YEAR 1
MASSACHUSETTS PRESCHOOL EXPANSION GRANT (PEG)
Evaluation Report

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Executive Summary

As part of the federal Preschool Development Grant Program in late 2014, the Massachusetts Department of Early Education and Care (EEC) was awarded a Preschool Expansion Grant (referred to as the Massachusetts PEG program) to expand high-quality early childhood education to four-year-old children from low-income families. The Massachusetts PEG program has provided the Commonwealth with a unique opportunity to increase access to high quality preschool through a mixed service delivery system. The PEG model is defined by the provision of key elements perceived to be important drivers of quality.

Massachusetts is concentrating its PEG resources in five underserved high need communities: Boston, Holyoke, Lawrence, Lowell, and Springfield. These communities provide full-day, full-year preschool for four-year-olds through public-private partnerships between the lead education agency (LEA) and local licensed early learning providers (ELPs). In each community, the participating ELPs, including a Head Start agency and one or more community-based agencies, provide the services with support from the LEA.

For families to be eligible for PEG, their income must be below 200 percent of the federal poverty level, and four out of the five communities also targeted four-year-olds that had not previously been enrolled in licensed child care settings. Beginning in September 2015, participating LEAs and ELPs in the five communities began implementing PEG in 48 four-year-old classrooms across 24 early education centers.

As part of the PEG program, EEC has invested in a rigorous external evaluation. The PEG evaluation is being conducted by Abt Associates Inc. in partnership with University of Massachusetts Boston. The multi-year evaluation has four components: an *implementation study* of the provision of quality elements in PEG classrooms, a *longitudinal study* of outcomes for PEG educators, children and families, an *impact study* of effects of PEG on children and families, and a *cost study*. The first year of the PEG evaluation (2015–16) focused on the implementation of PEG. The impact study and longitudinal study will begin in the second year of PEG (2016–17) and the cost study will analyze costs over the first three years of PEG.

Major Findings

The following are this report's major findings:

- In the first year of implementation, the PEG classrooms, on average, demonstrated a moderate to high level of overall quality, with higher scores on quality of the classroom environment and lower scores on instructional quality. Quality varied substantially across classrooms.
- At the end of the preschool year, PEG children, on average, demonstrated levels of early math skills, early literacy skills, and vocabulary comprehension close to the level shown in national samples of children entering kindergarten. However, the proportion of children meeting age expectations on these outcomes varied substantially across classrooms, and about one-third of PEG children overall were below age expectations on English language vocabulary.
- All eleven key PEG quality elements were implemented to some degree in the first year of the program. Some quality elements were fully implemented in all communities and centers, while other PEG quality elements were partially implemented both within and across communities and programs.
- PEG teachers reported a high level of job satisfaction and confidence at being able to teach and support the children in their classrooms.

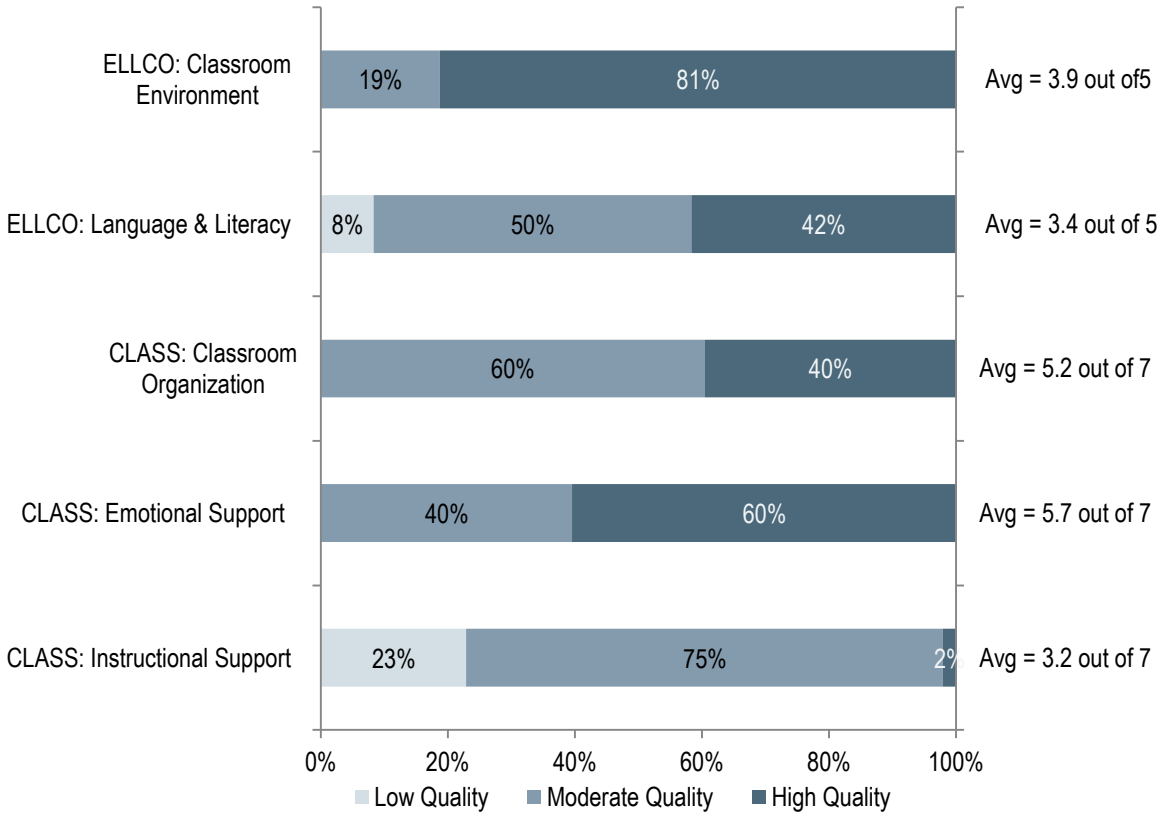
- PEG parents reported a strong sense of connection to the program and satisfaction with the program's support for their children's development and learning.

Detailed Findings on Classroom Quality

The PEG classrooms, on average, represented a moderate to high level of overall instructional quality.

Providing children with high-quality classroom instruction is a key goal of the PEG program. As of winter 2016, PEG classrooms, on average, received quality scores in the moderate to high range on the CLASS and the ELLCO, two commonly-used measures of classroom quality (see Exhibit S.1). As is typically observed in other preschool classrooms, on the CLASS PEG classrooms scored higher on Emotional Support and Classroom Organization (average ratings of 5.7 and 5.2, respectively) compared to Instructional Support (mean rating of 3.2). Quality varied widely across programs and classrooms.

Exhibit S.1: Percent of PEG Classrooms with Low, Moderate and High Quality Ratings, 2015–16



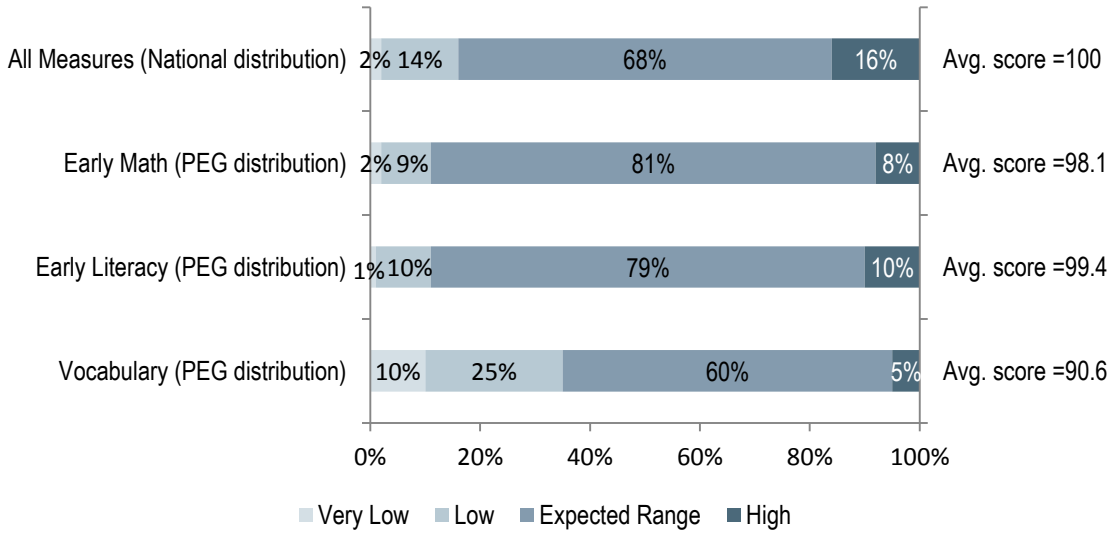
SAMPLE: N=48.
SOURCE: PEG Classroom Observations (Winter 2016) using the CLASS PreK and the ELLCO.

Detailed Findings on Children's Kindergarten Readiness

At the end of the preschool year, PEG children demonstrated levels of early math skills, early literacy skills, and vocabulary comprehension close to what would be expected for children entering kindergarten.

On average, at the end of preschool, PEG children scored near age expectation in their early literacy and early math skills; only about 12 percent of children were substantially below age expectation (see Exhibit S.2). Similarly, on average, PEG students scored near age expectation on English language vocabulary; however, although the *average* student's vocabulary score was not far below what might be expected, about one-third of PEG students were substantially below age expectation at the end of preschool. Vocabulary scores were generally lower for students from homes where English was not the primary language spoken. The proportion of children meeting age expectations on all of the measures varied across classrooms. It is important to note that, because of the timing of the evaluation's start, in 2015–16 the study team was not able to measure where PEG children started out on these skills and how much they improved over the year.

Exhibit S.2: Overall Distribution of PEG Children on Standardized Assessments, 2015–16



SAMPLE: N=324–326.
SOURCE: PEG Child Assessment Data (Summer 2016) using the Woodcock-Johnson III Tests of Cognitive Abilities: Applied Problems Subtest for early math skills, the Woodcock-Johnson III Tests of Cognitive Abilities: Letter-Word Identification Subtest for early literacy skills and the Expressive One-Word Picture Vocabulary Test for vocabulary skills.

Toward the end of their preschool year, PEG children were rated by their teachers as having age-appropriate social skills in managing behavior and emotions and in developing positive relationships.

The types of skills involved included the ability to follow limits and expectations, manage feelings, and take care of their own needs. PEG children were rated somewhat lower on their skills in group situations, such as balancing their own needs with needs of other children or solving social problems. Further, though the average scores were in the moderate range, a substantial number of children were rated below age expectations for many of the individual skills, primarily in forming relationships with adults and solving social problems.

Detailed Findings on Implementation of PEG Quality Elements

PEG achieved its goal of providing access to preschool to underserved children and families.

In four of the five communities, the PEG program was the first formal early education experience for most participating children.

PEG communities made progress with implementation on all eleven key quality elements in the first year of the program.

The PEG model includes eleven elements perceived to be important drivers of quality such as:

- Full-day and full-year programming;
- Class sizes of no more than 20 students;
- Teacher-child ratio of no more than 10 students to one teacher;
- Lead teachers with Bachelor of Arts (BA) degrees;
- Compensation for lead preschool teachers comparable with that of local public school K-12 teachers;
- Professional development and coaching for educators;
- Formal curricula;
- Formative assessment systems;
- Family engagement supports; and
- Comprehensive services for families, with inclusive services for special populations.

An additional element is the local governance structure including leadership from the participating districts and programs. This type of collaborative structure is seen as an important "enabling environment" or condition for the development and oversight of the PEG model.

Although all programs are expected to implement all eleven elements fully, the PEG model is supportive of local program development and approaches to implementation.

Six of the eleven quality elements were *fully implemented* in all communities in 2015–16. These elements included:

- **Classroom operations.** All 48 classrooms provided full-day, full-year programming (at least 8 hours/day, 12 months/year).
- **Class size.** All 48 classrooms had enrollments of twenty or fewer students.
- **Staff-child ratio.** All 48 classrooms maintained a child-teacher ratio of no more than 10 children to one teacher.
- **Curriculum**: All of the classrooms used curricula that aligned with the Massachusetts Preschool Standards and Guidelines.
- **Assessment**. All of the classrooms conducted formative assessments of children using a standardized system--Teaching Strategies Gold®.
- **Teacher qualifications**. All lead teachers had a minimum of a bachelor's degree in a relevant field.
- **Teacher compensation**. Lead teachers were paid an average of $54,246 (not including fringe benefits) in 2015–16, which is in line with what preschool teachers were paid by school districts and was higher than the typical teacher salaries in Head Start programs and other child care programs in Massachusetts.

Five of the eleven PEG quality elements were partially implemented or showed substantial *variation in implementation across communities and/or centers* in 2015–16.

These elements included:

- **Amount of professional development training.** On average, PEG lead teachers reported receiving 23 hours of professional development (PD) training in 2015–16 across a variety of topics. This ranged from as few as 5 hours to as many as 50 hours of professional development. There were substantial differences across PEG communities in the amount of professional development that teachers reported receiving, with average hours of training ranging from 10 to 29 in the five communities.

- **Level and focus of coaching.** Teachers were provided with coaching by LEA staff in four of the five PEG communities. The amount of coaching teachers received varied across communities and programs. Teachers reported receiving as few as 10 hours of coaching over the year and as many as more than 40 hours. The amount of coaching varied across communities. In three communities, more than half of the teachers reported receiving at least 20 hours of coaching, while in the fourth community, no teachers received 20 or more hours of coaching.

- **Extent of family engagement.** Most programs employed a family services coordinator; in four of the communities, each program had at least one dedicated staff member. The communication occurred through formal parent-teacher conferences and home visits, as well as more informal, ongoing discussions between parents and teachers at drop-off and pick-up, and through individual phone calls and text messages. In addition, almost two-thirds of centers reported conducting home visits. Most PEG centers were involved in helping families with the logistics of kindergarten transition planning and providing families with assistance in the kindergarten registration process.

  About half of the center directors reported that over 75 percent of parents participated in family engagement activities; other center directors reported lower levels of engagement, including some programs in which fewer than 20 percent of parents were reported to be engaged with the program. In most programs, some parents volunteered in the classroom, although the frequency of volunteering varied across programs, from as often as weekly to once per year.

- **Extent of comprehensive services for families (referrals and direct provision)**. Nearly all PEG center directors reported referring families for additional public services (including services addressing health, mental health, and behavioral needs), and about half of the programs provided some services directly to families.

  Some parents reported accessing services such as special education, family nutrition, meal guidance, and parenting classes through the PEG program. However, some parents reported being unaware of what services were offered through PEG and did not receive any services during the year.

- **Strength of local collaboration:** Each community formed a collaborative body that represented PEG leaders from the LEAs and ELPs, and these collaborations met regularly to develop the PEG program design for their community, coordinate program activities across providers, and make decisions about implementation goals. Across the five communities, as of spring 2016, PEG leaders were particularly positive about the local context in which they conducted their work (the climate for collaboration was favorable, and the collaboration was perceived as a leader in the early childhood community), believed that the participating organizations saw collaboration as in their best interest, and agreed that members of their collaborative had a stake in both process and outcome. There was also widespread

agreement that PEG leaders communicated regularly, both formally and informally. PEG collaborative members were less positive about the degree to which their collaboration had defined and worked toward a common mission. The collaborative members also reported that they did not always have sufficient human or financial resources for full implementation of their collaborative work.

Detailed Findings on Teacher and Parent Experiences

The first-year evaluation included preliminary assessments of PEG teacher attitudes and experiences as well as parent experiences with the PEG programs and their home educational supports.

PEG teachers reported moderate to high satisfaction with being a PEG teacher.

One of the goals of PEG is to support teachers' sense of professionalism and self-efficacy through professional development, coaching, and compensation. Ultimately, it is expected that teachers who feel more positively about their jobs and their own competencies will remain in the program, thereby providing the program continuity and stability.

In 2015–16, most PEG lead teachers felt positively about their job: half reported feeling very satisfied and another 44 percent reported feeling somewhat satisfied with their jobs. More than 90 percent of PEG teachers expressed a high level of confidence in their ability to make a significant difference in their students' lives and in reaching even the most difficult students. Overall, teachers were highly confident in their ability to communicate with parents and guardians.

PEG parents reported feeling strongly connected to their programs.

The PEG model assumes that involving families will be beneficial to children's learning and development by building a connection between the home and the preschool program and by supporting parent efforts to be more active teachers of their children in the home. By the end of the first year of PEG, more than 75 percent of surveyed parents reported that they were strongly connected to their child's PEG classroom. Across the five communities, the percentage of "strongly connected" parents ranged from 66 percent to 90 percent. While nearly all parents (93 percent) also felt well-informed about meetings and special school events for parents, somewhat fewer (81 percent) agreed that parent activities were scheduled at convenient times.

PEG parents reported feeling confident about their ability to communicate with their child's teacher, and reported that teachers did a good job of informing them about their child's progress in school.

Families expressed satisfaction with the quality and intensity of their communications with teachers. Nearly all parents indicated that teachers kept them informed them about their child's progress in school (91 percent) and that teachers were interested in their children and cooperative with their families (95 percent). Over 90 percent of parents were confident about their ability to communicate with their child's teacher, their ability to communicate effectively with their child about the school day, their knowledge of what their child was learning, and their ability to help their children continue their learning at home. A slightly lower proportion of parents reported that they had the skills to help out at their child's program (83 percent).

The majority of PEG parents reported reading to their child regularly.

About one-third of parents reported reading to their child every day and another 50 percent of parents reported reading to their child a few times per week. Nearly all parents also reported engaging with their child every day or a few times per week in activities involving numbers and/or letters.

Next Steps for PEG

In the second year of PEG (2016–17), a goal for the program is to increase the level of implementation of the key quality elements.

The focus includes:

- Continued community collaboration with strengthening of the relationships across early childhood systems and expanded joint planning and programming;
- Continued supports for teachers with more consistent implementation of professional development and coaching across all communities and centers;
- Continued engagement of families and building the connection of all families to the program; and
- Support for an increasing number of families with access to comprehensive services.

In the second year of PEG, another goal is to achieve positive outcomes for teachers, classrooms, families and children.

The outcomes include increasing or continuing:

- High levels of teacher satisfaction and retention;
- High levels of classroom instructional quality;
- High levels of parent connectedness to the program and home support for children's development and learning; and
- Age-appropriate levels of skill development for children in all domains so that children enter kindergarten ready to learn.

In the second year of the PEG evaluation (2016–17), ongoing attention will be paid to the implementation of the different components of PEG, including the level of classroom quality. The evaluation will also generate evidence about the extent to which the PEG programs are providing high-quality environments relative to other Massachusetts programs, the progress of PEG children's development over the course of their preschool year, and the impact of PEG on children's school readiness and parent behaviors and supports.

1. Introduction

Research shows that early education can be a cost-effective investment that improves the long-term school achievement and engagement outcomes for young children, particularly those at risk of adverse outcomes due to growing up in poverty (Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002; Schweinhart et al., 2005; Yoshikawa et al., 2013). In the last decade, in addition to investments in early childhood education by the federal government, many states and municipalities have also provided funding to expand the availability of center-based early childhood education, with promising results (Gormley, Gayer, Philips, & Dawson, 2005; Weiland & Yoshikawa, 2013; Wong, Cook, Barnett, & Jung, 2007). Massachusetts has long been at the forefront of efforts to support early learning, and the Massachusetts Department of Early Education and Care (EEC) has been highly involved in providing an array of supports to help ensure that children, especially those with the highest needs, arrive in kindergarten with the skills and abilities necessary to succeed.

An ongoing investment in preschool education is the Preschool Development Grant Program, a discretionary federal grant program that is jointly administered by the U.S. Department of Education and the U.S. Department of Health and Human Services. Preschool Development Grants support states to (1) build or enhance their infrastructure to provide high-quality preschool programs (referred to as Preschool Development Grants) and (2) expand high-quality preschool programs in high-need communities (referred to as Preschool Expansion Grants). The program currently supports 18 grantees (13 Expansion and 5 Development) nationwide. Each state grantee uses their funds in a unique way to extend and expand high-quality preschool.

In late 2014, EEC was awarded a federal Preschool Expansion Grant (referred to in this report as the Massachusetts PEG program) to expand high-quality early education to four-year-old children whose families earn under 200 percent of the federal poverty line. The PEG program provides the Commonwealth with a unique opportunity to increase access to high quality preschool through a mixed delivery system[1] and has allowed EEC to pilot a model that, if successful, might be replicated more widely across the Commonwealth. In 2016, the Massachusetts Legislature budgeted $500,000 for planning grants to support additional communities in identifying how they might expand preschool opportunities for both three- and four-year olds, following the model being piloted in the PEG communities.

EEC has completed its first year (2015–16) of overseeing the PEG program, which provided resources to 48 classrooms in five underserved communities across Massachusetts. In each community, lead education agencies (LEAs) were granted the funds and subcontracted with early learning providers (ELPs) for the direct services to preschool children and families. Participating LEAs and ELPs are following a model that is intended to deliver the ingredients and supports that research has shown can lead to improved child outcomes.

As part of the PEG program, EEC has invested in a rigorous external evaluation. The PEG evaluation represents an important opportunity for EEC to study a potential statewide approach for supporting high quality state-funded preschool. The PEG evaluation is being conducted by an independent research firm,

[1] The mixed delivery system refers to an early education system that includes child care centers, family child care educators, public preschool programs, and Head Start and Early Head Start programs.

Abt Associates Inc., in partnership with the University of Massachusetts Boston. The evaluation has four main components including:

- An implementation study of the PEG quality components in PEG communities and programs;
- A longitudinal study of outcomes for PEG children and families;
- An impact study of effects on PEG children and families; and a
- A cost study.

The impact study will begin with the cohort of children entering preschool in the fall of 2016 and continue with a second cohort of children entering in the fall of 2017.

This report describes the first year of implementation of the PEG program in Massachusetts and provides an initial assessment of the extent to which PEG programs are meeting the objective of providing high-quality preschool to underserved children. The report is organized into the following chapters:

- Overview of the Massachusetts PEG program;
- Overview of the Massachusetts PEG evaluation;
- Implementation of the PEG model in the first year:
  - Collaboration and leadership;
  - Teacher supports;
  - Curriculum and learning including observed classroom quality;
  - Family engagement activities; and
  - Comprehensive services for families;
- Status of PEG children's development at the end of the 2015–16 preschool year; and
- Overall assessment of the first year (2015–16) of the PEG program's implementation progress and implications for future years.

2. Overview of the Massachusetts PEG Program

This chapter provides an overview of the Massachusetts PEG program structure, expectations for participating programs, research basis for the state-level program model, and characteristics of participating children.

2.1 Structure of the PEG Program

Massachusetts is using its PEG grant to fund five high-need communities—Boston, Holyoke, Lawrence, Lowell, and Springfield—to expand full-day, full-year preschool for four-year-old children through public-private partnerships between the LEA and licensed ELPs.

PEG funds are allocated to communities using a block grant model that is based on a per-student allocation that started with the Commonwealth's Chapter 70 education foundation grant amount and was prorated to account for expanded hours per day (eight versus six hours per day). The funding level for each community has a floor to ensure a minimum investment in the smallest community (Holyoke) and a ceiling, along with an enhanced amount based on the higher cost of living, for the largest community (Boston).[2]

The PEG grant is implemented using a mixed delivery system; the five LEAs are granted the funds and then subcontract with ELPs for the direct services provided to children and families in the community. As Exhibit 2.1 shows, in each community the LEA subcontracted with several participating ELPs, including a Head Start agency and one or more community-based agencies.

In 2015–16, some ELPs operated PEG classrooms in a single location (referred to as a center in this report) whereas others operated PEG classrooms across multiple locations. Prior to the PEG grant, all participating ELPs had experience administering preschool classrooms and managing the licensing of facility space.

EEC staff actively collaborated with the designated LEAs and ELPs in the planning and early implementation process, especially in the local planning for professional development activities during the first year of implementation (2015–16). The designated ELPs worked together with the LEA around the selection and implementation of curriculum, coordination and provision of comprehensive services, family engagement supports, and inclusive services for special populations, as well as joint professional development.

Beginning in September 2015, ELPs began to operate 48 PEG classrooms across 24 centers, although full enrollment was not required until December 2015. In 2015–16, 18 of the 24 PEG centers included a single PEG classroom, and the other six centers each operated between two and eight PEG classrooms. Most PEG classrooms were managed by a single ELP, though two communities established new centers with PEG classrooms that were overseen by more than one ELP. In four of the five communities (all except Boston), the PEG classrooms were new classrooms. In Boston, PEG funding was used to support

[2] As described in chapter 4, Boston also made the decision to blend PEG funding with child care subsidy funding. An additional allocation per student was identified as a supplement to the child care subsidy funds, at an amount that accounted for the normal parent fee (which was waived in PEG) and the costs of the quality enhancements required by PEG.

existing preschool classrooms that implemented the PEG operating schedule (i.e., extending the programs to offer full-day, full year care) and all elements of the PEG instructional model.

Exhibit 2.1: Number of PEG Participating Organizations and Classrooms by Community, 2015–16

Local Education Agency	# of ELPs	# of PEG Centers	# of PEG Classrooms
Boston Public Schools	8	12	15
Springfield Public Schools	3	5[a]	11
Holyoke Public Schools	2	4	4
Lawrence Public Schools	2	2	10
Lowell Public Schools	2	1[b]	8
Overall	**16**[c]	**24**	**48**

[a]In Springfield, three ELPs jointly operated one of the five centers.
[b]In Lowell, two ELPs jointly operated one center
[c]One ELP operated PEG classrooms in two communities (Springfield and Holyoke).

To be eligible for PEG, children in each of the five communities were required to meet two criteria:

- Child must have reached his/her fourth birthday by the beginning of their preschool year and be eligible for kindergarten in the following September, and
- Family income must be below 200 percent of the federal poverty line.

Four of the five PEG communities (all except Boston) targeted and primarily served children who had never been enrolled in licensed early education (including both center-based programs and licensed family child care homes) in the prior year. In Boston, many of the children in the PEG classrooms were already served by licensed care settings prior to their PEG preschool experience.

2.2 PEG Program Model and Rationale

Although the Massachusetts PEG model is supportive of local program development, each PEG program is expected to provide the following eleven elements, which are perceived to be important components of quality early education:

- Collaborative local governance structure to oversee implementation and work on systems coordination for all children in the community;
- Full-day, full-year programming (at least 8 hours/day, 12 months/year);
- Maximum class size of 20;
- Maximum child-teacher ratio of 10:1;
- Curricula aligned with the Massachusetts Preschool Standards and Guidelines (although the specific curriculum may vary by grantee);
- Use of Teaching Strategies Gold® (Heroman, Berke, & Bickart, 2010) as a formative assessment tool;
- One educator in each classroom with a bachelor's degree in a relevant field;
- Salaries for all educators commensurate with those of comparable positions in the public schools within the respective community;
- Professional development training and coaching for teaching staff, and other supports for planning and implementation of curriculum, in collaboration with the LEA;

- Family engagement activities, including support for kindergarten transition and information and resources about child development;
- Comprehensive services including:
  - Services addressing health, mental health, and behavioral needs for all families,
  - Inclusion of students receiving special education services as well as children requiring other supports (e.g., children without permanent homes, dual language learners, refugee or immigrant families), and
  - Efforts to build links with services for children from birth to age 3 as well as support for the transition to kindergarten and connections with public elementary schools.

By the end of the grant period (2018–19), PEG centers are also expected to attain the highest rating (Level 4) in the QRIS or Level 3 and National Association for the Education of Young Children (NAEYC) accreditation.

Within the PEG model framework, LEAs and ELPs are provided with flexibility regarding the specific approaches they take to implement each element mentioned above. Some of the ways in which PEG communities and/or programs differ include (but are not limited to):

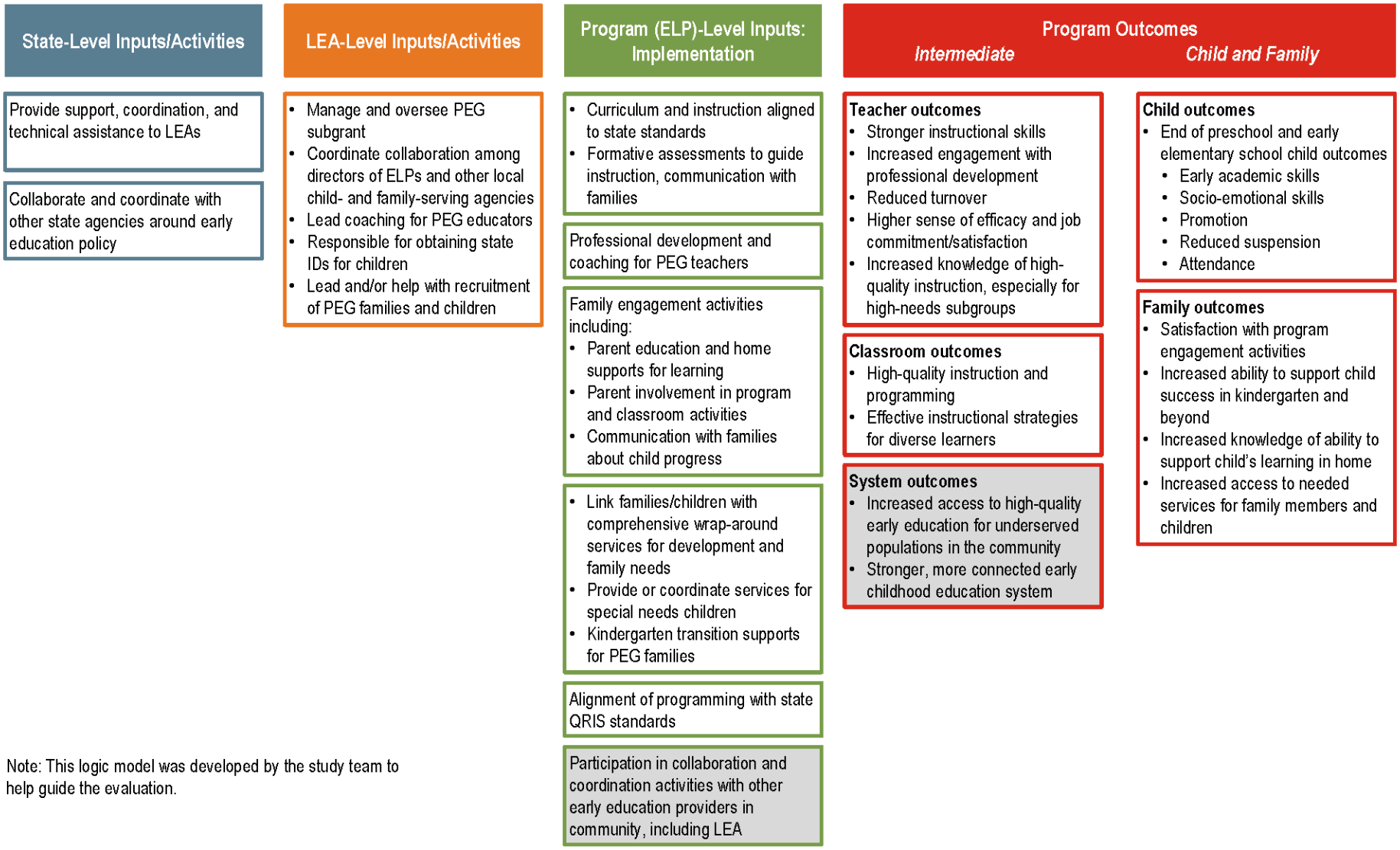
- Location of services (some ELPs co-locate all PEG classrooms within one center, while others provide services across various centers in the community);
- Approach to collaboration with other community providers;
- Size of the additional compensation to PEG teachers;
- Curriculum/a used in the classrooms;
- Focus and design of professional development and coaching supports offered; and
- Focus of family engagement efforts and the provision of comprehensive services.

The requirements guiding the PEG program model are intended to ensure the delivery of high quality ingredients and supports that research has shown will improve child outcomes, especially for children at risk for academic failure. The links between the required ingredients and both short- and long-term outcomes are shown in the PEG program theory of change (Exhibit 2.2).

The PEG model (as conceptualized) is intended to achieve a high level of quality in instructional and emotional supportiveness, classroom organization, and learning resources. It also includes goals beyond those pertaining to program quality and outcomes for educators, parents, and children. For example, the model has an explicit focus on systems-building, as represented in the public-private and cross-agency collaboration that is expected to be developed among the key stakeholders in the early education system in each community.

The teacher-focused supports that PEG LEAs and ELPs are providing are expected to lead to greater job satisfaction, improved self-efficacy, and the increased ability to recruit and retain high-quality educators, which are believed to lead to sustained improvements in classroom quality and ultimately child outcomes. The family engagement activities and comprehensive services are expected to lead to improved parent and child outcomes, including improved family stability, child behavior and attendance, and reduction of the need for services in elementary school.

Exhibit 2.2: Theory of Change for Massachusetts Preschool Expansion Grant



Note: This logic model was developed by the study team to help guide the evaluation.

2.3 Children Enrolled in PEG

Research shows that children from low-income households are more likely to enter school lacking some key skills for school success and more likely to demonstrate lower academic performance in school. The children enrolled in PEG in the 2015–16 program year came from low-income families; the mean PEG family income reported as part of the enrollment process was $18,466 dollars per year. Families were required to earn below 200 percent of the federal poverty level to be eligible for PEG. In fact, the majority of families earned well below this threshold, as 66 percent of families reported incomes below 100 percent of the 2016 federal poverty level for a family of four ($24,300).

In addition to growing up in a low-income household, the majority of the PEG children were from racial and/or ethnic minority groups, and over one-third (39 percent) lived in households where English was not the primary language spoken (see Exhibit 2.3). In addition, a small proportion of children (3.6 percent) were reported by programs as having Individualized Education Programs (IEPs), a plan developed for each public school child eligible for special education to guide his or her services.

As Exhibit 2.3 shows, the racial/ethnic makeup of the PEG classrooms varied by community. Overall, the majority of children served in PEG classrooms in 2015–16 were Hispanic (58 percent), and the proportion ranged from 34 percent of PEG children in Boston to 100 percent of PEG children in Holyoke. About one-quarter of children (27 percent) served were Black, ranging from two percent in Lawrence to more than 55 percent in Boston. Almost one-fifth of children served in PEG classrooms in Lowell were Asian-American, while there were very few Asian-American children in the other communities (one percent or less). Spanish was the primary language of 29 percent of children across the five PEG communities, ranging from 17 percent in Springfield to 73 percent of children in Lawrence. Notably, 26 percent of students in Lowell reported speaking a primary language other than English or Spanish (mostly Khmer and Portuguese), reflecting the diversity of that community.

Exhibit 2.3: Race/Ethnicity and Home Language, Overall PEG and by Community

	Number and Percentage of Children											
	Overall PEG		Boston		Holyoke		Lawrence		Lowell		Springfield	
Race/Ethnicity												
Caucasian—non-Hispanic	59	7%	14	5%	0	0%	3	2%	34	22%	8	4%
Hispanic	486	58%	94	34%	66	100%	136	95%	56	35%	134	80%
Black	223	27%	155	55%	0	0%	3	2%	22	14%	43	15%
Asian-American	35	4%	3	1%	0	0%	0	0%	30	19%	2	0.7%
Two or more races	20	2%	14	5%	0	0%	1	1%	2	1%	3	2%
American Native	1	0.1%	1	0.4%	0	0%	0	0%	0	0%	0	0%
Other	13	1.6%	0	0%	0	0%	0	0%	13	8%	0	0%
Primary Home Language												
English	516	60%	204	73%	49	74%	38	27%	86	55%	173	91%
Spanish	249	29%	56	20%	23	35%	104	73%	31	20%	32	17%
Haitian Creole	19	2%	17	6%	2	2%	1	1%	0	0%	0	0%
Other[a]	71	8%	26	9%	2	2%	0	0%	41	26%	3	2%

[a]Other common languages included Portuguese, Khmer, and Chinese; the most common other language was Khmer.

Notes: Data obtained from EEC data for all 48 PEG classrooms during spring/summer 2016.

Percentages may not add up to 100 because numbers are rounded to the nearest whole, except when they are between 0 and 1%.

Half of PEG parents reported that they had a high school degree or GED only, and 14 percent had Associate's degrees (14 percent), vocational or technical certificates (13 percent), or bachelor's degrees (9 percent). Most PEG households (72 percent) included at least two adults with full-time jobs. Sixteen percent of households had one adult with a full-time job, and the remaining households (12 percent) had no adult with a full-time job.

The next chapter of the report provides an overview of the PEG evaluation, and is followed by an in-depth examination of the implementation of each component of the PEG program model during 2015–16.

3. PEG Evaluation Overview

The multi-year PEG evaluation includes four main components: an implementation study of quality components in PEG programs, a longitudinal study of outcomes for PEG children and families, an impact study of effects on children and families, and a cost study. Beginning in Year 2 (2016–17) of the evaluation, the study team will begin the longitudinal study of outcomes for PEG children and families and the impact study of the effects of PEG on children and families. A cost effectiveness study will be conducted beginning in Year 3.

This chapter describes the following features of the Year 1 (2015–16) evaluation: research questions; data sources, sample description and measures; and approach to data analysis.

3.1 Research Questions

Year 1 of the PEG evaluation focused on the implementation study, including collaboration, teacher supports and classroom quality, and comprehensive services and family engagement activities. The Year 1 evaluation was designed to answer the following research questions:

- What types of collaborative activities/planning/decision-making took place among participating ELPs and LEAs? To what extent were collaborative activities effective? What challenges were encountered?
- What professional supports were provided to PEG teachers? What was the sense of self-efficacy and job satisfaction among PEG teachers?
- To what extent were PEG classrooms providing children with high-quality learning experiences?
  - What curricula and assessment systems were implemented in PEG classrooms?
  - How much time did PEG children spend in different types of activities?
  - What was the nature of observed classroom quality in PEG classrooms?
- How did PEG programs engage with families? How satisfied were PEG families with these activities?
- To what extent did PEG program make referrals to and provide comprehensive services for PEG families? How well-served did families feel about the services offered and received?
- What capabilities across different developmental domains did PEG children show at the end of their preschool year?

3.2 Data Sources, Sample Description, and Measures

The study team collected primary data during Year 1 through surveys, interviews, focus groups, classroom observations, and child assessments (Exhibit 3.1).

Exhibit 3.1: Overview of Data Sources and Instruments, by Focus Area

Focus Area	Sources	Instruments
Implementation of PEG quality elements	Surveys, Interviews, and Focus Groups.	Teacher Survey; Parent Survey; Center Director Interviews; LEA/ELP Leader Interviews; Coach Interviews; Teacher Focus Group; Parent Focus Group; Wilder Collaboration Inventory
Classroom quality	Standardized observation measures (described on later slide)	3 classroom quality measures administered over 2 days in each classroom 1 time-sampled measure of activities and child-teacher groupings
Children's pre-academic skills	Direct assessments (described on later slide)	3 standardized measures of early literacy and early math and language development, administered individually to 8 randomly-selected PEG children/classroom in late spring

3.2.1 Surveys, Interviews and Focus Groups

Exhibit 3.2 provides additional details about the samples and response rates for the surveys, interviews, and focus groups conducted during Year 1.

Exhibit 3.2: Year 1 Survey, Interview, and Focus Group Sample and Response Rates

	Sample	Response Rate
Surveys		
Teacher survey	All lead teachers and assistant teachers with available contact information	• Survey sent to 118 teachers (52 lead teachers and 66 assistant teachers) • Completed surveys obtained from 39 lead teachers (75 percent response rate) representing 35 of the 48 PEG classrooms and 33 assistant teachers (50 percent response rate) representing 27 of the 48 PEG classrooms
Parent survey	All parents of PEG children in 48 PEG classrooms	• Survey sent to 760 parents • Completed surveys from 336 parents/guardians (44 percent response rate)
Wilder Collaboration Inventory	All members of PEG leadership team in each community	• Inventory sent to 59 identified leadership team members across 5 communities • Completed inventories from 49 respondents (83 percent response rate)
Interviews		
Center director interview	All PEG center directors	• Interviews conducted with 28 center directors across 24 ELPs (includes teacher directors) (100 percent response rate)
LEA/ELP leader interview	All LEA coordinators and ELP leaders in each community	• Interviewed 5 LEA coordinators • Interviewed 10 ELP leaders across 16 agencies
Coach interview	All PEG coaches	• Interviews conducted with 10 coaches in 4 communities where PEG coaching was provided
Focus Groups		
Teacher focus group	One focus group in each community, inviting all lead teachers from all PEG classrooms	• 8 teacher focus groups conducted, at least 1 per community • 40 teachers participated (primarily lead teachers)
Parent focus group	Multiple focus groups in each community, inviting all parents from 12 PEG centers	• 11 focus groups conducted (at least 1 per community and up to 3 in 2 communities) • 70 parents participated

3.2.2 Classroom Observations

The study team conducted two-day classroom observations in February and March 2016 in all 48 PEG classrooms. Trained and reliable observers were in the classroom from the start of the school day until children began naptime (generally 8 a.m.–1 p.m.), and used four structured observation measures (two on each day).

The structured observation measures included:

- **Classroom Assessment Scoring System for Pre-K (CLASS;** Pianta, La Paro, & Hamre, 2008). The CLASS measures overall instructional quality with a focus on interactions among teachers and students in the classroom. Each item score ranges from 1 to 7. A score of 1–2 is described as "low" quality in that aspect of teacher-child interaction. Scores of 3–5 are described as "moderate," and scores of 6–7 are described as "high" quality.
- **Early Language and Literacy Classroom Observation Pre-K (ELLCO**; Smith, Brady, & Anastasopoulos, 2008). The ELLCO captures more in-depth information on the quality of support for language and literacy development, including support for diversity of languages, abilities, and cultures. Each item score ranges from 1 to 5, with the highest scores described as "exemplary."
- **Classroom Observation of Early Mathematics—Environment and Teaching, version 3 (COEMET**; Sarama & Clements, 2007). The COEMET focuses on the quality and quantity of mathematics instruction and measures the richness of the math environment in the classroom. The overall instructional environment is rated (1–5 scale) along with a count and rating (1–5 scale) of specific math activities (SMAs) and a count of mini math activities ("minis")– those that are brief and/or do not involve teachers or assistants but which nevertheless include mathematics content.
- **Observation Measures of Language and Literacy Instruction in Early Childhood Education Classrooms—Snapshot of Classroom Activities (OMLIT;** Goodson, Layzer, Smith, & Rimdzius, 2005). The Snapshot portion of the OMLIT measures classroom configurations and activities for each child and staff member in the classroom. The Snapshot provides a perspective on what a classroom looks like, based on how children spend their time—the activities they participate in and whom they are interacting with (i.e., number of other children, staff). In the Snapshot, 15 types of activities are coded, for example, time spent in reading, math, or science, and, within each activity that is occurring, the size of the child instructional grouping (whole group, small group, or individual activity) and how much of the time children are with adults.

The CLASS and the ELLCO were administered simultaneously during the first day, and the COEMET and the Snapshot were administered together during the second day.

3.2.3 Child Assessments

Toward the end of the first year of PEG (June–July 2016), the study team conducted individual child assessments on selected PEG children using standardized measures of early math, early literacy, and vocabulary. To select the sample, the evaluation team first sent parent permission forms home to 760 PEG children, and 543 signed permission forms were returned.

The study team selected a random sample of up to eight children per classrooms to directly assess. The sample selected reflected the primary languages of the children spoken at home in each classroom; that is, if 20 percent of the children in a classroom had a primary language other than English at home, the sample selected included 20 percent of the children in this group, to the extent that there were sufficient

children with permission to do so. In classrooms with less than eight children with parent permission, the study team directly assessed all children with permission. Assessments were conducted with 331 children across the 48 PEG classrooms.

The standardized measures used to assess the selected children included:

- **Early Math**: Woodcock-Johnson III Tests of Cognitive Abilities: Applied Problems Subtest (Woodcock, McGrew, & Mather, 2001). The Applied Problems subtest measures the ability to count and solve problems related to numeracy and space. The child hears a story problem and is asked to recognize the mathematical procedure that should be used and to perform the appropriate calculation.
- **Early Literacy**: Woodcock-Johnson III Tests of Cognitive Abilities: Letter-Word Identification Subtest (Woodcock, McGrew, & Mather, 2001). The Letter-Word Identification subtest measures early literacy skills. The child is asked to identify individual letters and read individual words of increasing difficulty.
- **Vocabulary Comprehension**: Expressive One-Word Picture Vocabulary Test, Version 4 (EOWPVT; Martin & Brownell, 2010). The EOWPVT measures vocabulary knowledge based on the child's ability to name an object/action/concept presented in a picture. The pictures represent objects or concepts that children usually have experience with through home, school, or the media.

Children identified as living in homes where Spanish was the primary language were first screened on their English language proficiency at the time of the assessments. The preschool version of the Language Assessment for Early Learners (preLAS; Duncan & De Avila, 1998; preLAS 2000, CTB/McGraw-Hill), a structured English language proficiency screener, was administered to these children, and children who failed to pass the screener were administered the Spanish language versions of the early math and early literacy tests and a bilingual version of the vocabulary test. The Spanish/bilingual versions of the assessment measures included:

- **Early Math**: Bateria III Woodcock-Munoz Problemas aplicados (Munoz-Sandoval, Woodcock, McGrew, & Mather, 2005);
- **Early Literacy**: Bateria III Woodcock-Munoz Identificacion de letras y palabras (Munoz-Sandoval, Woodcock, McGrew, & Mather, 2005); and
- **Vocabulary Comprehension**: Expressive One Word Picture Vocabulary Test, Version 4, Spanish-Bilingual Edition (EOWPVT; Martin, 2012).

In addition to the direct assessments of academic achievement, the study team obtained Teaching Strategies (TS) GOLD® teacher ratings from EEC on 606 PEG children from 40 of the 48 PEG classrooms. The ratings were completed in the spring or summer of 2016. The evaluation focused on the three Social-Emotional Objectives from the TS GOLD which included ratings of nine individual skills:

- Objective 1: Regulates own emotions and behaviors
  - Skill 1: Manages feelings
  - Skill 2: Follows limits and expectations
  - Skill 3: Takes care of own needs appropriately
- Objective 2: Establishes and sustains positive relationships
  - Skill 4: Forms relationships with adults
  - Skill 5: Responds to emotional cues

  - Skill 6: Interacts with peers
  - Skill 7: Makes friends
- Objective 3: Participates cooperatively and constructively in group situations
  - Skill 8: Balances needs and rights of self and others
  - Skill 9: Solves social problems.

3.2.4 Other Available Data

The study team also obtained additional available program data from EEC including demographic characteristics about PEG teachers, parents, and children.

3.3 Approach to Data Analysis

The study team conducted a variety of descriptive data analyses to provide an in-depth overview of the implementation and early child outcomes of the PEG program in its first year. To examine the level of implementation of each component of the PEG model (i.e., collaboration, professional development, coaching, family engagement, and comprehensive services), the study team analyzed survey, interview, and focus group data from multiple stakeholders including agency leadership, district staff, center directors, coaches, teachers, and parents. The evaluation team also examined whether there were differences in program implementation by community.

To examine characteristics of members of the PEG community, the study team examined measures from teachers, classrooms, parents, and children that included teacher and parent surveys, classroom observations, and child assessments. Parent measures included program connectedness and home activities, while teacher measures included self-efficacy and job satisfaction, classroom measures included the quality of teacher-child interactions and how child time was spent, and child measures included multiple domains of early childhood development (early math, early literacy, and vocabulary comprehension).

4. Collaboration and Leadership

One of PEG's goals is to improve collaboration and foster leadership within the early education system in each of the participating communities. In service of this goal, LEAs and ELPs in each community formed collaborations to jointly plan for and implement the PEG model in their communities. Communities expect that adjustments will be made to the local models as the program develops.

This chapter starts with a brief overview of the collaboration models that were developed in the communities and the collaborative activities that took place through the first year of PEG implementation (2015–16). The chapter also describes some specific successes of and challenges to collaboration that local PEG leadership reported having experienced through in the first year. The study team conducted structured interviews with key PEG leaders in each community, including representatives from each PEG LEA and PEG ELP. Finally, the findings from a standardized collaboration inventory are summarized as a broader reflection on strengths and weaknesses of the collaborative efforts. Data on PEG collaboration were collected from local PEG leadership teams near the end of the first year of implementation (during spring 2016); 48 PEG leaders completed the Wilder Collaboration Factors Inventory (Mattessich, Murray-Close, & Monsey 2001), including LEA staff and at least one representative from each ELP in four of the five communities and all but one ELP in the other community.

Throughout this chapter, members of the collaborative group in each community are referred to as the "PEG leadership" or "PEG leaders." PEG leadership primarily consisted of LEA PEG coordinators and/or other involved district staff, ELP leaders, and in some cases PEG center directors.

4.1 Summary of Findings

- In each community, a governing body was formed that represented PEG leaders from the LEAs and provider organizations and made decisions related to the design and management of the PEG funded programs. The communities took different approaches to this collaborative work. All of the communities coordinated some programmatic activities across providers and engaged in collaborative decision-making.
- ELP leadership and center directors reported both successes and challenges related to working collaboratively to implement PEG and carry out a shared vision for serving all children and families in their communities. The specific successes and challenges reported varied by community.
- Across the five communities, PEG leaders were particularly positive about the local context in which they conducted their work, believed that the participating organizations saw collaboration as in their best interest, and agreed that members of their collaborative had a stake in both process and outcome. There was also widespread agreement that PEG leaders in the collaboration communicated regularly, both formally and informally.
- PEG leaders were less positive about the degree to which their collaboration had defined and was working toward a common mission. Nor did they feel that they always had the necessary human and financial resources available for their work.
- The PEG community collaborations are expected to develop and strengthen over time. The evaluation will continue to measure the progress and strength of local collaboration in future years.

4.3 Collaboration Models

The PEG communities developed distinct collaborative models for implementing PEG, informed by their community's unique history and context. Each community's model is described briefly below.

4.3.1 Boston

In Boston, the PEG collaboration built off a prior collaboration (called Boston KIDS) between the Boston Public Schools (BPS) and some of the PEG-funded ELPs. The PEG collaboration began with three ELPs and BPS. The LEA and ELPs worked in the winter and summer (2014–15) to design components of the grant, including approaches to family engagement and comprehensive services, as well as birth to grade three alignment activities. As part of this planning process, the ELPs determined that there was not enough unmet need in Boston to justify the eligibility requirement that PEG children had no prior preschool. The Boston ELPs instead decided to blend PEG funding with subsidy funds from EEC and focus on improving the quality and extending hours of programs and classrooms that currently existed. Once the three ELPs identified the number of children they could serve, BPS conducted a follow up procurement process to identify additional ELPs to fund with the money that remained; these additional ELPs were all drawn from the pool that had previously worked with BPS in implementing the K1DS model.

BPS worked with the ELPs to implement the same curricula currently being used in BPS preschool classrooms. BPS provided curricular materials, professional development, and coaching to PEG teachers. In two cases, BPS worked in collaboration with additional coaches hired by the ELPs to provide ongoing support between BPS coach visits. Each ELP managed the family supports and comprehensive services relatively independently, although monthly director meetings allowed for sharing of best practices. Subcommittees of center directors were also formed to review current family engagement and comprehensive service approaches and develop an approach to be implemented across PEG programs in the community. Executive leadership of each ELP also met quarterly to discuss implementation challenges.

4.3.2 Holyoke

In Holyoke, two ELPs oversaw four PEG classrooms located in Holyoke Public School (HPS) buildings, with each ELP responsible for one classroom in each school. HPS provided coaching and coordinated a larger initiative focused on building early literacy community-wide (Holyoke Early Literacy Initiative or HELI). PEG classrooms are a key component of the larger plans for the community. PEG teachers participated in professional learning communities with public preschool and kindergarten teachers. Each ELP managed the family engagement and comprehensive service efforts independently and supplemented the professional development provided by HPS. The PEG leadership created a steering committee that met monthly. PEG leaders also participated in workshops organized by HELI.

4.3.3 Lawrence

Two ELPs opted to each start new programs that each ran independently in Lawrence. Lawrence Public Schools (LPS) managed enrollment for the PEG classrooms and aimed to identify ways to increase alignment with public school kindergarten classrooms, recognizing that each public school in Lawrence operates fairly autonomously and there is no one clear model or uniform curriculum for kindergarten in the community. During the course of the first year of PEG, the two ELPs began to consider possibilities

for greater alignment across their PEG programs and decided to use the same curriculum starting in the second year, a change that may also lead to coordinated professional development and coaching.

4.3.4 Lowell

Lowell Public Schools (LPS) decided to open one new early childhood center jointly run by two PEG-funded ELPs. Although the two ELPs maintain separate licenses for the classrooms they run, the program was viewed as one and decisions were highly collaborative across the ELPs. Lowell Public Schools provided coaching and coordinated supports with other district departments as needed. In Lowell, a management committee met monthly. The committee formed subcommittees as needed to address issues that arose, such as choosing a curriculum, coordinating outreach, and strategizing about the need for transportation. An executive committee provided updates to the executive management of each ELP quarterly.

4.3.5 Springfield

During the planning of the PEG grant, Springfield Public Schools (SPS) purchased a building to serve as an early childhood center, where PEG classrooms run by three ELPs were co-located with other SPS preschool and Early Head Start classrooms. To address the lack of transportation resources, each ELP also opened classrooms located within one or two of their other existing sites in the city. All PEG classrooms used the same curriculum used by public school preschool classrooms, and SPS provides professional development and coaching focused on the curriculum. Each ELP manages the family engagement supports and comprehensive services provided to children and families in their classrooms, although monthly management meetings for all ELPs support efforts to align these supports. SPS has also funded an occupational therapist, a speech pathologist and a behavioral specialist to consult with PEG teachers and provide additional comprehensive service supports. Subcommittees were formed to address particular areas of focus, such as family engagement.

4.4 Collaboration Structure

Each PEG community was required to set up collaborative structures for communication and collaboration between the public and community-based early education and care programs. These collaborations were expected to support program design, coordination of program activities and funding, and coordinated decision-making among the LEA and participating ELPs. In all PEG communities, the primary mechanism for this collaboration was the creation of a steering committee with representation from the LEA and each ELP. In some communities, multiple committees were formed to ensure communication at different levels of leadership, such as subcommittees of executive management and of center directors. Also, subcommittees were sometimes formed to manage the planning of particular programmatic requirements of the grant, such as family engagement supports, curriculum choices, and professional development activities.

The community steering committees began meeting as soon as the grant award was announced (late 2014) and met through the spring and summer of 2015 to plan the program. Meetings continued through the first year of the PEG program operation (2015–16), typically held monthly. Ongoing communication among PEG leaders was often handled through email. As part of the collaborative work, PEG leaders determined which of the PEG programmatic requirements would be managed independently by each ELP and which would be coordinated across ELPs. While joint professional development within each community was a

requirement of the grant, communities were free to coordinate as many of the other grant requirements as they wished.

As already described, the LEA in each community served as the lead agent for the grant and was responsible for managing the funds and monitoring the fund use and the programmatic requirements of the grant. Public school preschool classrooms within the participating LEAs did not serve children; the PEG classrooms were run by the community partners. Instead, each LEA identified particular supportive services, such as professional development, that they would provide. In this role, each LEA hired one or two people to serve as the coordinator of the PEG grant and to manage the collaboration among partners.

4.5 Collaboration Experiences: Successes and Challenges

Local district and program leadership members reported a range of specific successes and challenges related to collaboration during 2015–16.

4.5.1 Successes of PEG Community Governance Structure

Overall, PEG leaders from each community reported through interviews that the collaborative structure was beneficial to implementing the PEG components and strategizing more systematically about how to serve and provide high-quality early education to all children in the community. Collaborative members found it helpful to share successes and challenges and learn from one another.

PEG leaders from four of the five communities also found it helpful to collaborate to provide joint professional development and coaching. Leadership from three communities noted that it was helpful to work together (across ELPs and sectors) to conceptualize and clearly define a community approach to implementing PEG components that were new to some or all of the participating programs. The new components most referenced were comprehensive services and transition to kindergarten activities. Furthermore, PEG leaders noted that the regular meetings and communications with other programs resulted in increased knowledge of community activities and resources that could be shared with their families.

In some communities, leaders noted that the collaborative process and regular communications resulted in stronger relationships between the ELPs and LEAs and the opportunity to break down some of the separation between different sectors in terms of policy and practices and start to better align the sectors into one coherent system. ELP leaders reported gaining a better understanding of the LEA approach to early education and programming, and vice versa. In addition, some PEG leaders noted that it was helpful to have the Head Start agency perspective represented given its resemblance to the PEG model.

Additional key themes and salient points related to collaboration that arose during interviews with LEA staff, ELP leadership, and center directors are summarized below.

4.5.2 Sharing Best Practices

Many LEA staff, ELP leaders, and center directors described the value of sharing information with and learning from others in their community. The most frequently identified focus of collaboration was teacher professional development supports, particularly coaching. Some ELP leaders and center directors also reported sharing strategies for engaging families and providing comprehensive services during regular meetings.

Some PEG center directors were positive about the collaboration between the LEA and ELPs with implementing ongoing coaching for teachers. One center director reported:

> I think they've [LEA] done a really great job. There have been plenty of opportunities for administrators to get some support. I've tried to really connect with the coach, and really want to know what they're doing inside the classroom so I can support the teachers after the coach leaves. I want to understand what they're thinking, and the feedback they're giving them, because teachers can interpret things differently. I think there's been a lot of support.

4.5.3 Alignment of Regulations and Policies

Many ELP leaders and LEA staff discussed the need to learn about the regulations and policies that governed work within each of their respective systems. LEAs, for example, were required to learn about licensing regulations and EEC policies related to ELP operations, while ELPs had to become familiar with LEA policies and practices. One ELP leader noted:

> Sometimes it's confusing when I have different rules and regulations with EEC than with the public schools. They contradict each other sometimes. It's hard to figure out what you're supposed to do. It depends who is looking at you. You want to make sure you're in compliance with everyone.

Several ELP leaders also reported concerns that their LEA was focused too narrowly on curriculum, perhaps at the expense of other aspects of program quality. One community's LEA staff also voiced a general desire to establish a more shared vision about what quality looks like and how it is defined and supported. Several ELP leaders and LEA staff noted that conversations about misaligned policies or practices—although difficult—resulted in collaborative decision-making and more of a shared vision in their communities.

4.5.4 LEA Role

ELP leaders in one community commented on structural barriers to forming collaborative partnerships between the LEA and ELPs related to the role of the LEA in the partnership:

> I don't think [the LEA's monitoring role] works," one ELP leader said, "especially to be true partnerships. Having the LEA be the auditor and program overseer doesn't foster a partnership mentality; the LEA becomes the compliance organization, which makes the partnership go away."

ELP leaders in one community reported a competitive relationship between ELPs and LEAs to serve a finite/limited number of children. They believed the LEA preschool classrooms were taking children away from community organizations, related at least partially to the fact that children who attend LEA preschool programs were ensured slots in more desirable elementary schools in kindergarten.

4.5.5 Communication among PEG Leaders

While many center directors reported generally positive perceptions of communication among PEG leadership in the community, some also raised some concerns. For example, one center director noted:

> At times, it feels like a big chain of trickling information down. I feel like we don't always get answers right when we would like them. It is a lot of people involved and a lot of different things on the table.

4.5.6 Communication within ELPs

Several ELP leaders across communities reported challenges in communication and collaboration *within* their own programs, and suggested this is an area in which LEAs might provide professional development and support. At least two ELPs also reported a lack of technology to facilitate their own communications and information sharing processes; for example, some ELPs did not have work email addresses/systems for teachers, making communications difficult.

4.5.7 Support for Center Directors

Some communities held monthly meetings where center directors came together for mutual support and information sharing. In these communities, many center directors reported that these meetings were supportive and helpful, although some reported that they found it difficult to leave their programs to attend these meetings due to staffing shortages in the program.

In one community, a center director reported that a site visit from the district PEG coordinator was very helpful, and something she would like to see continue. The director noted:

> I think what was good for me in the beginning was when [the LEA PEG coordinator] would come and do the site visits. That happened often in the beginning, but as we got more busy, it became more about going to larger meetings. Sometimes it was more helpful for me to have that one-on-one to clarify things and make connections.

In communities that did not have regular center director meetings, some directors voiced the desire to have such meetings. One director suggested:

> I think it would be helpful to have PEG specific leadership meetings. Any of my leadership training has been on my own time. It would be helpful to know the struggles that other people are dealing with and dealing with this collaboration between so many groups.

Several center directors voiced their satisfaction with the professional development they received as administrators during 2015–16, and those who had not received professional development indicated their desire to have these opportunities in year two. One center director commented:

> I know what I'd like to see in the future. I'd like more of an emphasis on helping center administrators. For me personally, the kind of professional development I want is a more clear path for my own education. I think there are few directors that don't have master's degrees. I think we could make it easier to obtain one. I don't really feel like we're reaching center directors at an administrator level.

4.6 Wilder Collaboration Factors Inventory Findings

The Wilder Collaboration Factors Inventory is a standardized tool to assess the elements of effective collaboration, as perceived by its members. The Wilder asks respondents to rate their collaboration on 40 survey items that represent 20 factors that can contribute to the success of collaboration. (These factors were developed by the authors through a systematic review of empirical studies of collaboration.) On each survey item, respondents indicated their level of agreement using a five-point scale: (1) strongly disagree, (2) disagree, (3) neutral/no opinion, (4) agree, or (5) strongly agree. To score the Wilder, the responses on the survey items within each factor are averaged to form a factor score. The 20 factors are grouped under six "themes" or categories: environment, membership characteristics, process and

structure, communication, purpose, and resources. Exhibit 4.1 shows the six themes, which of the 20 factors fall under each of the six themes, and in parentheses after each factor label, the number of survey items contributing to that factor. The authors of the Wilder suggest that factor scores can be loosely interpreted as follows: scores of 4.0 or higher show strength and probably do not need special attention; scores between 3.0 and 3.9 are borderline and may require attention; and scores of 2.9 or lower indicate concern and should be addressed.

Exhibit 4.1: Wilder Collaboration Factors Inventory: Factors and Themes

Theme	Collaboration Factors
Environment	There is a history of collaboration/cooperation in the community (2)
	Collaboration is seen as a legitimate leader in the community (2)
	Political and social climate is favorable for collaboration (2)
Membership characteristics	There is mutual respect, understanding, trust among members of the collaboration (2)
	There is an appropriate cross-section of members in the collaboration (2)
	Collaboration members see collaboration as in their self-interest (1)
	Collaboration members are able to compromise (1)
Process and structure	Collaboration members share a stake in process and outcome (3)
	Collaboration has multiple layers of participation from member organizations (2)
	Collaboration members demonstrate flexibility in considering options/approaches (2)
	Collaboration has developed clear roles and policy guidelines (2)
	Collaboration demonstrates adaptability in the fact of changing conditions(2)
	Collaboration demonstrates an appropriate pace of development (2)
Communication	Collaboration members demonstrate open and frequent communication (3)
	Collaboration members have established informal relationships/ communication links (2)
Purpose	Collaboration has concrete, attainable goals and objectives (3)
	Collaboration members have a shared vision of the goals of the work (2)
	The collaboration has a unique purpose in the community (2)
Resources	Collaboration has sufficient funds, staff, materials and time to accomplish its goals (2)
	Collaboration leaders are skilled at working with other people/organizations (1)

Notes: Numbers in parentheses indicate the number of survey items within the factor.

4.6.1 Findings from the Wilder Collaboration Factors Inventory

The findings in this section are based on the average scores (or ratings) for the PEG leaders for all of the survey items under each of the six broad themes. Please note that the term "organizational" or "organization" in this section refers to the local PEG collaborative versus an individual organization. In the results, each community has been assigned a letter to keep its identity confidential. Exhibit 4.2 shows the overall mean ratings for each of the themes and factors within the themes, for PEG overall and separately by community.

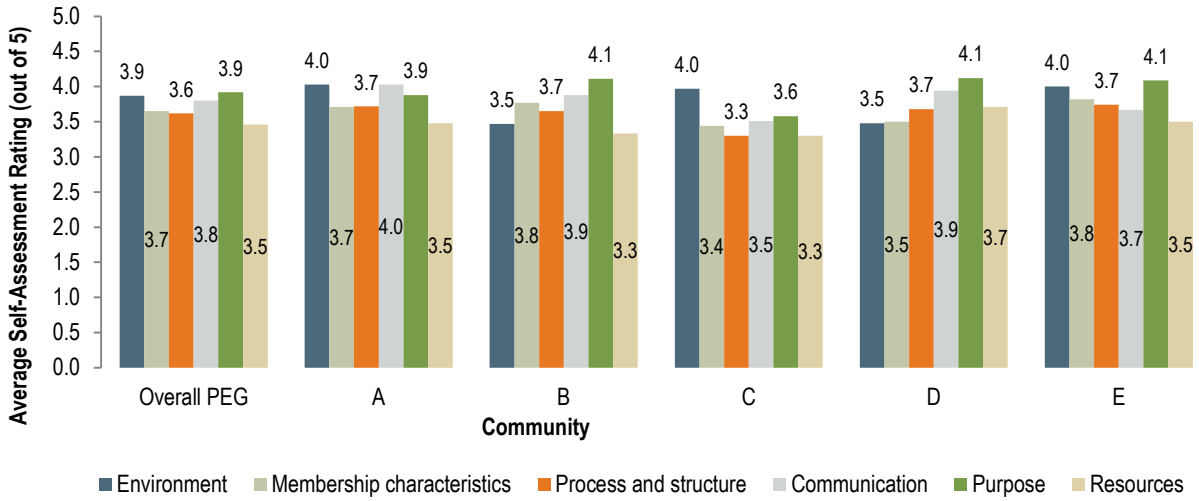
Exhibit 4.3 compares the average ratings for each of the six themes overall and by community. Overall, the average ratings in Exhibits 4.2 and 4.3 suggest that the PEG communities have all developed strong collaborations, but that there is room for growth in some areas in some communities.

Exhibit 4.2: Average Wilder Ratings by Theme and Factor, Overall PEG and by Community

Theme	Community	Total	A	B	C	D	E
Environment	There is a history of collaboration/cooperation in the community (2)	3.74	3.75	4.20	3.32	3.93	3.83
	Collaboration is seen as a legitimate leader in the community (2)	3.70	3.89	3.90	3.59	3.21	3.80
	Political and social climate is favorable for collaboration (2)	4.03	4.19	3.20	4.05	3.93	4.25
	Total for Environment	**3.87**	**4.03**	**3.47**	**3.97**	**3.48**	**4.0**
Membership characteristics	There is mutual respect, understanding, and trust among members of collaboration (2)	3.56	3.64	3.40	3.36	3.43	3.79
	There is an appropriate cross-section of members in the collaboration (2)	3.46	3.36	3.90	3.05	3.43	3.79
	Collaboration members see collaboration as in their self-interest (1)	4.37	4.50	4.60	4.45	4.14	4.17
	Collaboration members are able to compromise (1)	3.51	3.79	3.40	3.36	3.14	3.58
	Total for Membership characteristics	**3.65**	**3.71**	**3.77**	**3.44**	**3.50**	**3.82**
Process and structure	Collaboration members share a stake in process and outcomes (3)	4.08	4.17	4.20	3.61	4.10	4.36
	Collaboration has multiple layers of participation from member organizations (2)	3.30	3.36	3.00	2.95	3.43	3.58
	Collaboration members demonstrate flexibility in considering options/approaches (2)	3.41	3.68	3.80	2.77	3.48	3.50
	Collaboration has developed clear roles and policy guidelines (2)	3.59	3.71	3.30	3.36	3.57	3.79
	Collaboration demonstrates adaptability in the face of changing conditions (2)	3.58	3.46	4.10	3.41	3.93	3.46
	Collaboration demonstrates an appropriate pace of development (2)	3.52	3.75	3.20	3.55	3.36	3.46
	Total for Process and structure	**3.62**	**3.72**	**3.65**	**3.30**	**3.68**	**3.74**
Communication	Collaboration members demonstrate open and frequent communication (3)	3.61	3.95	3.60	3.24	3.76	3.47
	Collaboration members have established informal relationships/communication links (2)	4.07	4.15	4.30	3.91	4.21	3.96
	Total for Communication	**3.80**	**4.03**	**3.88**	**3.51**	**3.94**	**3.67**
Purpose	Collaboration has concrete, attainable goals and objectives (3)	4.04	4.05	4.33	3.61	4.29	4.17
	Collaboration members have a shared vision of the goals of the work (2)	3.79	3.82	3.90	3.45	4.14	3.79
	The collaboration has a unique purpose in the community (2)	3.88	3.68	4.00	3.68	3.86	4.27
	Total for Purpose	3.92	3.88	4.11	3.58	4.12	4.09
Resources	Collaboration has sufficient funds, staff, materials and time to accomplish its goals (2)	3.31	3.39	2.90	3.36	3.43	3.25
	Collaboration leaders are skilled at working with other people/organizations (1)	3.78	3.64	4.20	3.18	4.29	4.00
	Total for Resources	**3.46**	**3.48**	**3.33**	**3.30**	**3.71**	**3.50**

NOTES: Factor scores of 4.0 or higher show strength and probably do not need special attention; scores between 3.0 and 3.9 are borderline and may require attention; and scores of 2.9 or lower indicate concern and should be addressed. Numbers in parentheses indicate the number of survey items within each factor.
SAMPLE: The N ranged from 5 to 14 respondents by community; for overall PEG, N=29 respondents.
SOURCE: Wilder Collaboration Factors Inventory of PEG ELP and LEA Directors (Spring 2016).

Exhibit 4.3: Average Wilder Rating by Theme, Overall PEG and by Community



READS AS: On average, ELPs in PEG rated their communities' collaborative environments as 3.9 out of 5.
NOTES: Authors of the Wilder suggest that factor scores of 4.0 or higher show strength and probably do not need special attention; scores between 3.0 and 3.9 are borderline and may require attention; and scores of 2.9 or lower indicate concern and should be addressed.
SAMPLE: The N ranged from 5 to 14 respondents by community; for overall PEG, N=29 respondents.
SOURCE: Wilder Collaboration Factors Inventory of PEG ELP and LEA Directors (Spring 2016).

Theme: Environment

PEG leadership teams were quite positive about the environment for their collaboration, with a mean rating of 3.87 out of 5.00 across all factors and communities. Leaders reported a broadly favorable political and social climate for their work (4.03), although there was less widespread agreement that there was a history of working together to solve common problems prior to PEG collaboration (3.74) or that member organizations were seen as legitimate leaders on the issues they worked to address (3.70).

Perspectives varied somewhat by community, although no clear pattern emerged. PEG leadership in one community (D) was less likely to agree that there was a broadly favorable social climate for their work than the other four. Leadership in another community was less likely to agree that their community had a history of collaboration (community C), and leaders in yet another community had lower agreement that members of the collaborative were seen as local leaders (community B).

Theme: Membership Characteristics

PEG leadership teams were generally positive about their collaborations' membership characteristics, with a mean rating of 3.65 across all factors and communities. Leadership agreed that participating organizations saw collaboration as being in their best interest (the mean of 4.37 on this factor was the highest rated in the inventory), but were less in agreement that their collaborative had an appropriate cross-section of members (3.46).

There was some variation by community, particular on the subject of the collaboration including an appropriate cross-section of members. Of note, community C's mean was lower (3.05) than the overall mean of 3.46.

Theme: Process and Structure

PEG leadership teams were generally positive about their collaborations' process and structure, with a mean score of 3.62 across all factors and communities. PEG leadership was neutral about whether their collaborative provided for multiple layers of participation (3.30), neutral about whether their collaborative took on work at an appropriate pace (3.52), and more positive but still fairly neutral about if the collaborative had developed clear roles and guidelines (3.59). Two communities were the most negative on each of the indicators (C and D), and one community was consistently the most positive (A).

Theme: Communication

Overall, PEG leadership rated the communication among the members of the collaborations quite positively, with a mean rating of 3.80 across all factors and communities. There was some variation by community; in three communities, ratings were near 4.00 across all factors. PEG leaders were generally more likely to report success in establishing informal relationships and communication links (4.07) than success in demonstrating open and frequent communication (3.61).

Theme: Purpose

PEG leadership teams were generally positive about their collaborations' sense of purpose, with a mean rating of 3.92 across all factors and communities. PEG leadership varied by community in their perceptions of the goals, mission, and shared vision of their local collaborative. PEG leadership in one community (C), for example, were somewhat less likely than others to agree that their collaborative had concrete, attainable goals and objectives (mean rating of 3.61 versus overall mean of 4.04), that it had a unique purpose in their communities (3.68 versus 3.88), or that members of the collaborative had a shared vision for its future (3.45 versus 3.79).

PEG leadership in three communities (A, B, and D) was generally quite positive about the state of their shared mission, reporting strong agreement with all three relevant statements. Respondents in two of these communities unanimously agreed that their collaborative had concrete, attainable goals and objectives, and PEG leadership in one of the two communities was unanimously positive about their shared vision for the future.

Theme: Resources

PEG leadership teams were less positive about the state of their resources than they were about anything else, with a mean rating of 3.46 across all factors and communities. Leadership was generally less positive that their collaboration had sufficient resources at hand (3.31), although they reported general satisfaction with their local leadership (3.78).

Perceptions varied by community. PEG leadership in one community was less positive about the skills of their leadership (C's mean was 3.18 compared to the overall mean of 3.78). Leadership in another community was more positive than the rest (4.20) about the skills of their leadership, although this community was also the least positive about whether their collaborative had access to adequate resources (D's mean was 2.90 compared to the overall mean of 3.27).

5. Teacher Supports

During 2015–16, PEG LEAs and ELPs provided an array of supports to their teachers aimed to achieve multiple goals including: building teacher instructional competencies, increasing teachers' sense of professionalism and job satisfaction, and improving teacher stability. Ultimately, the teacher supports are expected to lead to higher classroom quality, which in turn will lead to improved child learning and development.

This chapter includes an overview of the characteristics of PEG teachers; a description of the supports that PEG teachers received during 2015–16 including: compensation; professional development, coaching, and planning time; and reports on two early teacher self-reported outcomes (self-efficacy and job satisfaction).

5.1 Summary of Findings

- PEG aimed to compensate its teachers in line with the level of pay for public school preschool teachers. PEG lead teachers were paid an average of $54,246 in 2015–16 (not including fringe benefits), which was in line with what preschool teachers were paid by school districts in the PEG communities and higher than typical teacher salaries in Head Start programs and other community-based programs in Massachusetts.
- PEG LEAs and ELPs were expected to provide supports to teachers, including professional development and coaching. Programs were also encouraged to provide paid time for teachers to use for instructional planning.
  - On average, PEG lead teachers were offered 23 hours of professional development training in the first year, across a variety of topics. The level of professional development supports varied across communities and ELPs.
  - Teachers were provided with coaching by LEA staff in four of the five PEG communities. The amount of coaching teachers received varied across communities and programs. About 44 percent of PEG lead teachers reported receiving more than 20 hours of coaching in the first year, while almost one-third of teachers (32 percent) reported receiving 10 or fewer hours of coaching.
  - Over 60 percent of PEG lead teachers reported weekly paid release time for instructional planning.
- PEG teachers reported moderate to high satisfaction with being a PEG teacher and high levels of commitment to teaching. They generally felt confident about their ability to work with students and communicate with parents.
- In later years, the evaluation will examine whether the financial and professional supports for PEG teachers result in greater teacher stability and skill.

5.2 Characteristics of PEG Teachers

A core PEG program goal is to establish classrooms that provide children with a high-quality learning environment supported by a workforce of qualified and experienced educators. As required by the grant, all lead teachers surveyed had at least a bachelor's degree and 23 percent also had a Master's degree (23

percent) (see Exhibit 5.1).[3] Fewer PEG assistant teachers than lead teachers had at least a bachelor's degree (16 percent) and almost one-third (31 percent) had no more than a high school degree or GED.

Exhibit 5.1: Characteristics of PEG Teachers, 2015–16

	Lead Teachers		Asst. Teachers	
	n	%	n	%
Education				
High school diploma or GED	0	0%	10	31%
Associate's/Technical/Vocational Degree	0	0	16	50
Bachelor's degree	30	77	5	16
Master's degree	9	23	1	3
Experience				
1 year	3	8%	7	21%
2–5 years	12	31	14	42
6–10 years	12	31	5	15
More than 10 years	12	31	7	21
Languages Spoken				
English	39	100%	32	97%
Spanish	10	26	15	45
Creole	2	5	0	0
French	1	3	0	0
Haitian	1	3	0	0
Other	3	8	1	3
Other Work				
Externally Employed (Part- or Full-Time)	8	21%	5	16%
Other Education				
Currently in School as a Student	8	21%	13	41%

READS AS: Zero lead teachers and 10 assistant teachers (or 31% of assistant teachers) held a high school diploma or a GED as their highest level of education.
NOTES: Percentages were rounded to the nearest whole number; Responses for "Language Spoken" do not sum to 100 percent because multiple responses were permitted.
SAMPLE: For lead teachers, N=38–39, missing=0–1. For assistant teachers, N=32–33, missing=0–1. For all teachers, N=71–72, missing=0–1.
SOURCE: PEG Teacher Survey (Spring 2016).

All PEG lead teachers had at least one year of experience as a preschool teacher, and 62 percent had at least six years of experience. PEG assistant teachers were less experienced than lead teachers; the majority of assistant teachers (63 percent) were in their first five years of teaching.

The level of education of PEG lead teachers was higher than what is reported nationally for programs serving disadvantaged preschool children; nationally 45 percent of center-based teachers and caregivers serving children ages 3–5 had a bachelor's degree or higher (ACF OPRE, 2013). It is also higher than the 30 percent that was recently reported for center-based teachers in Massachusetts; if the 30 percent reflects

[3] Teacher characteristics were reported on the teacher survey, which was completed by 39 lead teachers representing 35 of the 48 PEG classrooms and 33 assistant teachers from 27 classrooms.

both assistant and lead teachers, the comparable PEG proportion is 63 percent, which is still double the state rate (Marshall, Dennehy, Johnson-Staub, & Wagner-Robeson, 2005; Massachusetts, 2009).

About one-quarter of PEG lead teachers (26 percent) and about two-fifths of PEG assistant teachers (45 percent) reported speaking Spanish, though not necessarily in the classroom. As already described, about one-third of PEG children came from a home where the primary language was not English, with the predominant non-English home language being Spanish.

Early childhood teachers may take additional jobs to supplement their incomes and/or enroll in school to further their education. Approximately one-fifth of PEG lead and assistant teachers reported holding either part- or full-time external employment (on top of their PEG roles). Twenty-one percent of lead teachers and 41 percent of assistant teachers reported that they were also currently in school.

5.4 Compensation

The average total teacher compensation for a PEG classroom lead teacher was $67,475 in 2015–16, a combination of $54,246 in salary and $13,229 in fringe and other benefits. Across the five PEG communities, the average lead teacher salary (excluding fringe benefits) ranged from $54,000 to $71,000. Some programs used funds other than PEG to pay portions of their teacher salaries. A federal report released in 2016 found that on average Massachusetts elementary school teachers were paid $71,240, preschool special education teachers were paid $55,860, Head Start teachers were paid $28,078, and other child care teachers were paid $24,980 (US Department of Education, 2016).

Despite PEG's efforts to provide higher teacher compensation, teachers had a range of perceptions of the adequacy of their salaries. Most lead teachers surveyed (64 percent) were somewhat or very satisfied with their salaries while 13 percent of lead teachers reported that their salaries were inadequate. Total compensation for PEG assistant teachers averaged $43,248. Assistant teachers had lower levels of satisfaction compared to lead teachers with their salaries. About half of assistant teachers (45 percent) were somewhat or very satisfied with their salaries, and 21 percent of assistant teachers reported that their salaries were inadequate.

5.5 Professional Development

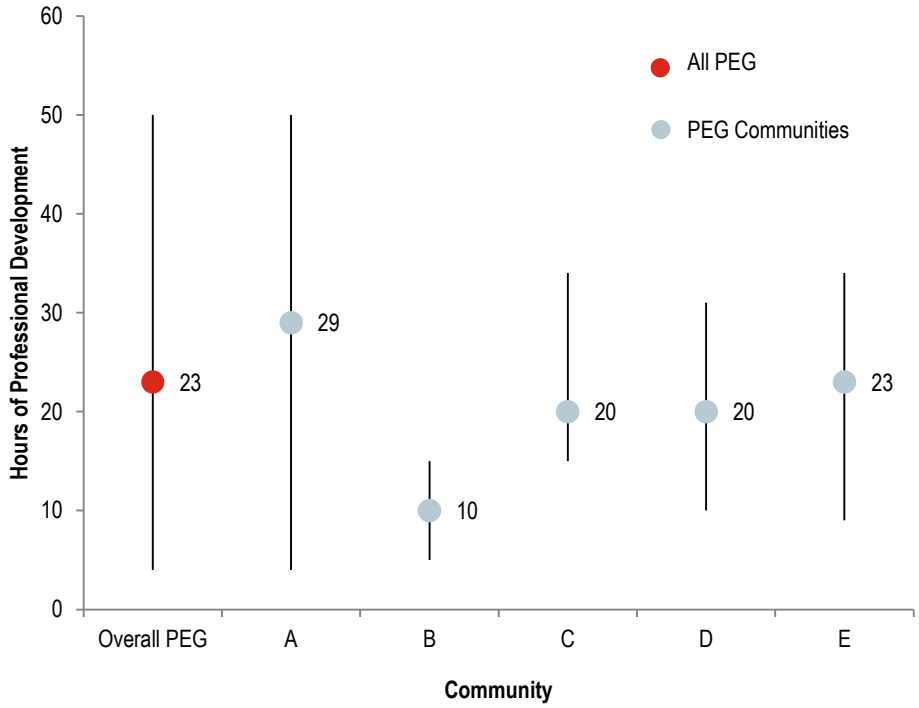
In early education, there is a common assumption that in-service teacher training affects teacher practices in the classroom, and those practices in turn result in positive benefits for children. There are a limited set of findings that show that teacher training is related to improved quality of early childhood programs (Burchinal, Howes, & Kontos, 2002; Burchinal, Cryer, Clifford, & Howes, 2002) and more sensitive interactions with children (Clarke-Stewart, Vandell, Burchinal, O'Brien, & McCartney, 2002). While there is some research about what types of training strategies are most likely to be effective, there is some evidence suggesting that more intensive and longer duration training is likely to be better than brief training (Tout, Zaslow, & Berry, 2006; Loeb, Rouse, & Shorris, 2007).

5.5.1 Hours of Professional Development

A primary support provided to teachers in the first year of PEG was professional development.[4] PEG LEAs and programs were allowed to design their own professional development programs, which could vary in intensity and topics covered. At the same time, LEAs and ELPs were encouraged to collaborate within their communities on professional development approaches and activities. Most center directors (75 percent) reported that professional development to teachers was provided primarily by school district staff. Less often, ELP and center staff delivered the professional development.

On average, PEG lead teachers reported attending 23 hours of professional development training during 2015–16. However, there was substantial variation among teachers in the amount of training, ranging from a few to 50 hours. There also were substantial differences across PEG communities in the amount of professional development that teachers reported receiving, with average hours ranging from 10 to 29 (Exhibit 5.2).

Exhibit 5.2: Average Hours of Professional Development Received by PEG Lead Teachers, Overall PEG and by Community



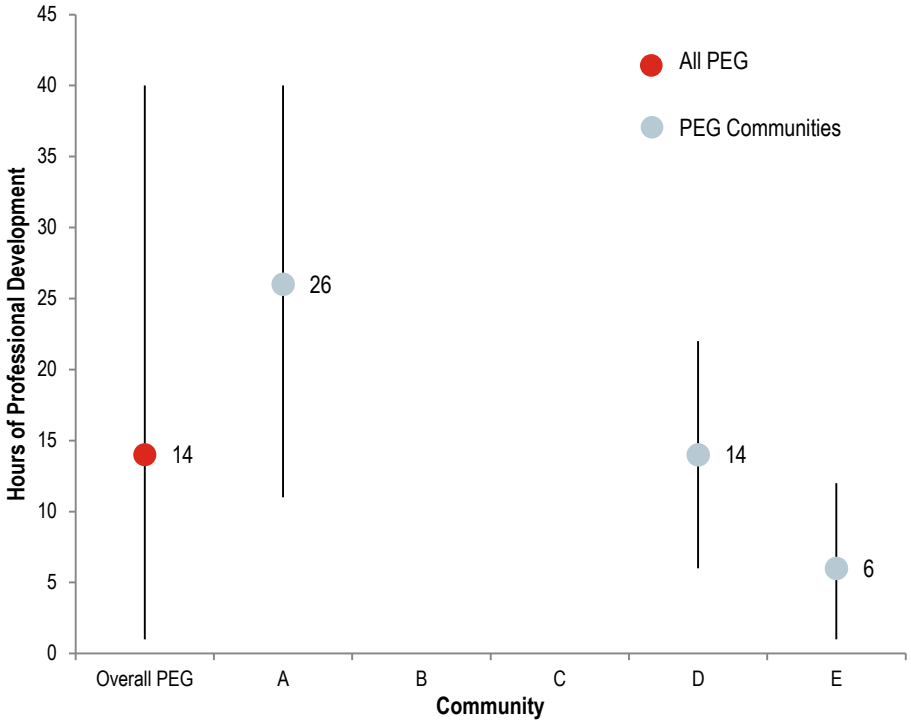
READS AS: PEG lead teachers reported receiving between 4 and 50 hours of professional development over the past year, with an average of 23 hours.
SAMPLE: N ranged from 3 to 10, by community. For overall PEG, N=25, missing=13.
SOURCE: PEG Teacher Survey (Spring 2016).

Assistant teachers reported receiving, on average, 61 percent of the hours of professional development received by lead teachers (Exhibit 5.3). The average amount of professional development for assistant

[4] In PEG, professional development is an encompassing term used to refer to in-service training and education to increase teaching skills, knowledge of a particular subject area, or to learn to implement a particular curriculum.

teachers was 14 hours, although the averages varied across communities. In the same community where lead teachers reported the most professional development, assistant teachers also reported receiving the most training—an average of 26 hours. In the other two communities for which data were reported, the average amount of professional development received by assistant teachers ranged between 6 and 14 hours.

Exhibit 5.3: Average Hours of Professional Development Received by PEG Assistant Teachers, Overall PEG and by Community



READS AS: Overall, PEG assistant teachers reported receiving between 1 and 40 hours of professional development, with a mean of 14 hours.
SAMPLE: N ranged from 2 to 4 by community for Communities A, D and E. For overall PEG, N=12, missing=19. Only one assistant teacher in each of Communities B and C reported their hours of professional development, so their data is not reported.
SOURCE: PEG Teacher Survey (Spring 2016).

5.5.2 Training Topics

A substantial majority of PEG lead teachers (over 80 percent) reported receiving training on four topics in 2015–16: training on guiding and interacting with young children, training on implementing specific curricula, training on general content instruction, and training on conducting formative child assessments (Exhibit 5.4). Fewer teachers (less than 50 percent) reported receiving training on state standards and special education referrals.

Exhibit 5.4: Topics Covered in PEG Professional Development and Usefulness as Reported by Lead Teachers

Professional Development Topics	Percentage of Lead Teachers Who Reported that:	
	Topic Was Addressed in Professional Development	Professional Development Was Very Effective
Guiding and interacting with young children	92%	56%
Curriculum-specific training	84%	64%
General content instruction (language/literacy/math instruction)	84%	60%
Conducting formative child assessments through observation, child screening, and/or assessments	80%	36%
Supporting children's social/emotional development	76%	56%
Understanding child development	76%	52%
Classroom organization and learning environments	72%	36%
Health, safety, and nutrition	72%	32%
Training in using particular assessment tools (i.e., ASQ, TS Gold, DIBELS)	72%	36%
Behavior Management	68%	32%
Communicating with parents	68%	40%
Working with diverse populations	68%	44%
Supporting children with special needs in the classroom	60%	20%
Training in using particular tools to understand the classroom environment (ECERS, CLASS, etc.)	56%	24%
Training on state standards	48%	20%
Special education referrals	36%	8%

READS AS: Ninety-two percent of lead teachers reported that PEG professional development addressed guiding and interacting with young children, and 56 percent of lead teachers reported that the professional development coverage of the topic was very effective.
SAMPLE: N=25, missing=13.
SOURCE: PEG Teacher Survey (Spring 2016).

5.5.3 Perceived Effectiveness of Professional Development

In general, PEG lead teachers reported that some of the professional development that they received was useful in 2015–16. There were five areas in which the professional development was judged to be effective (by 50 percent or more of teachers), including training on guiding and interacting with young children, specific curricula, content instruction, supporting children's social/emotional development, and understanding child development more generally (Exhibit 5.4). In focus groups, lead teachers reported that, regardless of the topic, they especially appreciated training that provided concrete strategies and resources for classroom management and instruction.

The professional development related to supporting special education referrals was perceived to be ineffective by nearly all lead teachers, and less than one-quarter of teachers reported that the professional development around supporting children with special needs, state standards, and using specific child observation tools to be useful.

5.5.4 Challenges in Implementing Professional Development

Center directors noted that coordinating teacher training with the public schools introduced some challenges for implementing professional development in 2015–16. The challenges included scheduling training during times when the schedules of the PEG programs and the public schools differed and some reports of perceived lack of buy-in to the PEG program among public school staff. Center directors noted other administrative challenges in planning and providing professional development, such as finding sufficient time for professional development in light of restrictions on the number of days that programs could close for teacher training and insufficient budgets. Finally, center directors noted that the professional development provided by school district staff was not always customized to the needs of teachers and that the training sometimes focused too narrowly on topics related to meeting state Quality Rating and Improvement System (QRIS) requirements.

Lead teachers in most PEG communities also raised concern that assistant teachers received less professional development than teachers did. They recommended that the same level of professional development be offered to all staff in future school years.

5.6 Coaching

In the PEG model, coaching is one important means by which support is delivered to teachers to improve knowledge and practice. Although coaching was not required in year one, it was strongly encouraged and added as an expectation in year two. This expectation is aligned with Level 4 of the Massachusetts QRIS which requires programs to "demonstrate systematic opportunities for teachers to engage in reflective teaching practices through the use of peer groups, coaches and/or mentors."

In recent years, there is growing recognition and evidence of the potential value of coaching for supporting improvements in teaching in early childhood classrooms. Though there is little information about the specific components of coaching, the broader body of literature on professional development efforts that include coaching is extensive. In 2011, Isner et al. conducted a literature review to examine 48 studies on the effects of professional development with a coaching element. Of the studies that examined staff outcomes, about 60 percent reported positive findings on one of the following: knowledge, attitudes, and satisfaction with the coaching. Most of the studies also included a measure of observed quality and instructional practices with children and, of those, 87 percent reported positive outcomes. Finally, about half of the studies included child outcomes. Of those, just over half found positive language and literacy outcomes for children, 28 percent found positive outcomes on behavioral measures, and just one study reported a positive outcome on math. Isner et al. (2011) concluded that the existing research suggests positive associations between coaching and quality improvements in early education settings.

PEG communities were allowed to design their own coaching model in terms of content, dosage, and strategies. Coaches met with individual PEG teachers or teaching teams to offer instructional support and other classroom management support to improve instruction. While PEG coaches did not exist in one community during 2015–16, at least one of the center directors in that community offered instructional support to the PEG teachers in her building.

5.6.1 PEG Coaches

In the four communities with PEG coaches, the coaches were hired by the school district. All of the coaches had expertise in early childhood education and development. With one exception, coaches were

former early childhood teachers. In three communities, PEG coaches were hired from an existing pool of district coaches or experienced district teachers.

PEG coaches received professional development related to coaching, instructional leadership, or teaching in prekindergarten classrooms. Coaches in three communities attended team meetings in which a supervisor provided professional development or other kinds of support directly related to the responsibilities of coaches. In two communities, coaches were provided with mentorship opportunities in which the mentor observed the coach in action and debriefed with the coach about his/her work with the teacher. In one case, the mentor modeled the process of providing feedback to teachers.

Across the four communities, coaches had other responsibilities in addition to coaching. Coaches in two communities were responsible for developing curriculum for the PEG and district preschool classrooms. All coaches reported monthly meetings with district supervisors and monthly meetings with PEG leadership. Coaches differed in their reports of the relative amount of time spent in meetings, but stated that there was at least one meeting per week. These meetings included those with district supervisors and district curriculum and instruction teams. Importantly, in three communities, coaches met with other PEG or district coaches; these coaches reported during interviews that these meetings contained essential support and training content.

5.6.2 Coaching Activities

Coaching Strategies

PEG coaches reported using some common strategies across the five communities. All coaches reported using a sequence of "observe, reflect, and discuss" with teachers. First, coaches observed the classroom and the teachers' practices within the classroom as part of coaching, reflected on their observations, and then met with the teacher to discuss what the coach observed. While observing, coaches gathered information either in the form of written notes, photographs, or videos. Afterward, coaches reflected upon what s/he observed and created a set of key points to discuss with the teacher or teaching team. Finally, the coach met with the teacher or teaching team to discuss the observation notes and other information. In this meeting, coaches and teachers often generated a set of goals and next steps.

Coaching Topics

Lead teachers reported that the PEG coaching addressed a range of topics. The most common topic of coaching (reported by 79 percent of teachers) was about general content instruction (Exhibit 5.5). Most teachers also received coaching on how to use specific curricula, the general classroom environment, and on supporting children's social emotional development. Only 21 percent of teachers received coaching on special education referrals. Coaches reported that earlier in the school year, the coaching was more likely to focus on classroom organization and behavior management. Later in the year, coaching was more likely to focus on curriculum content and pedagogy.

Exhibit 5.5: Topics of Coaching Reported by PEG Lead Teachers

	Lead Teachers	
	N	%
General content instruction (language and literacy/math instruction)	27	79%
Curriculum-specific training	26	76%
Classroom organization and learning environment	26	76%
Supporting children's social/ emotional development	24	71%
Behavior Management	22	65%
Follow-up to professional development trainings	16	47%
Supporting children with special needs in the classroom	12	35%
Supporting English Language Learners	11	32%
Using information from child formative assessment, screeners and assessments	10	29%
Aligning classroom practices with state standards	10	29%
Working with diverse populations	10	29%
Using information from formal classroom observation tools (i.e., CLASS)	9	26%
Special education referrals	7	21%

READS AS: Twenty-seven lead teachers, or 79% of PEG lead teachers, received coaching on general content instruction.
SAMPLE: N=34, missing=2.
SOURCE: PEG Teacher Survey (Spring 2016).

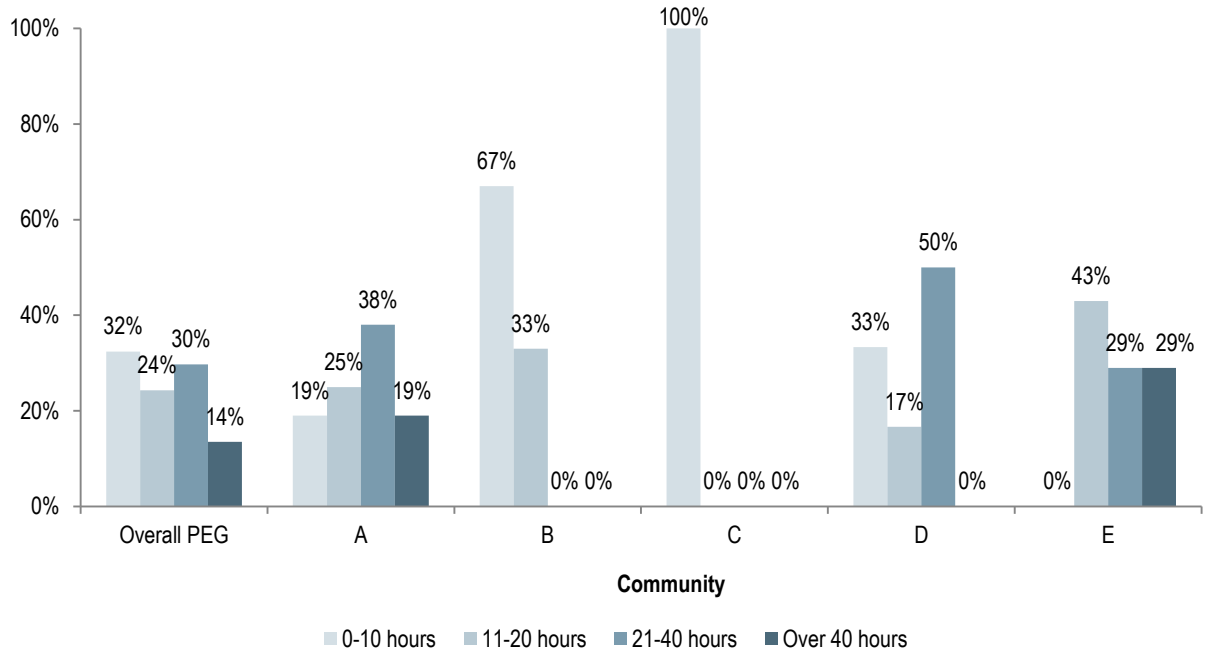
About half (47 percent) of surveyed lead teachers reported that at least one coaching session was directly related to professional development trainings that they received. According to interviews with coaches, in three communities teachers were intentionally involved in determining what coaches would observe and address in coaching sessions. Teachers in two communities completed a formal needs assessment at the beginning of the school year for coaches to review. In another community, the PEG coaches set a loose structure for the 2015–16 coaching sessions—a list of topics that all coaches were to cover with teachers over the course of the year; other topics and teacher needs could be addressed as well.

5.6.3 Coaching Dosage

Coaches typically observed teachers in their classrooms and then met with them to discuss the observation. In two of the communities where coaching was provided, most lead teachers reported being observed and meeting with their coach monthly. In the other two communities, lead teachers reported being observed and meeting with their coach a few times per year. Typically, coaches met with teachers one-on-one, but 23 percent of teachers reported that they sometimes met with the coach with a group of teachers.

In terms of the total amount of coaching teachers reported receiving, the dosage varied widely: 14 percent of teachers reported receiving more than 40 hours of coaching, while 32 percent of teachers received 10 or fewer hours (Exhibit 5.6).

Exhibit 5.6: Hours of Coaching Reported by PEG Lead Teachers, Overall PEG and by Community



READS AS: Thirty-two percent of PEG teachers reported receiving between 0 and 10 hours of coaching over the last year.
SAMPLE: N ranged from 16 to 3, by community. For overall PEG, N=37, missing=1.
SOURCE: PEG Teacher Survey (Spring 2016).

5.6.4 Supervision and Documentation of Coaching

Teacher progress resulting from coaching was formally tracked in one of the four communities that provided coaching. In this community, coaches kept logs that helped them identify what to follow-up on in subsequent sessions and also allowed them to note any growth/progress that was observed. An observation tool was used in one coaching session that focused specifically on how teachers were implementing the curriculum. Information gathered during this session was used to create action plans for individual teachers. In the other three communities, tracking was less systematic. Coaches followed up with teachers informally, but did not record whether progress was made on any goals or areas of improvement that were identified in previous coaching sessions.

5.6.5 Effectiveness of Coaching

Teacher perceptions of the utility of coaching differed across communities. In focus groups, teachers in one community reported that the coaching was highly beneficial. Teachers in two other communities reported that the coaching was useful, but not well-aligned with what was happening in the classroom; these teachers wanted coaches to provide more actionable feedback targeted to specific teacher practices or child learning outcomes.

5.6.6 Challenges Implementing Coaching

Coaches reported several barriers to the delivery of coaching.

- *Insufficient time*. Coaches and teachers in two communities had difficulty finding enough sufficient staff classroom coverage for necessary coaching activities and communications. Coaches and teachers reported that this barrier arose due to incomplete or shifting staffing in PEG classrooms.
- *Space*. The physical space presented an additional barrier to coaching. In two communities, some teachers were geographically isolated, with individual classrooms scattered across a range of early childhood education settings. This barrier increased travel time for the coaches and prevented teachers from forming relationships with each other that could reinforce the support they were receiving from the coaches. In one community there was not enough space available in the center for private follow-up meetings between the coach and teachers. In some cases, coaches had to wait one to two days after observations to have this type of meeting.
- *Understanding regulations and context*. Coaches, teachers, and ELP leadership in two communities reported that coaches were sometimes unfamiliar with ELP regulations and context. The coach's unfamiliarity with regulations decreased the utility of the strategies and support that he/she was able to provide. Given that LEAs and ELPs are regulated by different state agencies, there were some instances where coaches' suggestions were not only poorly-suited to the ELP context but contradicted state licensing requirements for the ELP center or agency. For example, one ELP leader described a scenario in which the coach suggested that a teacher leave the room in order to plan, but if the teacher had done this, the adult-child ratio required by state licensing standards would not have been met.

5.6.7 Coach-Recommended Improvements

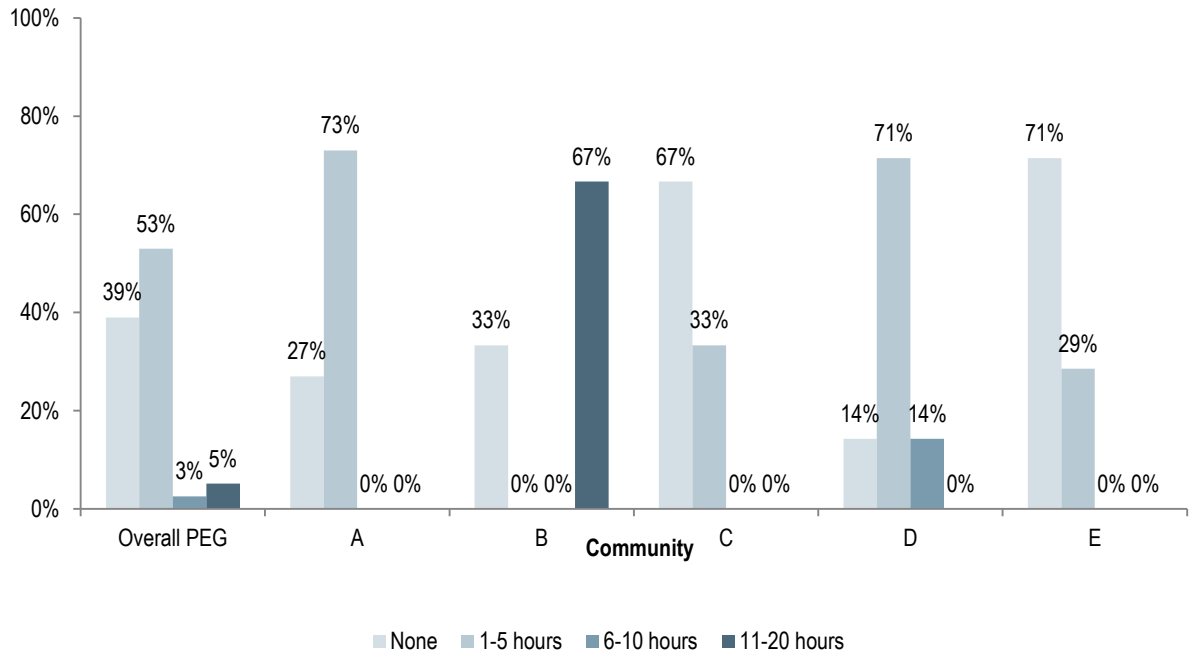
According to coaches, relationship building was important for coaching success. They reported that one-on-one meetings between teachers and coaches, as well as meetings with entire teacher teams, facilitated high quality coaching. Coaches reported that they would like to meet more with other PEG coaches in future school years, work with a literacy instruction specialist, and receive training related to the CLASS measure. Additionally, coaches in two communities would like to meet with PEG coaches in other communities to share best practices and learn more about how they organize their work. In two other communities, coaches desired more professional development from a literacy instruction specialist. In one community, coaches discussed the intention to create a contract in 2016–17 that outlined the responsibilities of coaches and teachers.

5.7 Paid Instructional Planning Time

The PEG model did not include a requirement that teachers have paid time for planning, but EEC encouraged PEG programs to provide this support as a strategy for developing high-quality programming for children. About half of the lead teachers (53 percent) reported receiving 1–5 hours per week of formal release time for planning, while a smaller proportion (8 percent) received 6 or more hours of planning time.[5] Approximately one-third of lead teachers (39 percent) received no formal release time per week (Exhibit 5.7). Assistant teachers reported similar hours of paid planning time.

[5] Teachers may have interpreted the definition of formal planning/release time differently; it is possible that some teachers counted time spent planning in the classroom while children were present and some did not. The survey described this as "time from your program for planning/other non-instructional work responsibilities."

Exhibit 5.7: Weekly Hours of Paid Planning Time Reported by PEG Lead Teachers, Overall PEG and by Community



NOTE: Since community B only includes responses from 3 lead teachers, the 67% in the exhibit reflects the responses of 2 teachers.
READS AS: Thirty-nine percent of PEG lead teachers reported receiving no weekly planning time, and 53 percent of PEG lead teachers reported receiving one to five hours of planning time per week.
SAMPLE: N ranges from 3 to 15, by community. For overall PEG, N=38, missing=1.
SOURCE: PEG Teacher Survey (Spring 2016).

Among lead teachers who received some formal release time, the most commonly-reported time during the day during which they had release time was during the children's nap (85 percent), followed by other break periods such as lunch.

5.7.1 Teacher Perceptions of Planning Time

The majority of lead teachers (87 percent) and assistant teachers (76 percent) reported that paid planning time was "very important" to helping do their jobs. However, half of lead teachers (50 percent) felt they did not have enough paid planning time to complete their responsibilities. The majority of assistant teachers (76 percent) reported that they had just enough paid planning time.

According to the center directors, the key barrier to paid planning time was coverage of classrooms so that the adult-child ratio was maintained. Coverage was affected by incomplete or shifting staffing in PEG classrooms and teacher absences within the PEG classroom or the center in which the PEG classroom was located.

5.8 Early Teacher Outcomes

5.8.1 Job Satisfaction and Self-Efficacy

One of the goals of the PEG program is to support teachers' sense of professionalism and self-efficacy through professional development, coaching, and compensation. Ultimately, it is expected that teachers

who feel more positively about their jobs and their own competencies will remain in the program, thereby providing the program continuity and stability. Some studies have found that teachers with high self-efficacy are more likely to believe that they can have an impact on what and how the children in their classrooms learn (Tschannen-Moran, Hoy, & Hoy, 1998). Importantly, teacher self-efficacy has also been found to have a positive association with teacher willingness to implement newly learned tasks and strategies, choice of activity, task persistence and effort expenditure (Allinder, 1994; Fuchs, Fuchs, & Bishop, 1992; Guskey, 1988; Pajares, 1997; Woolfolk, Rosoff, & Hoy, 1990).

Since teacher retention will not be examined until the second year of the PEG program, the Year 1 evaluation focused on teacher job satisfaction and self-efficacy toward the end of the first year of program implementation. Most PEG lead teachers were either very satisfied (49 percent) or somewhat satisfied (44 percent) with their jobs. A high percentage of teachers were satisfied with their decision to be a preschool teacher; 74 percent of lead teachers and 67 percent of assistant teachers reported that they would "certainly" become a teacher again if they were to go back to their college days and start over again. Also, most lead teachers (77 percent) and assistant teachers (79 percent) planned to remain in teaching "as long as they are able."

PEG teachers also expressed a high level of confidence in their ability to work with students (Exhibit 5.8). This confidence included feeling that they made a significant difference in students' lives and that they were successful at reaching even the most difficult students. Teachers were less confident about their influence on their students' achievement and motivation, relative to the influence of their home environments and peers. However, teachers were highly confident in their ability to communicate with parents and guardians; on average, teachers rated their ability to communicate with parents about various topics as above 4.6 on a 5-point scale.

Exhibit 5.8: Lead Teacher Confidence Regarding Interactions with Students

	Disagree or Disagree very strongly (%)	Disagree just a little (%)	Agree just a little (%)	Agree or Agree very strongly (%)
Positive Statements about Teacher Abilities				
I feel that I am making a significant educational difference in the lives of my students.	0%	0%	3%	97%
If I try really hard, I can get through to even the most difficult and unmotivated students.	0%	0%	10%	90%
I am successful with the students in my class.	3%	0%	5%	92%
I usually know how to get through to students.	0%	0%	3%	97%
Negative Statements about Teacher Abilities				
There is a limited amount that I can do to raise the achievement level of students.	82%	5%	5%	8%
Children are so private and complex, I never know if I am getting through to them.	67%	15%	10%	8%
I feel as though some of my students are not making any academic progress.	64%	13%	13%	10%
Most of a student's motivation depends on the home environment, so I have limited influence.	61%	18%	8%	13%
My students' peers influence their academic performance more than I do.	59%	32%	8%	0%
I am uncertain how to teach some of my students.	59%	3%	26%	13%
My students' peers influence their motivation more than I do.	55%	32%	11%	3%

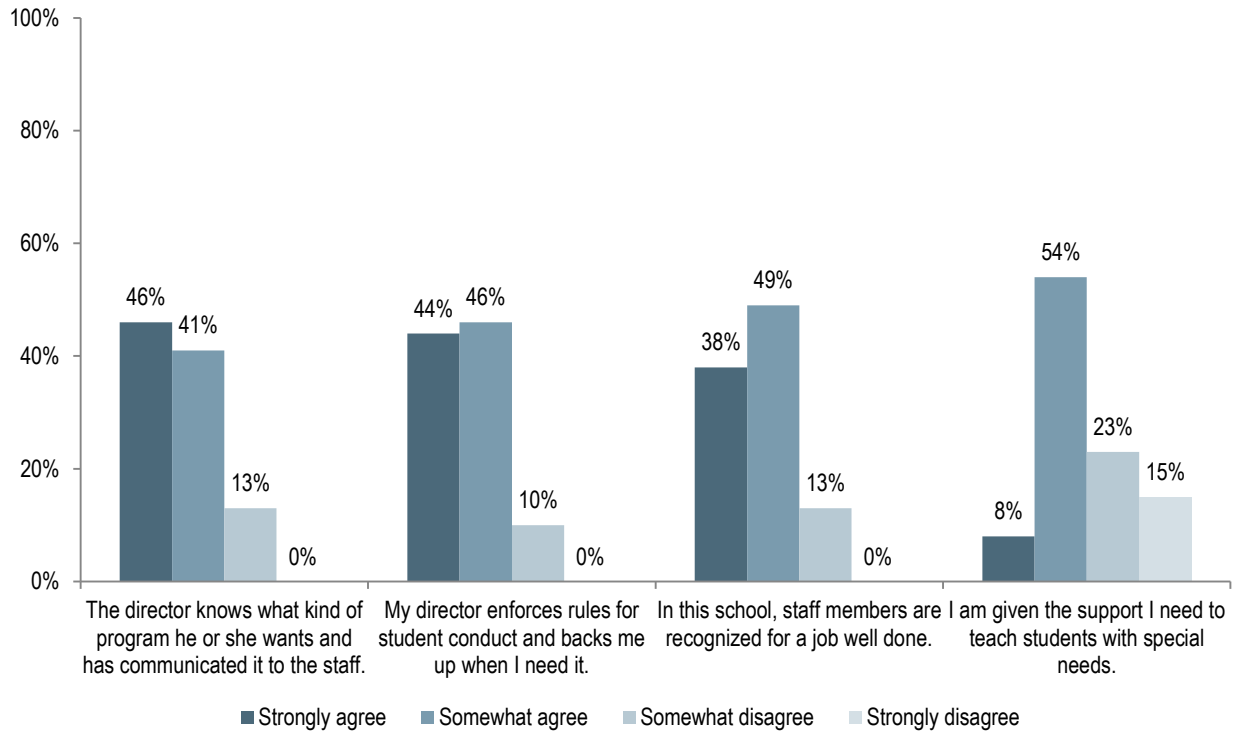
READS AS: Ninety-seven percent of PEG lead teachers agreed or agreed very strongly that they felt they were making a significant educational difference in the lives of their students, and 3 percent agreed just a little.
SAMPLE: N=37–39.
SOURCE: PEG Teacher Survey (Spring 2016) using items from the Teacher Self-Efficacy for Teaching Scale (Hoover-Dempsey, et al., 2002).

5.8.2 Teacher Perceptions of Support from PEG Administrators

More than half of lead teachers surveyed (60 percent) reported that ELP and center directors were "very supportive" in helping them manage their classrooms effectively, while another 23 percent of teachers characterized their leadership as "somewhat supportive." Teachers were similarly positive in focus groups; most teachers reported that they generally felt supported by their ELP and center directors.

Teachers were somewhat less positive when asked about several specific aspects of support from their program administration (Exhibit 5.9). Notably, 38 percent of teachers disagreed (somewhat or strongly) that they had the support they needed to teach students with special needs. This finding is consistent with teacher reports of having little training focused on special education referrals.

Exhibit 5.9: Lead Teacher Perceptions of Support and Leadership from PEG Program Administration

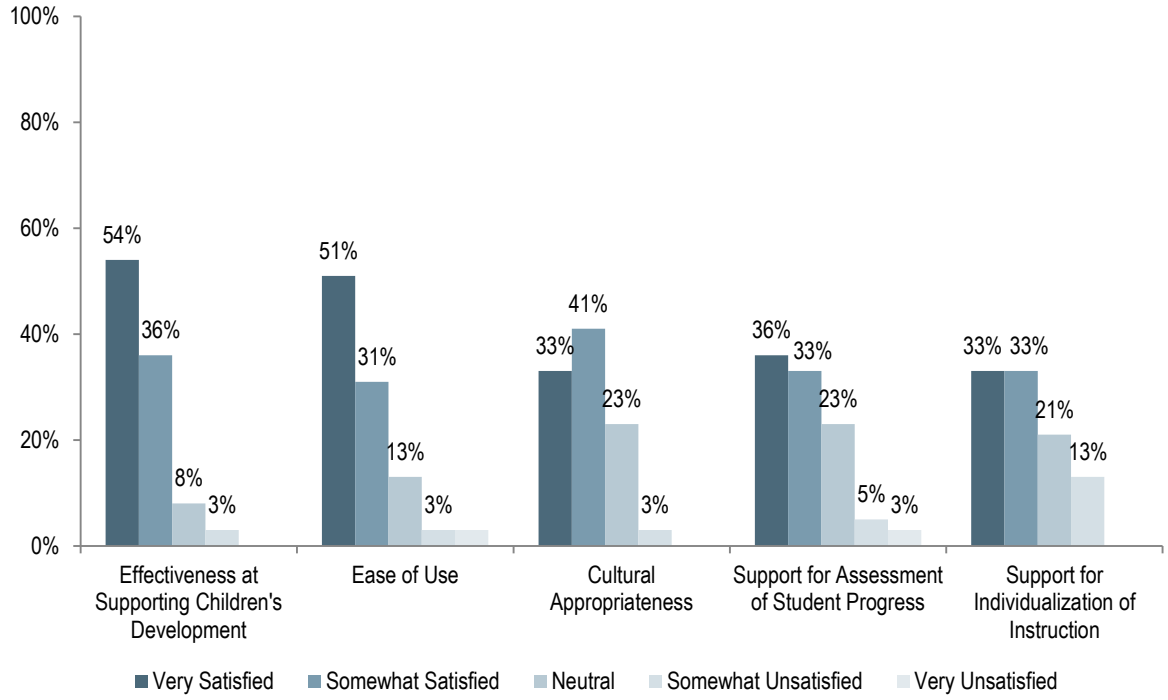


READS AS: Forty-eight percent of lead teachers reported strongly agreeing with the statement "The director knows what kind of program he or she wants and has communicated it to the staff," 40% of teachers agreed somewhat, and 13% of teachers disagreed somewhat.
SAMPLE: N=38–39, missing=0–1.
SOURCE: PEG Teacher Survey (Spring 2016).

5.8.3 Additional Teacher Perceptions

Overall, lead teachers reported high or moderate satisfaction with the curricula used in their classrooms (Exhibit 5.10). Between one-quarter and one-third of lead teachers were neutral or unsatisfied with several other aspects of the support available for instruction: support for individualization of instruction (34 percent), support for assessment of student progress (31 percent), and cultural appropriateness (26 percent).

Exhibit 5.10: Lead Teacher Satisfaction with Aspects of PEG Curricula



READS AS: Fifty-four percent of lead teachers reported being very satisfied with PEG Curricula's effectiveness on supporting children's development.
SAMPLE: N=39, missing=0.
SOURCE: PEG Teacher Survey (Spring 2016).

Lead teachers also identified several challenges specific to their programs. A notable proportion of surveyed teachers reported student absenteeism and tardiness as serious problems (26 percent and 15 percent, respectively). Some teachers also reported that lack of parental involvement and teacher absenteeism were serious problems (10 percent and 8 percent, respectively). Furthermore, 11 percent of lead teachers strongly agreed and 34 percent somewhat agreed that routine duties and paperwork interfered with their job and teaching.

6. Curriculum and Learning

Providing children high quality instructional programming within the classroom is a key goal of the PEG program. In the PEG model, two elements of instructional quality are the utilization of a developmentally appropriate, comprehensive curriculum, aligned to the state's standards, to guide instruction and utilization of an assessment system to track student progress and guide instruction.

This chapter presents information about the curricula and formative assessments used in PEG classrooms during 2015–16, as reported by teachers and center directors. This chapter also presents descriptive information about the activities and instructional groupings in the PEG classrooms based on independent observations of the classrooms by the study team.

6.1 Summary of Findings

- All PEG programs surveyed used developmentally-appropriate curricula. In three of the five PEG communities, all of the programs in each community used the same comprehensive curriculum. In the other two communities, different programs used different curricula.
- All of the PEG programs conducted formative assessments of children using the Teaching Strategies GOLD (TS GOLD). In addition, most programs surveyed reported supplementing the TS GOLD with other measures, including developmental screeners and assessments specific to understanding children's English language proficiency and understanding children's literacy and language development.
- PEG children, on average, spent nearly forty percent of their time in teacher led activities (including academic and creative activities and circle time) and approximately the same percentage of time in meals, routines, and transitions. Classrooms varied widely in the proportion of time that children spent in these two categories of activities.
- PEG children, on average, spent the majority of their time in activities where the all children in the group were together versus activities where children were in smaller groupings, though the proportion of time varied widely from one classroom to the next.

6.2 Curriculum

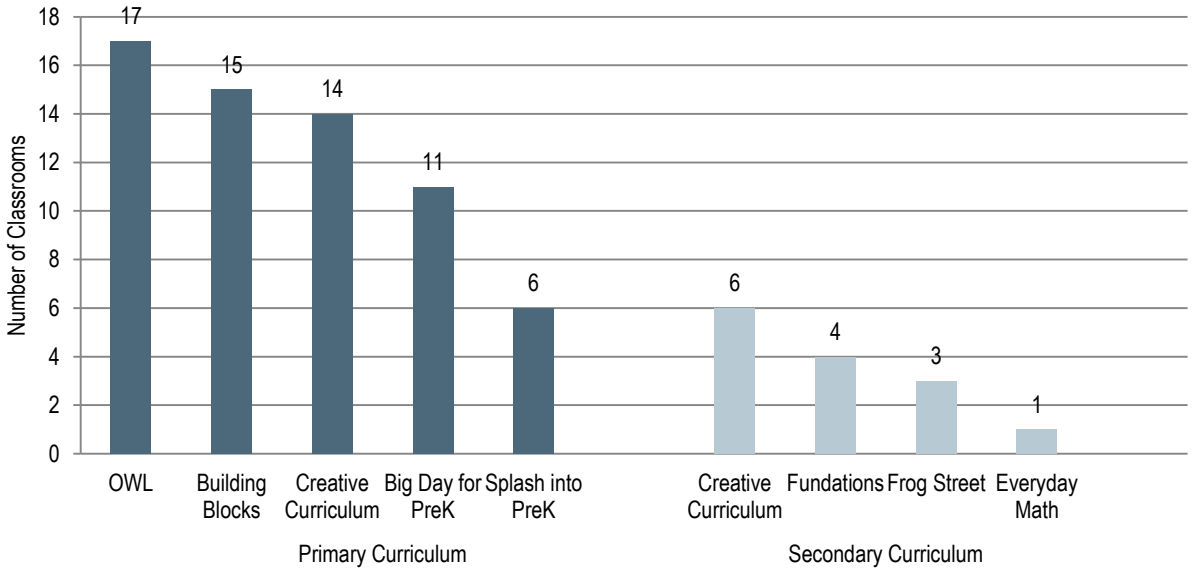
In a recent review of the evidence base, Yoshikawa and colleagues (2013) found support for the efficacy of content-specific curricula in increasing children's kindergarten readiness. Yet, the same review acknowledged the limited amount of research on the effectiveness of global curricula. There is generally a lack of strong research that speaks to the effectiveness of any one preschool curriculum over another on improving children's school readiness, but the mere presence of a curriculum is widely accepted to be necessary for quality preschool environments.

Curriculum and Learning is one of the four standards considered as part of the Massachusetts Quality Rating and Improvement System (QRIS). To meet standards for Level 2 and higher in the QRIS, programs must use a developmentally-appropriate, comprehensive curriculum aligned to the state's standards, which all PEG classrooms were expected to do as well.

All of the PEG classrooms reported using at least one published curriculum as their primary curriculum (Exhibit 6.1). Six different curricula were used as the primary curriculum in PEG classrooms. Three of these were comprehensive curricula that covered math and literacy: Creative Curriculum, Splash into

PreK, and Big Day for Pre-K. Other classrooms used curricula that were literacy-focused (Opening the World of Learning (OWL)), and still other classrooms used both OWL and a math-focused curriculum (Building Blocks for Mathematics). For more than half of teachers (54 percent), 2015–2016 was their first year using their program's primary curriculum. A few classroom teachers also reported using a variety of other secondary curricula. As shown in Exhibit 6.1, these secondary curricula typically included two general curricula--Creative Curriculum as a supplementary curriculum and Frog Street PreK, a literacy-focused curriculum (Fundations) and a math-focused curriculum (Everyday Math).

Exhibit 6.1: Primary and Secondary Curricula Used in PEG Classrooms



READS AS: Creative Curriculum was the primary curriculum in 12 classrooms and a secondary curriculum in nine other classrooms.
Notes: Dark blue = primary curriculum. Light blue = secondary curriculum.
SAMPLE: N= 48 classrooms.
SOURCE: PEG Teacher Survey (Spring 2016).

In three of the PEG communities, selection of the primary classroom curriculum was a community-level decision; the same primary curricula were used by all classrooms in all ELPs (although classrooms in the same community also reported using different secondary curricula). In two communities, different ELPs used different curricula. Across the communities, about one-third of the PEG classrooms reported using different secondary curricula.

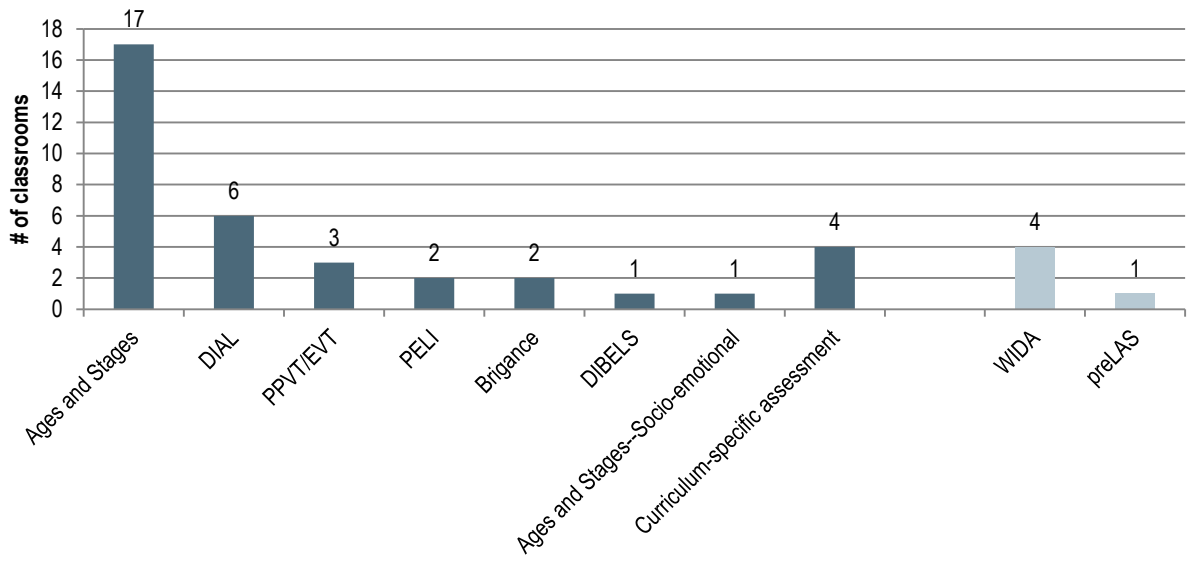
- In Boston, all PEG classrooms implemented OWL and Building Blocks.
- In Springfield, all PEG classrooms used Big Day for PreK as well as different secondary curricula.
- In Lowell, all PEG classrooms used Creative Curriculum.
- In Lawrence, PEG classrooms from one ELP used Splash into PreK and classrooms from the second ELP used Creative Curriculum.
- In Holyoke, PEG classrooms from one ELP used Creative Curriculum and classrooms from the second ELP used OWL.

6.3 Screening and Assessment

Little research has focused on the effects of child assessment in preschool, yet research in other grades suggests that ongoing assessment of children's progress by teachers may improve academic skill acquisition and kindergarten readiness (for a review of this literature, see Atkins-Burnett et al., 2014). Assessing children's progress is important for teachers to be able to identify where each individual child is at regular intervals during the program year, to provide appropriate instruction, and to monitor their progress as their year passes. Some curricula include specific directions regarding the timing and manner in which children's progress should be monitored and/or assessed. In addition to guidance from the curriculum, preschool programs often require teachers to use additional assessment tools. Data collected by teachers about children's learning and development can be used to individualize instruction, redistribute program or classroom resources, and focus teacher outreach to and engagement of parents.

All PEG classrooms were expected to use Teaching Strategies GOLD (TS GOLD) to assess children's progress across multiple developmental domains. All PEG classrooms reported conducting screening and assessments of children at enrollment and throughout the 2015–16 year with TS GOLD. Just over half of the classrooms also reported using additional screening/assessment tools in just over half of the classrooms (26 of 48) (Exhibit 6.2). The Ages & Stages Questionnaire (ASQ), a screening tool that measures children's progress toward developmental milestones, was the most common additional screening tool used in PEG classrooms (17 classrooms). The DIAL was used as an additional assessment tool in 6 classrooms, the PPVT in 3 classrooms, the Brigance and PELI in two classrooms each, and the DIBELS and Ages and Stages Socio-emotional Questionnaire in a single classroom each. Two English language proficiency screeners were used by some of the PEG programs. The WIDA was used in four classrooms in one of the communities and the preLAS in a single classroom in a second community.

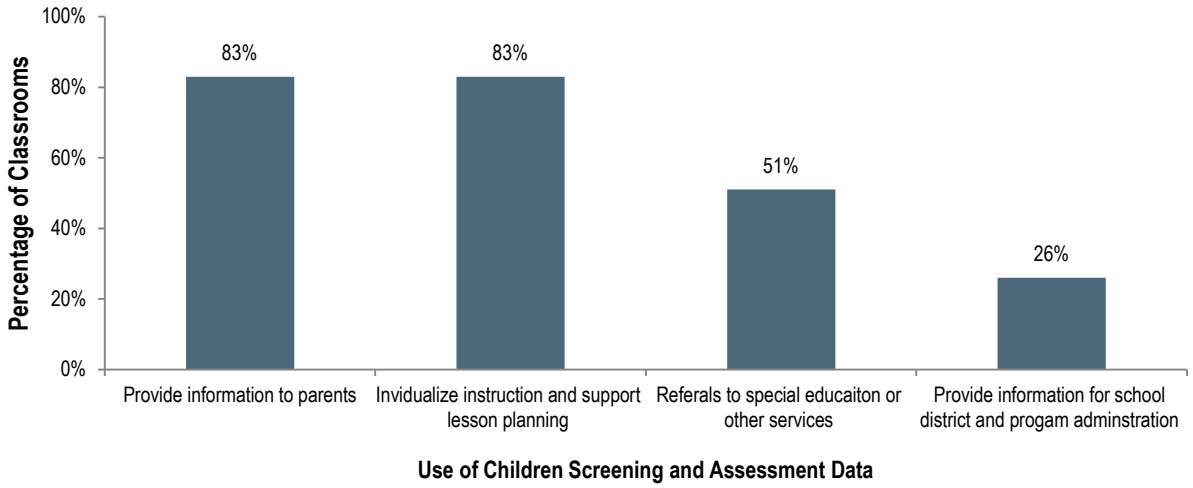
Exhibit 6.2: Additional Assessment/Screening Tools Used in PEG Classrooms (in addition to TS GOLD) (n=35 classrooms)



READS AS: Ages and Stages was used for assessment/screening in 17 classrooms.
NOTE: Grey bars represent general screening tools. Red bars represent English language proficiency screening tools. From left to right, Ages and Stages (Ages and Stages Questionnaires); DIAL (Developmental Indicators for the Assessment of Learning); PPVT/EVT (Peabody Picture Vocabulary Test/Expressive Vocabulary Test); PELI (Preschool Early Literacy Indicators); Brigance Early Childhood Screen); DIBELS (Dynamic Indicators of Basic Early Literacy Skills); Ages and Stages-Socio-emotional (Ages and Stages Questionnaires: Socioemotional); WIDA (World Class Instructional Design and Assessment) assessment of English language proficiency), preLAS (English language proficiency screener);
SAMPLE: N=35 classrooms.
SOURCE: PEG Teacher Survey (Spring 2016).

PEG teachers reported using the information gathered from these assessments for a number of purposes (Exhibit 6.3). Individualizing instruction and communicating with parents about their child's progress were the most common ways that PEG lead teachers reported using screening and assessment data. Approximately half of lead teachers reported using assessment data to inform referrals to special education or other additional services, and one-quarter of teachers used these data to provide their program and district leadership with information on children's progress.

Exhibit 6.3: Uses of Child Screening and Assessment Data in PEG Classrooms



READS AS: Eighty-three percent of teachers reported using child screening and assessment data to provide information to parents.
SAMPLE: N=38.
SOURCE: PEG Teacher Survey (Spring 2016).

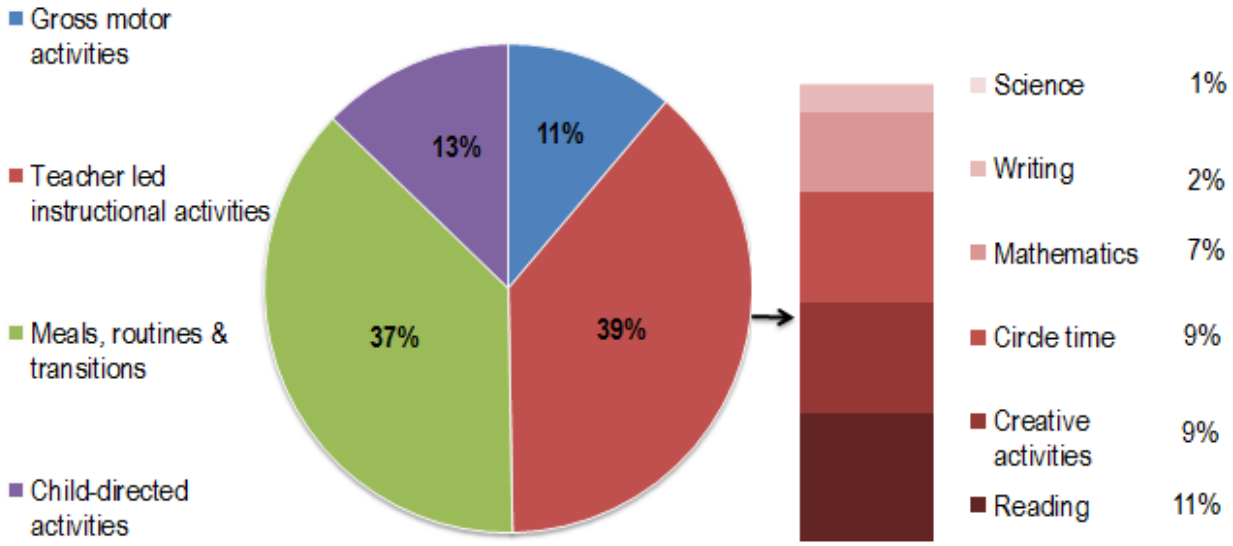
6.4 Classroom Activities and Groupings

How and where children spent their time in PEG classrooms was recorded by the study team using the OMLIT Classroom Snapshot; the observations lasted for four hours (240 minutes), on average, during the morning. Each child's activities were categorized by type of activity (teacher-led activities, child-directed activities, meals routines and transitions, and gross motor activity). While each activity observed was assigned to a single category in terms of its goal, many activities likely served multiple goals in the observed classrooms. For example, playing with blocks was coded as a creative activity, yet this activity may have also supported children's understanding of mathematical concepts. Within each of these activities, the involvement of the teacher and the size of the groupings of children (children on their own or in small, medium or large groups) were also recorded.

6.4.1 Classroom Activities

Teacher-led activities accounted for the largest amount of children's time in PEG classrooms during the morning. Over the four hour observation period, children in PEG classrooms spent one and a half hours (38.5 percent of classroom time), on average, in these teacher-led activities (Exhibit 6.4). This category includes time in which teachers and children were engaged in academic activities such as reading, math, science, and writing; circle time, which typically includes math and literacy activities as well as science and nature activities; and creative activities such as dramatic play, art, music, block play, fine motor play, sensory play, and games. Among these activities, reading were the most common teacher-led activity (11 percent of classroom time) followed by creative play (9 percent of classroom time) and circle time (9 percent of classroom time). Activities involving mathematics accounted for about 7 percent of children's classroom time. Science and writing related activities were less common, on average (2 percent and 0.7 percent of classroom time respectively).

Exhibit 6.4: Percentage of Time Spent by PEG Children by Type of Activity



READS AS: PEG children spent an average of 38.5 percent of their time on teacher-directed activities during the 4 hour observation period.
SAMPLE: N=48.
SOURCE: PEG Classroom Observations (Winter 2016).

There was substantial variation across the PEG classrooms in time spent in teacher-led activities. In three classrooms children spent less than an hour (25 percent of classroom time) engaged in teacher-led activities, while in six classrooms, these activities accounted for more than 2 hours (50 percent) of children's time.

Meals, routines, and transitions represented the second most common use of time in PEG classrooms. Children in PEG classrooms spent nearly one and a half hours (37 percent of classroom time) engaging in meals, routines and transitions, although there was substantial variation by classroom. Time spent ranged from as little as 43 minutes (18 percent of time) in routines up to more than two hours and 45 minutes (69 percent of classroom time).

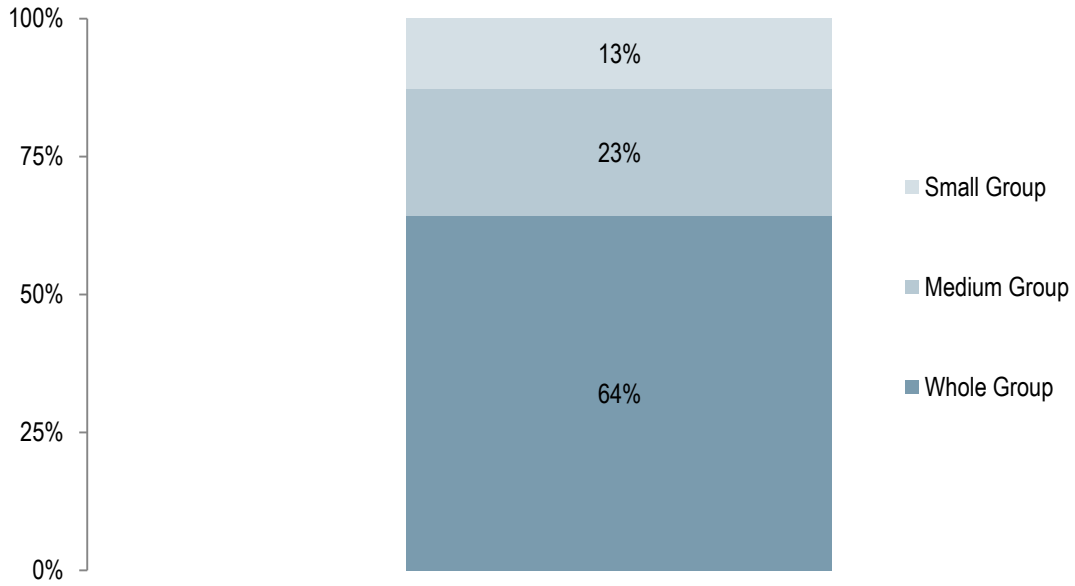
About half of the time that children spent in routines and transitions included verbal communication between the teacher and children. Some communications were for the purpose of management, for example, "Everybody in the room needs to go to the cubbies and get their jackets for outdoor play time" and some communications were for the purpose of supporting children's learning. In about one-quarter of the classrooms, teachers were observed to use these transition times as an opportunity for literacy-related activities. As examples, in one classroom, teachers used index cards to practice phonics or played rhyming games with the children as they waited in line, and in another classroom, teachers read books to children during transition times. In the classrooms that infused literacy activities into transition time, time spent doing literacy activities ranged from 8 to 33 percent of the time spent in routines and transitions.

The remainder of children's time in the PEG classrooms was split between child-directed activities (which could include creative activities, reading, math or science activities, or other activities). These accounted for 45 minutes or 13 percent of time. Children were also involved in gross motor play for on average 30 minutes during the morning. PEG children spent little time watching television or using computers.

6.4.2 Child Groupings

PEG children spent the majority of their time -- more than two and one half hours (64 percent) of the morning--in activities in which all children were doing the same activity (whole group). Children spent 23 percent of their time in medium groups (defined as four or more children but not all students), and 13 percent of their time in small groups (defined as three or fewer children). Meals, routines and transitions were the most common whole group time activities (48 percent of all whole group time). Creative and academic activities most often were conducted with children in small groups. Although all PEG classrooms spent a substantial amount of time in whole group activities, there was variation across classrooms. Classrooms ranged from 40 percent of children's time in whole group to nearly 88 percent of time (Exhibit 6.5).

Exhibit 6.5: Percentage of Time Spent by PEG Children in Different Group Sizes



READS AS: PEG children spent an average of 13 percent of their time in small groups.
SAMPLE: N=48.
SOURCE: PEG Classroom Observations (Winter 2016).

7. Classroom Quality

As discussed in Chapter 1, the PEG program model is designed to provide quality early childhood education to low-income four-year-old Massachusetts children. For the PEG program, the meaning of quality encompasses multiple components including teacher supports, parent engagement and family supports, community collaboration, and classroom instructional quality. This chapter focuses specifically on the classroom quality component. Previous chapters of this report have presented information about the extent to which PEG programs provided the supports hypothesized to be key ingredients in producing classroom instructional quality, including teacher compensation, teacher professional development, coaching and paid planning time, and the use of developmentally appropriate curricula and assessments.

Current conceptualizations of classroom quality differentiate "process quality," "instructional quality", and "structural quality." Process quality includes teacher warmth, and sensitivity, and classroom organization and management. Instructional quality includes the type of programming (curriculum with scope and sequence versus teacher-selected activities), whether the instructional programming includes domain-specific instruction, the extent to which instruction is differentiated, extent of teacher scaffolding, provision of a variety of age-appropriate, engaging activities. Structural quality includes teacher-child ratio, class size, class composition, time allocation, and classroom culture. The PEG program targeted all three aspects of quality, through its teacher PD and coaching, adoption of standardized curricula, and requirements on class size and ratio.

This chapter focuses on both process and instructional quality, using three standardized classroom observation instruments to describe PEG classrooms. This chapter presents findings from classroom observations with these measures and also includes some relevant findings from recent early childhood education studies that used one of the same measures.

7.1 Summary of Findings

Key findings from the classroom observations include:

- The overall quality of the PEG classrooms, on average, was rated as moderate to high. PEG classrooms had higher ratings on measures of the quality of the classroom *environment* compared to their ratings on the quality of classroom *instruction*.
- Classroom quality varied widely across programs and classrooms.
- Most PEG classrooms received a mix of moderate and high quality ratings across the three measures.
- No PEG programs received low quality ratings across all of the quality indicators, and one classroom consistently received ratings of high quality across all of the measures.
- The quality of instruction in PEG classrooms is, on average, comparable to other studies of preschool programs serving low-income children that used one of the same measures.

7.2 Measures of Classroom Quality

The PEG model includes an implicit assumption that instructional quality will result in greater gains in children's school readiness skills. There is some prior research that suggests that higher-quality child care promotes the development of cognitive and academic skills and may promote the development of social skills (Pianta, Barnett, Burchinal, & Thornburg, 2009).

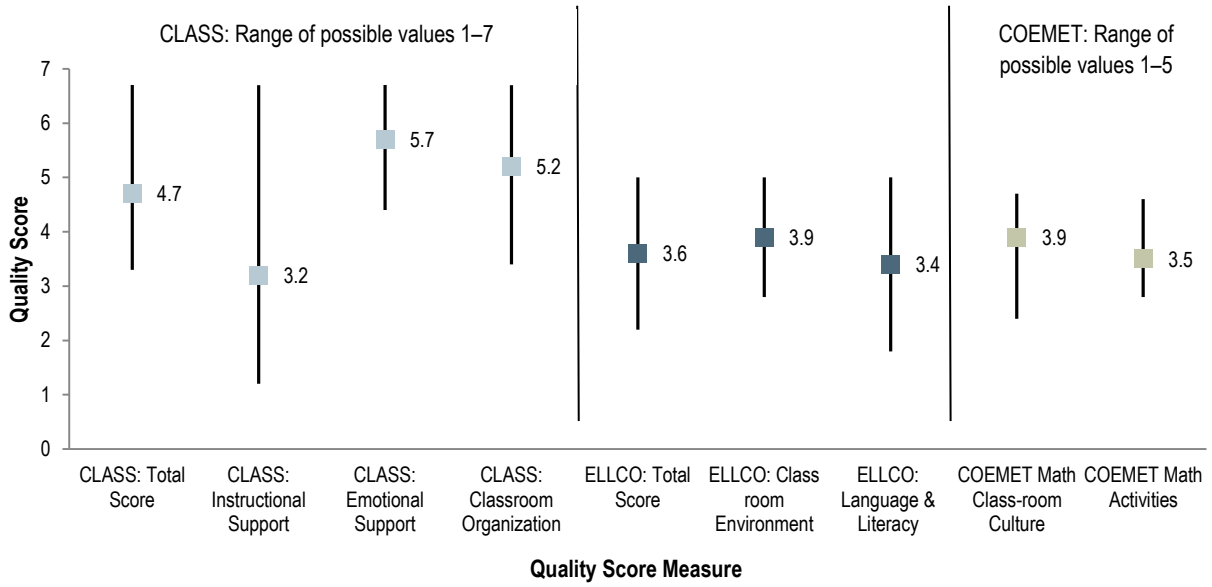
The quality of the PEG classrooms was directly examined using three standardized observation measures:[6]

- The CLASS-PreK was used to rate overall classroom quality.
- The ELLCO was used to rate the quality of the literacy environment and literacy instruction.
- The COEMET was used to rate the quality of the mathematics environment and mathematics instruction.

The ratings of PEG classrooms, on average, represented a moderate to high level of quality (Exhibit 7.1). The average CLASS rating for overall classroom quality in PEG classrooms was 4.7 on a 7-point scale. The average ELLCO rating was 3.6 on a 5-point scale. The average COEMET ratings for the quality of the math environment and instruction were, respectively, 3.9 and 3.5 on a 5-point scale.

There was substantial variation across PEG classrooms on each of the classroom quality measures, as also shown in Exhibit 7.1. Ratings of the PEG classrooms represented nearly the full range of values, from the lowest to the highest possible values on each subscale.[7] There was also substantial variation in quality scores within the five communities as well as within the early learning programs with more than one classroom.

Exhibit 7.1: PEG Classroom Quality Scores, by Measure



READS AS: PEG classrooms earned an average total CLASS score of 4.7 out of 7, and classroom total scores ranged from 3.3 to 6.8.
NOTE: Squares represent average scores for all PEG classrooms. The lines display the range from the highest to lowest score.
SAMPLE: N=48.
SOURCE: PEG Classroom Observations (Winter 2016) using the CLASS-PreK, the ELLCO and the COEMET.

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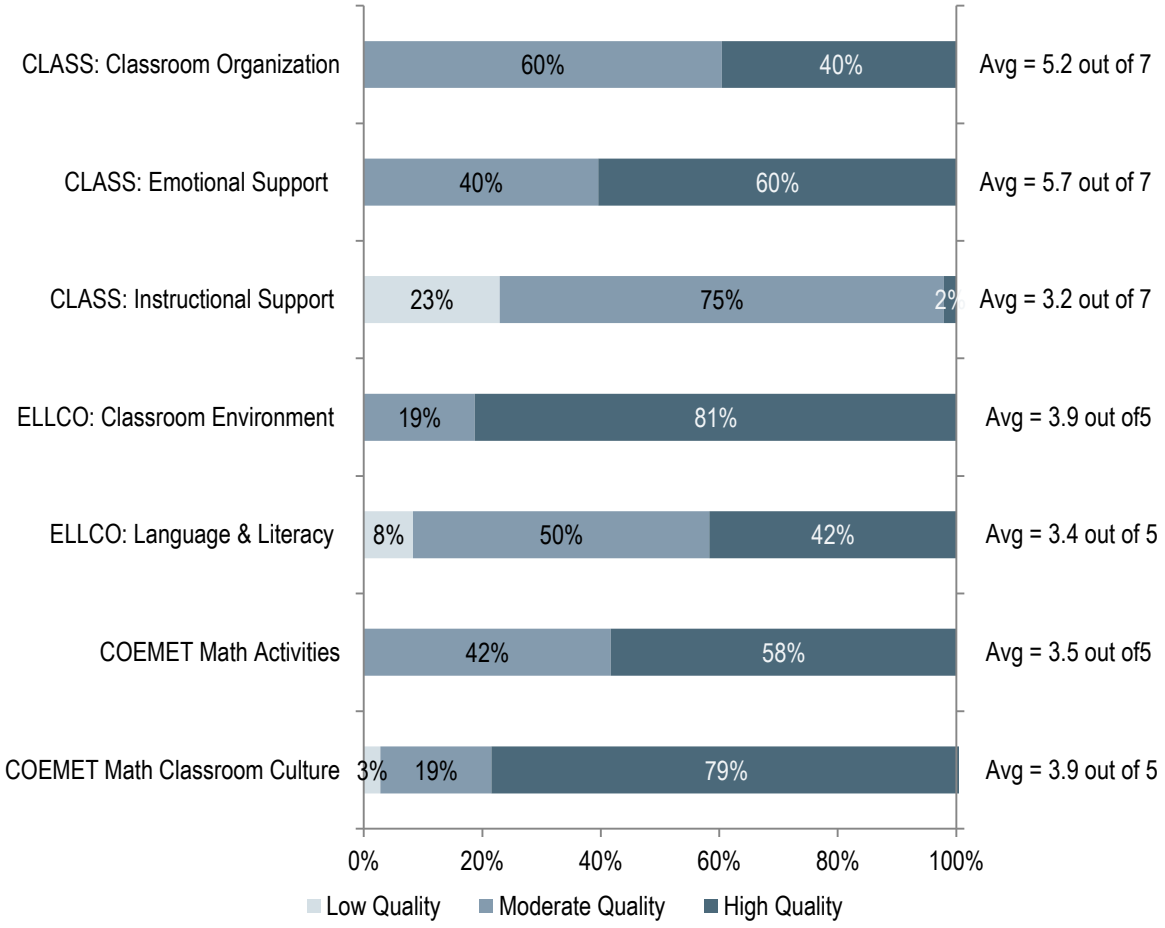
[6] The OMLIT Snapshot was also used to examine how children spent their time in different activities; these data are presented in Chapter 6.

[7] There was also substantial variation in quality scores between classrooms within each of the five communities and between classrooms within those early learning programs. See Appendix A-1 for graph showing the class-to-class variation of this variation.

Exhibit 7.2 displays the percentage of classrooms that received low, moderate, and high scores on the CLASS, ELLCO and COEMET subscales.[8] Most PEG classrooms earned scores that were in the moderate to high range. Across each of the observation measures, nearly all PEG classrooms earned scores in the moderate and high categories on those subscales that focused on aspects of the Classroom Environment. For example, approximately 80 percent of the classrooms earned ratings in the high category on the COEMET Math Classroom Culture and ELLCO Classroom Environment subscales. All PEG classrooms earned scores in the high or moderate categories on the CLASS Emotional Support and Classroom Organization subscales. Fewer classrooms earned high ratings, and some classrooms earned low ratings, on the subscales that emphasize aspects of Teacher Behavior and Teacher-Child Interaction. On the CLASS Instructional Support subscale, 11 classrooms (23 percent) had ratings in the low category. On the ELLCO Language and Literacy subscale, four classrooms (8 percent) had ratings in the low category.

[8] This classifications are based guidance from the measure developers. On the 7-point CLASS subscales, scores of 1 or 2 were categorized as *Low*, scores of 3, 4 or 5 as *Moderate* and scores of 6 or 7 as *High*. For the 5- point ELLCO, the study team categorized scores of 1 or 2, which are labeled as Deficient and Inadequate, as *Low*, a score of 3 (Basic) as *Moderate* and scores of 4 (Strong) or 5 (Exemplary) as *High*. The COEMET does not provide similar guidance regarding how to categorize scores. We classify COEMET using the same procedure used in classifying ELLCO: scores of 1–2 are labeled *Low*, score of 3 are labeled *Moderate* and scores of 4 and 5 are labeled *High*.

Exhibit 7.2: Number of PEG Classrooms with Low, Moderate and High Quality Ratings by Measure



READS AS: Researchers observed that 23 percent of PEG classrooms received low quality ratings on instructional support, as measured by the CLASS tool.
SAMPLE: N=48.
SOURCE: PEG Classroom Observations (Winter 2016) using the CLASS PreK, the ELLCO and the COEMET.

Classrooms received a range of ratings within and across the three measures. Across the seven subscales of the CLASS, ELLCO, and COEMET, most PEG classrooms had a mix of either moderate and high ratings (35 classrooms) or low, moderate, and high ratings (12 classrooms); only one classroom had the same rating on all of the subscales (which was high).

7.3 Quality of Classroom Instruction in PEG Compared to Similar Programs

To help interpret the levels of CLASS scores in the PEG program, the study team compared average CLASS scores for PEG classrooms to some other recent studies of early childhood programs serving 4-year-olds that overlapped with PEG in terms of being in Massachusetts or in national samples of Head Start, community based, and school district programs. Comparing PEG classrooms to two earlier Massachusetts studies of representative state samples of public school and community-based preschool

settings,[9] PEG classroom scores were very similar to the scores from the Massachusetts samples on Emotional Support and Classroom Organization. PEG scores on Instructional Support were higher compared to Instructional Support scores in the Massachusetts UPK study (where higher is defined as being at least 0.5 points on the 7-point scale).

The CLASS scores for PEG classrooms were also compared to scores from two national samples of early childhood programs, one a large sample of 671 preK classes operated by different auspices (Burchinal et al., 2010) and the other a sample of 277 Head Start programs. The differences between the samples were not consistent; PEG classrooms had higher scores on Classroom Organization compared to the national sample of preK programs and lower scores on Emotional Support compared to the Head Start sample. There were not notable differences in Instructional Support.

Finally, CLASS scores for PEG classrooms were compared to the scores from two samples of preschool classrooms operated by the Boston Public Schools (BPS).[10] While the three samples were similar on Emotional Support and Classroom Organization, PEG classrooms had lower scores on Instructional Support compared to both of the Boston samples.

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[9] One study reported quality on a sample of 115 preschool classrooms that participated in the Massachusetts QRIS (Dahlke et al., 2014) and the other study reported on a statewide sample of 93 preschool classrooms in which at least 50 percent of students were low-income (Goodson et al., 2010).

[10] One sample of Boston preschool programs included 10 public school classrooms that were part of the Boston K1 in Diverse Settings (K1DS) program (Yudron and Weiland, 2016). The second sample included 83 preschool programs run by the Boston Public School (Weiland & Yoshikawa, 2013),

8. Family Engagement Activities and Comprehensive Services

Family engagement, or program efforts to connect with families to involve them in their children's education, is an important component of the PEG program model. For many families, the PEG program represented the first time that children and parents had participated in an organized early education program. PEG programs are also expected to provide or refer families to comprehensive services to support children's physical and mental health and school readiness, as well as overall family social service needs (e.g., housing, nutrition, and parent employment).

The PEG model assumes that efforts to engage families will be beneficial to children's learning and development in two ways: first, family engagement activities will build a connection between the home and the preschool program, which will be a positive support for children's learning and development, and second, some of the PEG family engagement activities are designed to support parents in being more active teachers of their children in the home. Also, the model assumes that parents who are strongly connected to and supportive of their child's education in preschool will be more likely to continue to engage with and advocate for their child's education in kindergarten and beyond.

This chapter first describes the family engagement activities in the PEG programs in 2015–16 and next describes how PEG programs and teachers have implemented comprehensive service activities, as well as how different stakeholders (center directors, teachers, parents) perceived the effectiveness of these strategies. The chapter then reports on parent perceptions and behaviors in three areas: parent connectedness to the PEG program; parent feelings of self-efficacy in their relationship with their child's teacher and program; and parent involvement in home activities to support children's learning and development. The PEG model assumes that over the course of the preschool year, these perceptions and behaviors will improve or increase. In the first year, however, data were only collected from parents once during the spring; without a baseline measure at PEG entry, it is not known whether the perceptions at the end of the year reflect an increase from where the children would have been without participating in the PEG program.[11]

8.1 Summary of Findings

Family Engagement

- All PEG programs engaged families during 2015–16 through communications between program staff (including but not limited to teachers) and parents focused on the child's learning and development.
- Program-parent communication occurred through scheduled parent-teacher conferences, home visits, other program events, more informal, ongoing discussions between parents and teachers at drop-off and pick-up, and through individual phone calls and in some cases text messages.
- Most programs (21 of 28 centers) employed a family services coordinator to help promote and provide education and engagement opportunities as well as connect families to needed supports.
- Most programs organized family events such as potlucks, holiday celebrations, and field trips. Although parents appeared to enjoy these events, both center directors and parents reported

[11] Furthermore, the information on parent outcomes was reported via a survey that about half of the PEG parents completed, so it is possible that parents who did not participate in the survey are different from those who did.

challenges in scheduling events at times that worked well for families with different work hours and family responsibilities.

- In most programs, parents volunteered in the classroom, although the frequency of volunteering varied across programs, from as often as weekly to once per year.
- PEG center directors reported differing levels of engagement with all parents. About half the center directors reported that over 75 percent of parents participated in family engagement activities; other center directors reported lower levels of engagement, including some programs that reported that fewer than 20 percent of parents were engaged with the program.

Comperehensive Services

- Programs varied substantially in how systematically they collected information on family service needs. Less than half of centers (12 of 28 centers) used formal needs assessment surveys, whereas most centers (24) reported using more informal strategies, such as talking to parents at enrollment or during the year.
- Nearly all PEG centers (26) reported referring families to services, and about half of the programs provided some services directly to families.
- Almost two-thirds of center directors (19 of 28 centers) reported home visits taking place during the year. Teachers, family services coordinators, and/or center directors conducted the home visits.
- Over half of parents (56 percent) reported accessing services such as family nutrition, meal guidance, and parenting classes through the PEG program.
- Multiple program stakeholders reported difficulties coordinating with LEAs to provide services for children with special needs.

Kindergarten Transition

- Most PEG centers were involved in kindergarten transition planning and provided families with assistance in the kindergarten registration process.

Parent Experiences

- At the end of the school year, nearly all PEG parents who responded to the survey described themselves as connected to their child's program and confident in their ability to communicate with teachers.
- At the end of the school year, nearly all PEG parents reported having frequent conversations at home with their children, and engaging regularly (usually weekly) in activities that supported their children's learning.

8.2 Family Engagement Activities

Family engagement efforts are hypothesized to create a greater sense of family members' connection to and trust in the program and increased understanding of child development and ways to support the child's learning and behavior at home. Recent research has indicated that the engagement of families in children's early learning is linked to school readiness and later academic outcomes (Halgunseth, 2009; McWayne, Hampton, Fantuzzo, Cohen, & Sekino, 2004; Fantuzzo, McWayne, Perry, & Childs, 2004).

In 2015-16, PEG programs focused on providing the following types of activities and services for families: (a) culturally and linguistically responsive family engagement activities; (b) comprehensive services that promoted families' access to services that support children's learning and development

(vision, hearing, dental, hearing, development and health screenings and referrals and assistance obtaining services when appropriate); and (c) support for kindergarten transition. The overarching goal of this work was to develop trust that supports program's ability to support children and their families and to build home support for child learning.

One set of family engagement activities involved communication between the teachers and the parents, focused primarily on a child's developmental progress. A substantial majority of PEG lead teachers (87 percent) reported holding regularly scheduled parent-teacher conferences (versus as needed). In these centers, most teachers reported that conferences were most frequently several times per year (69 percent) or once per year (15 percent). Nearly all teachers reported that they communicated regularly with parents about their children at drop-off and pick-up times. In focus groups, teachers in two communities also reported using texting to communicate with parents remotely, and in at least one community, teachers also sent photos of children engaged in different activities via e-mail or text.

In centers providing home visiting services (19 of 28 centers), visits were scheduled as often as a few times per year (12 of 28 centers), or some reported conducting visits on an annual or as-needed basis (7). Approximately one third of PEG centers (9) did not conduct any home visits. Center directors reported that PEG teachers (in 14 of 28 centers) and/or family service coordinators (in 13 of 28 centers) most frequently were responsible for conducting home visits. Six center directors reported that they were also directly involved in leading home visits.

In circumstances where families may feel uncomfortable about home visits, PEG staff may meet families in another nearby location (e.g., community center). One interviewed program director noted that this arrangement allows staff to ask questions and engage with parents without making parents feel judged about their home (e.g., cleanliness).

The majority of PEG centers (21 out of 28 centers) who helped to promote and provide education and engagement opportunities as well as connect families to needed supports. Teachers and center leadership were also often involved in planning family engagement activities. Center- and/or classroom-wide activities included family potlucks, field trips, holiday parties, outdoor activities and field trips, and multicultural nights. According to center directors, the majority of programs (17) held monthly parent events; in the other programs, parent activities were less frequent. Also, almost all centers (26) sent home a parent newsletter on a regular basis. About 70 percent of programs (19) had interpreters to help communicate with parents who spoke another language, either available at the site on a daily or weekly basis (7) or as needed (12).

About two-thirds of surveyed lead teachers (68 percent) reported that parents also volunteered in the classroom. About half of lead teachers (46 percent) reported that parents volunteered a few times during the year. Fewer teachers reported that parents volunteered regularly—a few times per month (reported by 8 percent of lead teachers) or monthly (13 percent).

Teachers across PEG communities emphasized during focus groups the importance of developing relationships with families, and many reported that their outreach efforts helped parents feel more comfortable in the program and within the larger education system. Teachers generally were comfortable communicating with parents/guardians and maintaining home-school connections; over 80 percent of surveyed lead teachers felt very confident in their ability to speak with parents about student progress and behavior, communicate through paper classroom newsletters, and describe classroom activities to parents.

Across these various outreach activities, PEG center directors reported differing levels of engagement among parents, with some programs reporting that only a small number of parents were engaged in the program and other programs reporting that all families participated in the program. Overall, 15 of 28 center directors interviewed (54 percent) reported that more than three-quarters of PEG families were engaged in the program. Only two centers reported that 20 percent or less of their parents were involved with the PEG program. There was variation in the level of family engagement both across and within communities.

8.2.1 Challenges in Engaging Families

Programs reported effectively communicating with parents about events and activities, but scheduling appeared to be a major barrier to parent attendance. Parents credited teachers for their efforts to inform parents through direct face-to-face communication, flyers sent home with children, and electronic reminders. However, over half of parents participating in focus groups expressed frustration that school events conflicted with their work or school schedules or with other responsibilities at home (e.g., meal preparations, etc.). There was no one time that parents agreed would work best for all families to participate in program-sponsored activities. Similarly, center directors expressed difficulties accommodating parents' work schedules in their planning efforts, as well as other program-level logistical barriers, such as cost, space constraints, planning time, transportation, and providing child care. A few center directors noted that some families had little interest in being engaged and were particularly difficult to reach despite multiple outreach efforts.

8.3 Comprehensive Services for PEG Families

Comprehensive services provided to families have been shown to improve children's behavior, improve attendance, and reduce later need for services in elementary school. Facilitating families' referral and connection to services has become a popular feature of many programs (Gilliam & Zigler, 2001; Irish, Schumacher, & Lombardi, 2004). Some programs that have had significant long-term effects on children's health and educational outcomes provide comprehensive education, family, and health services in addition to half- or full-day preschool programming (Reynolds, Temple, Robertson, & Mann, 2001). Head Start programs similarly have a long history of providing comprehensive services like comprehensive health screenings and home visits, which are required under Head Start Program Performance Standards.

8.3.1 Assessing Family Needs

PEG programs used a combination of strategies to assess family needs. While some centers appeared to have a clear system in place to identify family needs and refer families to services, many centers provided less guidance and support. About half of PEG centers (12 of 28) systematically collected relevant information on family needs using parent surveys/needs assessments. Almost all centers (24) collected information through more informal discussion with parents, at the time of enrollment and/or during the school year.

8.3.2 Linking Families to Needed Services

All PEG center directors reported referring families to services in the community. Centers referred families to a variety of services, mostly targeting children's needs, such as medical, dental and mental health services. Centers less frequently referred families to adult-focused services such as GED preparation/adult literacy programs, transportation, or immigration services (Exhibit 8.1).

Exhibit 8.1: Types of Services to which PEG Families Were Referred

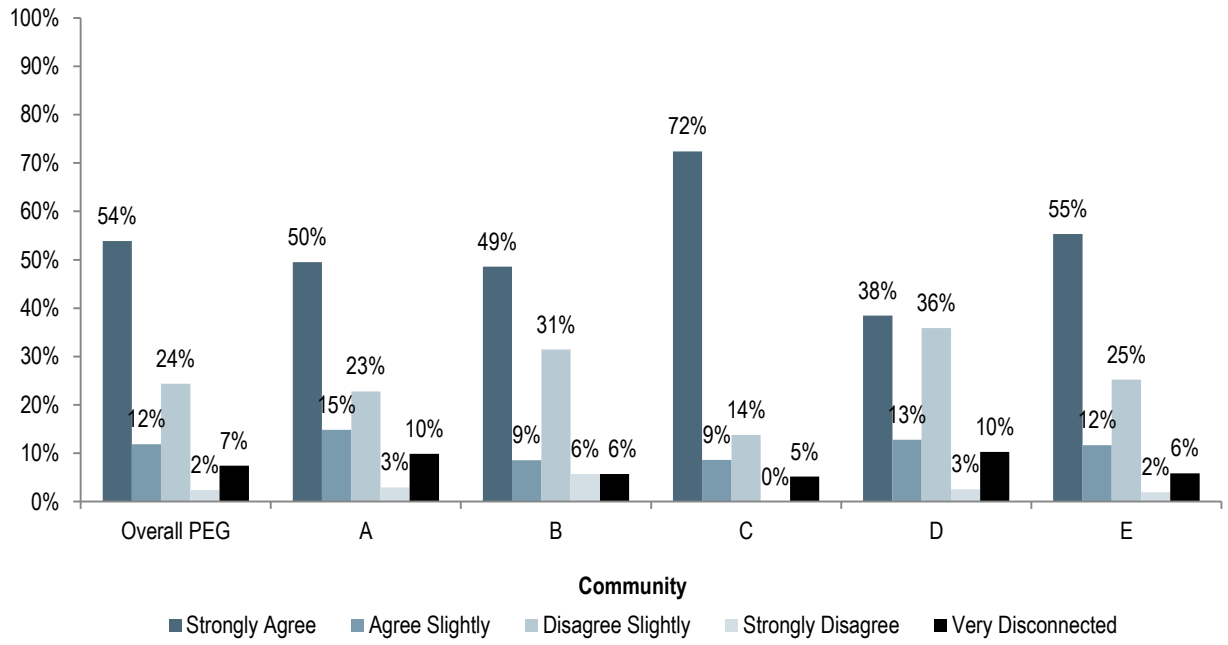
Service Type	Number of Centers (%)
Services for Children	
Mental health/behavioral supports	11 (39%)
Medical/dental services	7 (25%)
Speech therapy	7 (25%)
Occupational therapy	3 (11%)
Physical therapy	2 (7%)
Services for Families	
Assistance in finding medical care; mental health screenings; physical health screenings	8 (29%)
Parenting classes	7 (25%)
Social services	6 (21%)
Family nutrition support	6 (21%)
GED preparation/adult literacy programs	3 (11)
Psychotherapy	2 (7%)
Transportation	1 (4%)
Immigration services	1 (4%)

NOTE: The services for children may include services for children with IEPs.
READS AS: Twelve PEG Center directors (or 43 percent of centers) reported referring PEG families to services for children with IEPs.
SAMPLE: N=28.
SOURCE: PEG Center Director Interviews (Spring 2016).

The proportion of families within programs referred for comprehensive services varied by program. About half of PEG programs (12 of 28) programs reported that few families (10 percent or less) had received comprehensive services either directly from the PEG program or through referrals, and in five programs, the majority of parents (more than 75 percent) received services or referrals through the program.

Overall, about two-thirds of the parents who replied to the survey (66 percent) agreed that the PEG program had connected them to services that they needed during the year. As noted earlier, about half of parents responded to the survey that these data are from, and these parents may or may not be representative of the entire population. Surveyed parents reported varying levels of agreement across communities regarding the sufficiency of comprehensive service referrals (Exhibit 8.2). Furthermore, a significant proportion of parents (44 percent) reported that they had not received any comprehensive services through the PEG program.

Exhibit 8.2: Parent Agreement that Program Helped Connect to Services Needed, Overall PEG and by Community



READS AS: Fifty-four percent of PEG parents reported that they strongly agreed that their child's preschool program helped connect them with services they needed this year.
NOTE: The wording of the question was: "Overall, how much do you agree that your child's preschool program has helped connect you with the services that your family needed this year? (Select one only))"
SAMPLE: N ranges from 35 to 103, by community. For overall PEG, N=336.
SOURCE: PEG Parent Survey (Spring 2016).

8.4 Services for Children with Special Needs

Less than one-tenth of parents surveyed (8 percent) reported that their child was referred for special education services during 2015-16. Of the parents who received IEP-related services, 70 percent were very or somewhat satisfied, 13 percent were neutral, and 17 percent were somewhat or very dissatisfied with the services that they received.

Center directors reported difficulties coordinating IEP-related services with the LEAs. They identified the shortage of LEA special education staff and the high demand for services as barriers. Teachers in four communities discussed the importance of IEPs in providing children with appropriate resources and support, and also expressed disappointment and frustration with the length of the IEP process. During focus groups, multiple teachers described children who waited for months without services until the correct paperwork was completed. The teachers also noted that public school teachers had more resources than they did for children with special education needs.

Coordination with parents during the IEP process was another challenge that multiple center directors noted during interviews. They mentioned that some parents were distrustful of the IEP process or did not agree that their child might have a developmental delay or disability.

8.5 Kindergarten Transition Supports

In the first year of PEG program implementation, all of the centers began planning for supports for kindergarten transition, and almost all centers had started transition planning (10 of 28 centers) or had begun to provide transition services (15) for the first cohort of PEG children. Center directors reported that family engagement staff played a large role in coordinating transition-focused events and activities like "Kindergarten Night" or "Big Day." Similar events were also offered by the public schools and advertised to PEG families. ELP leadership reported communicating with LEA staff to ensure that all families successfully registered, and center directors also reported providing general registration and transition support to families. As of the spring before kindergarten, most parents who participated in focus groups had already completed the kindergarten registration process, owing in large part, according to parents, to the efforts of PEG staff.

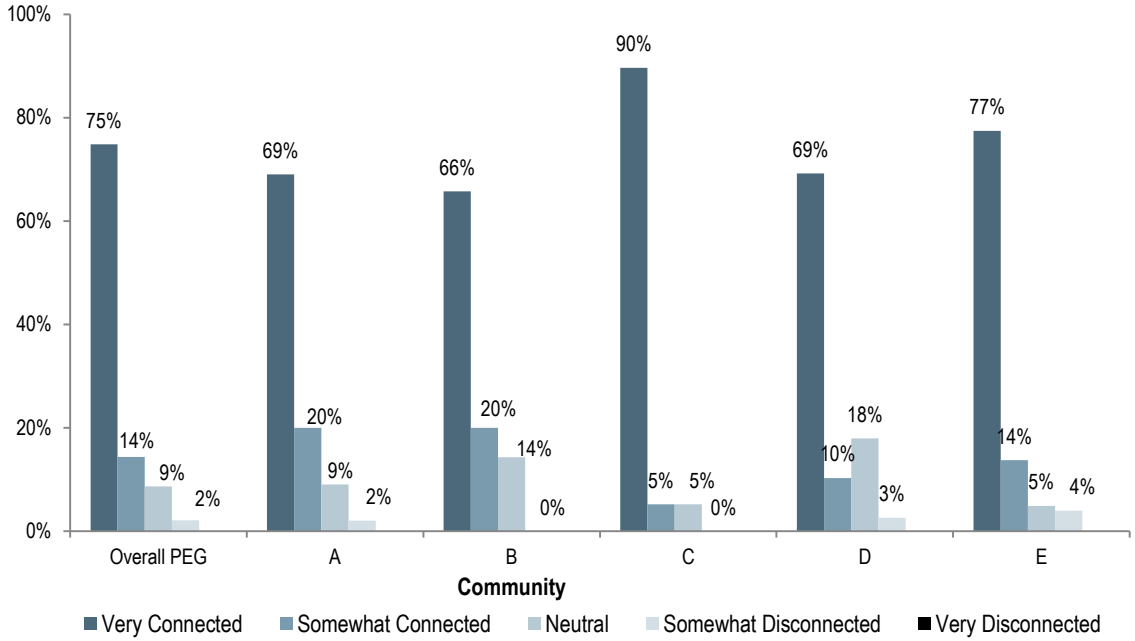
8.6 Parent Experiences

8.6.1 Parent Connectedness to their Child's PEG Program

Efforts to engage parents appear to have been largely successful in making parents feel comfortable with and connected to the PEG program in 2015-16. Overwhelmingly, surveyed parents expressed broad satisfaction with the program. For example, nearly all parents (94 percent) indicated that they felt welcome at their children's schools. Families also expressed satisfaction with the quality and intensity of their communication with teachers; nearly all parents indicated that teachers kept them informed them about their child's progress in school (91 percent) and that teachers were interested in their children and cooperative with their families (95 percent). While nearly all parents (93 percent) also felt informed about meetings and special school events, somewhat less (81 percent) agreed that parent activities were scheduled at convenient times.

Overall, the vast majority of PEG parents (89 percent) reported that they felt "very connected" or "somewhat connected" to the program (see Exhibit 8.3). The level of connection varied by center, ranging from centers in which 90 percent of parents reported being very connected to centers in which 66 percent of parents reported being very connected. Of note, no parents reported feeling "strongly disconnected" from their PEG program.

Exhibit 8.3: Parent Connectedness to PEG Program, Overall PEG and by Community



READS AS: Seventy-five percent of PEG parents reported feeling very connected to the program.
SAMPLE: N ranges from 35 to 105. For overall PEG, N=334.
SOURCE: PEG Parent Survey (Spring 2016).

In focus groups, parents identified some specific aspects of the PEG program they were most satisfied with. The most common themes that emerged were 1) individualized attention and frequent communication with teachers, 2) safe and caring school environments, 3) kindergarten preparation, and 4) healthy and high-quality meals. Parents across all five communities most frequently spoke about their satisfaction with the PEG teaching staff. For example, multiple parents spoke about how much their children enjoyed attending PEG programs because of their strong relationships with teachers. One parent noted:

> "Teachers really love [students] like they are their own. My kid is ready to go back to school at the end of the day when we get home because she wants to see her friends and teachers."

Another parent reported that:

> "Each teacher is very attentive to the child, and they notice anything happening or differences in the child's day and they communicate this to the parents."

8.6.2 Parent Self-Efficacy

One of the central goals of PEG is to promote family self-efficacy in terms of supporting their child's education. As shown in Exhibit 8.4, almost all PEG parents reported feeling positively about their ability to communicate with their child's teacher and in their level of knowledge about what was happening in their child's classroom. Over 90 percent of parents reported feeling confident about their ability to communicate with their child's teacher, their ability to communicate effectively with their child about the school day, their knowledge of what their child was learning, and their ability to help their children continue their learning at home. A slightly lower proportion of parents reported that they had the skills to

help out at their child's program (83 percent) and that they knew about volunteer opportunities (80 percent). These perceptions were generally consistent across PEG communities.

Exhibit 8.4: PEG Parent Self-Efficacy and Knowledge of Program Activities

	N	Agree Strongly %	Agree %	Agree Somewhat %	Disagree Somewhat %	Disagree %	Disagree Strongly %
I know how to communicate effectively with my child's teacher	335	58	39	2	1	0	1
I know how to communicate effectively with my child about the school day	336	56	41	2	0	1	0
I know enough about the things my child is learning to be able to help him/her	335	56	36	6	1	0	0
I know how to explain things to my child if they have questions about what they are learning in school	336	54	41	5	1	1	0
I know effective ways to contact my child's teacher	334	54	40	4	1	1	1
I know about special events in my child's program	336	51	41	5	3	0	0
I have the skills to help out at my child's program	334	39	44	13	3	2	0
I know about volunteering opportunities at my child's program	331	31	49	10	5	5	2

READS AS: Fifty-eight percent of PEG parents reported strongly agreeing with the statement "I know how to communicate effectively with my child's teacher."
SAMPLE: N=331–336.
SOURCE: PEG Parent Survey (Spring 2016).

8.6.3 Home Support for Children's Learning

PEG parents also reported high levels of engagement with their children in home activities that were supportive of children's development and learning. Parents were asked about their involvement with their child in a variety of different types of activities (Exhibit 8.5). The most frequent activity parents reported engaging in was talking with children about school, which 93 percent of parents reported doing every day. About one-third of parents (35 percent) reported reading to their child every day.[12] The majority of parents reported that they engaged with their child at least a few times per week for all of the other activities listed. The frequencies of home activities reported by parents were similar across the five PEG communities.

[12] In 2007, 40 percent of poor 3- to 5-year-olds were read to every day, compared with 50 percent of children in families at 100–199% of poverty, and 64 percent of children in families at 200% of poverty and above. Source: Federal Interagency Forum on Child and Family Statistics. America's Children: Key national indicators of well-being, 2009. Federal Interagency Forum on Child and Family Statistics, Washington, DC: U.S. Government Printing Office. Based on National Household Education Survey analysis.

Exhibit 8.5: Frequency of Family Activities Reported by PEG Parents

	Every Day (%)	A Few Times This Week (%)	Once a Week (%)	Never (%)
Talk about what happened in school	93	6	1	0
Teach child letters, words, or numbers	58	36	6	1
Play with toys or games indoors together	58	34	7	2
Involve child in household chores like cooking, cleaning, setting the table, or caring for pets	54	33	9	5
Count different things with child	51	38	10	1
Talk about TV programs or videos	45	38	11	6
Teach child songs or music	44	40	11	5
Play counting games like singing songs with numbers or reading books with numbers together	40	46	11	3
Take child on errands like going to the post office, the bank, or the store	39	42	15	3
Read to child	35	52	11	3
Play a game, sport, or exercise together	33	43	20	3
Tell child a story	33	47	17	3
Work on arts and crafts together	17	47	25	11
Play blocks together	15	32	29	25
Play a board game or a card game together	6	41	34	18

READS AS: Ninety-three percent of PEG parents reported talking about what happened in school with their child every day.
NOTES: Percentages in each row may not add to 100 because of rounding.
SAMPLE: N=331–336.
SOURCE: PEG Parent Survey (Spring 2016).

9. Child Assessments

A primary goal of PEG is to better prepare children for kindergarten and later school success. This chapter summarizes findings about 2015–16 PEG children's performance toward the end of their preschool year on direct assessments of early academic skills and teacher ratings of their social-emotional development.

9.1 Summary

- In the summer of 2016, PEG children scored close to what would be expected for children entering kindergarten in the following areas: understanding early math concepts, early literacy, and vocabulary comprehension. Scores were higher for early math and literacy than for vocabulary.
- The proportion of children at age level varied widely across PEG classrooms.
- Though the *average* student's vocabulary score is not far below what might be expected, there are some students who did not demonstrate the vocabulary skills needed for kindergarten success. Vocabulary scores were generally lower for children from homes where English was not the primary language spoken.
- On average, PEG children were rated by their teachers as having age-appropriate social skills in managing behavior and emotions and positive relationships. They were rated somewhat lower in participating in group situations. Further, though the average scores were in the moderate range, a number of children were rated below age expectations for many of the individual social skills, primarily in forming relationships with adults and solving social problems.

9.2 Early Academic Skills

Toward the end of the first year of PEG implementation (June-July 2016), the research team measured academic performance for 331 children across 47 PEG classrooms.[13] Data collectors trained by the study team conducted individual assessments using standardized measures of early math, early literacy, and vocabulary. Each of the standardized tests of academic skills is normed such that a standard score of 100 represents the performance of an average student at this age (based on a national sample of children from all socioeconomic groups). As previously described in Chapter 3, the standardized assessment measures included:

- **Early Math**: Woodcock-Johnson III Tests of Cognitive Abilities: Applied Problems Subtest;
- **Early Literacy**: Woodcock-Johnson III Tests of Cognitive Abilities: Letter-Word Identification Subtest; and
- **Vocabulary Comprehension**: The Expressive One-Word Picture Vocabulary Test.

Prior to beginning the assessments, children who were identified as coming from homes in which English was not the primary language were screened on their understanding of English.[14] The *preLAS* was used

[13] Children in one other PEG classroom were not assessed because the program was unable to collect any parent permission forms for the child assessments.

[14] For most children, the information on home language came from parents at the time of enrollment. For children missing this information, teachers provided it based on their knowledge of the child and the child's home environment.

as a screening measure to confirm whether it was appropriate to assess the child in English or if he/she should be tested in Spanish. All but five of the 331 children in the sample passed the English language screener and were tested in English. The remaining five children were assessed in Spanish with the two Woodcock Johnson subtests and with a bilingual version of the vocabulary assessment.

Average standard scores for the three early academic content areas are shown in Exhibit 9.1 below. On all three measures, the average scores were close to the expected standard score for their age (score of 100). PEG children scored lower, on average, on the vocabulary measure, than on the other two constructs.

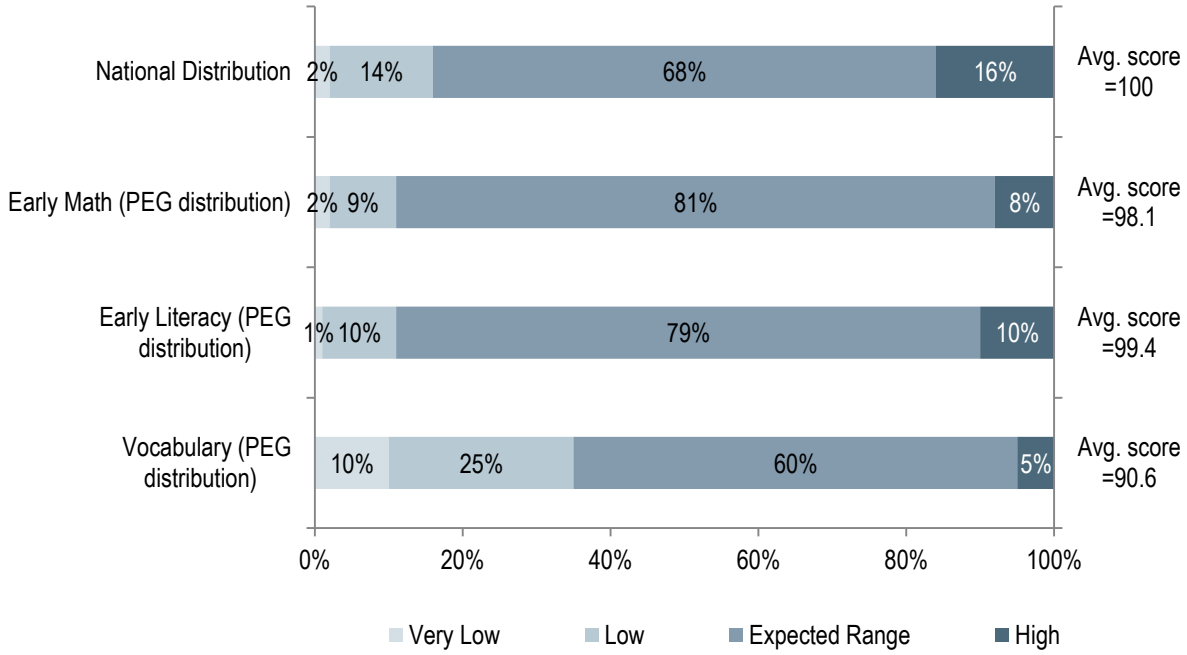
Exhibit 9.1: Overall PEG Early Academic Skill Scores

Construct	Mean	Standard Deviation	Range
Early Math	98.13	12.56	59–133
Early Literacy	99.40	13.46	60–155
Vocabulary	90.64	15.71	50–131

READS AS: PEG children scored a mean of 98.13 on the early math construct, with a standard deviation of 12.56. Scores ranged from 59–133.
SAMPLE: N=324–326.
SOURCE: PEG Child Assessment Data(Summer 2016) using the Woodcock-Johnson III Tests of Cognitive Abilities: Applied Problems Subtest for early math skills, the Woodcock-Johnson III Tests of Cognitive Abilities: Letter-Word Identification Subtest for early literacy skills and the Expressive One-Word Picture Vocabulary Test for vocabulary skills.

Most PEG children, on average, appeared to have the early math and early word/letter recognition skills that will be expected of them once they began kindergarten compared to the national distribution (Exhibit 9.2). However, over one-third of PEG children scored low or very low on the vocabulary measure, which is more than expected in a sample of children this age. Children who enter kindergarten behind where they are expected to score given their age can have a difficult time making progress without significant intervention in elementary school.

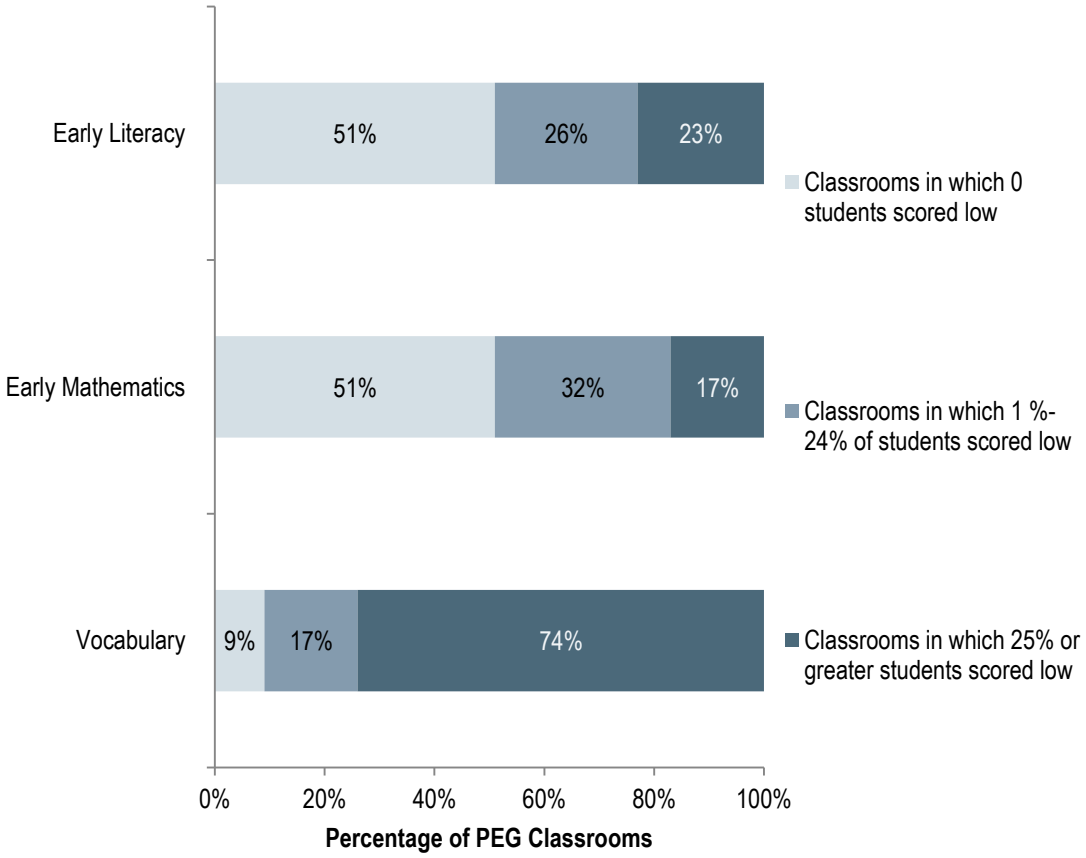
Exhibit 9.2: Overall Distribution of PEG Children on Standardized Assessments



READS AS: Two percent of PEG children scored very low on the early math construct, which is consistent with the percentage of children receiving a very low score nationally. Nine percent of PEG children scored low on the early math construct, which is fewer than the 14 percent of children in the national distribution that scored low on the early math assessment.
NOTE: The national distribution represents the distribution of scores on standardized measures with mean = 100 and standard deviation = 15.
"Very Low": More than 2 standard deviations below the expected mean of 100 (<70).
"Low": Within 2 standard deviations below the expected mean of 100 (70–84).
"Expected Range": Within 1 standard deviation above or below the expected mean of 100 (85–115).
"High": More than 1 standard deviation above the expected mean of 100 (>115).
SAMPLE: N=324–326.
SOURCE: PEG Child Assessment Data(Summer 2016) using the Woodcock-Johnson III Tests of Cognitive Abilities: Applied Problems Subtest for early math skills, the Woodcock-Johnson III Tests of Cognitive Abilities: Letter-Word Identification Subtest for early literacy skills and the Expressive One-Word Picture Vocabulary Test for vocabulary skills.

There were substantial classroom-to-classroom differences in the numbers of children who scored low on the assessments. In more than half of PEG classrooms (51 percent), none of the assessed children earned "low" scores on the test of early mathematics or early literacy, whereas in nearly one-quarter of PEG classrooms (17 percent and 23 percent respectively), 25 percent or more assessed children earned low scores (see Exhibit 9.3). On the measure of vocabulary, 9 percent of PEG classrooms had no assessed children who earned low scores, whereas in 74 percent of PEG classrooms, 25 percent or more assessed children earned low scores. There were two classrooms (each from a different ELP) in which none of the children earned low scores on any of the measures and four classrooms in which greater than one- quarter of assessed children earned low scores on all of the measures.

Exhibit 9.3: Percentage of Classrooms with PEG Children Scoring Low by Skill



READS AS: In 23 percent of PEG classrooms, 25 percent or more of assessed PEG children scored low on the early math construct,
NOTE: "Low": More than 1 standard deviations below the expected mean of 100 (<85).
SAMPLE: N=324–326.
SOURCE: PEG Child Assessment Data(Summer 2016) using the Woodcock-Johnson III Tests of Cognitive Abilities: Applied Problems Subtest for early math skills, the Woodcock-Johnson III Tests of Cognitive Abilities: Letter-Word Identification Subtest for early literacy skills and the Expressive One-Word Picture Vocabulary Test for vocabulary skills.

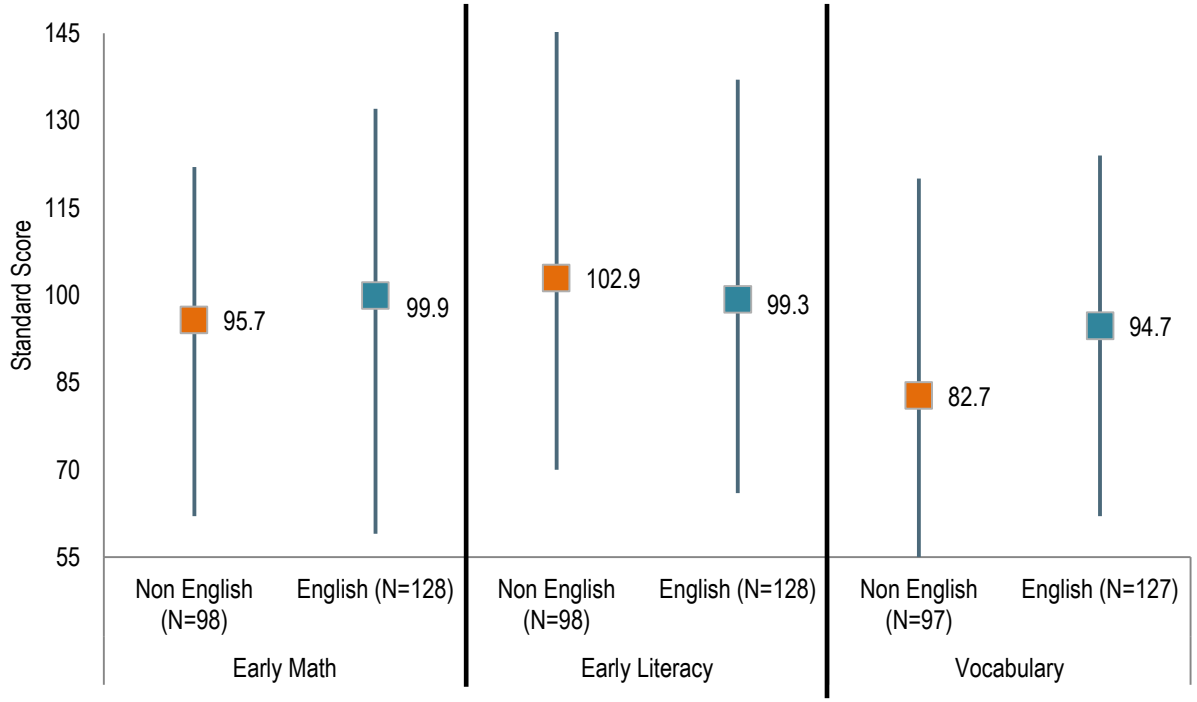
9.2.1 Academic Achievement and Home Language

The study team examined whether the early academic achievement scores were different for the children from homes where the primary spoken language was not English. In the sample of PEG children selected for the assessments, over one-third of children lived in homes in which English was not the primary spoken language. Spanish was the predominant home language (other than English), and there were smaller numbers of children from homes where other languages were spoken, including but not limited to Chinese, Haitian Creole, Khmer, and Portuguese. Just over 30 percent of the sample of 331 children (104) were administered the *preLAS* screener for English proficiency based on parent identification of home language and/or teacher identification. Yet, as already noted, only five children failed the screener of the

88 children who it was administered to and therefore received the Spanish or bilingual version of the assessments.[15]

Exhibit 9.4 shows average standard scores on each early academic achievement measure for the two home language groups (English and Spanish). The average difference between groups was most pronounced for the vocabulary assessment; children from homes where English was not the primary language scored significantly lower than children from homes where English was the primary language. It should be noted that the five children who were tested with a bilingual version of the vocabulary measure scored similarly to the national norm for children from second language homes; this comparison suggests that the children in the sample who were tested in English and were from homes where other languages were spoken could have stronger vocabulary skills in their home language compared to English.

Exhibit 9.4: Early Academic Assessment Scores by Home Language



READS AS: On average, PEG children from homes where English was not the primary language scored 95.67 on the early math construct and PEG children from homes where English was the primary language scored an average of 99.9.
SAMPLE: For PEG children from homes where English is not the primary language, N=98, missing=0–1. For PEG children speaking English at home, N=127–128.
SOURCE: PEG Child Assessment Data (Summer 2016) using the Woodcock-Johnson III Applied Problems Subtest/Woodcock Munoz Problemas Applicados for early math skills, the Woodcock-Johnson III Letter-Word Identification Subtest/Woodcock Munoz Identificacion de letras-Palabras for early literacy skills, and the Expressive One-Word Picture Vocabulary Test (English only) for vocabulary skills.

Children with lower scores on the preLAS, which indicate weaker English language abilities, also scored lower on the EOWPVT. This relationship indicates that even children with sufficient English language

[15] Children with home languages other than English or Spanish who were identified by program staff as not appropriate for the English assessments were not screened during 2015–16. Moving forward, all children regardless of home language will be screened using the *preLAS.*

skills to pass the screener may still face barriers to developing and/or demonstrating vocabulary understanding that would be expected for children entering kindergarten.

It should be noted that the assessment scores are from the end of the 2015–16 preschool year and do not take into account where children started out at the beginning of the year. Children from non-English speaking homes may have started the year lower than their peers from English-speaking homes, although this is not known. It also cannot be known from these data whether those children made greater gains throughout the year despite scoring below their peers on two of the measures in the summer.[16]

9.3 Teacher Reports of Children's Social-Emotional Skills

In addition to early academic outcomes, there is increasing importance placed on non-cognitive skills by researchers, practitioners, and policy makers. PEG teachers rated children's socio-emotional skills using the Teaching Strategies GOLD (TS GOLD) at least once during the 2015–16 school year. The Social-Emotional section of the TS GOLD that was used in the PEG programs includes nine skills grouped into three primary Objectives: 1) self-regulation of emotions and behaviors; 2) positive relationships; and 3) participation in group situations. For each of the nine skills, a student is rated on a scale from 1 to 9. Individual skill scores are then averaged into the appropriate Objectives.

The study team examined teacher ratings from spring of the 2015–16 preschool year for 606 students from 40 PEG classrooms[17] (see Exhibit 9.5). Average scores for all three Objectives were moderate. Scores were lowest for Participation in Group Situations and highest for Positive Relationships. A full summary of average scores across the nine skills can be found in Appendix B.

Exhibit 9.5: Teaching Strategies GOLD Ratings for Overall PEG

Objective	Mean	Standard Deviation	Range
1. Self-regulation of emotions and behaviors	6.26	1.12	1.3–9.0
2. Positive relationships	6.44	1.15	2.0–9.0
3. Participation in group situations	5.77	1.25	1.0–9.0

READS AS: PEG teachers gave children a mean score of 6.26 for self-regulation of emotions and behaviors, with a standard deviation of 1.12 and a range of 1.3–9.0.
SAMPLE: N=606.
SOURCE: PEG Child Socio-emotional Skills Assessment (Summer 2016) using TS Gold.

Average scores were not very different for each of the PEG communities. Though there was slight variation in average ratings by community, the bulk of variation was between classrooms and, more so, between individual students (examined through statistical analysis of the variation in ratings).

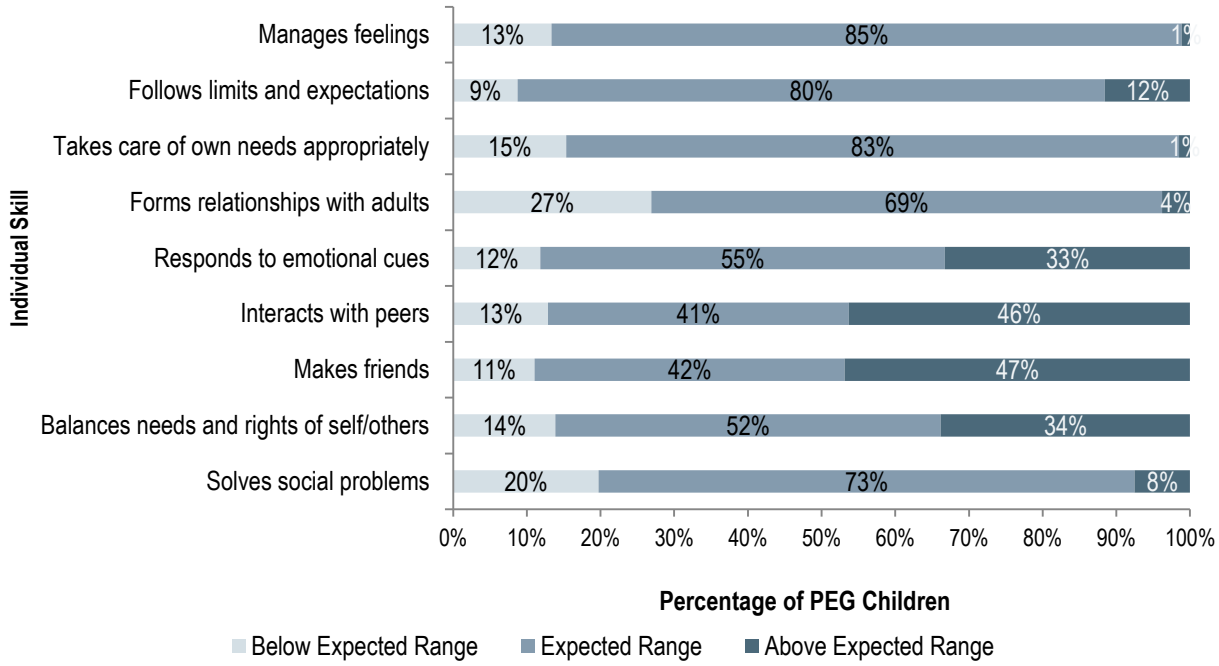
Ratings of individual skills for PEG children can be compared to the minimum ratings that are expected for this age range, which vary by skill from 5 to 7. Despite the fact that the average TS GOLD ratings for

[16] In the evaluation of the Tennessee public pre-k program, researchers reported that English language learners started behind their peers at the beginning of pre-k but made greater gains during the year on a composite of measures including early math, early literacy, and vocabulary. The English language learners still finished the year scoring lower than English-speaking children (Lipsey, Farran, & Hofer, 2015).

[17] Data provided by EEC included 40 of the 48 PEG classrooms.

all PEG children were moderate, there were sizeable numbers of children who scored below what would be expected for a typical student of this age. As Exhibit 9.6 shows, nearly 30 percent of PEG children were lower than expected at participating in group situations and 20 percent scored below expectation on their skills in regulating their own emotions and behaviors.

Exhibit 9.6: Distribution of PEG Children on TS GOLD Ratings



READS AS: Thirteen percent of PEG children fall below the expected range for how they manage feelings.
SAMPLE: N=606.
SOURCE: PEG Child Socio-emotional Skills Assessment (Summer 2016) using TS Gold.

10. Discussion of Findings

The Massachusetts PEG program aims to expand the supply of high-quality preschool opportunities for low-income children through collaborations between public school districts and EEC-licensed programs. PEG can be seen as a demonstration program and its results – the level of quality PEG programs are able to achieve and the impacts on children's learning — can inform the state about what can be accomplished given this level of investment.

The independent Year 1 PEG evaluation generated evidence about the progress of the PEG program in meetings its ambitious set of goals. In general, the PEG program achieved substantial success in a short amount of time. By funding existing community-based programs with experience administering preschool services, PEG classrooms were generally able to ramp up quickly to enroll children, hire teachers, provide full-day, full-year programming, and deliver many of the planned teacher and classroom supports. The local collaborative governance structure, which included public school and community-based stakeholders, facilitated efforts to align programming across the community.

The evaluation findings can be used to assess the progress of PEG statewide in meeting its implementation goals for increased access, systems change, and delivering high-quality supports for educators, families and children. The findings also include a first look at the level of PEG classroom quality and the skills of the first cohort of PEG children immediately before kindergarten entry.

10.1 PEG Classroom Quality

In the first year of PEG, classroom quality, on average, was moderate to high according to three observation instruments. In general, classrooms tended to receive higher ratings for aspects of quality related to classroom environment and organization and lower ratings for aspects of quality related to teacher instruction. Only a few classrooms were consistently low across their quality ratings; likewise, only one classroom received consistently high ratings.

There is increasing evidence that suggests very high classroom quality is necessary to meaningfully improve child outcomes. A recent meta-analysis of studies linking scores on the CLASS with child outcomes suggests that scores, particularly in the Instructional Support domain, were more strongly related to larger gains in children's language and literacy skills in higher versus lower quality classrooms (Burchinal et al., 2016). Increases in classroom quality predicted gains in language and literacy outcomes, but only in high-quality classrooms, across several measures of quality. Similar "threshold" findings were not as clear for math and social emotional outcomes.

Although the level of classroom quality observed in PEG in the first year is promising, it is important for PEG stakeholders to develop additional strategies to help classrooms reach the highest levels of quality. The classroom quality findings suggest that PEG programs could benefit from more attention to the instructional quality of the classrooms in particular; more detailed suggestions are provided later in this chapter.

10.2 Children's Skills at End of Preschool

A central goal of PEG is to ensure that the children in the program are prepared for long-term school success. Longitudinal research on school performance suggests that the skills children have when entering kindergarten strongly predict their academic success in later grades. Therefore, if preschool can make a

difference in children's kindergarten readiness, the model could have long-lasting benefits through school.

The evaluation assessed the cognitive skills of PEG children at the end of their program year. The evaluation was not able to conduct similar assessments of the children's skills at the time they entered the program since the evaluation did not start until December 2015. As a result, the study team can describe the level of kindergarten readiness of the first cohort of PEG children, but cannot draw conclusions about the extent to which the PEG program *improved* the outcomes for these children. Findings about PEG children's skills at the end of the first year of the program included the following:

- At the end of their preschool year, PEG children, on average, performed at age level on their early math and early literacy skills. Performance at this level is notable in light of the fact that all of the children come from very low-income households, about one-third come from households where English is not the primary home language, and the majority of children not had prior formal early education, increasing the likelihood that many children came to the program with little exposure to these early academic concepts.
- At the end of their preschool year, PEG children, on average, performed somewhat below age level on their understanding of English vocabulary (as assessed by an expressive language assessment); one-third of the children scored below age-expectation.
- Teacher ratings of social-emotional development suggest PEG children developed many of the key skills needed in kindergarten, including managing behavior and emotions and forming positive relationships. Children lagged in some skills related to functioning in groups, an important area for kindergarten success.

Longitudinal research provides some context about how to interpret the performance of the PEG children at the end of their preschool year. The research suggests that there may be long-term negative consequences for children who enter kindergarten scoring below average on their early literacy and language skills (Layzer and Price, 2008). The growth patterns of children in this longitudinal analysis showed that scores on literacy skills in the fall of kindergarten were highly predictive of scores in fifth grade. Also, children with high, moderate, and low literacy scores at the start of kindergarten all grew at the same rate, on average. Furthermore, the gaps between levels did not narrow over time. As the skill tested became more complex (e.g., comprehension versus letter knowledge), the time that it took for children to catch up increased, and some children did not catch up even by the end of fifth grade. For the skills needed to interpret and understand what is read, which for most children do not manifest themselves until the end of the kindergarten year, the gap between children who entered kindergarten with average-high skills and below-average skills actually grew over time. Although many children who entered kindergarten with lower performance caught up to others on some skills, the delay may cost them the opportunity to develop adequately some other skills important for school success.

It is positive that at the end of the preschool year, PEG children demonstrated levels of early math skills, early literacy skills, and vocabulary comprehension close to what would be expected for children entering kindergarten. However, the notable proportion of children who did not perform at age expectation in vocabulary development is worthy of attention, since research shows that there are lasting consequences for children who enter kindergarten scoring below average on their early literacy and language skills.

10.3 PEG Implementation Progress in the First Year

This section discusses the extent to which PEG communities and programs met some of their key goals over the course of the first year of implementation.

Increased Access and Community Collaboration

In all five communities, the LEA and ELPs successfully met their goal for serving high-risk families. PEG families had very low incomes and about one-third of children came from homes where English was not the primary language. In four of the five PEG communities, most of the PEG children had not previously participated in formal early education.

PEG communities partially met their goal of effective local cross-sector collaboration. Each of the PEG communities established a collaboration of key stakeholders representing the LEA, Head Start agencies, and other community programs. PEG leadership from the five communities reported some successes and some challenges with their collaborative efforts. Each community plans to continue to build on its efforts so far and tackle some of the more challenging issues faced.

Teacher Supports

As detailed in Chapter 5, during 2015-16, the PEG communities were still in the process of developing their vision for teacher supports. There was substantial variation across communities in the dosage and types of teacher professional supports provided. On average, PEG lead teachers were offered 23 hours of professional development training in the first year, across a variety of topics. Across PEG communities, teachers reported receiving between 10 and 29 hours. Teachers were provided with coaching by LEA staff in four of the five PEG communities. The amount of coaching teachers received varied across communities and programs. About 44 percent of PEG lead teachers reported receiving more than 20 hours of coaching in the first year, while almost one-third of teachers (32 percent) reported receiving 10 or fewer hours of coaching. The variation in intensity of teacher supports could have been the result of different program approaches to teacher supports and/or partial implementation of planned supports. Over the next two years, there will be more information available about the extent to which communities are successfully implementing their planned levels and types of teacher supports.

As PEG programs continue to develop their plans for professional development, the research on teacher training is suggestive about strategies more likely to be impactful for teachers. Overall, the findings from the evidence base are inconsistent about the extent to which teacher professional development is associated with improved program quality and more sensitive teacher interactions with children. The evidence of a positive effect is more common in the context of highly-controlled research studies, as opposed to large scale training offered by districts or states (see Burchinal, Howes, & Kontos, 2002; Burchinal, Cryer, et al., 2002; Clarke-Stewart et al, 2002; Jackson et al., 2006; Lonigan et al., 2011; Justice et al., 2016.). There is some evidence that more intensive and longer duration training is more likely to yield benefits compared to briefer trainings (Tout, Zaslow, and Berry, 2006; Loeb, Rouse, & Shorris, 2007.

In terms of the content of professional development, a recent threshold study (Burchinal et al., 2016) reports that professional development for teachers should target strategies for improving the instructional content in teacher–child interactions. Intentional content-specific instruction includes activities designed to teach specific skills such as extended discussions with children and systematic feedback to promote children's oral language, phonemic awareness and print knowledge for literacy and numeracy and

geometry skills for mathematics. This research suggests that early childhood programs should not only emphasize content instruction, but also should target professional development for teachers on these same instructional skills.

The research on the value-added of coaching in combination with teacher training is also inconsistent. On the one hand, there are studies that suggest that in-class mentoring in combination with training has no added value (Assel et al., 2007; Lonigan et al., 2011). On the other hand, there is a growing body of research showing that teacher training that provides the opportunity for on-site practice, with feedback from a supportive source, is key to the effectiveness of traditional professional development such as workshops, particularly for teachers in classrooms in the lower range of quality (Zaslow, Tout, Halle, Whittaker, & Lavelle, 2010; Powell et al., 2010). In 2011, Isner et al. conducted a literature review to examine and summarize more than 20 studies on the effects of professional development with a coaching element. About 60 percent of the studies reported positive findings on teacher knowledge and attitudes. Most of the studies also included a measure of observed quality and practices with children and, of those, 87 percent reported positive outcomes. Finally, about half of the studies include child outcomes. Of those, just over one-half reported positive language and literacy outcomes for children, one-quarter found positive outcomes on behavioral measures, and just one study reported a positive outcome on math outcomes. Isner concluded that broadly speaking, the existing literature suggests associations between coaching and quality improvements in early childhood education.

Currently, there is little consensus about the features of coaching that are key to effectiveness. Isner et al. (2011) also looked for evidence about features of coaching that were most consistently linked with positive outcomes for staff and children, including the characteristics of the coaches, coaching activities, coordination between coaching and other professional development, dosage of coaching, supervision and document/tracking of teacher progress during coaching. The researchers were unable to determine patterns of association between identified coaching features and intended outcomes because of the limited reporting of the specific features of coaching within the published articles. Similarly, variations in the delivery of features could not be described or linked to variations in outcomes, also due to limited reporting about specific features.

Additional research suggests that more intensive and targeted coaching is more likely to produce effects on teachers and children. A number of studies find positive effects of targeted coaching on specific instructional practices (in contrast to more general coaching on broad instructional principles) (Burchinal et al., 2014; Landry, Anthony, Swank, & Monseque-Bailey, 2009; Landry et al., 2011). Another large study of professional development (more than 250 early childhood educators in four states) suggests that the intensity of coaching matters (where intensive is defined as twice monthly 2-hour sessions. In addition, the same study reported that the effect on overall teaching quality is conditional on educators' baseline teaching quality, such that the professional development only benefits educators who begin with poor to average teaching quality.

There is also positive evidence for a coaching model based on the CLASS-- MyTeachingPartner™-- which includes web-facilitated consultation and feedback (Hamre, Justice et al., 2010; Pianta et al, 2008); this coaching model is both targeted and intensive. Research on the model found positive effects on the quality of teacher-child interactions and positive effects on preschoolers' language and literacy skills when teachers used the model with fidelity. Also, a recommendation from the recent threshold study (Burchinal et al., 2016) is that programs should not only focus more on content instruction, but should also provide aligned teacher training and coaching on the content instruction.

It is important to note that in many of these studies, coaches received intensive support. For example, in the Landry study, coaching was implemented by two highly trained and closely monitored facilitators, who completed a four-day intensive training workshop, participated in weekly conference calls with an overall project manager and weekly conference calls with the entire network of facilitators, and were observed on-site several times by the manager.

Given the research, PEG communities and programs could consider a number of ways to try to ensure that professional development and coaching is as effective as possible:

- Plan teacher professional development trainings that are more intensive and longer in duration, as opposed to more frequent, less intensive trainings;
- Improve the alignment of professional development and coaching with the classroom curriculum (especially in the context of classroom curricula focused more explicitly on content instruction); and
- Provide more intensive supports to coaches through training, monitoring and supervision, communication with other coaches.

Curriculum and Assessment

As described in Chapter 6, PEG programs were allowed to choose age appropriate curricula aligned to the Massachusetts Curriculum Frameworks, and all of the PEG programs reported using standard, published curricula in 2015-16. Some of the curricula used were general early childhood curricula, covering all content areas, while others were more content-specific.

There is increasing emphasis on early childhood curricula that focus on supporting specific aspects (or domains) of school readiness. Experimental evaluations of specific curricula have demonstrated moderate to large gains for mathematics curricula (e.g., Clements & Sarama, 2008; Weiland et al., 2013), literacy curricula (e.g., Bierman et al., 2008; Farver, Lonigan, & Eppe, 2009; Landry, Anthony, Swank, & Monesque-Bailey, 2009; Neuman and Cunningham, 2009; Powell et al., 2010; Weiland et al., 2013), language curricula (Neuman and Cunningham, 2009; Wasik and Hindman, 2011), and social-emotional skills curricula (e.g., Bierman et al., 2008; Fantuzzo, Gadsden, & McDermott, 2011; Raver et al., 2011).

The evidence is growing that greater attention should be paid to the content of instruction as a key feature of instructional quality. A meta-analysis of studies of early childhood education programs (Burchinal et al., 2016) finds that a greater overall dosage of center-based early childhood education is related to larger gains in academic skills when teachers spend more time in instruction in related content areas. For example, gains in mathematics skills are larger when children experience more time in more intensive mathematics instruction.

Given the research, PEG communities and programs could consider ways to intensify their content instruction, depending on their current curriculum offerings:

- Integrate into their programming more explicit content instruction;
- Improve the alignment of the professional development and coaching with the content instruction, including giving teachers opportunities for active practice and modeling; and/or
- Improve the alignment of curriculum and formative assessment.

Family Engagement

Massachusetts PEG programs, in line with federal requirements for the Preschool Expansion Grants, focused on providing the following types of activities and services for families: (a) culturally and linguistically responsive family engagement activities; (b) comprehensive services that promote families' access to services that support children's learning and development (vision, hearing, dental, hearing, development and health screenings and referrals and assistance obtaining services when appropriate); and (c) support for kindergarten transition. As discussed in Chapter 8, all of the PEG programs began to implement activities and services in all three areas, with a variety of approaches and strategies. Nearly all of the programs also reported challenges in working successfully with families, both challenges related to program operations and service coordination and challenges related to the level of family participation.

All PEG programs used multiple methods to communicate with parents, including newsletters, emails, and brief check-ins, when parents came to the programs to drop off or pick up their children. In addition, almost two-thirds of PEG programs conducted at least one scheduled home visit to families, and some programs conducted multiple home visits. All programs organized family engagement activities such as potluck dinners or holiday events, which although popular, were irregularly attended.

Although federal requirements call for a broad set of family supports (as do virtually all state child care quality rating systems), there is little research evidence that these types of supports are associated with better outcomes for children.[18] There have been and continue to be many early childhood programs that combine parent education/ involvement components with classroom programs for children, based on the hypothesis that children's learning and development will be enhanced by this dual focus.

There are at least three early childhood programs that have reported significant impacts at the end of preschool and into school: the Perry Preschool Program, the Child-Parent Center Education Program, and the AVANCE Parent-Child Education program. Each of these programs combined high-quality preschool education starting at age 3 with a substantive parent component that included family engagement and comprehensive services.

In the Perry Preschool Program[19] teachers conducted weekly home visits designed to involve the mothers in implementing the preschool curriculum at home. The Child-Parent Center Education Program[20] combines high-quality preschool starting at age 3 with a comprehensive system of services for children and parents that promote parent involvement, has reported significant impacts in preschool and throughout the school process to high school graduation. AVANCE[21] provides early childhood education, home visits, weekly 3-hour parenting classes, advocacy and support services. However, the fact that these programs "bundle" child-focused and parent-focused components makes it impossible to differentiate the contribution of each of the components. It is unclear whether providing services in both the home and

[18] Perhaps reflecting the lack of research, a current framework for high-quality prekindergarten programs and systems does not include any features related to family engagement or comprehensive services.

[19] Weikart, Bond & McNeil, 1978; Schweinhart et al., 2005.

[20] Reynolds, 2000; Reynolds, Temple et al., 2001; 2002; Ou & Reynolds, 2006; Reynolds, Ou et al., 2004.

[21] Johnson et al., 1996; Walker et al., 1995.

preschool program is more effective in supporting the development of young children than targeting one or the other context alone.

The findings from a recent meta-analysis (Grindal et al., 2016) that compared early childhood programs with and without parenting education are informative. Overall, the programs with parenting education did not have stronger effects on children's outcomes. However, the authors report some suggestive evidence about forms of parent education that are more likely to be associated benefits for children, specifically, intensive home visits, defined as one or two home visits a month, and parent education with modeling and opportunities for active practice.

Moving forward, PEG communities and programs could consider:

- Whether it would be worth investing in more intensive parenting education, either through more frequent home visits or training that involves opportunities for parents to actively practice new interactions and receive feedback on their practice; and/or
- Shifting resources for activities that have lower attendance into more intensive activities that potentially focus on individuals or smaller groups of parents.

Comprehensive Services

PEG programs partially met their goal of providing comprehensive services to families; only some of the programs undertook efforts to provide services for families on-site and many programs encountered challenges with setting up systems to assess family needs and with referring or providing services to all families. During 2015–16, the comprehensive services component of the PEG program model was still in an earlier stage of development than the other components in many programs.

Ideally, how comprehensive services are delivered in PEG could be guided by research on effective approaches. However, there is virtually no research that has shown significant effects of case management interventions alone in early childhood settings. Most of the research focuses on case management in health care (medical and mental health), and although there is an active literature on standards for case management, there is little reference to a research basis for these standards (Case Management Society of America, 2011). The research on case management has reported mostly no effects, although the explanation may be as much about the low quality of the services that families are referred as about ineffective case management strategies. The limited literature on successful case management interventions describe their effective case management as "intensive," which is defined as a combination of low caseloads for a caseworker and frequent contacts between the caseworker and the recipient, and "targeted," which is defined as focusing on specific types of services as opposed to a broad range of services (Scott et. al., 2013).

Similar to the discussion of family engagement above, there are early childhood programs that have reported positive effects that *include* case management in addition to child-centered programming, including the Child-Parent Education Center and AVANCE. Again, because these programs "bundle" child-focused and parent-focused components, it is impossible to determine the separate contribution of case management.

In terms of comprehensive services, PEG communities and programs might want to consider either adopting more fully particular standards for case management or moving toward the depth of services

described for the three example programs above. If so, it is likely that there will need to be more resources devoted to this component of the model.

10.4 Teacher and Parent Experiences

The PEG model assumes that increasing teacher compensation and providing teachers with more intensive professional supports will lead to job satisfaction and, over time, higher rates of teacher retention. Although retention could not be assessed at the end of the first year of PEG, PEG teachers were asked about their perceptions of their jobs and ability to be effective teachers. Overall, PEG teachers reported high levels of job satisfaction and high levels of confidence about being able to reach and teach all of the children in their classrooms.

PEG communities generally met their goal for parent connectedness to the PEG program. On average, PEG parents expressed a strong level of connectedness to and satisfaction with their child's program and reported feeling confident about their ability to communicate with teachers about their child. Parents reported moderate to high levels of involvement in activities at home that could support their child's learning and development, although the study team is not able to conclude whether the levels of these behaviors represented an increase since children enrolled in PEG because data were only collected once toward the end of the school year.

10.5 Next Steps for PEG Evaluation

In future years (beginning in 2016-17), the evaluation will focus on program impacts on children and families, as well as continuing to track implementation of the key program components. Using a rigorous regression discontinuity evaluation design, the evaluation will estimate the impact of PEG on children's academic and socio-emotional skills. The study will also look at impacts on the level of home support and school connectedness for children's learning and development. At the end of 2016–17, the evaluation will be able to look at impacts for a single cohort of PEG children. Impacts on a second cohort of PEG children and families will be estimated at the end of the 2017–18 year. Furthermore, beginning in the 2016–17 school year, the evaluation will also be able to describe the gains children made during their preschool year as well as track the 2016-17 PEG children into kindergarten to follow their progress.

If additional resources become available, an additional study could include a sample of programs across the state that represent different levels of key PEG supports (e.g., teacher compensation, professional development, coaching) and then examine through a quasi-experimental study whether children's gains in academic and socio-emotional skills over the year are related to particular quality components. This evidence would help policy makers and program developers better understand what the program model should look like, in an environment of limited resources, to sustain and ultimately scale-up the PEG model.

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Appendix A: Summary of Classroom Quality Scores

Exhibit A.1: Classroom Learning Assessment System Scores

	Mean	Standard Deviation	Range
Total Score	4.7	0.7	3.3-6.8
Instructional Support	3.2	1.0	1.2-6.7
Emotional Support	5.7	0.6	4.3-7.0
Classroom Organization	5.2	0.8	3.4-6.7

READS AS: The average Total CLASS score was 4.7 with a standard deviation of 0.7 points. Scores ranged from a low of 3.3 to a high of 6.8.
SAMPLE: N=48.
SOURCE: PEG Classroom Observations (Winter 2016) using the CLASS PreK.

Exhibit A.2: Early Language and Literacy Classroom Observation Pre-K (ELLCO) Scores

	Mean	Standard Deviation	Range
Total ELLCO	3.6	0.6	2.2-5.0
Language and Literacy Subscale	3.4	0.6	2.8-5.0
Classroom Environment	3.4	0.7	1.8-5.0

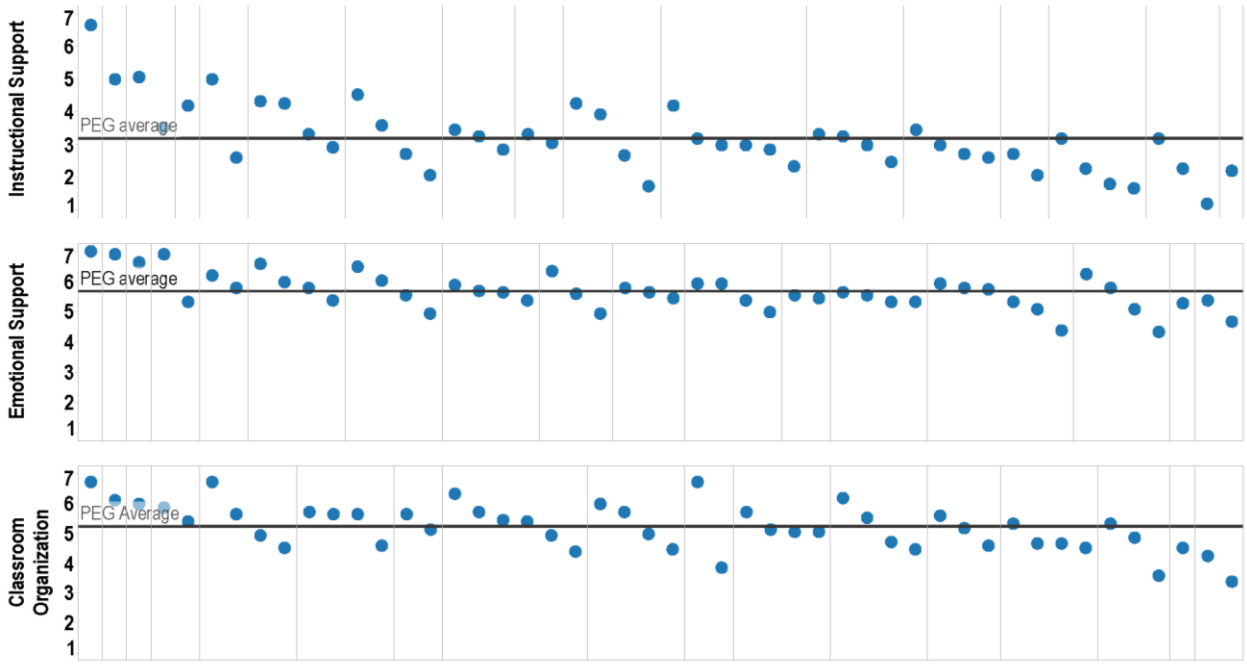
READS AS: The average Total ELLCO score was 3.6 with a standard deviation of 0.6 points. Scores ranged from a low of 2.2 to a high of 5.0.
SAMPLE: N=48.
SOURCE: PEG Classroom Observations (Winter 2016) using the ELLCO.

Exhibit A.3: Classroom Observation of Early Mathematics (COEMET) Scores

	Mean	Standard Deviation	Range
Mathematics Classroom Culture	3.9	0.5	2.4-4.7
Mathematics Activities	3.5	0.4	2.8-4.6

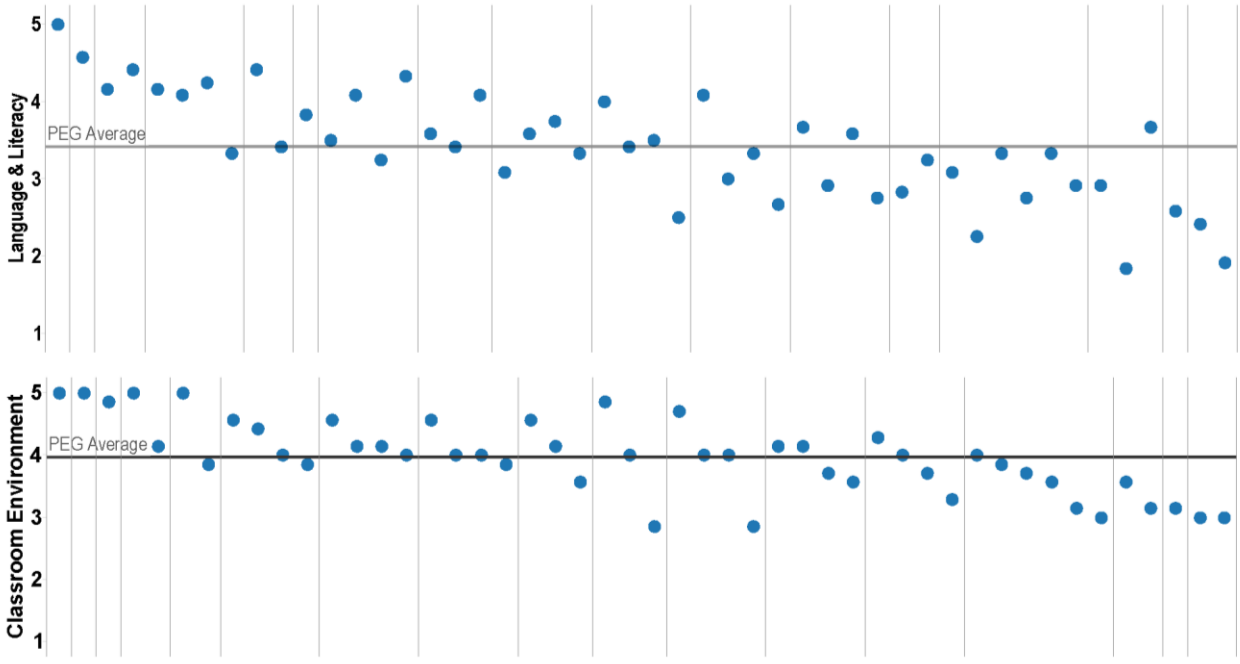
READS AS: The average Mathematics Culture score was 43.9 with a standard deviation of 0.5 points. Scores ranged from a low of 2.4 to a high of 4.7.
SAMPLE: N=48.
SOURCE: PEG Classroom Observations (Winter 2016) using the COEMET.

Exhibit A.4: Distribution of CLASS Subscale Scores by ELP



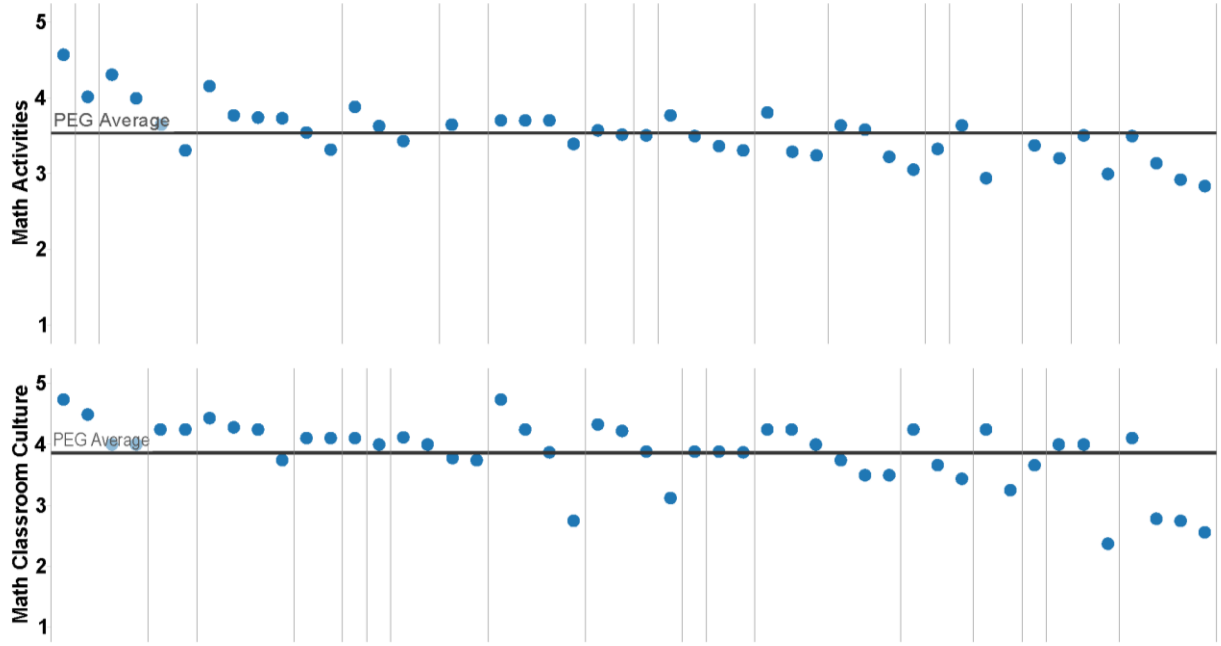
Note: PEG classrooms are represented by blue dots. Classrooms are displayed from highest to lowest score within each ELP. ELPs are separated by grey bars and are displayed from highest to lowest mean average score for their classrooms.

Exhibit A.5: Distribution of ELLCO Subscale Scores by ELP



Note: PEG classrooms are represented by blue dots. Classrooms are displayed from highest to lowest score within each ELP. ELPs are separated by grey bars and are displayed from highest to lowest mean average score for their classrooms.

Exhibit A.6: Distribution of COEMET Subscale Scores by ELP



Note: PEG classrooms are represented by blue dots. Classrooms are displayed from highest to lowest score within each ELP. ELPs are separated by grey bars and are displayed from highest to lowest mean average score for their classrooms.

Appendix B: Summary of Teaching Strategies GOLD Objective and Skill Ratings

Exhibit B.1: TS GOLD Objective and Skill Ratings, Overall PEG

	Objective	N	Mean	Standard Deviation	Range
1.	Self-regulation of emotions and behaviors	606	6.26	1.12	1.3–9
	Manages feelings	606	6.02	1.40	2–9
	Follows limits and expectations	606	6.21	1.17	1–9
	Takes care of own needs appropriately	606	6.56	1.17	1–9
2.	Positive relationships	606	6.44	1.15	2–9
	Forms relationships with adults	606	7.06	1.12	2–9
	Responds to emotional cues	583	6.02	1.32	1–9
	Interacts with peers	583	6.30	1.44	2–9
	Makes friends	606	6.35	1.38	2–9
3.	Participation in group situations	606	5.77	1.25	1–9
	Balances needs and rights of self and others	606	5.93	1.38	1–9
	Solves social problems	583	5.61	1.30	1–9

READS AS: Teachers rated their students at an average score of 6.26 for self-regulation of behaviors with a standard deviation of 1.12. Scores ranged from 1.3 to 9.
SAMPLE: N=583– 606.
SOURCE: PEG Child Social-Emotional Skills Assessment (Summer 2016) using TS Gold.