Evaluation of Indiana's Early Education Matching Grant Program: 2015-16

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Executive Summary

Indiana policymakers initiated public prekindergarten services for eligible 4-old children in 2014. During the first two years of the Early Education Matching Grant (EEMG) the state awarded program funds to 36 eligible high-quality early education programs. Many programs participated in both Year 1 (2014-15) and Year 2 (2015-16). In the second year, 19 programs provided full-year services to 326 children from low-income families.

As part of this initial prekindergarten effort, Indiana contracted with Indiana University's Early Childhood Center (ECC) to conduct an evaluation of EEMG during its first two years. This report provides an overview of the evaluation of the EEMG-funded efforts conducted during Year 2. The focus of the evaluation was to look at children's gains in learning early academic and school readiness skills, (including classroom social skills and behaviors), the quality of families' engagement in their children's learning and development, and classroom quality.

Methodology

ECC staff evaluated 242 randomly selected children at the beginning and end of the 2015-16 year using two instruments: the Peabody Picture Vocabulary Test (PPVT-4) and the Bracken School Readiness Assessment (BSRA-3). The evaluators asked classroom teachers to complete the Preschool and Kindergarten Behavior Scales (PKBS-2) as well as the Indiana Standards Tool for Alternate Reporting of Kindergarten Readiness (ISTAR-KR). Families also completed the PKBS-2 to gauge parent perception of social behavioral functioning.

The evaluators asked EEMG program directors to complete a program self-assessment interview with an evaluation team member to measure their family engagement efforts. The program assessment has four components that correspond with the four focus areas described in the family engagement framework adopted by the Indiana Early Learning Advisory Council (ELAC). ECC evaluators then asked individual families to complete an attitudes and motivation survey in the fall and an additional measure of overall family engagement and participation at the end of the 2015-16 year.

Finally, the evaluators measured classroom quality using the Classroom Assessment Scoring System (CLASS), which measures teacher-child interactions across three broad domains: Emotional Support, Instructional Support, and Classroom Organization. The evaluators completed the CLASS observations in a sample of 46 classrooms. All EEMG teachers also submitted classroom schedules that were used to determine time allocation throughout their program day.

Findings

Analyses of the pre- and post-measures of children's learning for the 2015-16 prekindergarten program year found children made significant gains in nearly all measures. Children made significant improvements in their receptive language (PPVT), concept development (BSRA), and important school readiness skills (ISTAR-KR). The percentage of children showing developmental delays for each of these measures also decreased, sometimes dramatically. At the start of the EEMG 2015-16 year, 22% to 49% of the children showed delays in their receptive language (PPVT) and concept development (BSRA), respectively. These numbers were reduced by more than half by the end of the 2015-16 year (11.2% and 20.2%, respectively). These changes in children's

developmental status were also captured in the ISTAR-KR measures. At the beginning of the 2015-16 year, 46.3% of children were delayed in two or more English/Language Arts skill areas, 67.7% were delayed in two or more Mathematics skills areas, and 61.4% were delayed in two or more Social-Emotional skill areas. By the end of the 2015-16 prekindergarten program year, these numbers were reduced to 17.5%, 28%, and 42%, respectively. Families and teachers reported significant gains in social skills throughout Year 2 of the EEMG (PKBS). Additionally, children who were at-risk socially and behaviorally at the beginning of the school year showed significant improvement in their social emotional skills during the duration of the year (PKBS).

[My child] has progressed so well going to Apple Tree; they have helped her with her listening and cooperation skills. She has started listening to instructions and sitting for stories. I am so proud of her progress with her one year of working with the Apple Tree teachers and staff. Most of her problem areas have been addressed and worked through and it's like dealing with a different more well-rounded person.

In terms of classroom quality, Indiana's EEMG teachers scored above average in the areas of Emotional Support and Classroom Organization but below average in Instructional Support, when compared with national samples and other studies. Statistical analyses indicated that Classroom Organization was a significant predictor of decreased problem behaviors, as reported by parents. When instructional support was increased in classrooms, EEMG parents and teachers reported fewer behavior problems as well.

Regarding family engagement, teachers reported increased social skills when EEMG programs reported a higher level of Assisting Families as Connected, Supported Members of the Community (one of the four components of the ELAC family engagement framework).

Introduction

In 2013, the Indiana Legislature set aside $2 million to pilot Indiana's first public-funded early education program, the Early Education Matching Grant (EEMG) program. Its purpose was twofold: to provide high-quality early learning programs for 4-year-olds of families with incomes lower than 100% of the federal poverty level throughout Indiana; and to evaluate the success of these initial efforts to inform future investments. The state made funds available to eligible early childhood programs across Indiana based on a competitive grant application process. Early childhood programs were eligible to apply for the grant if they were designated as a Level 3 or Level 4 provider in Indiana's Paths to Quality System (PTQ), Indiana's voluntary quality rating and improvement system for early education. EEMG funds were allocated for the 2014 and 2015 state fiscal years, with the first programs receiving funds and initiating services beginning in the fall of 2014. In 2015 the Indiana Legislature renewed EEMG funds for an additional two-year cycle, extending public preschool services for both the 2016 and 2017 state fiscal years.

The legislature authorized an evaluation of the EEMG program as part of Indiana's initial investment in early education. In June 2014, the Office of Early Childhood and Out of School Learning, Indiana Family and Social Services Administration, awarded a contract for this evaluation to the Early Childhood Center (ECC) at the Indiana Institute on Disability and Community, Indiana University Bloomington, and renewed it in 2016 to include the two-year extension.

The purpose of evaluating the EEMG has been to assess children's gains in learning early academic and school readiness skills, including classroom social skills and behaviors. Additionally, the evaluation has and continues to examine the quality of families' engagement in their children's learning and development, and the quality of classroom interactions. This report provides an overview of our evaluation of the EEMG-funded efforts conducted during Year 2 (2015-16 prekindergarten program year). The ECC also examined families' engagement in their children's early education and the quality of teacher-child interactions in EEMG classrooms. Using assessments of program quality, family engagement, and children's learning and school readiness, the evaluators sought to provide state decision makers with data on Indiana's first formal efforts to support a high-quality early education system.

Our report is organized into the following sections:

- **EEMG Participants**, which provides an overview of the programs, classrooms, children, and families who provided and/or received early education services through EEMG funding;
- **Evaluation Methodology**, which outlines the evaluation design, data collection tools, and procedures that were administered by ECC;
- **Results**, which presents an analysis of the child, family, and program assessment data collected over the course of the year; and
- **Summary**, which offers a synopsis of key findings and possible implications for further investigation and discussion.

Early Education Matching Grant Evaluation Participants

Programs

The State of Indiana awarded 20 early childhood programs EEMG funding to provide early education opportunities to income-eligible children during prekindergarten program year 2 (2015-16). Table 1 presents the 20 EEMG-funded programs, the county they served, whether they provided full- or half-day services, PTQ level, the number of classroom teachers, and the number of children contracted to serve.

Table 1
EEMG-Funded Programs

Site	County	Services offered	PTQ level	No. of teachers	No. contracted
Apple Tree Child Development Center YMCA	Delaware	Full-time	4	1	14
Arlington Heights Elementary School	Monroe	Full Time	3	1	20
Busy Bees Academy	Bartholomew	Full-time	3	7	50
Child Study Center	Delaware	Part-time	4	1	4
El Campito	St. Joseph	Full-time	4	1	8
Elwood Elementary School	Madison	Part-time	3	2	24
Greater Clark Elementary Schools	Clark	Part-time	3	17	120
Huffer Memorial Children's Center	Delaware	Part-time	4	1	10
HUMmingbird Day Care Ministry Annex	Dubois	Both	4	2	25
Imagination Station @ Knapp Elementary School	LaPorte	Full-time	4	1	10
Pathfinder Kids Kampus	Huntington	Full-time	3	1	10
Rainbow's End Child Care Center	Harrison	Full-time	3	1	15
Right Steps Dennis Burton	Tippecanoe	Full Time	4	1	5
Right Steps Downtown	Tippecanoe	Full-time	4	1	5
Small World Learning Center	Vigo	Both	3	2	60
TRI-CAP Head Start - Jasper	Dubois	Full-time	3	1	10
United Child Care Center, Inc.	Vigo	Part-time	4	1	5
United Day Care Center of Delaware County, Inc.	Delaware	Full-time	4	1	15
Waterloo Discover Academy/DeKalb County School	DeKalb	Both	3	4	72
YMCA Learning Center	Ripley	Full-time	4	1	20

The 20 grantees proposed funding to support 61 classroom teachers who would serve 502 4-year-old children. Shortly after the start of the 2015-16 year, one program discontinued its involvement because of low enrollment, and four others reduced their number of classrooms, also due to low enrollment. The 19 remaining programs and their 47 classrooms represented a cross-section of Indiana's mixed delivery system and included 12 community preschool/child care providers, 5 public school preschools, 1 Head Start program, and 1 registered child care ministry. A majority of the programs offered full-day services (N=14) versus half-day services (N=5), with full-day programs serving 55.8% (N=225) and half-day programs serving 44.2% (N=178) of the children. About half of the participating programs were Level 4 PTQ (N=10), but more children were served in PTQ Level 3 classrooms (N=283) than in Level 4 classrooms (N=102). Due to the EEMG being in its second year, many programs were returning grantees (N=13). Programs were dispersed throughout the state of Indiana serving children across 14 counties, with most serving children in urban settings (N=13). The majority of programs (N=14) included both EEMG-funded and non-

EEMG funded children in their classrooms. Each program was comprised of 1-12 classrooms and served from 4 to 99 children.

Overall programs served 72% of their proposed EEMG enrollment capacity typically due to their inability to find, and thus fulfill, their contracted number of children. Reported reasons for low enrollment included:

1. difficulty with recruitment,
2. families choosing Child Care and Development Fund (CCDF) vouchers,
3. inadequate child find practices, and
4. low poverty threshold (below 100% of the federal poverty level) required for EEMG.

Children

Figure 1 shows enrollment of children receiving early education services supported by the EEMG program during the Year 2. The EEMG-funded programs proposed serving 502 children. Over the course of the year, the 19 programs had recruited and provided early education to a total of 403 children. Average monthly enrollment was 365 children, with a total of 43 children withdrawing from EEMG. By the end of the academic year, 326 of the 403 children enrolled (80.9%) received services for the entire 2015-16 year.

> *[Child's name] has had a lot of change in his life the past 4 months: moving into a new house, mom being in and out of the hospital, dad working 2nd shift.*

Figure 1
Enrollment in EEMG-Funded Programs (2015-16)

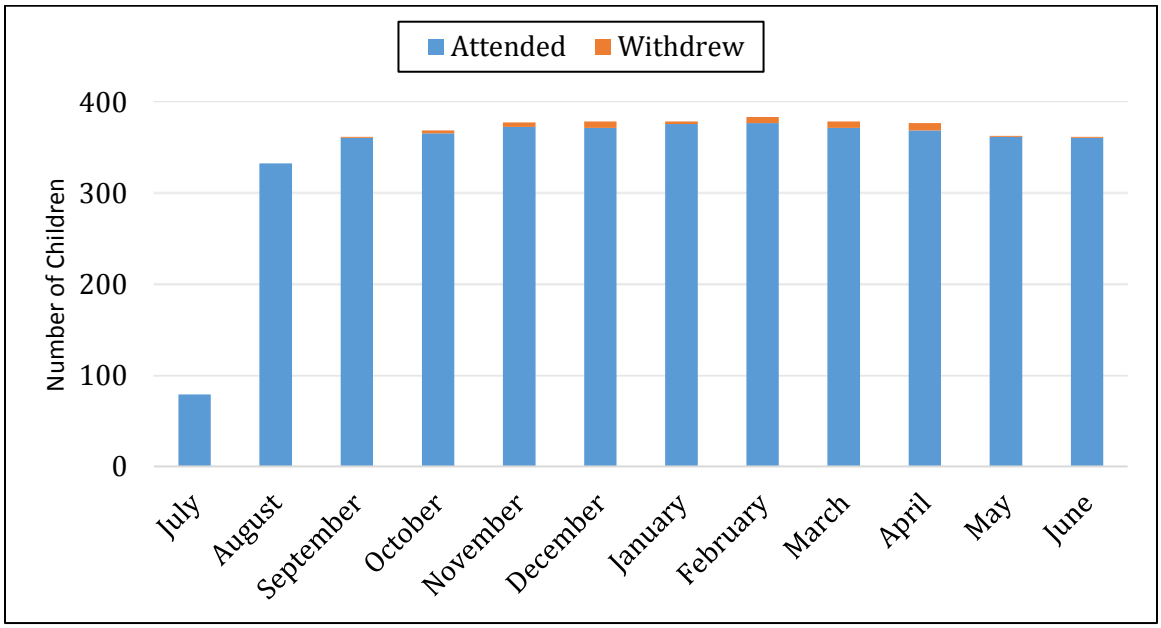


Table 2
Demographics of Children and Families Served by EEMG-Funded Programs

Demographic variable	% of children
Child's Gender	
Female	50.7%
Previous Early Childhood Experience	
No	52.2%
Child's Race	
White	65%
Two or more races	14%
Hispanic	13%
African American	7%
Other	1%
Child's Primary Language	
English	90.5%
Spanish	8.75%
Arabic	.75%
Developmental Concerns	
IEP and receiving special education	15%
Family expressed concerns	13%
Primary Caregiver's Marital Status	
Single parent	47.5%
Married	31.5%
Divorced	12.4%
Separated	8.6%
Primary Caregiver's Education	
No high school diploma	21%
High school diploma	30%
Some college, no degree	32%
College degree	17%
Primary Caregiver's Employment	
Unemployed	50%
Full-time employed	32%
Part-time/seasonal	18%
Primary Caregiver's Enrollment in Post-Secondary Education	
Full time	8%
Part time	6%

Table 2 provides demographic information on the children and families receiving EEMG-funded services as stated on EEMG enrollment forms. These forms were completed by all children's primary caregivers prior to entry into the program. ECC evaluators collected and entered enrollment data for all 403 children, although some enrollment forms were not fully completed.

The data show roughly equal numbers of boys (N=204) and girls (N=198). The majority of children served were White (65%) and English-speaking (90.5%). Fifteen percent of children were eligible for and receiving special education services, and an additional 13% of families expressed developmental concerns. The majority of children served had no prior early education experience (52.2%).

Families

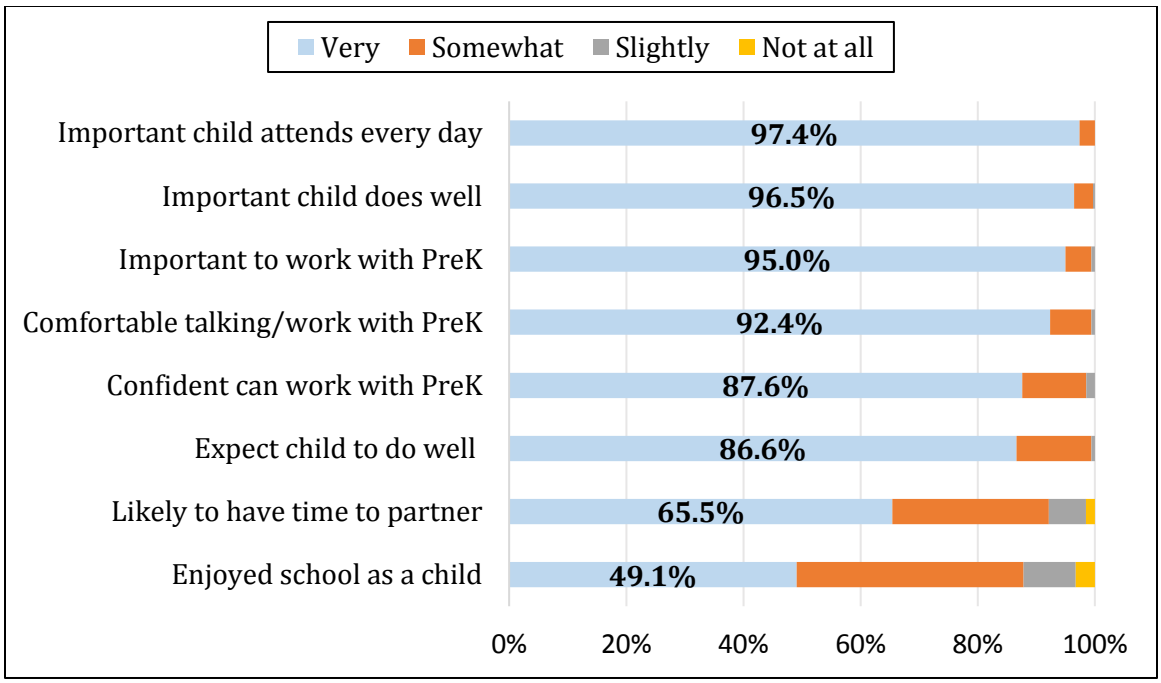
Families served through the EEMG were very low-income, earning less than 100% of the federal poverty level. The majority were single parent families (68.5%) and included those who were single, divorced, or separated. While most parents had a high school degree (79%) and college education (49%), a fifth of the families did not have a high school

degree and most parents were not enrolled in any post-secondary education programs (N=86%). Additionally, half of primary caregivers were unemployed while 32% were fully employed.

During the first month of school, families were asked to complete a short survey of their attitudes and expectations concerning preschool education. The results of that survey, presented in Figure 2, indicate that more than 90% of families reported feeling very positive about their ability to work with the preschool and felt confident that their child would do well in school. Although family responses were overwhelmingly positive for the majority of survey questions, two items had more variation. When asked about available time to partner with their child's preschool to help their child learn, family responses dropped to only 65.5% who stated that this was "very likely." Finally, less than half of the families reported enjoying school "very much" when they were children. This finding suggests that future EEMG programs may have more work to build trust and positive relationships with families.

One of the assessment picture prompts is an envelope. Next to the envelope is a dollar bill. A child became fixated on the dollar bill while saying, 'I know what that is, that is money. My Mom really needs that; I wish I had some.'

Figure 2
Family Attitudes and Expectations



Evaluation Methods

Sampling of children, classrooms, and programs

To examine the progress in learning and development demonstrated by children across EEMG programs, ECC evaluators conducted a random sample of children and classrooms. We included a total of 267 of the 361 (74.0%) children enrolled in the first month of school in the assessment sample, which represented all 19 programs and 35 of the 47 classrooms. Over the course of the year, 28 children withdrew from the EEMG program, leaving a final sample of 249 children for assessment and data analysis.

Assessment of program factors

The evaluators collected information concerning a number of program-level factors at the beginning of the 2015-16 year. We collected this information from two sources: general program information provided by the Indiana Office of Early Childhood and Out-of-School Learning (OECOSL); and completion of a short survey by program directors. Specifically, we collected information on the program's PTQ level (3 or 4); the type of program (e.g., center-based, public school, Head Start, or registered ministry); and program service day (half- or full-day). Additional information was collected regarding the program's curriculum and classroom staff's professional development and licensing.

Assessment of children's learning

As part of contract requirements, ECC staff administered three child assessment measures: the Peabody Picture Vocabulary Test–Fourth Edition (PPVT-4), the Bracken School Readiness Assessment–Third Edition (BSRA-3), and the Preschool and Kindergarten Behavior Scales–Second Edition (PKBS-2). We administered all three measures at the beginning of the prekindergarten program year (September 2015) and again at the end of the prekindergarten program year (May 2016). We asked teachers to complete the PKBS-2 after the first four weeks of school to ensure sufficient observations of children's social skills and behavior.

The PPVT-4 measures receptive language or vocabulary acquisition, which are important indicators of a child's linguistic and cognitive development and readiness for formal

school. The measure is norm-referenced, untimed, and was administered by a trained ECC evaluator to one child at a time.

The BSRA-3 tool is also a picture identification test focusing on foundational concepts necessary for academic readiness. The test measures skills in the recognition of colors, letters, numbers/counting, sizes/comparisons, and shapes. The BSRA-3 is norm-referenced, untimed, and was administered by a trained ECC evaluator with individual children. The PPVT-4 and BSRA-3 took approximately 20-25 minutes to complete for each child.

After completing an assessment, a boy asked, 'can I show my teacher how many letters I know?'

The third instrument, the PKBS-2, is a standardized, family and classroom teacher-report measure of children's social skills and problem behaviors. The Social Skills scale includes 34 items across three subscales: Social Cooperation, Social Interaction, and Social Independence. The Problem-Behavior scale includes 42 items across two subscales: Externalizing Problems and Internalizing Problems. The PKBS-2 takes parents and classroom teachers approximately 10-15 minutes to complete for each child.

A team of six experienced early childhood practitioners (two master's level speech language pathologists, three master's level early educators, and one bachelor's' level early educator) administered the PPVT-4 and the BSRA-3. All assessment team members reported that most children were willing and able to sit for the required length of time to complete each assessment instrument. ECC evaluators assessed a total of 242 children both in the fall and spring on both the PPVT-4 and the BSRA-3. Seven children had repeated absences that prevented assessment team members from completing final assessments.

The evaluators asked classroom teachers to complete the PKBS-2 for each of the sample children twice, once at the beginning of the school year prior to the end of the second month of school; and again in the spring prior to the end of the prekindergarten program year (May 2016). In addition, we asked classroom teachers to send the PKBS-2 forms home for all sample families to complete. Once families completed the PKBS-2, they returned the form to the classroom teacher who put them in a sealed envelope and gave them to their assessment team member. Fall and spring PKBS-2 forms were completed by 234 families and 244 classroom teachers.

Assessment of children's school readiness

As part of the legislation sponsoring the EEMG pilot, Indiana legislators mandated the use of the Indiana Standards Tool for Alternate Reporting of Kindergarten Readiness (ISTAR-KR) for assessing children's school readiness. The ISTAR-KR is a web-based instrument that is derived from Indiana's Early Learning Standards. It includes skills in five areas of learning: English/Language Arts, Mathematics, Physical Development, Personal Care, and Social-Emotional. The ISTAR KR is considered a standards-referenced, curriculum-based teacher rating measure where accuracy is dependent on effective and ongoing classroom teacher observation and documentation.

At the beginning of the evaluation, all EEMG program staff received training about ISTAR-KR from staff at the Indiana Department of Education (IDOE). All classroom teachers were asked to complete the ISTAR-KR two times: first by the end of the program's first six weeks of school (e.g., October 2015); and a second time at the end of the prekindergarten program year (May 2016). Initial and final ISTAR-KR assessments were completed for 229 children.

Assessment of family outcomes

ECC evaluators asked all sample families to complete a 15-item survey of family outcomes in the spring of 2016. ECC staff created this survey, drawing heavily from work done by the Indiana Early Learning Advisory Committee (ELAC) Family Engagement Workgroup. We created outcomes to align with the family engagement framework adopted by ELAC. Each of the 15 items fell into one of four focus areas: Families as Child's Primary Educators and Nurturers (7 items), Families as Connected and Supported Members of the Community (4 items), Families as Child Advocates and Leaders (2 items), and Families as Safe, Healthy and Self-Sufficient Caregivers (1 item). All 249 families in the EEMG sample group returned the family outcomes survey.

Assessment of classroom quality

In this study, ECC evaluators used two measures to assess classroom quality: the Classroom Assessment Scoring System (CLASS) (Pianta, LaParo & Hamre, 2004); and a review of classroom teachers' daily schedules. The CLASS focuses on teacher-child interactions that characterize children's classroom experiences. It measures the quality of interactions across three broad **domains** purported to support children's learning and development:

- **Emotional Support** captures how teachers help children develop positive relationships, cultivate enjoyment in learning, provide comfort in the classroom, and foster appropriate levels of independence.
- **Classroom Organization** focuses on how teachers manage the classroom to maximize learning and keep children engaged.
- **Instructional Support** involves how teachers promote children's thinking and problem solving, use feedback to deepen understanding, and support and facilitate the development of more complex language skills.

The CLASS is measured on a scale of 1 to 7. A score of 1 is *inadequate*, a score of 3 is *minimal*, 5 is considered *good*, and 6 is *excellent*. The scores are based on observer ratings of 10 dimensions within three domains. The first domain is Emotional Support, and includes four of the 10 dimensions: Positive Climate, Negative Climate, Regard for Student Perspective, and Teacher Sensitivity. The Classroom Organization domain consists of three dimensions: Behavior Management, Instructional Learning Formats, and Productivity. The third domain, Instructional Support, includes three dimensions: Concept Development, Quality of Feedback, and Language Modeling. Each of the 10 dimensions is rated according to observable behavior indicators.

The CLASS observation protocol consists of 30-minute cycles, during which the observer watches and records teacher-child interactions for 20 minutes followed by coding and scoring of the interactions for 10 minutes. This cycle is repeated 4-6 times. CLASS observers did not include outside activities (such as outdoor recess and gross motor times) or rest time in their formal observations. All other activities were coded. Classrooms were assessed using the CLASS measure in the late fall of 2015.

In addition to the CLASS, ECC staff requested the daily schedules from all classroom teachers serving children in our assessment sample. One staff person analyzed each classroom schedule to determine the number of minutes the classroom spent on each of the following activities:

- Small group instruction
- Large group instruction
- Snack/meal times
- Free choice/free play
- Basics, including transition, self-care, and rest times
- Recess/gross motor/outside time

To determine a total number of minutes of daily classroom time, we added all of the activities' times together.

Assessment of family engagement, including child attendance

All 19 programs participating in EEMG completed a 22-item family engagement program assessment. This assessment was developed by the ELAC Family Engagement Workgroup and was designed to provide guidance to programs around how to define family engagement. The framework also provides specific practices that constitute high-quality family engagement. The program assessment has four components that correspond with the four focus areas described in the ELAC framework. Each program assessment was completed in the spring with an evaluator to ensure full and consistent comprehension of the items across programs. Each of the 22 items received a rating on a scale from 1 (Entering) to 4 (Excelling).

A teacher reported that a student that had been absent several days and said, 'He has a pretty turbulent home life; he is staying with grandma right now but he doesn't always come to class when that happens.'

In addition to family engagement framework data, ECC evaluators collected attendance rates for each child enrolled in EEMG programs. In cases where attendance was missing for a particular child, attendance rates were calculated based on available data.

Statistical analyses

ECC evaluators calculated all demographic and descriptive statistics using Tableau, a data analysis and visualization software. We conducted all other statistical analyses with *R* (version 3.2.3). Independent t-tests were run on all differences to determine if the mean difference on any of the three tests and on ISTAR-KR scores were statistically zero (no difference). This tested the average growth of all children, independent of predictor variables. On all other tests examining the relationship between child growth scores and individual child, family, and program variables, we used a linear mixed model. In addition to the assessment scores that were treated as our dependent variables, the independent variables included: (1) Race, (2) Language, (3) Developmental Concerns, (4) Chronically Absent, (5) Program Length, (6) Classroom PTQ, (7) Class Organization, (8) Public School, (9) Emotional Support, (10) Teacher Concentration, (11) Time Percent as Group, (12) Family Enjoys School, (13) Family Partner Time, (14) Family as Educator, (15) Family as Member, (16) Family as Advocate, (17) Family as Safe, (18) Family Engagement [defined as the mean of 14-17 and never included simultaneously with 14-17], (19) Interaction between Time Percent as Group and Emotional Support, and (20) Interaction between Public School and Program Length.

Results

Children's learning

The ECC evaluators assessed children in the evaluation sample at the beginning and end of the EEMG 2015-16 year with the Picture Vocabulary Test–Fourth Edition (PPVT-4), Bracken School Readiness Assessment-3 (BSRA-3), and the Preschool and Kindergarten Behavior Scales-2nd edition (PKBS-2). We carried out independent t-tests to determine if the growth children experienced during their time in EEMG was significant across the three instruments. The measure, mean growth, t-statistic, and *p*-values are presented in Table 3.

Table 3
Mean Growth of Children's Learning in EEMG

Test	*M*	*t*	*p*
PPVT-4 Standard Score	4.47	t(35.15) = 6.24	< 0.001*
BSRA-3 Standard Score	8.52	t(50.17) = 8.61	< 0.001*
PKBS-2 Home Problem Behavior	-0.12	t(45.4) = -0.09	0.927
PKBS-2 School Problem Behavior	-0.06	t(48.25) = -0.04	0.97
PKBS-2 Home Social	2.90	t(29.24) = 3.35	0.0022*
PKBS-2 School Social	6.59	t(48.28) = 4.31	< 0.001*

**p<.01*

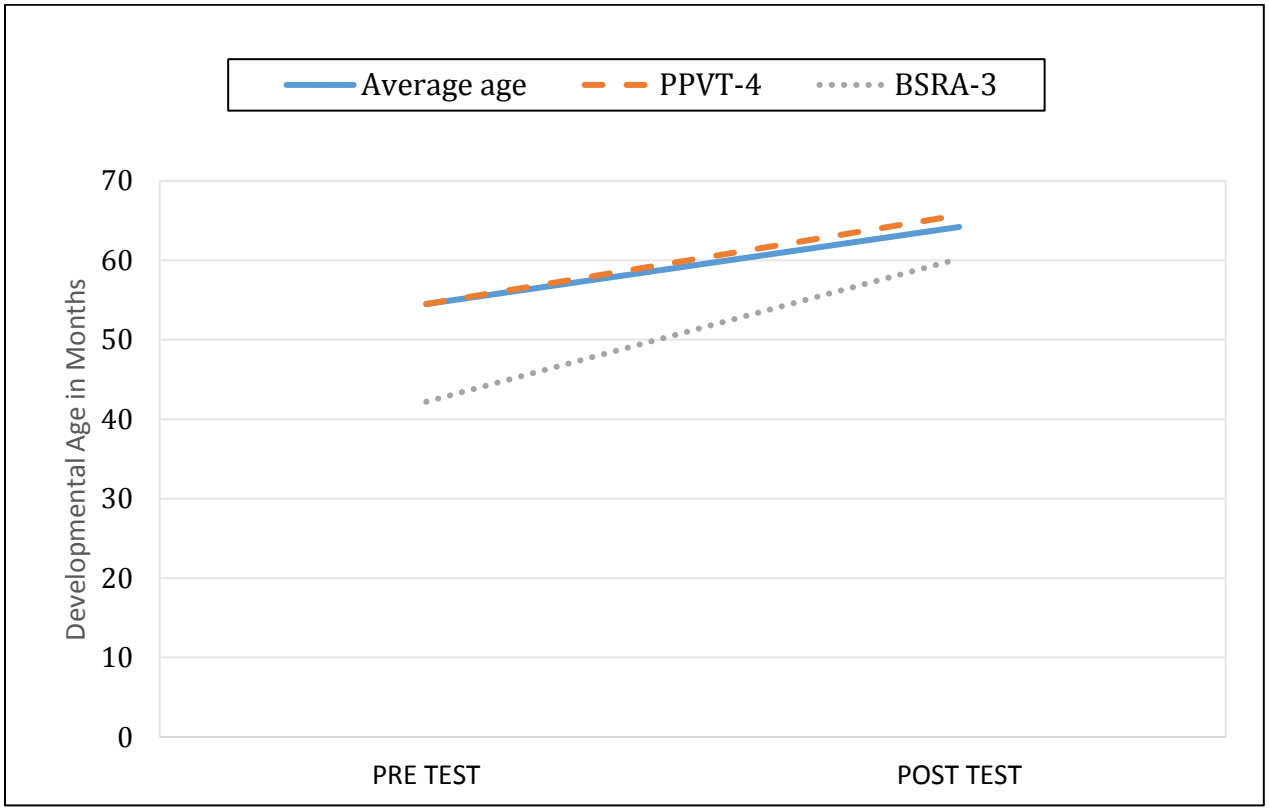
On average, children in EEMG programs made significant gains in all areas of learning measured by the three assessment instruments. Children experienced a significant increase in their receptive language/vocabulary development as measured by the PPVT-4; a significant increase in their concept learning, as measured by the BSRA-3; and significant growth in their social development, as measured by the PKBS-2. The one exception was the Problem Behavior Scale of the PKBS (both home and classroom reports), which did not reflect similar gains. It should be noted that the negative mean growth scores for the PKBS Problem Behavior Scale is a positive outcome, indicating a decline in the number of problem behaviors observed and reported. Because most children did not display a great number of problem behaviors, finding nonsignificant growth is not surprising. We ran additional analyses for children whose initial PKBS Problem Behavior scores were high and placed them at moderate to high risk for behavioral concerns. When independent t-tests were calculated, this particular group of children showed significant growth in decreasing their problem behaviors by the end of the 2015-16 year (t=-3.086, df=51, *p*<.005).

> *[Child] has become a lot more aware of his feelings. He has started talking more about how he feels instead of lashing out. I have seen a great change in his behavior during this year of preschool. He controls himself a lot better now [*more*] than ever.*

ECC evaluators converted both the PPVT-4 and the BSRA-3 scores to age-equivalent scores. This allowed us to see how well children were performing based on their chronological age. Figure 3 uses these scores to highlight children's improvement. On average, children in our EEMG sample were at age level at the start of the school year on the PPVT-4, but they were significantly delayed in their concept learning (BSRA-3). During the 2015-16 year, children made significant gains that exceeded typical rates of learning when compared with the rate expected for children in general. Based upon the growth in receptive language as measured by the PPVT, children learned at a rate 1.15 times greater than children their own age and a rate of 1.86 times greater in their concept learning—nearly double. While children on average were slightly delayed in their concept learning at the end of the EEMG program, their rate of learning significantly exceeded typical rates of learning and development.

When expressing to the child how much vocabulary he had learned this year, he said, 'You know how come I know all these words? Cuz my teacher taught them to me!'

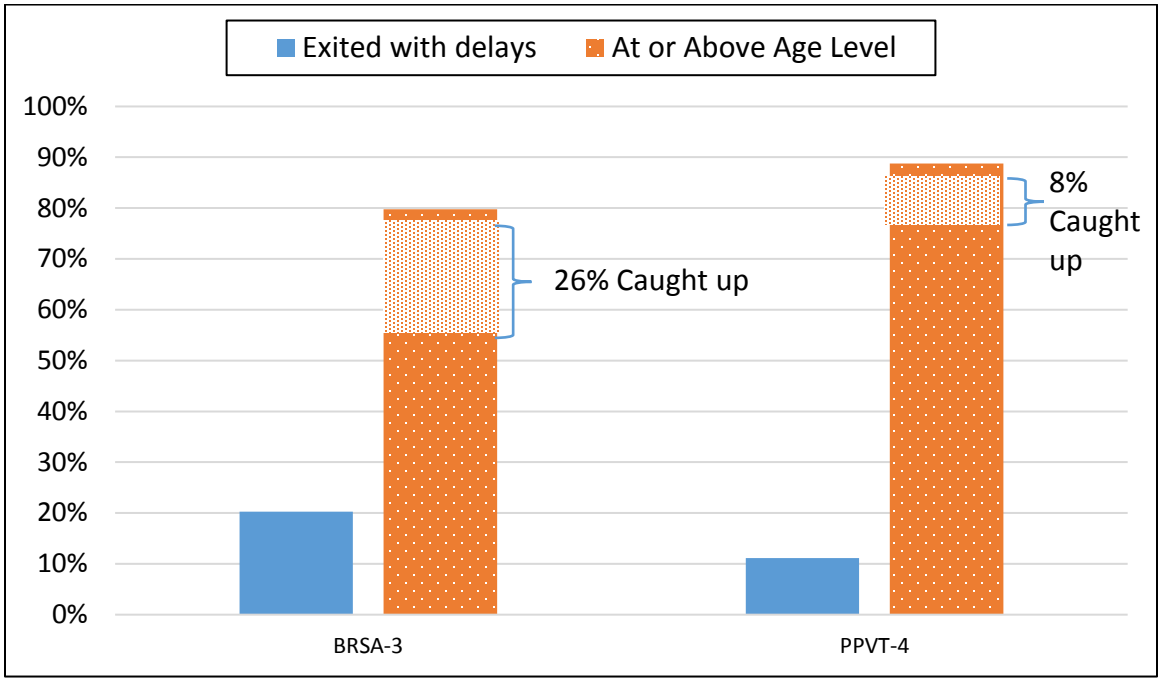
Figure 3
Children's Average Learning Gains on PPVT-4 and BRSA-3



Another way of approaching the learning outcomes of children based on these two measures is to look at overall developmental outcomes at the end of the 2015-16 year—the percentage of children who are functioning at a level equivalent to same-age peers (see Figure 4). At the end of the year, the vast majority of children were demonstrating receptive language skills (88.8%) and concept learning skills (79.8%) equivalent to their same-age peers. Eight percent of children who began the

year delayed in their receptive language skills were able to accelerate their learning and *catch up* to their same-age peers; this was also true for 26% of children in the area of concept learning.

Figure 4
Developmental Status at Final Assessment (BSRA-3 and PPVT-4)



School readiness

Classroom teachers in all programs completed the ISTAR-KR, a teacher rating measure of children's learning and development reflective of Indiana's early learning standards. This measurement tool represents this evaluation's effort to determine children's school readiness for kindergarten. All EEMG programs were required to enter initial and exit child assessments into the ISTAR-KR online system for all children. ISTAR-KR assessment data were entered for 229 children in our assessment sample of 249. ECC evaluators carried out independent t-tests to determine if the growth children experienced during their time in EEMG was significant across three of the ISTAR-KR domains: English/Language Arts, Mathematics, and Social-Emotional. The other two domains (Physical, Personal Care) were not included because they do not include skills that measure development past 4 years of age. Table 4 presents a summary of the analyses.

Table 4
Mean Growth of Children's School Readiness in EEMG

ISTAR-KR domain	*M*	*t*	*p*
English/Language Arts	18.8	t(205) = 15.73	< 0.001*
Mathematics	19.2	t(205) = 15.84	< 0.001*
Social-Emotional	7.3	t(205) = 10.8	< 0.001*

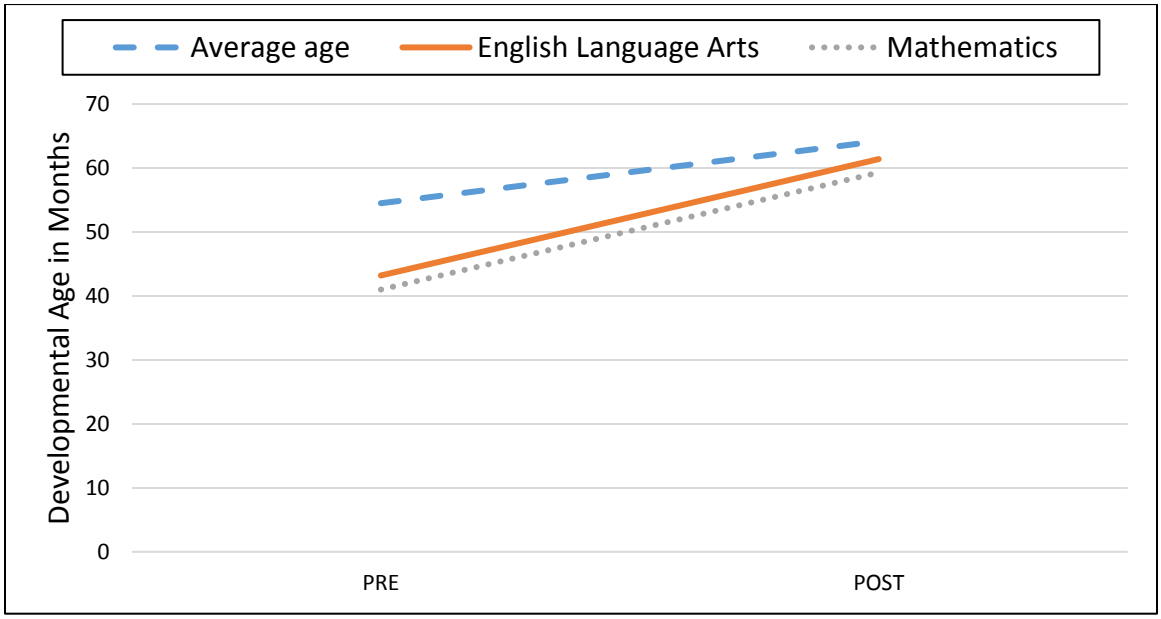
**p<.001*

On average, children in EEMG programs made significant gains in all three ISTAR-KR domains. In the area of English/Language Arts, children demonstrated an average gain of 18 months during the 9.7-month EEMG program. This means that children gained an average 1.9 months of development in their early literacy skills for every month they were in the program. This contrasts with their rate of learning prior to EEMG, in which children demonstrated significant delays and demonstrated gains of 0.8 months for each month of life. This progress was also true for math skills, with children demonstrating an average 19-month gain (1.98 months gained/program month) during the EEMG program. Children's prior rate of learning in mathematics was also significantly delayed and amounted to an average of 0.75 months gained for each month prior to EEMG (M=54 months). Finally, while gains in children's social-emotional development were significant, the average growth measured by the ISTAR-KR for this domain (M=7.3 months) is less than half of the growth in the other two domains. This finding has less to do with children's actual gains in social development and more to do with a limitation of the ISTAR-KR tool in that it measures few skills beyond 4 or 5 years of age. Therefore, it is easy for children to *top out* in this domain and not demonstrate their full growth.

Because ISTAR-KR scores are expressed as age equivalence scores (month's development) ECC evaluators are able to deduce how well children were performing based on their chronological age. Figure 5 shows these scores to highlight children's improvement. As discussed above and

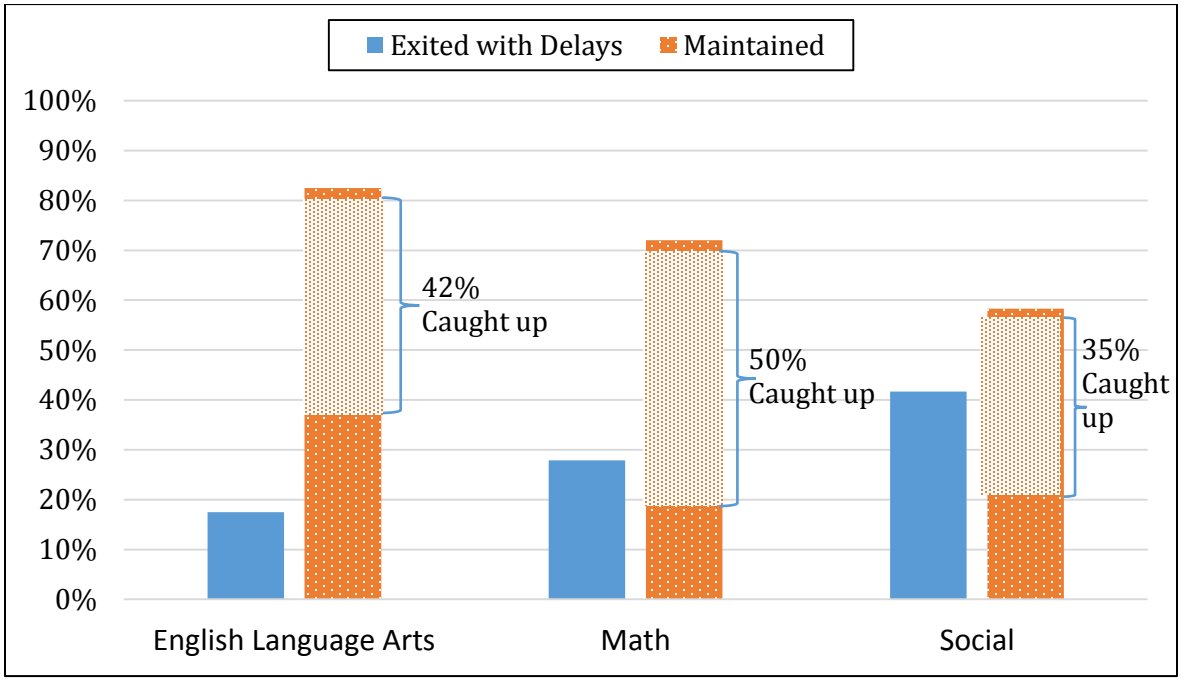
highlighted here, children began EEMG showing delays of 11 months or more in both domains. During the 2015-16 year, children made significant gains that exceeded typical rates of growth and demonstrated, on average, age-appropriate (within 3-4 months) literacy and math skills.

Figure 5
Children's Rates of Learning in ISTAR-KR Literacy and Math



As was done earlier for the PPVT and BSRA assessments, ECC evaluators also reviewed children's learning outcomes for the three ISTAR-KR domains. This involved examining overall developmental outcomes at the end of the 2015-16 year—the percentage of children who are functioning at a level equivalent to their same-age peers (see Figure 6). At the end of the year, a large majority of children demonstrated both early language and literacy skills and early math skills (82.5% and 72.0%, respectively) equivalent to their same-age peers. A large percentage of children who were showing delays at the start of the school year caught up in both English Language Arts and Mathematics (42% and 50% of children, respectively). Finally, although the majority of children acquired all skills in the Social-Emotional domain (58.3%), almost 42% were still missing key social skills.

Figure 6
Developmental Status at Final Assessment (ISTAR-KR)



A review of the individual skill threads that make up the three ISTAR-KR domains identified several school readiness skills frequently missing among exiting EEMG children who were delayed in those domains. We show these in Table 5.

Table 5
Most Frequently Missed Skills Among Children with Delays in ISTAR-KR

ISTAR-KR domain and thread	ISTAR-KR skill
Social Domain	
Responsibility	Follows rules, completes tasks, helps.
Problem solving	Searches for solutions, finds alternatives.
Approaches to learning	Tries difficult tasks, maintains attention.
Manages emotions	Solves conflicts, identifies own feelings.
English Language Arts Domain	
Comprehends details	Retells stories and answers questions.
Uses print	Follows words left-right, tells story with book.
Math Domain	
Sorting and classifying	Groups like objects, predicts next item.
Counting and quantity	Uses numbers to compare, counts to 10.
Time	Sequences and explains events over time.

Family outcomes

ECC evaluators measured family outcomes by asking all sample families to complete a 15-statement survey tool indicating their level of agreement with a series of outcome statements. Table 6 presents the 15 outcome statements, organized by the four focus areas of ELAC's family engagement framework, the percentage of families who *Agreed* or *Strongly Agreed* that they had experienced the individual outcomes, and the percentage of families who indicated that the program had helped them accomplish the outcome.

On average, a large number of families expressed *agreement* or *strong agreement* for most outcomes. More than 90% of families agreed or strongly agreed with 8 of the 15 statements. The first focus area—*strengthening families as child's primary educator and nurturer*—saw high agreement for the first four items in Table 6, including the use of positive parenting skills, communicating in preferred language, sharing information with their child's teacher, and trying things at home. This percentage shrank significantly, however, for outcomes in this focus area that required families to spend time in the classroom (e.g., participating in classroom activities and volunteering in the classroom).

Table 6

Percentage of EEMG Families Expressing Positive Family Outcomes and Program Assistance

Outcome statement	% of families	% program helped
Family as child's primary educator and nurturer		
Used positive parenting	97%	93%
Communicated in preferred language	95%	93%
Shared information with teachers	91%	94%
Tried things at home	91%	94%
Participated in activity in classroom	67%	78%
Shared family information with classroom	55%	68%
Volunteered in classroom	34%	60%
Family as connected, supported members of the community		
I have transition information I need	95%	94%
I know how to child transition to kind	94%	94%
I engage with new families to offer support	54%	68%
I reach out to other families for support	52%	68%
Family as child advocate and leader		
Expressed concerns to teacher/program	82%	91%
Expressed opinions to teacher/program	78%	90%
Family as safe, healthy and self-sufficient caregivers		
Find resources I need for health and safety	94%	85%
Find resources I need for learning, development, and behavior	94%	94%

For the second focus area—*families as connected, supported members of the community*—families reported feeling confident about having

the information and skills to assist in their child's transition to kindergarten, but proportionally fewer families reported connecting with other families to give or receive support.
The third focus area— *empowering families as child advocates and leaders*—received relatively high scores across the two items, although approximately 20% of families did not express concerns or opinions to their preschool program.

Finally, the fourth focus area—*supporting families as safe, healthy, and self-sufficient caregivers*—measured two items, both highly rated by families. More than 90% of families reported being able to find the resources they need to provide a safe and healthy environment for their families and to support their child's learning and development.

Classroom quality
Results from two measures of classroom quality are presented below: average classroom scores on the CLASS; and the average amount of time children spent in various classroom activities.

Table 7 presents information on CLASS scores for the 35 EEMG classrooms that were part of the evaluation sample. On average, the 35 EEMG classrooms received a score of 6.03 on Emotional Support, with scores ranging from a low of 4.13 to a high of 6.81. The classrooms scored an average of 5.47 for Classroom Organization with a low of 3.83 and a high of 6.58. Finally, EEMG classrooms scored an average of 2.74 on the Instructional Support domain, with a low of 1.33 and a high of 5.0.

Table 7
CLASS Scores for EEMG Classrooms

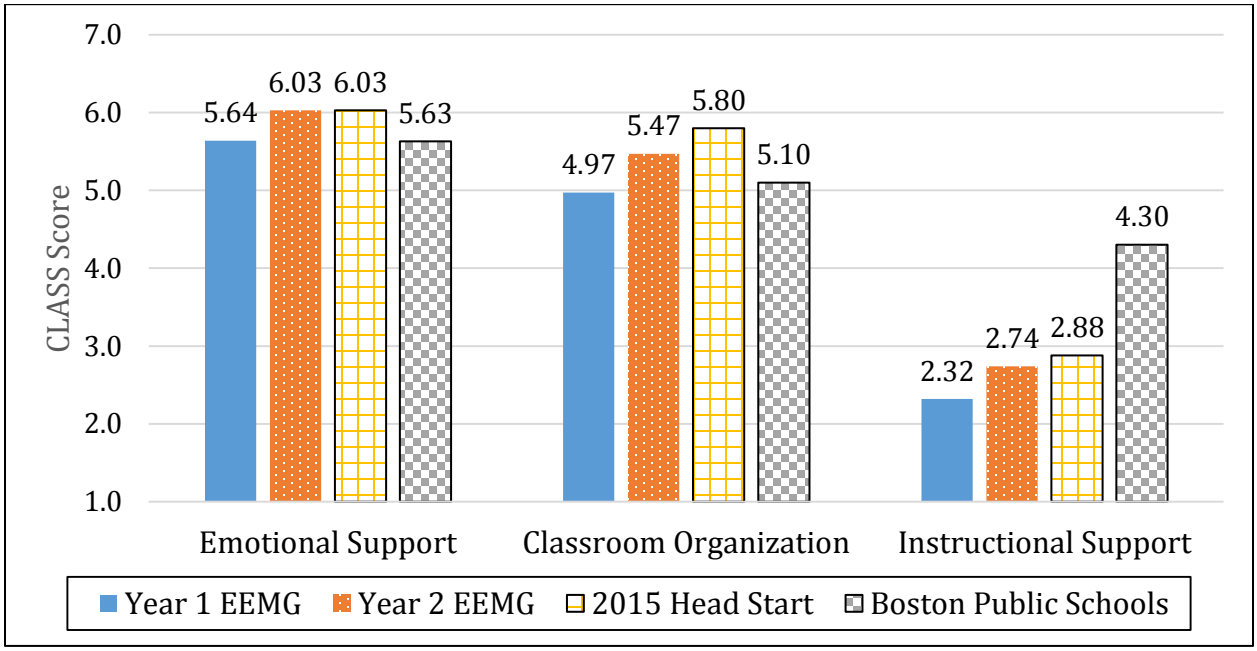
CLASS domain and dimension	*Mean*	*Standard Deviation*	Low	High
Emotional Support	6.03	0.64	4.13	6.81
Positive climate	6.42	0.81	3.50	7.00
Negative climate	6.71	0.48	5.25	7.00
Teacher sensitivity	5.62	0.76	4.00	7.00
Regard for student perspectives	5.39	0.95	2.75	6.75
Classroom Organization	5.47	0.82	3.83	6.58
Behavior management	5.81	0.98	3.75	7.00
Instructional learning formats	4.92	1.04	2.25	6.75
Productivity	5.68	0.91	3.25	7.00
Instructional support	2.74	0.95	1.33	5.00
Concept development	2.51	0.99	1.25	5.00
Quality of feedback	2.87	1.09	1.25	5.25
Language modeling	2.84	1.00	1.25	5.00

As was found in Year 1, EEMG Year 2 teachers demonstrated strong Emotional Support (6.03) on average, providing children with a positive and nurturing climate in which to learn. EEMG Year 2 teachers also scored well in Classroom Organization (5.47), offering classrooms with clear rules and

expectations along with varied and engaging activities during learning times. The domain of Instructional Support continues to challenge EEMG teachers in general. While scoring slightly better than Year 1 teachers, Year 2 EEMG teachers scored in the low range in this domain (2.74). This domain focuses on teacher interactions that teach critical thinking skills and provide a language-rich environment for children to expand their vocabulary and reinforce concepts.

When we compare EEMG Year 2 CLASS scores with EEMG Year 1 programs and national programs, this group of classroom teachers compares well in the domains of Emotional Support and Classroom Organization. Figure 7 provides the CLASS scores for Years 1 and 2 of the EEMG Program, along with the 2015 national Head Start scores and the scores from a nationally recognized prekindergarten program—Boston Public Schools. Both Emotional Support and Classroom Organization scores for the EEMG Year 2 classroom teachers is comparable to scores from Head Start programs throughout the country and slightly better than scores from the Boston Public Schools (Weiland, Ulvestad, Sachs, & Yoshikawa, 2013). Instructional Support scores are better than Year 1 EEMG programs, comparable to Head Start programs nationally, but significantly below the scores from the Boston Public Schools, a large prekindergarten program that research has shown to have a large and significant impact on children's learning and school readiness.

Figure 7
CLASS Scores from EEMG, Head Start, and Boston Public Schools



A second classroom quality measure ECC evaluators implemented was an analysis of classroom schedules that were coded to determine the amount of time children spent in the following activities: free play/centers, whole group instruction, small group instruction, basics (e.g., rest time, bathroom), meals/snacks, and recess/outside play. We calculated time spent in each activity each day. An assumption was made that the classroom activities approximated the actual amount of time

spent in each activity. Table 8 depicts the reported time that, on average, children spend in each activity in the 46 classrooms.

Table 8
Time Children Spend in Typical Prekindergarten Activities

	Full day		Half day	
Activity	Time (mins.)	% of day	Time (mins.)	% of day
Basics (rest, bathroom)	132.5	31.3%	22.7	14.4%
Free Choice/centers	120.2	28.4%	41.9	26.5%
Snack/meals	58.4	13.8%	20.6	13.0%
Recess/outside	50	11.8%	23	14.5%
Small group	28	6.6%	15.3	9.7%
Whole group	53	12.5%	34.7	21.9%
Total	422.8		158.1	

Children in full-day classrooms spent an average 423 minutes in school, compared with 158 minutes for children in half-day classrooms. Children in full-day classrooms spent almost a third of the day in *basics*, including rest time, bathroom and other personal care breaks, and transitions. Both full- and half-day classrooms spent about a fourth of their time in *free choice or child-directed* times. *Instructional* time, including small and whole groups in which teachers guided the activity, occurred only 19% of the time in full day classrooms compared to 32% of the time for half-day classrooms. Unlike current research on evidence-based early education and the Boston Public School programs (Weiland & Yoshikawa, 2013), EEMG classrooms were generally not characterized as "implementing explicit, intentional, and uniform curricula across classrooms" (p. 2,114) with a majority of class time spent on non-instructional activities.

Impact of program and classroom factors

The evaluators constructed a linear mixed model to determine if any program or classroom factors were significantly associated with changes in any of the four child outcome measures (PPVT-4, BSRA-3, PKBS-2, and ISTAR-KR). These analyses yielded few significant relationships that could be used to guide program improvement in Indiana.

Length of day and program quality. Table 9 highlights two major comparisons made in the different types of programs participating in EEMG: Level 3 and 4 programs under the State's Paths to Quality rating system and half-day versus full-day programs. We found no difference in child outcomes between full-day and half-day programs. Half-day programs were as effective as full-day programs in bringing about child outcomes across all measures, with children in half-day programs making slightly greater but not significant gains on average.

When comparing programs based on PTQ levels, ECC evaluators found only one significant difference: children in Level 3 programs gained more math skills as measured by the ISTAR-KR compared with children in Level 4 programs (F (1,38.13) = 5.49, *p*=0.0245). Children in Level 3 programs tended to experience greater gains in ISTAR-KR social skills, but this difference was marginally significant (F (1,35.13) =3.68, *p*=0.063). Generally speaking, Level 4, National Association for the Education of Young Children (NAEYC)-accredited programs were no better or worse than Level 3 programs in bringing about greater impact on children's learning and school readiness. More often than not, children in Level 3 programs made slightly greater (but non-significant) gains.

Table 9
Program Factors and Impact on Child Outcomes

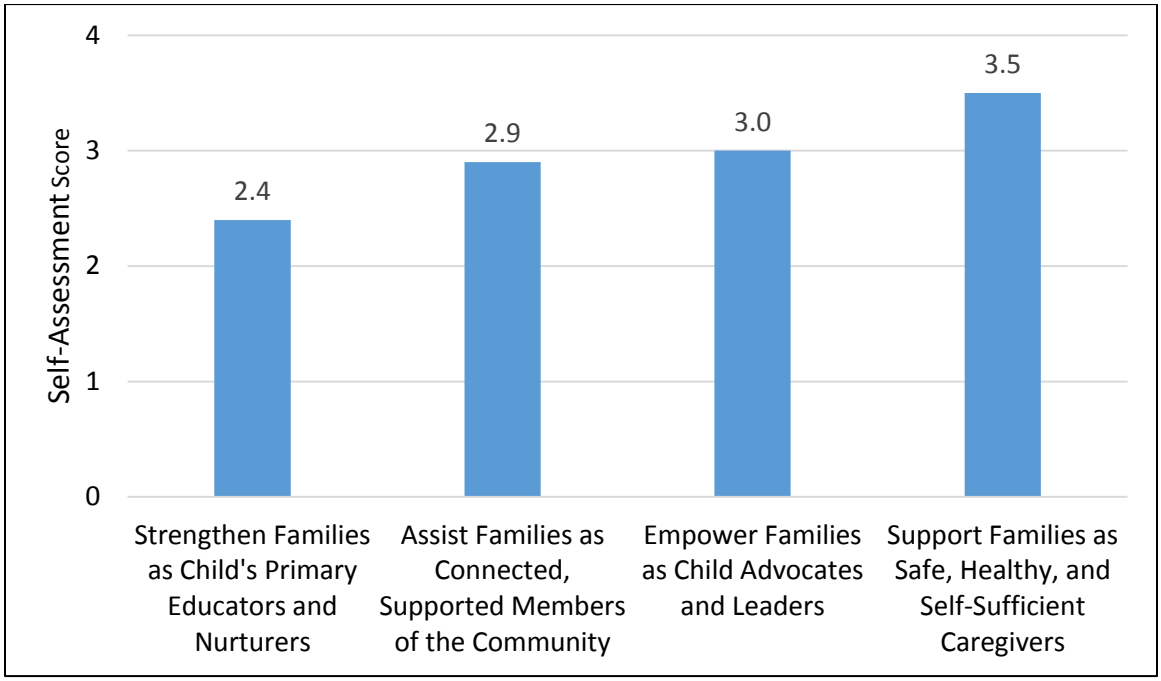
Test	PTQ Level 3	PTQ Level 4	Full day	Half day
PPVT-4	5	4.3	3.5	6.5
BSRA-3	9.6	7.1	8.2	9.6
PKBS Home Social	2.2	4.3	3	2.8
PKBS School Social	7.9	5.8	7.6	6.9
ISTAR-KR ELA	19.4	15.7	17.9	18.8
ISTAR- KR Math	20.1*	14.9*	17.7	19.7
ISTAR- KR Social	7.8	5.5	6.4	8.0
N	165	77	137	105

**p<.05*

Family engagement practices. Another program measure the evaluators examined was the relationship between program's self-reported family engagement practices based on ELAC's Indiana Early Childhood Family Engagement Toolkit and child outcome measures. We averaged the family engagement program assessment items across each of ELAC's four focus areas, and Figure 8 shows the average score for each. (The range is: 1=entering; 2=emerging; 3=progressing; 4=excelling.)

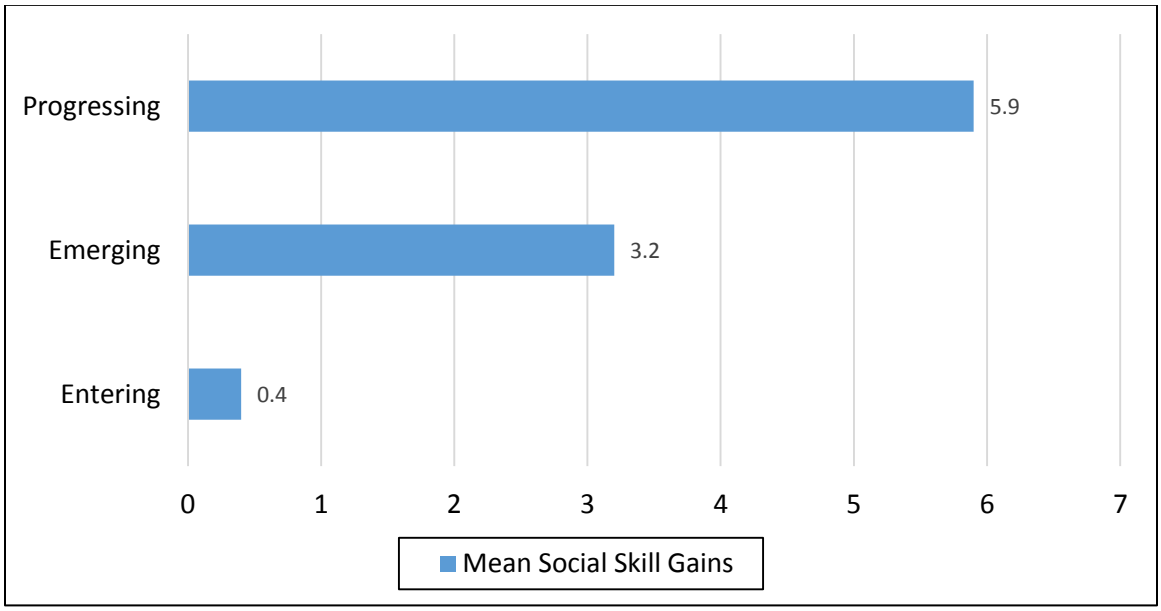
Interestingly, programs report doing the best for the fourth focus area—supporting families as safe, healthy, and self-sufficient caregivers. This is also the briefest focus area (only three items). Programs also report doing well with the third focus area—empowering families as child advocates and leaders. They report the lowest average score for the first focus area—strengthening families as child's primary educators and nurturers—which is, anecdotally, the focus area with which preschool teachers and directors report feeling most comfortable.

Figure 8
Family Engagement Self-Assessment Scores on ELAC Focus Areas



ECC evaluators found one association between the family engagement program assessment and child outcomes—when programs reported a higher level of assisting families as connected, supported members of the community, teachers reported increased social skills for children on the PKBS (see Figure 9).

Figure 9
Social Skill Gains in the Focus Area of Assisting Families Community Members



Classroom attendance. Across all participating EEMG programs, children attended an average of 91.7% of scheduled school days. While this measure of overall attendance may seem promising, it is important to note that 34.7% of children were chronically absent. Chronic absenteeism occurs when a child attends school less than 90% of the time. Although the literature suggests strong relationships between child learning outcomes and classroom attendance, the evaluators found *marginally significant* relationships for three child outcome measures. When children were chronically absent, classroom teachers reported a slight increase in problem behaviors (PKBS) ($F(1, 181.6) = 3.66$, $p = 0.058$) and slightly fewer gains in social skills (PKBS) ($F(1, 183) = 3.73$, $p = 0.055$). Finally, chronic absenteeism attributed to fewer gains in children's concept learning as measured by the BSRA-3 ($t = 1.83$, $p = 0.069$).

Classroom quality. Children in higher-quality classrooms showed significant improvement in decreasing problem behaviors as measured by the PKBS-2. Parents reported significant declines in problem behaviors in classrooms with higher scores in the CLASS domain of Classroom Organization ($F(1, 36.55) = 6.3$, $p = 0.0166$). Both parents and teachers reported fewer behavior issues in classrooms with higher scores in the domain of Instructional Support (Parents- $F(1,29.38) = 6.63$, $p=0.015$; Teachers- $F(1,38.25) = 6.24$, $p=0.0169$). For each point increase in Classroom Organization, the evaluators found a decrease of 3.59 points on the parent PKBS-2 behavior ratings. Similarly, for each point increase in Instructional Support, we found a 3.13 decrease in points on the PKBS-2 parent behavior ratings and a 3.46 decrease in points on the teacher PKBS-2 behavior ratings. In addition, higher amounts of classroom time spent on group instructional activities (small and whole group instruction) were related to significant declines in problem behaviors ($F(1, 41.16) = 6.74$, $p=0.013$). Lastly, children in classrooms with higher scores in the domain of Emotional Support tended to show greater gains in concept learning as measured by the BRSA-3 ($F(1, 47.9) = 2.94$, $p = 0.09$), but this difference was marginally significant.

In summary, our analyses of classroom activities and interactions found:

- In classrooms with increased classroom organization, parents reported fewer behavior difficulties.
- In classrooms with increased levels of instructional support, parents and teachers reported fewer behavior difficulties.
- When more time was spent in teacher-led small and whole group instructional activities, children's behavior improved as reported on the teacher PKBS-2 rating scales.

Summary

ECC's evaluation of Year 2 (2015-16) of Indiana's Early Education Matching Grant Program yielded several results that may assist local and state decision makers. We organize results below into three sections: children's learning, family engagement, and classroom practices. While reviewing the results, please remember that the design of the evaluation does not allow conclusive determination that all changes in learning and family engagement are due to the EEMG program. This design did not include a control group nor did it randomly assign children to EEMG classrooms.

I have watched him grow rapidly in this program and I am very thankful he was able to participate.

Children's learning

On average, children in EEMG programs made significant gains in areas addressed by all assessment/measurement tools employed in this evaluation. Children made significant gains in:

1. Receptive language learning as measured by the Peabody Picture Vocabulary Test–Fourth Edition (PPVT-4);
2. Concept development as measured by the Bracken School Readiness Assessment–Third Edition (BRSA-3);
3. Social skills as measured by the Preschool and Kindergarten Behavior Scales–Second Edition (PKBS-2); and
4. Language, literacy, mathematics, and social-emotional skills as reported by teachers on the Indiana Standards Tool for Alternative Reporting of Kindergarten Readiness (ISTAR-KR).

At the start of the EEMG 2015-16 year, 22% to 49% of the children showed delays in their receptive language (PPVT) and concept development (BSRA), respectively. These numbers were more than halved by the end of the program (11.2% and 20.2%, respectively). These changes in children's developmental status were also captured in the ISTAR-KR measures. At the beginning of the 2015-16 year, 46.3% children were delayed in two or more English/Language Arts skill areas, 67.7% were delayed in two or more Mathematics skills areas, and 61.4% were delayed in two or more Social-Emotional skill areas. By the end of the 2015-16 year, these numbers were reduced to 17.5%, 28%, and 42%, respectively.

ECC evaluators used two measures to assess social-emotional outcomes. ISTAR-KR assesses social-emotional skills across five threads: sense of self and others, manages emotions, interpersonal skills, responsibility, and problem solving. The PKBS measures both social skills and problem behavior. The PKBS social skills subscale looks at skills

across three areas including social cooperation, social interaction, and social independence. Both the ISTAR-KR and the PKBS are rated by teachers. Our results revealed that teachers reported a large percentage of children (42%) were missing skills that should be acquired by all 5-year olds (ISTAR-KR). On the other hand, they reported little concern with children's social skill development on our other measure (PKBS). Why the discrepancy? Most broadly, for children to be at-age level in each of the five ISTAR-KR social domains, they must display several discrete behaviors. The PKBS looks more widely at social skills, and it usually does not specify if the child needs to complete tasks independently or with adult help/direction. For example, the PKBS may use items such as "follows rules" whereas on the ISTAR-KR, to meet age-appropriate standards, they must display eight specific behaviors that indicate that they apply rules to situations. It may be important to determine how well teachers are able to assess social-emotional skill and how well their current curricula emphasize children directly learning these skills.

While the evaluators found significant variation among programs and classrooms, we found no significant differences between programs that offered full- versus half-day programming. We also found few differences among programs based on their PTQ ratings. Children enrolled in PTQ Level 3 classrooms made larger gains in the math domain on the ISTAR-KR than did children in PTQ Level 4 classrooms. Although only marginally significant, children in Level 3 classrooms made more gains in their social development as well, as measured by the ISTAR-KR. These findings suggest important policy implications going forward.

While it is widely known that classroom quality affects learning, our findings found few

significant relationships between our child learning and school readiness measures and our measures of classroom instruction and quality. All significant findings were related to significant decreases in problem behavior over the EEMG 2015-16 year. Classrooms with higher scores across the CLASS domains of Classroom Organization and Instructional Support saw decreases in teacher- and parent-reported problem behaviors. In addition, classrooms that spent proportionally more time in teacher-directed group instruction showed greater improvements in behavior over the 2015-16 year.

Family outcomes and family engagement

On average, EEMG families reported that they felt supported and empowered by their child's preschool program. ECC evaluators measured family outcomes across four focus areas. Across these areas, the items that families agreed with most involved parent education and resource sharing. Families were less likely to endorse items that addressed their likelihood to participate or volunteer in the classroom, express concerns with their child's teacher, engage with other EEMG families, and share family information with their child's classroom. Although parents rated these items low, they generally reported that their child's program was helpful in those domains.

EEMG programs indicated that they were either progressing or excelling across three of the four ELAC family engagement toolkit focus areas. They reported the lowest average score for the focus area, strengthening families as child's primary educators and nurturers. Although preschool teachers and directors reported feeling most comfortable with the latter focus area, the data show they are having a difficult time executing practices that truly strengthen families as their child's first teacher.

The analyses revealed that when programs reported a higher level of assisting families as connected members of the community (an ELAC focus area), teachers reported increased social skills over the EEMG 2015-16 year. Other than this finding, our evaluation did not discover strong relationships between higher levels of family engagement and children's learning. This contradicts what other researchers have found. It may be that implementing evidence-based family engagement practices is relatively new for many early childhood programs, or that participants are overstating the level of engagement that is actually occurring. Recent efforts by ELAC and its Family Engagement Workgroup may assist programs in carrying out higher-quality family engagement practices in the future.

Classroom quality

The evaluators administered the Classroom Assessment Scoring System (CLASS) to examine the quality of teacher's interactions with children and also collected classroom schedules to explore how EEMG children spend their program day. On the CLASS, most EEMG teachers fell in the high range in their Emotional Support of children, with an average score of 6.03 out of 7. Most classrooms showed positive classroom climates with a presence of warm, respectful connections; an absence of expressed negativity; an awareness of and responsiveness to children's needs; and an emphasis on children's interests and growth in responsibility.

EEMG classroom teachers were more mixed in terms of their Classroom Organization skills, with many teachers falling in both the mid and high ranges (average score of 5.47). While many teachers exhibited strength in behavior management and productivity, several were not as strong in the dimension of Instructional Learning formats. This means that the teachers' skills in effectively facilitating lessons, fostering student interest, and having clear learning objectives were not observed as often.

As is true for most preschool programs, EEMG classrooms teachers generally fell in the low range of CLASS Scores for the Instructional Support domain, with an average score of 2.74. Classroom teacher interactions typically failed to ask questions and engage children in rich conversations that asked children to think deeply about ideas and connect them with what they already know and to their own experiences.

After examining classroom schedules, the evaluators found that children were exposed to a wide range of activities, but they spent the majority of their time in free choice, basics, and group learning environments. As expected, full-day children spend significantly more time in activities coded as “basics,” which include nap time, waiting in line, and restroom breaks. ECC evaluators conducted additional analyses to determine if the amount of time spent in certain activities predicted changes in children’s learning. The evaluators found that teachers reported significant decreases in problem behavior in classrooms where children spent more time in group instruction.