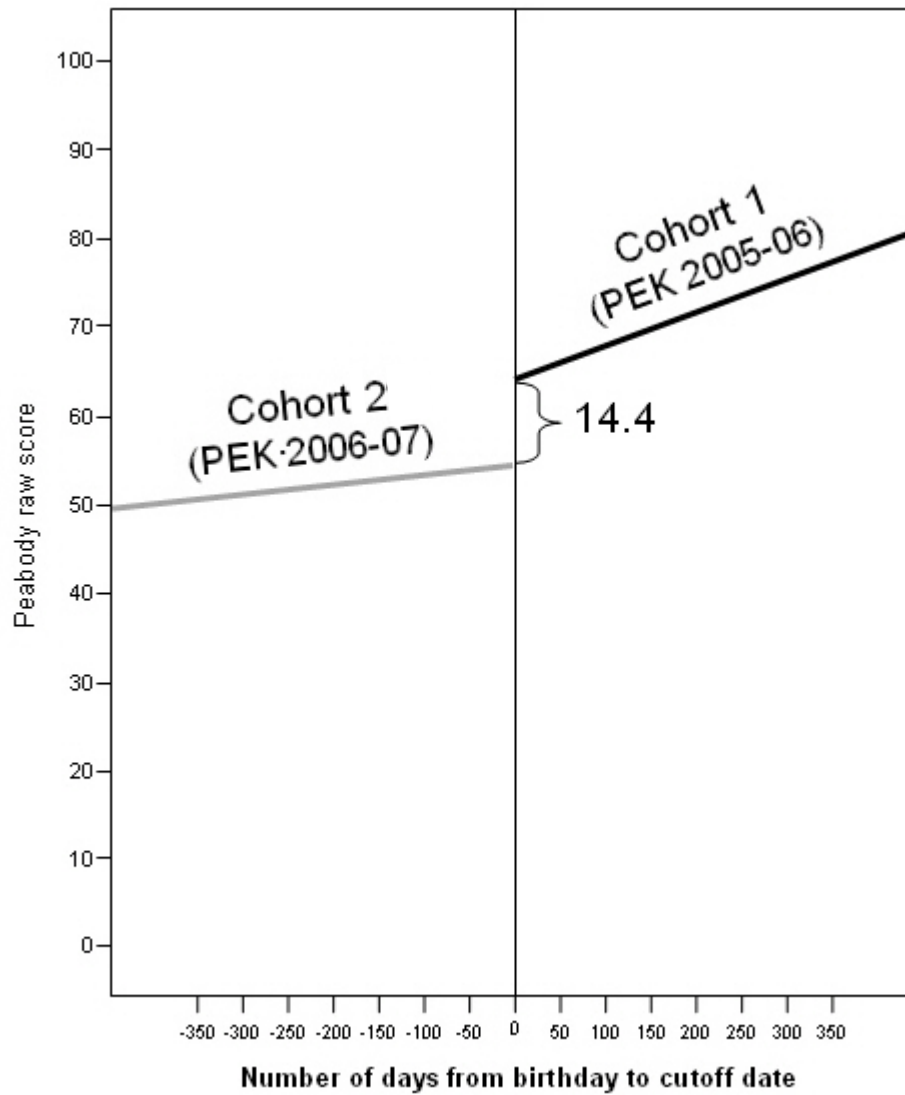
Regression lines:

- Estimated relationship between age and test score for each cohort
- The gap between the lines at the “cut-off birth date” is the estimated treatment effect (impact of PEK)

Note: In the birthday cutoff method, treatment and comparison groups are defined by whether a child’s fourth birthday falls before or on/after September 1, the birthday cutoff date used to determine eligibility for PEK. For students attending PEK in 2005-06, the treatment group consists of children who enrolled in PEK in fall 2005 and whose fourth birthdays, therefore, fell before September 1, 2005 (Cohort 1). The comparison group consists of children who entered PEK a year later in fall 2006 and whose fourth birthdays fell on/after September 1, 2005, but before September 1, 2006 (Cohort 2). Upon kindergarten entry, the treatment group (Cohort 1) is compared to the comparison group which is just entering PEK (Cohort 2). The comparison is carried out using a regression-discontinuity research design in which two regression lines estimating test scores by age are developed, one for the treatment group and one for the comparison group. The regression-discontinuity approach assumes that a child who just made the age cutoff and a child who just missed it have similar characteristics, except that the former child has received the treatment (PEK) while the latter child has not. Given this assumption, the estimated test score difference at the cutoff date should provide an unbiased estimate of the treatment effect (Barnett et al., 2005; Gormley et al., 2005).

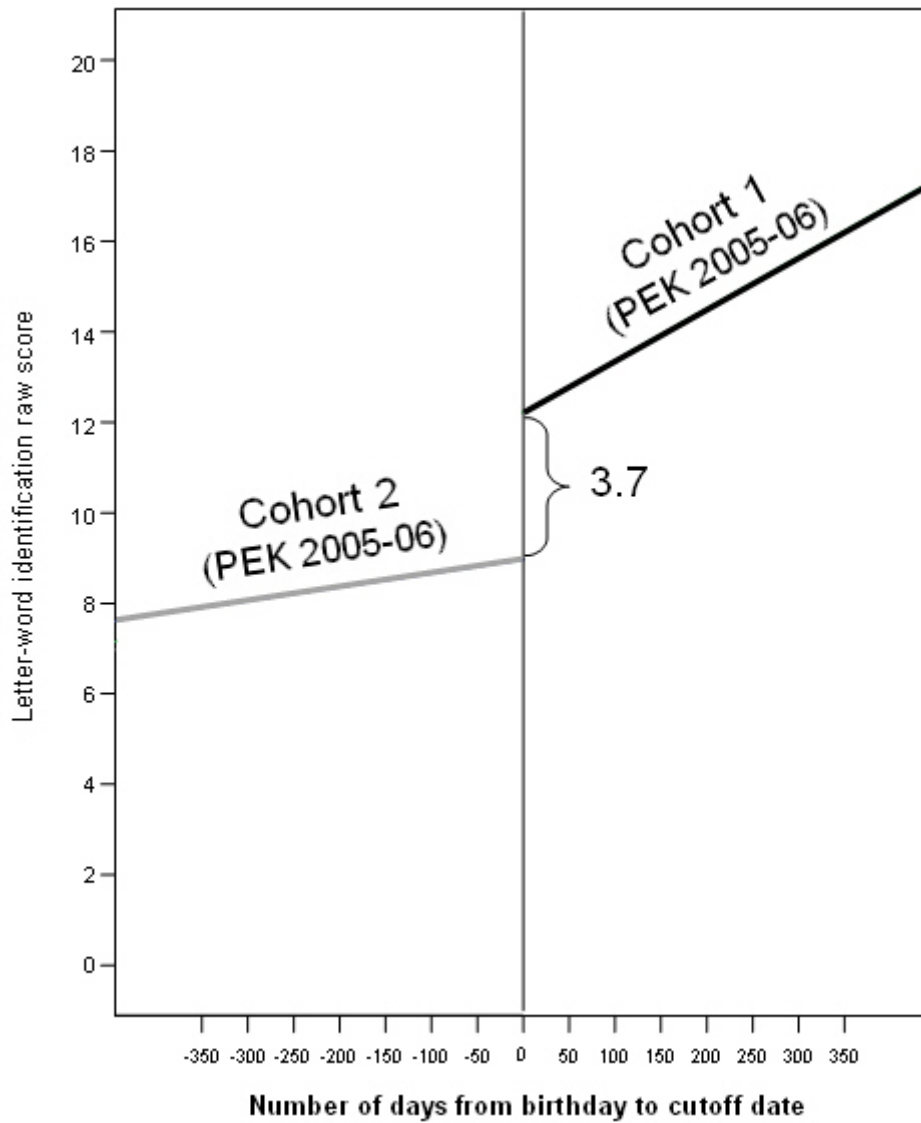
Source: Mueller & Gozali-Lee, 2007.

A6. PEK effects on Cohort 1 school students in vocabulary



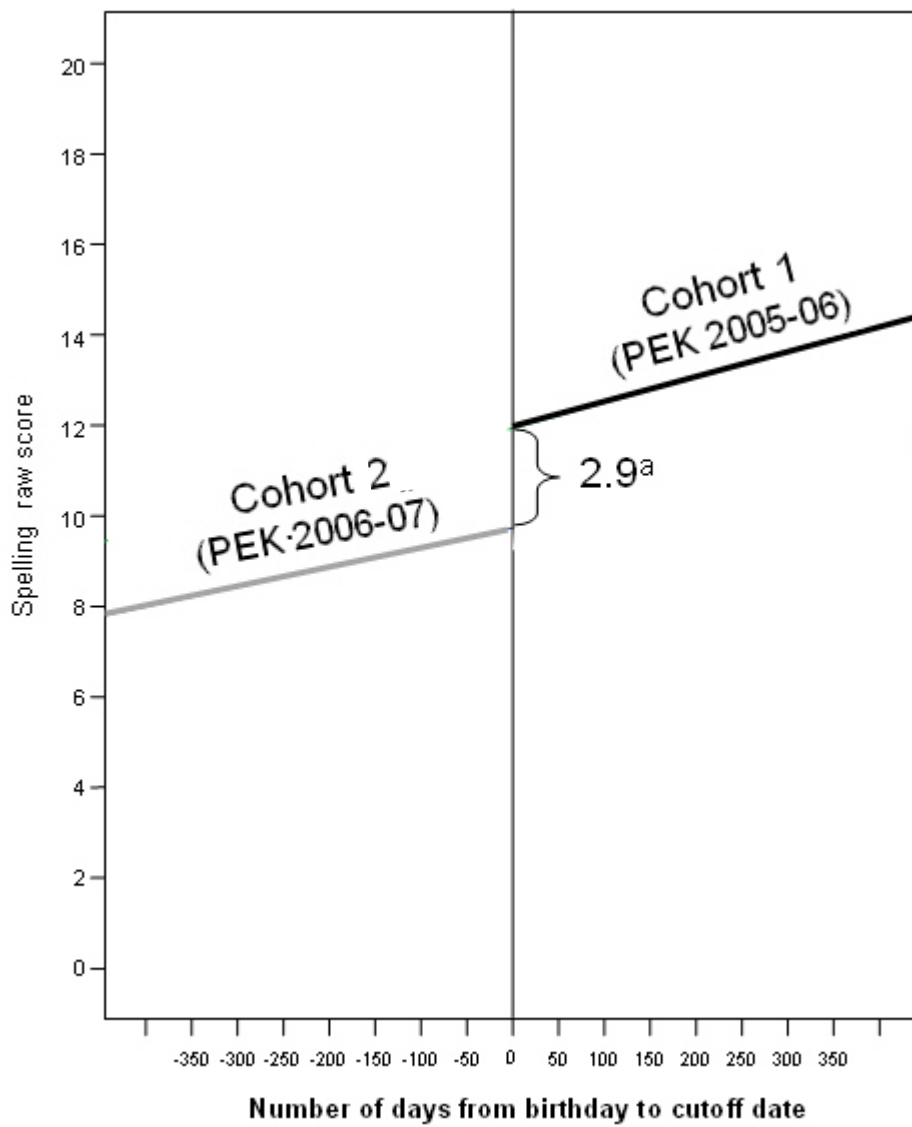
Source: *Mueller & Gozali-Lee, 2007.*

A7. PEK effects on Cohort 1 school students in letter-word identification (reading)



Source: *Mueller & Gozali-Lee, 2007.*

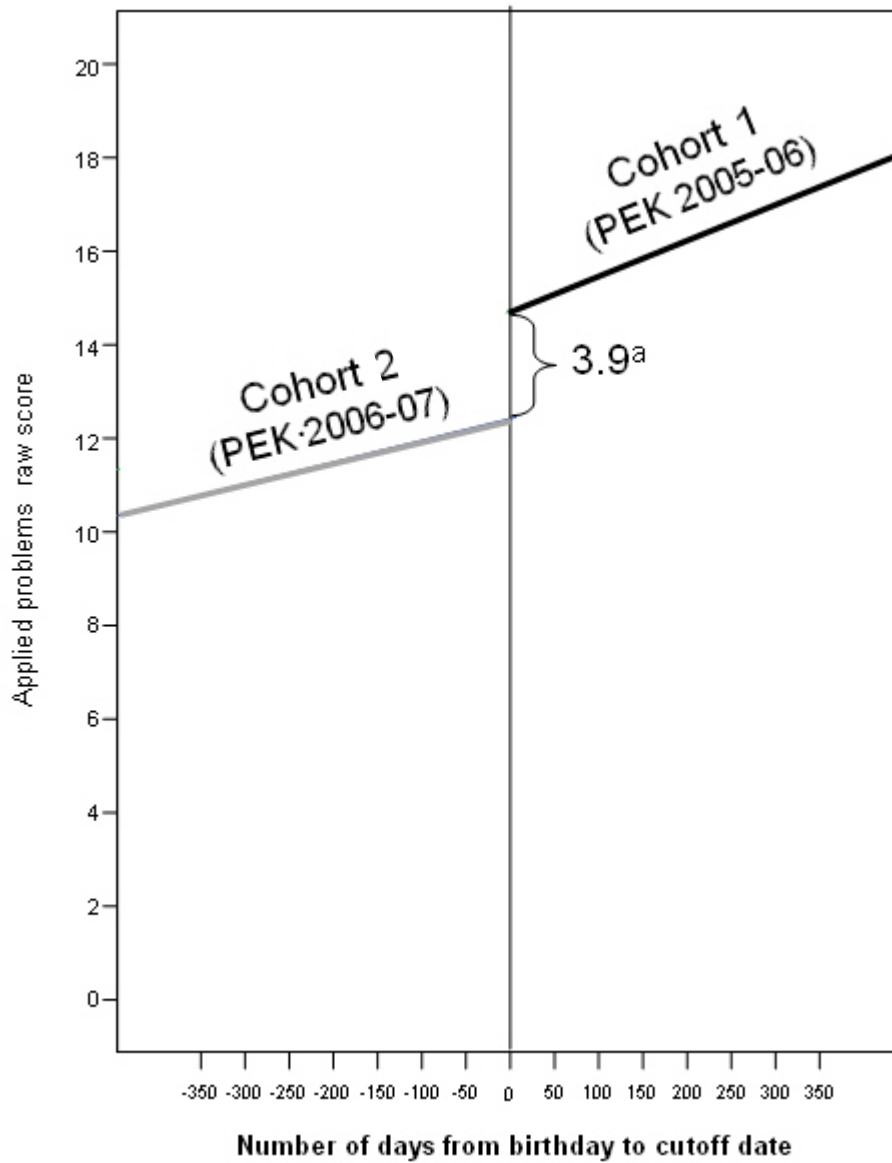
A8. PEK effects on Cohort 1 school students in spelling (writing)



^a Adjusted difference is 2.2.

Source: Mueller & Gozali-Lee, 2007.

A9. PEK effects on Cohort 1 school students in applied problems (math)



^a Adjusted difference is 2.9.

Source: Mueller & Gozali-Lee, 2007.

A10. Age-equivalency scores^a at the birthday cutoff point (estimate of the effect of PEK on Cohort 1 school students)

Assessment instrument	Just missed birthday cutoff (Cohort 2)	Just made cutoff (Cohort 1)	Difference
Peabody Picture Vocabulary Test	3 – 09	4 – 09	12 months
W-J Letter-Word Identification (reading)	4 – 11	5 – 07	8 months
W-J Spelling (writing)	4 – 06	5 – 06	12 months (9 months ^b)
W-J Applied Problems (math)	4 – 03	5 – 01	10 months (6 months ^b)

^a In years and months.

^b Adjusted for differences between Cohorts 1 and 2 at baseline (fall of PEK year).

Note: The expected age equivalency score is 5 years, 0 months at the birthday cutoff based on national norms.

Source: Mueller & Gozali-Lee, 2007.

A11. PEK effect sizes: PEK Cohort 1 (just made birthday cutoff) vs. Cohort 2 (just missed cutoff) school students

Assessment instrument	Effect size^a
Peabody Picture Vocabulary Test	.69
W-J Letter-Word Identification (reading)	.75
W-J Spelling (writing)	.96 (.69 ^b)
W-J Applied Problems (math)	.88 (.67 ^b)

^a Small effect = 0.2, medium effect = 0.5, large effect = 0.8. Effect sizes are calculated using Cohen's *d* (1988).

^b Effect size adjusted for differences between Cohorts 1 and 2 at baseline (fall of PEK year).

Source: Mueller & Gozali-Lee, 2007.

A12. Average age-equivalency scores^a of kindergartners (fall 2006): PEK Cohort 1 school students vs. kindergarten classmates

Assessment instrument	Cohort 1 (former PEK) n=262-263	Kindergarten classmates n=329-332	Difference
Peabody Picture Vocabulary Test	5 – 00	4 – 07	5 months
W-J Letter-Word Identification (reading)	5 – 10	5 – 07	3 months
W-J Spelling (writing)	5 – 09	5 – 06	3 months
W-J Applied Problems (math)	5 – 03	5 – 01	2 months

^a In years and months.

Note: Scores are adjusted for gender, race/ethnicity, free/reduced-price lunch eligibility, English Language Learner status, Special Education status, and test date.

Source: Mueller & Gozali-Lee, 2007.

A13. PEK effect sizes: PEK Cohort 1 school students vs. kindergarten classmates

Assessment instrument	Effect size^a
Peabody Picture Vocabulary Test	.27
W-J Letter-Word Identification (reading)	.39
W-J Spelling (writing)	.28
W-J Applied Problems (math)	.27

^a Small effect = 0.2, medium effect = 0.5, large effect = 0.8. Effect sizes are calculated using Cohen's *d* (1988).

Source: Mueller & Gozali-Lee, 2007.

A14. Comparison of teachers' ratings of kindergartners (fall 2006): PEK Cohort 1 school students vs. classmates

Scale		Number assessed	Standard scores ^a			
			Mean	Adjusted mean ^b	Significance test ^c	Effect size ^d
Total Social Skills^e	Cohort 1	235	103.60	103.21	p<.05	.19 ^h
	Classmates	324	99.98	100.27		
Problem Behaviors^f	Cohort 1	236	94.64	94.97	Not significant	-
	Classmates	329	95.21	94.98		
Academic Competence^g	Cohort 1	221	97.14	96.36	p<.001	.33 ⁱ
	Classmates	298	91.26	91.83		

^a Standard scores have a mean of 100 and a standard deviation of 15 in the national normative sample.

^b Adjusted for gender, race/ethnicity, free/reduced-price lunch eligibility, English Language Learner status, and Special Education status.

^c Test of significance for difference between adjusted means.

^d Small effect = 0.2, medium effect = 0.5, large effect = 0.8.

^e Higher scores indicate higher social skills. Cohort 1 had significantly higher ratings than the classmates on the Cooperation subscale.

^f Higher scores indicate more problem behaviors.

^g Higher scores indicate higher academic competence.

^h Effect size is calculated using Cohen's d (1988): the difference between the adjusted means of Cohort 1 and classmates (2.95) divided by the pooled standard deviation of the two groups (15.72).

ⁱ Effect size is calculated using Cohen's d (1988): the difference between the adjusted means of Cohort 1 and classmates (4.53) divided by the pooled standard deviation of the two groups (13.86).

Note: Using the Social Skills Rating System, teachers rate children's social skills, problem behaviors, and academic competence. For social skills, teachers rate the child on 30 items according to how often the child exhibits the behavior described: never, sometimes, or very often. For problem behaviors, teachers rate the child on 18 items according to how often the child exhibits the behavior: never, sometimes, or very often. Academic competence is a nine-item measure that asks teachers to rate the child on a five-point scale according to how they compare with other children in the classroom. Children are rated on overall academic performance, intellectual functioning, motivation, reading performance, math performance, classroom behavior, and parental encouragement.

Source: Mueller & Gozali-Lee, 2007.

A15. Teacher ratings of PEK school students' social skills, problem behaviors, and academic competence with academic achievement

Social Skills Rating System scales (Standard Score)	Woodcock-Johnson Standard Score			Peabody Picture Vocabulary Test
	Letter-Word Identification (reading)	Spelling (writing)	Applied Problems (math)	
Cohort 2				
Social Skills	.16**	.23***	.25***	.31***
Problem Behaviors	.04	-.21***	-.06	-.03
Cohort 1				
Social Skills	.20**	.30***	.28***	.16*
Problem Behaviors	-.16*	-.23***	-.11	-.01
Academic Competence	.51***	.51***	.52***	.35***
Kindergarten classmates				
Social Skills	.27***	.34***	.32***	.22***
Problem Behaviors	-.22***	-.26***	-.14*	-.01
Academic Competence	.61***	.60***	.50***	.34***

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Note: This figure indicates the relationships (i.e., correlations) between teacher ratings of students' social skills and problem behaviors and academic achievement for each of the three groups of students: Cohort 2 (current PEK), Cohort 1 (former PEK), and kindergarten classmates of Cohort 1. This figure also shows the relationships between teacher ratings of student academic competence, which is part of the Social Skills Rating System, and student academic achievement.

Source: Mueller & Gozali-Lee, 2007.

Community-based PEK: Child characteristics

A16. PEK Cohort 1 child care children's characteristics (2006-07)

	Home		Center	
	N	Percent	N	Percent
Age as of September 1, 2006				
3	13	48%	52	47%
4	14	52%	58	53%
Total	27	100%	110	100%
Gender				
Male	15	56%	50	45%
Female	12	44%	60	55%
Total	27	100%	110	100%
Eligible for free or reduced-price lunch				
Yes	13	50%	90	87%
No	13	50%	13	13%
Total	26	100%	103	100%
Ethnicity				
American Indian	0	0%	2	2%
Asian	4	15%	7	6%
Latino	1	4%	19	17%
Black	8	31%	58	53%
White	13	50%	21	19%
Bi-racial or Multiracial	0	0%	2	2%
Total	26	100%	109	100%
Home language				
English	27	100%	94	86%
Hmong	0	0%	4	4%
Spanish	0	0%	8	7%
Other	0	0%	4	4%
Total	27	100%	110	100%
Received Special Education services				
Yes	2	8%	3	3%
No	23	92%	99	97%
Total	25	100%	102	100%

Source: Gozali-Lee, 2007.

A17. PEK Cohort 1 child care children's attendance (September 1, 2006, to August 31, 2007)

Number of days present	Home		Center	
	N	Percent	N	Percent
Age 3				
Fewer than 60 days	-	-	-	-
60-80	-	-	3	6%
81-100	-	-	6	12%
101-120	-	-	3	6%
121-140	2	15%	4	8%
141-160	1	8%	5	10%
161-180	2	15%	6	12%
181-200	3	23%	7	13%
201-220	4	31%	6	12%
More than 220 days	1	8%	12	23%
Total	13	100%	52	100%
Average	182		168	
Median	184		178	
Range	121-239		65-241	

Note: Table continued on following page.

A17. PEK Cohort 1 child care children's attendance (continued)

Number of days present	Home		Center	
	N	Percent	N	Percent
Age 4				
Fewer than 60 days	-	-	2	3%
60-80	-	-	1	2%
81-100	-	-	5	9%
101-120	1	7%	2	3%
121-140	2	14%	3	5%
141-160	4	29%	11	19%
161-180	3	21%	12	21%
181-200	1	7%	9	16%
201-220	2	14%	4	7%
More than 220 days	1	7%	9	16%
Total	14	100	58	100%
Average	163		165	
Median	161		175	
Range	111-235		38-248	

Note: The number of days offered by family child care homes varied widely, with some homes not participating in PEK during this entire period. The range was 129 to 252 days between September 1, 2006, and August 31, 2007. For child care centers, it was 250 to 253 days.

Source: Gozali-Lee, 2007.