Virginia Preschool Initiative Plus (VPI+)

Final Evaluation Report

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Contents

Overview

The Virginia Preschool Initiative Plus (VPI+) provided high-quality preschool that included a comprehensive set of supports to thousands of at-risk 4-year-olds and their families to ensure they received rich learning opportunities that would put them on a successful path as they entered kindergarten.

In January 2015, the Virginia Department of Education (VDOE) in the Commonwealth of Virginia was awarded a 4-year federal Preschool Development Grant (PDG) to expand high-quality preschool programs for at-risk 4-year-olds in 11[1] of Virginia's 132 school divisions[2] that ranked highest in need on key indicators. Virginia was one of 18 states that received PDG funds to increase access to high-quality preschool.

Key Findings

- VPI+ increased access to high-quality preschool in Virginia by serving more than 5,000 children in 13 school divisions across 4 years.
- VPI+ teachers received about 3 hours of coaching per month. More than 80% of teachers reported that coaches provided practical suggestions for improving their teaching and 75% reported that coaching changed their practice.
- Teacher-child interaction quality improved over time as evidenced by Classroom Assessment Scoring System (CLASS®) scores, showing that a significantly higher percentage of teachers met *Virginia Quality* thresholds for the instructional support domain in Year 3 than Year 1 (59% versus 39%).
- Overall, two thirds of children who participated in VPI+ entered kindergarten ready to learn. VPI+ participation increased school readiness skills based on a rigorous impact study with large impacts on literacy skills, medium impacts on self-regulation and math skills, and small impacts on vocabulary skills.
- In the year between enrolling in VPI+ and beginning kindergarten, participating children developed more than 15 months of mathematics skills and more than 20 months of literacy skills in a 12-month time frame.
- Children who participated in VPI+ demonstrated substantially higher early literacy scores at the beginning of kindergarten than children who did not attend VPI+. However, the magnitude of this difference was smaller at the end of kindergarten and no longer significantly different by the spring of first grade. This is consistent with the findings from other examinations of the impacts of preschool on children's cognitive skills.
- School division leaders attributed successful implementation to hiring qualified staff, having adequate funding, and gaining buy-in from other division leaders and school principals about the value of high-quality preschool.

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[1] Findings on who participated in VPI+ includes information about student enrollment in two school divisions that were added in the 2017–2018 school year (Year 3), but these divisions did not participate in the evaluation and therefore are not represented in any of the findings in other sections of this report.
[2] Virginia uses the term "division" rather than "district."

Since the PDG grant augmented Virginia's existing state-funded Virginia Preschool Initiative (VPI), Virginia named the work being carried out through its PDG grant the Virginia Preschool Initiative Plus (VPI+). This evaluation report examines VPI+ program implementation and impacts across the 4 years of the initiative (beginning in the 2015–2016 school year and ending in the 2018–2019 school year).

Evaluation questions

The evaluation focused on the following five questions:

(1) **Who participated in VPI+?** How many children were served in VPI+ classrooms and what are their characteristics?

(2) **Did VPI+ classrooms and programs meet the high-quality standards of VPI+?**

- To what extent did VPI+ classrooms provide high-quality teaching and learning environments: (1) developmentally appropriate classrooms, (2) well trained and compensated teachers, (3) ongoing observation and feedback of teaching, and (4) supports for children outside of the classroom?

- How was high-quality VPI+ implementation supported? What coaching did VPI+ teachers receive? What professional development (PD) did VPI+ coaches and administrators receive?

(3) **Did VPI+ improve school readiness skills and outcomes?**[3] What percentage of VPI+ children were ready for kindergarten? Did VPI+ impact participating children's school readiness skills and outcomes? What are the longer-term outcomes for VPI+ participants?

(4) **What factors supported and challenged successful implementation?** What lessons were learned that can inform similar efforts?

Methods

SRI used a variety of data sources to learn about VPI+ implementation and impacts. These included: (1) extant data on student demographic and enrollment characteristics, teacher and program characteristics, and ratings from classroom and teacher quality observations; (2) logs on local coaching delivered and interviews with coaches; (3) summaries of technical assistance and training sessions provided by state partners to VPI+ coordinators[4], coaches, and family engagement coordinators; (4) interviews and surveys with VPI+ coordinators; (5) surveys of VPI+ teachers; and (6) direct assessments of children and teacher-completed checklists to

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[3] Findings about how much school readiness skills increased for children in VPI+ classrooms during preschool (i.e., from fall to spring) overall and by subgroups are presented in the spring formative reports (2016, 2017, and 2018) and the summer annual reports (2016, 2017, and 2018). http://vpiplus.org/report/annual.php
[4] VPI+ coordinators were responsible for managing and coordinating programming, services, curriculum implementation, and coaching for VPI+ classrooms for the division.

measure outcomes in the areas of language and literacy, mathematics, approaches to learning, social and emotional development, and physical well-being and motor development.[5]

Findings

Who participated in VPI+?

During the 4-year grant, the VPI+ program served more than 5,500 children in 13 school divisions. As planned, the number of 4-year-olds participating in VPI+ high-quality preschool slots in high-need communities across Virginia increased each year. In Year 3, VDOE added two more school divisions to the initiative. Exhibit 1 shows the total number of enrolled children for each division for each year and overall, totaling 5,566 children enrolled in newly opened VPI+ classrooms.[6] In addition to the 5,566 children enrolled in newly opened VPI+ classrooms, 7,759 children were enrolled in existing state-funded VPI classrooms that enhanced their quality with PDG funds; however, these children were not included in the evaluation and are not described in this report.

VPI+ served a culturally and linguistically diverse population, with about half the children identified as Black or African American and about one-fourth as dual language learners. Children were only eligible for VPI+ if their families' incomes were at or below 200 percent of the Federal Poverty Level (FPL) and they met the age criteria – 4 years old by September 30th of their preschool year. More than half of enrolled children were from households living in poverty (at or below 100% of the FPL), ranging from 53–66% across the 4 years of the initiative. Three-fourths of mothers of VPI+ children reported having completed high school (ranging from 75–77% across years). According to family enrollment forms, about half of the children were Black or African American (ranging from 46–55% across years), around a quarter were Hispanic (ranging from 24–29%), and less than one fifth were White (ranging from 14–18%). Most children spoke English at home; however, about one fourth to one third of children (ranging from 26–32% in any given year) were dual language learners who spoke a language other than English at home (typically Spanish). Approximately 7–9% of VPI+ children were identified as having a disability or delay and had an Individualized Education Program (IEP) at some point during the preschool year.

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[5] Additional details about the VPI+ evaluation methodology are provided in a technical report, available upon request.
[6] There were two types of VPI+ classrooms: 1) New VPI+ classrooms which refer to newly-opened VPI+ classrooms that implement all of the VPI+ grant requirements, and 2) VPI Improved classrooms which refer to existing state-funded VPI classrooms that enhanced their quality by implementing at least one of five program quality enhancements.

Exhibit 1.   Number of VPI+ classrooms and children, Years 1, 2, 3, and 4

School Division	Year 1 (2015–2016)		Year 2 (2016–2017)		Year 3 (2017–2018)		Year 4 (2018–2019)		Total # of Children Enrolled
	# of Classrooms	# of Children Enrolled December 2015	# of Classrooms	# of Children Enrolled December 2016	# of Classrooms	# of Children Enrolled December 2017	# of Classrooms	# of Children Enrolled December 2018	
Brunswick County	1	11	2	29	2	29	2	24	93
Chesterfield County	9	143	10	160	10	160	13	206	669
Fairfax County	4	68	5	88	5	87	5	85	328
Giles County	2	33	2	36	2	36	2	36	141
Henrico County	54	364	53	358	53	346	53	323	1,391
Norfolk City	10	141	11	188	8	106	9	136	571
Petersburg City	5	69	5	58	4	72	4	71	270
Prince William County	8	143	11	199	12	214	12	217	773
Richmond City	9	136	11	160	11	165	11	117	578
Sussex County	2	20	2	25	2	27	2	26	98
Winchester City	6	102	6	105	6	95	6	100	402
SUBTOTAL	110	1,230	118	1,406	115	1,337	119	1,341	5,314
Frederick County*	--	--	--	--	3	54	3	54	108
Virginia Beach City*	--	--	--	--	3	54	5	90	144
TOTAL	110	1,230	118	1,406	121	1,445	127	1,485	5,566

* Frederick County and Virginia Beach City were added in Year 3 and not included in the VPI+ evaluation.

For Henrico County, yearly enrollment numbers include children in the 43 existing classrooms with blended funding (e.g., VPI+, Title 1 or Head Start) that were brought up to VPI+ standards.
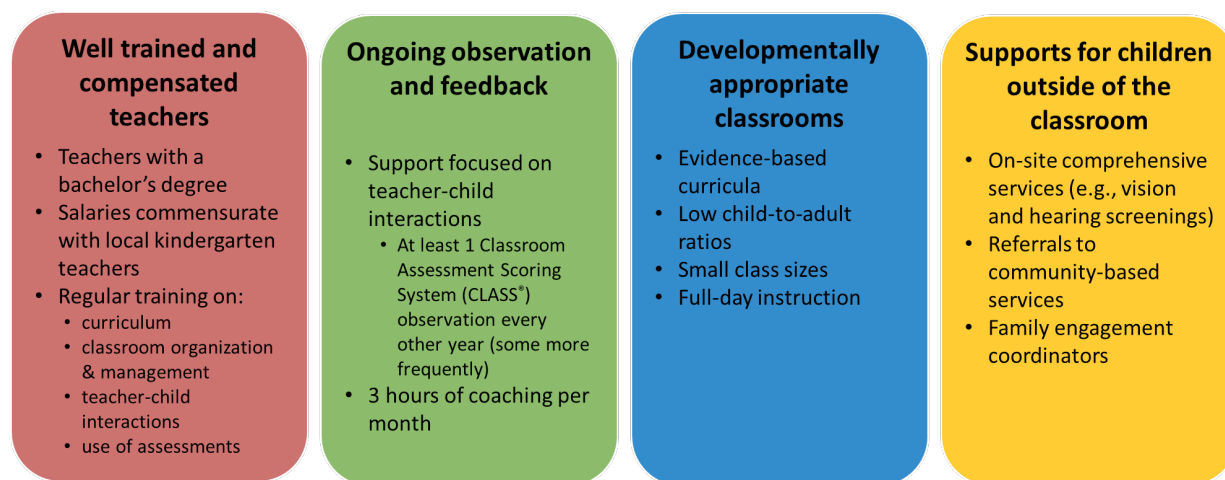
During Years 3 and 4, VPI+ programs enrolled a lower proportion of children living in acute poverty and a higher proportion of dual language learners compared with Years 1 and 2. While all VPI+ children were from low-income families (200% or less of the FPL), the percentage of VPI+ children at or below 100 percent of the FPL decreased in Years 3 and 4 (56% and 53%, respectively) as compared with Years 1 and 2 (67% and 63%, respectively). When the evaluation team asked program staff what might have caused the decrease in proportion of children living in poverty, two division coordinators discussed how public housing units had closed in their communities, potentially decreasing the number of VPI+-eligible families in this poverty category. Other coordinators were surprised by this decrease as they reported following similar outreach methods across years and believed they were serving similar populations.

VPI+ programs enrolled a higher proportion of dual language learners in Years 3 and 4 (32% and 29%, respectively) as compared with Years 1 and 2 (26% and 26%, respectively). One division coordinator explained that they recruited more non-English speaking families in the latter years of the initiative because they hired a part-time bilingual family engagement coordinator who more effectively targeted the Hispanic community. Another division coordinator shared that there was a large influx of non-English speaking families in the community due to employment opportunities related to agriculture (e.g., apple farming and chicken processing). Each division worked hard to meet the changing needs of children and families in their community by developing flexible outreach strategies and adapting as necessary.

Did VPI+ classrooms and programs meet the high-quality standards of VPI+?

The goal of VPI+ was to provide high-quality preschool experiences to more children across Virginia who were living in low-income households. To help ensure a high-quality experience, VPI+ required implementation of four preschool program components that research demonstrates are important for children's learning and development: (1) well-trained and compensated teachers, (2) ongoing observation and feedback of teaching, (3) developmentally appropriate classrooms, and (4) supports for children outside of the classroom (Exhibit 2).

Exhibit 2.   VPI+ programs are designed to provide a high-quality preschool environment within four components:

Well trained and compensated teachers	**Ongoing observation and feedback**	**Developmentally appropriate classrooms**	**Supports for children outside of the classroom**

• Teachers with a bachelor's degree
• Salaries commensurate with local kindergarten teachers
• Regular training on:
  • curriculum
  • classroom organization & management
  • teacher-child interactions
  • use of assessments
	• Support focused on teacher-child interactions
	  • At least 1 Classroom Assessment Scoring System (CLASS®) observation every other year (some more frequently)
	• 3 hours of coaching per month
		• Evidence-based curricula
		• Low child-to-adult ratios
		• Small class sizes
		• Full-day instruction
			• On-site comprehensive services (e.g., vision and hearing screenings)
			• Referrals to community-based services
			• Family engagement coordinators

At the beginning of the initiative, VDOE and its partners established a set of high-quality components to be implemented in new VPI+ classrooms. Research has identified certain practices and indicators within these four components as important for providing high-quality early learning experiences for children (Yoshikawa et al., 2013). In the next section, we describe the critical practices and structures associated with each component that guided VPI+ implementation. We also provide context from the research literature for why these components, practices, and structures provide high-quality early learning experiences for children. We then present findings on implementation of the four components across the 4 years of VPI+.

Well-trained and compensated teachers

To ensure the quality of VPI+ classrooms, VPI+ teachers were required to have a bachelor's degree and salaries commensurate with those of local kindergarten teachers. VPI+ teachers were also expected to receive a minimum of 30 hours each year of professional development (PD) on providing supportive early learning environments and teacher-child interactions, implementing curricula, using formative assessments, promoting school readiness learning domains and instruction, and other relevant topics.

Why teacher training, qualifications, and salary parity matter

Preschool teachers need high-quality PD and support to continue to improve and tailor classroom experiences for children. There is some evidence that training on early childhood curricula and practices is linked to enhanced interactions with children (e.g., Clarke-Stewart, Vandell, Burchinal, O'Brien, & McCartney, 2002; Dickinson & Caswell, 2007). Researchers also have found that pairing teacher training opportunities with ongoing feedback and support through coaching (as described below) can help lead to changes in teacher practice (Sheridan, Edwards, Marvin, & Knoche, 2009).

Employing teachers who have, at a minimum, a bachelor's degree is a research-based standard commonly used by high-quality early education programs (Barnett, Carolan, Squires, & Clarke-Brown, 2014). Some researchers have found that teacher education/certification is only weakly and inconsistently linked with the quality of teachers' interactions with children and children's early learning (e.g., Early et al., 2006; Early et al., 2007; LoCasale-Crouch et al., 2007; Pianta, Whittaker, Vitiello, Ansari, & Ruzek, 2018), whereas others have found that teacher education and years of experience matter, especially in mixed-age early childhood classrooms with diverse student needs (Ansari & Pianta, 2019; Purtell & Ansari, 2018). These findings suggest that teachers with greater qualifications may possess the knowledge and skills that can better prepare them to serve diverse groups of children. Although more research is needed to fully determine the relationship between teacher education and early learning, VDOE required VPI+ teachers to have a bachelor's degree to align with the federal grant's definition of qualified teachers. Recent work has also found that the use of salary parity policies is linked to higher salaries for preschool teachers and higher spending per child. There is also evidence suggesting that programs with salary parity generally have higher quality standards (Barnett & Kasmin, 2017).

VPI+ teacher education, salary parity, and teaching experience

Nearly all VPI+ teachers had a bachelor's degree and salaries that were generally commensurate with local K–12 teachers. Across the four years, nearly all teachers (99%) had a bachelor's degree and 55 percent had a master's degree or higher. The average annual salary for a VPI+ teacher was $49,976, with salaries ranging from $35,505 to $95,671. The average annual salary for VPI+ teachers was about $5,841 lower than that of K–12 teachers in Virginia, which may have been because VPI+ teachers had fewer years of teaching experience in a school division than their K–12 colleagues.

In Year 1, about one-third of VPI+ teachers had no preschool teaching experience before VPI+. However, in Years 2, 3, and 4, nearly all VPI+ teachers had prior experience teaching in preschools (97%, 92%, and 90%, respectively), in large part because many had taught in a

VPI+ classroom during the first year. The percentage of teachers with 4 or more years of experience increased from Year 1 to Year 4 (47% in Year 1 to 77% in Year 4).

Training on formative assessments, curricula, and school readiness learning domains and strategies

Overall, VPI+ teachers received more than 40 hours of professional development per year on the use of formative assessment and the curricula in Years 1–3, with hours of training decreasing in the final year of the initiative. In Year 1, teachers received a median of 60 hours of PD through coaching and training on GOLD™ formative assessments and on their respective curriculum. In Year 2, the median was 44 hours, in Year 3 it was 58 hours, and in Year 4 it dropped to 20 hours. This decrease in training hours in the final year may be attributed to a decrease in need for PD. Most coaches and teachers identified fewer areas to focus on in the last year and therefore reduced the amount of time spent in coaching. Additionally, coaches may not have logged all hours in the final year as consistently as they had in previous years.

VPI+ teachers received training on how to collect GOLD™ formative assessment data and how to use these data to inform their instruction. In Year 1, nearly all teachers (98%) reported receiving training on GOLD™, yet this percentage decreased to 91 percent in Year 2, 87 percent in Year 3, and 77 percent in Year 4 (Exhibit 3). Overall, the median number of hours of PD on GOLD™ fluctuated, with more training provided in Years 1 and 3 (median of 6.5 and 6 hours, respectively) than in Years 2 and 4 (each with a median of 3 hours). This may reflect that divisions did not perceive two consecutive years of intensive training on GOLD™ as necessary. The amount of training provided on GOLD™ was similar for new and returning VPI+ teachers.

Most teachers received substantial PD on their division's curriculum during the first year of implementation, with significantly less training in subsequent years. In the first year of the initiative, 83 percent of teachers reported receiving training on using their curriculum (Exhibit 3), and the majority of teachers (68%) were implementing their program's curricula for the first time. The median number of hours of training on a division's curriculum was 7.5 hours. There was a sharp decline in the amount of training in Years 2 and 3, in which teachers reported receiving a median of 1 hour of training each year. However, in Year 4, the largest school division adopted a new curriculum and their teachers received a median of 6 hours of PD. The significant amount of training in this large division accounts for the increase across divisions in the percentage of teachers who received curriculum training in Year 4 (85%) and an uptick in the median number of hours of training (5.5 hours). In addition, teachers new to VPI+ in Years 2–4 consistently reported a higher median number of hours of PD on the division's curriculum than returning VPI+ teachers (Exhibit 3), indicating that throughout the course of the initiative, divisions provided more support for teachers who were using a curriculum for the first time.

Exhibit 3.   *Percentage of teachers who received professional development (PD) on GOLD™ and the curriculum, and median number of hours of support*

	Year 1 n = 108	Year 2 n = 99			Year 3 n = 102			Year 4 n = 109		
	All teachers	All teachers	Returning teachers	New teachers	All teachers	Returning teachers	New teachers	All teachers	Returning teachers	New teachers
PD on GOLD™ Formative Assessment										
Percentage of teachers who received PD	98%	91%	89%	100%	87%	73%	90%	77%	74%	88%
Median number of hours of PD for the year	6.5	3.0	3.0	6.0	6.0	6.0	6.0	3.0	3.0	3.5
PD on Curriculum										
Percentage of teachers who received PD	83%	56%	74%	88%	56%	52%	80%	85%	84%	92%
Median number of hours of PD for the year	7.5	1.0	0	4.0	1.0	0.3	2.5	5.5	4.3	7.5

Most teachers reported receiving PD in the school readiness learning domains of language and literacy and social-emotional development and on instructional strategies focused on supportive environments and teacher-child interactions. VPI+ teachers reported participating in PD delivered in a variety of formats, including in-person training sessions, online modules, webinars, and coaching, and from an assortment of sources (e.g., PALS program at the University of Virginia, Erikson Institute's Early Math Collaborative, Pyramid Model, Virginia Early Childhood Foundation, and National Early Childhood Inclusion Institute). VPI+ teachers most often reported participating in PD focused on supporting language and literacy (ranging from 85–91% of teachers across the four years), social-emotional development (79–90%), and mathematics (65–75%). Generally, in Years 1 through 3, a lower percentage of teachers reported receiving PD focused on science (51%–59% across years) and the arts (38–50%), but more teachers reported receiving PD on these topics in Year 4 (68% and 69%, respectively). VPI+ teachers also reported receiving PD focused on a variety of instructional strategies, with the highest percentage of teachers reporting they received PD about practices focus on supportive environments (ranging from 80–95% of teachers across years), teacher-child interactions (81–92%), classroom organization and management (68–86%), and supporting children with challenging behavior (73–79%). There was a sharp increase in the

percentage of teachers who reported receiving PD focused on working with children with special needs in Years 3 and 4 (from 29% in Years 1 and 2 to 41% in Year 3 and 50% in Year 4).

The majority of VPI+ division coordinators reported that state-supported PD and technical assistance on curriculum implementation, teacher-child interactions, and using formative assessments was very useful for informing their local division's practices. At the end of the initiative, the majority (8 of 11) VPI+ division coordinators reported that the support they received from state partners on implementation of an evidence-based curriculum and on teacher-child interactions was "very useful". Over half the coordinators (6 of 11) reported that technical assistance from state partners on using formative assessment to inform instruction was "very useful".

Ongoing observation and feedback

In addition to trainings through workshops and conferences, VDOE partnered with state partners and program leaders to ensure VPI+ teachers received ongoing observation and feedback. In particular, VECF rated VPI+ classroom quality in Years 1 and 3 against benchmarks from Virginia's quality rating and improvement system (QRIS), *Virginia Quality*, including CLASS® observations. State partners helped program leaders and coaches to use observation data to provide teachers with effective coaching and feedback to maintain and improve positive teacher-child interactions.

Why teacher observation and feedback matters

Among all PD opportunities for teachers, instructional coaching offers some of the most individualized inputs based on cycles of observation, implementation, self-reflection, evaluation, and feedback (Sheridan et al., 2009). There is strong evidence that coaching can improve the quality of teaching practices among early childhood teachers (Neuman & Cunningham, 2009). Moreover, experimental evaluations of practice-based coaching models, including those used by some VPI+ divisions, have proven this type of coaching to be effective. For example, a study of MyTeachingPartner found improvements in the quality of teacher-student interactions in preschool (Early, Maxwell, Ponder, & Pan, 2017; Pianta, Mashburn, Downer, Hamre, & Justice, 2008), and a study of the Pyramid Coaching Model found it led to improvements in children's social behavior (Hemmeter, Snyder, Fox, & Algina, 2016).

VDOE made significant investments in PD focused on ongoing observation and feedback of teaching and classroom. This included supports for VPI+ coordinators and coaches to help them in conducting classroom observations and providing feedback to teachers. VDOE required divisions to have a local coach and adopt an evidence-based coaching model. The Center for Advanced Study of Teaching and Learning (CASTL) at the University of Virginia
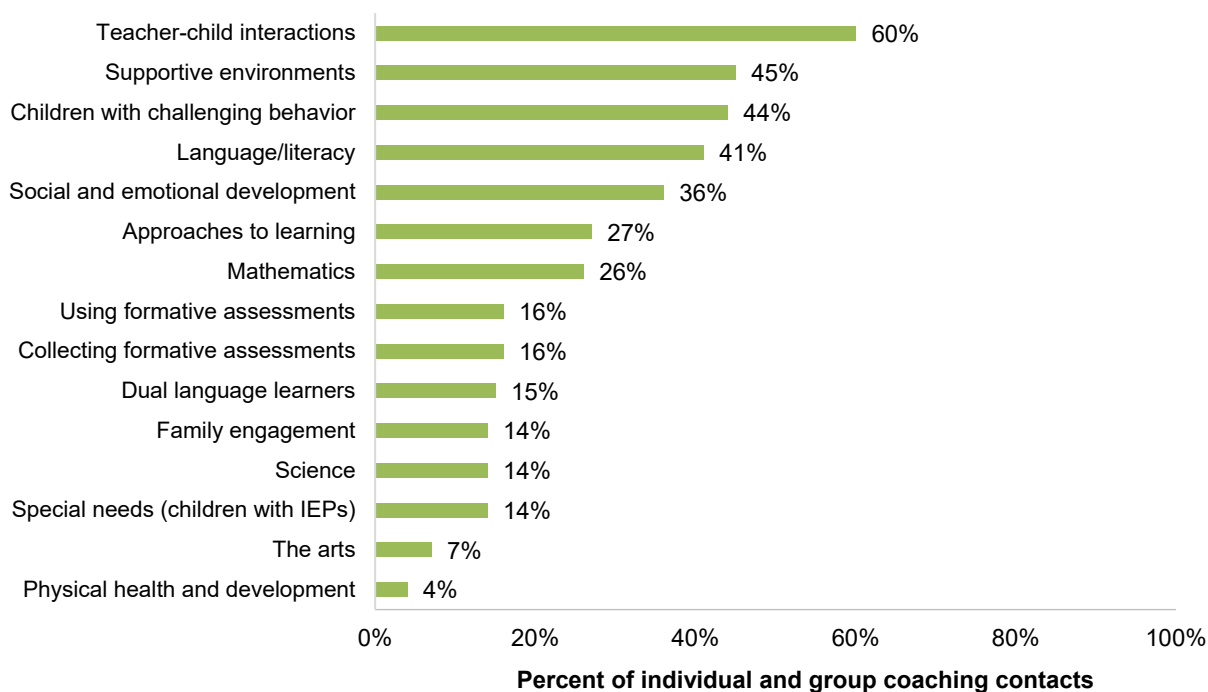
provided all VPI coaches with training using the practice-based coaching framework. VPI+ coaches were tasked with helping teachers implement evidence-based curricula and to engage in effective teacher-child interactions and individualize instruction based on formative assessments. In addition, the Virginia Early Childhood Foundation (VECF) provided training on use of Virginia's QRIS, including CLASS® and the Early Childhood Environment Rating Scale (ECERS-R) to guide program improvement efforts. Coaches individualized the focus of coaching based on areas of growth co-identified by the coach and teacher and the CLASS® observation ratings in Years 1 and 3.

VPI+ teachers received, on average, 3 hours of coaching per month split across approximately two coaching sessions. About two-thirds (68%) of coaching contacts over the 4 years were with individual teachers with or without children present, and about one third (32%) of coaching contacts were with groups of teachers.

Coaching most commonly focused on teacher-child interactions, supportive environments, and children with challenging behavior. More than half (60%) of coaching sessions focused, at least partly, on teacher-child interactions, and almost half on providing supportive classroom environments (45%) and supporting children with challenging behavior (44%) (Exhibit 4). More than a third of coaching sessions were focused on language and literacy (41%) and about a quarter on approaches to learning (27%) and mathematics (26%).

Exhibit 4. *Percentage of individual coaching and group training contacts with VPI+ teachers, by focus area, Years 1–4*

Teacher-child interactions — 60%
Supportive environments — 45%
Children with challenging behavior — 44%
Language/literacy — 41%
Social and emotional development — 36%
Approaches to learning — 27%
Mathematics — 26%
Using formative assessments — 16%
Collecting formative assessments — 16%
Dual language learners — 15%
Family engagement — 14%
Science — 14%
Special needs (children with IEPs) — 14%
The arts — 7%
Physical health and development — 4%

Percent of individual and group coaching contacts

N = 7,926

Most VPI+ teachers felt positive about the support they had received from their VPI+ coaches, and teachers and coaches alike reported improved teacher practice. Across the 4-year initiative, the vast majority of VPI+ teachers either strongly or somewhat agreed that they had a positive relationship with their coach (ranging from 90–96% of teachers in any given year), and that their coach was available when they needed help (90–95%), knowledgeable about priority areas (89–94%), provided useful resources (86–93%), and provided practical suggestions for improving teaching (84–91%). However, more teachers agreed that they changed their practice as a result of coaching in the early years of the initiative than in the later years (i.e., 86% of teachers reported changing practices as a result of coaching in Years 1 and 2, compared with 75% in Year 3 and 77% in Year 4). This may indicate that coaching was most impactful in the initial years, fundamentally changing teachers' beliefs, pedagogy, and/or practice. VPI+ teachers reported that coaching prompted changes in their practice such as asking children more open-ended questions that encouraged critical thinking, using new behavior and classroom management strategies, doing more differentiated instruction, implementing social-emotional learning curricula, and incorporating more learning into transition time.

These impacts were also noted by coaches. In Year 4, nearly half of coaches (7 of 15) said that the greatest change they observed in teacher practice over the course of the initiative was improved teacher-child interactions. For example, coaches described how teachers improved at language modeling, were more intentional about the types of questions they asked children, used more open-ended questions, and asked more questions that required higher-order thinking skills.
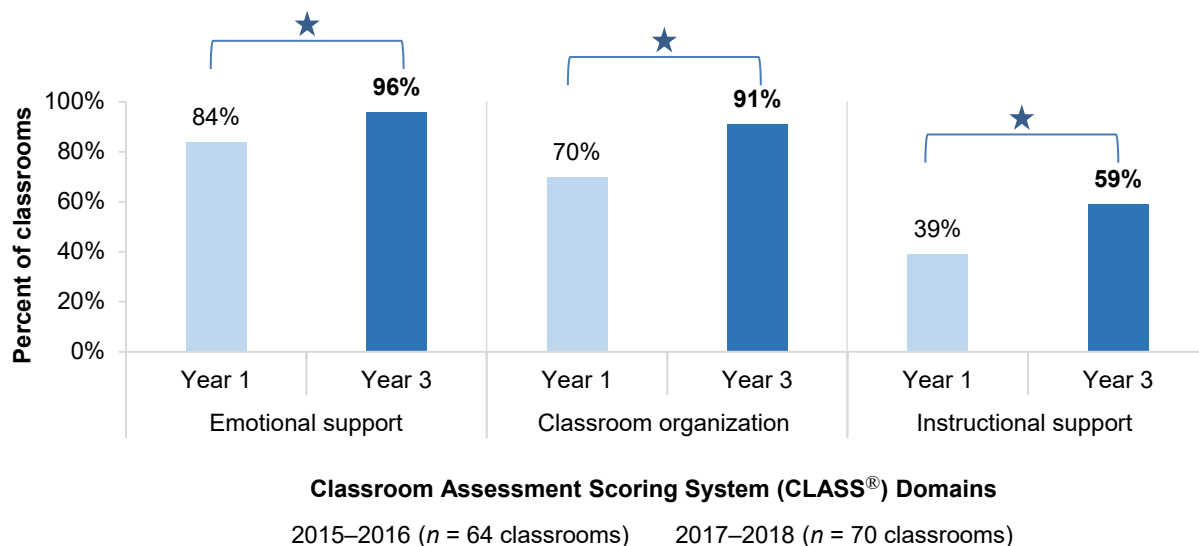
Program quality as measured by CLASS® observations

As part of Virginia's quality rating and improvement system (QRIS), *Virginia Quality*, VECF staff conducted observations of VPI+ classrooms using the CLASS® in Years 1 and 3 of the initiative. The CLASS® is a tool that measures the daily interactions between teachers and children and among children. The CLASS® measures interactions in three domains on a scale of 1 to 7: emotional support (the level of responsiveness and sensitivity of caregivers), classroom organization (the overall organization of the classroom that teachers provide), and instructional support (the extent to which teachers provide and scaffold in-depth learning). *Virginia Quality* set thresholds at 5.00 or higher in the emotional support/classroom organization domains and 3.25 or higher in the instructional support domain for programs to receive a Level 4 QRIS rating (the second highest rating a VPI+ program can receive). We use these thresholds to examine the percentage of teachers meeting high-quality standards for the VPI+ evaluation (Exhibit 5).[7]

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[7] For the purposes of the evaluation, we analyzed the emotional support and classroom organization domains separately and applied a threshold of 5 for each of these domains. This differs from how the *Virginia Quality* system assesses classrooms, in that the QRIS applies a threshold of 5 to the overall combined average of the emotional support and classroom organization domains.

**Classroom quality, including teacher-child interactions as evidenced by the CLASS®
instructional support domain scores, improved significantly from Year 1 to 3.** In Year 3,
nearly all VPI+ classrooms met *Virginia Quality* thresholds for emotional (96%) and
organizational support (91%), and 59 percent of classrooms met the threshold for instructional
support. Significantly more classrooms in Year 3, compared with Year 1, met the threshold for
quality on each of the three CLASS® domains: emotional support (96% versus 84%), classroom
organization (91% versus 70%), and instructional support (59% versus 39%). All of these
differences are statistically significant; specifically, with a 51% increase in the number of
teachers meeting the *Virginia Quality* threshold for the instructional support domain. These
improvements suggest that over the course of the initiative many VPI+ children experienced
stimulating interactions with their teachers that are critical for supporting learning and social-
emotional development. VDOE has stated that there were not consequences for falling below
these thresholds. Rather, CLASS® results were used in a formative way, to identify which
divisions needed additional support to strengthen teacher-child interactions. CASTL also
recommended that educators in classrooms falling below thresholds receive high-quality
professional development to help them meet or exceed these thresholds to best support the
children's learning and development (VDOE, 2018).

Exhibit 5.   *Percentage of classrooms that met or exceeded Virginia Quality thresholds on the
CLASS®*

Classroom Assessment Scoring System (CLASS®) Domains

2015–2016 (*n* = 64 classrooms)   2017–2018 (*n* = 70 classrooms)

★ Significant at *p* < .05

Developmentally appropriate classrooms

> VDOE required VPI+ programs to adopt an approved early childhood curriculum that supported developmentally appropriate instruction and learning and that met the federal grant's definition of evidence-based curriculum.[8] Additionally, teachers received supports to provide a mix of teacher-directed and child-initiated instructional time, and to minimize time spent in transitions in order to maximize children's time spent learning. To ensure staff had enough time to support children's learning and social development needs, VDOE required that VPI+ programs have child-to-adult ratios of no more than 9 to 1, class sizes of no more than 18 children, and full-day programming.

Why making classrooms developmentally appropriate matters

Research consistently identifies developmentally appropriate classrooms as those that implement a high-quality curriculum with fidelity (Clements, 2007; Burchinal, 2018), have low child-to-adult ratios and small class sizes (Barnett, Schulman, & Shore, 2004), and provide full-day instruction (Atteberry, Bassok, & Wong, 2019; Reynolds et al., 2014; Loeb, Bridges, Bassok, Fuller, & Rumberger, 2007). These are often considered structural elements of a high-quality preschool program. Specifically, low child-to-adult ratios and small class sizes are believed to promote positive teacher-child interactions, individualized supports to children, and decreased time teachers spend on classroom management (Shim, Hestenes, & Cassidy, 2004; Finn, Gerber, & Boyd-Zaharias, 2001).

Research suggests that a balance of teacher-directed and child-initiated activities leads to improved social-emotional and executive functioning skills, such as task persistence, and that teacher-directed approaches benefit children's basic early literacy and math skills (Chien et al., 2010). New research also recommends minimizing the time children spend in transitions and increasing the time children spend in specific content areas, such as math (Farran, Meador, Christopher, Nesbitt, & Bilbrey 2017). Finally, studies suggest preschool children learn best when allowed to engage in guided free play with a lot of opportunities for language and communication and problem-solving, including but not limited to time spent in creative arts and dramatic play (Yogman, et al., 2018; Tonyan & Howes, 2003).

Developmentally appropriate practices in VPI+ classrooms

VPI+ programs adhered to standards of high quality in terms of factors like choice of curricula, class sizes and ratios, a mix of both teacher-directed and child-initiated learning, and careful allocation of time spent on instruction across critical school readiness domains.

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[8] https://www.researchconnections.org/childcare/resources/32509/pdf

All the VPI+ school divisions used a comprehensive curriculum that was vetted against key criteria. At VDOE's request, CASTL vetted each curriculum to ensure it was grounded in child development principles and research, covering all school readiness learning domains with sufficient depth, supporting individualized teaching that is culturally and linguistically responsive, and providing specific learning goals with well-designed learning activities, ongoing assessments, and family involvement ideas and materials. The VPI+ school divisions used four different curricula. In Years 1–3, VPI+ teachers in 8 of the 11 divisions used *The Creative Curriculum*® (39–42% of teachers across years). Teachers in the largest VPI+ division used Houghton Mifflin Harcourt (45–50% of teachers), one school division used High Scope curriculum (7–10% of teachers), and one school division used a locally developed curriculum vetted by CASTL (4% of teachers). In Year 4, teachers in the largest school division changed to using *The Creative Curriculum*®, resulting in the majority (86%) of teachers using this curriculum in the final year of the initiative.

Nearly all VPI+ classrooms (98%) met the VPI+ child-to-staff ratio target of 9:1 or had a low child-to-staff ratio. The overall child-to-staff ratio was consistent throughout the 4-year initiative, ranging from 8.4 to 8.5 children to 1 instructional staff member. However, each year at the time of data collection, the same one division consistently had one to four classrooms with a child-to-staff ratio higher than 9:1, either because a classroom had more than 18 children (i.e., 19 or 21 children) or did not have an instructional aide.

Nearly all VPI+ classrooms met the VPI+ target of a class size of 18 or smaller. Class sizes remained stable throughout the course of the initiative. Across the 4 years, the average class size ranged from 17.1 to 17.3 children.

All VPI+ classrooms provided full-day instruction, which included a balance of teacher-directed and child-initiated activities addressing a range of content areas. Children in VPI+ classrooms spent a minimal amount of time in transitions. All VPI+ classrooms met the grant requirement and provided a full-day program with at least 5.5 hours of instruction (defined as time in the classroom but excluding breaks for meals, and recess), which included a mix of child-initiated activities and teacher-directed activities. Based on teacher report, children in VPI+ classrooms spent similar amounts of time in activities directed by teachers (37–39% across Years 2–4) as in child-initiated activities (34–38% across Years 2–4)[9] (Exhibit 6). Time spent on teacher-directed activities across years included whole group (16%), small group (11%), and one-on-one activities (11%). Children spent on average about 9% of the day transitioning between activities.[10]

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[9] Teachers did not report on the amount of time spent in teacher-directed and child-initiated activities in Year 1.
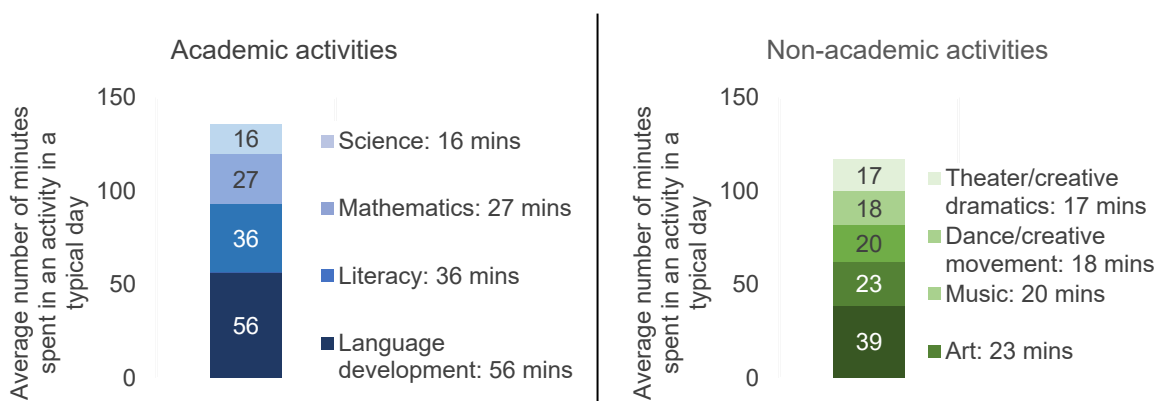[10] The average amount of time VPI+ teachers reported spending on transitions was lower than that of public prekindergarten programs in a metropolitan school system in the southern United States, which spent up to 26–31%of time in transitions (Farran et al., 2017).

Exhibit 6.   Proportion of time children spent in various types of activities, Years 2–4

Transitions between activities, 9%

Mealtimes, 18%

Teacher-directed activities, 37%

Child-initiated activities, 36%
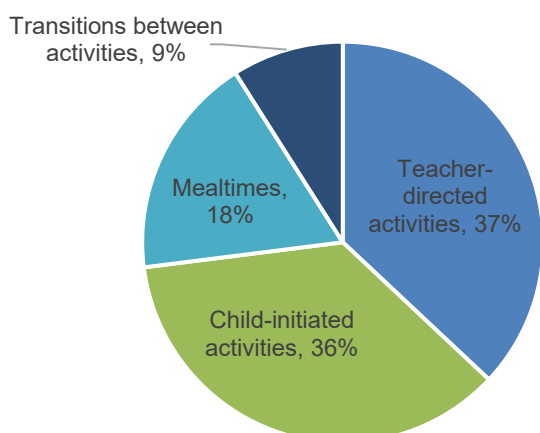
On average, teachers spent slightly more time in academic activities (135 minutes per day) than in non-academic activities (117 minutes per day). Exhibit 7 shows the average minutes of daily instruction teachers reported for each domain. Teachers reported spending the most time on language development, averaging 56 minutes per day. Time spent in physical activity and literacy were the next most frequent, occurring for 39 minutes and 36 minutes, respectively. Teachers reported spending 27 minutes on mathematics each day and an average of 17 to 23 minutes on each of the following non-academic activities: theater, dance, music, and art. Teachers reported spending the least amount of time on science (16 minutes).

Exhibit 7.   Average minutes per day of instruction in specific domains

Academic activities

- 16 ■ Science: 16 mins
- 27 ■ Mathematics: 27 mins
- 36 ■ Literacy: 36 mins
- 56 ■ Language development: 56 mins

Non-academic activities

- 17 ■ Theater/creative dramatics: 17 mins
- 18 ■ Dance/creative movement: 18 mins
- 20 ■ Music: 20 mins
- 23 ■ Art: 23 mins
- 39

Note. Activity categories are not mutually exclusive. Teachers reported on the frequency and full length of time for each topic area even if it was covered at the same time as another topic area.

Supports for children outside the classrooms

VPI+ programs received funding to provide a comprehensive set of services to children and families to increase family engagement in children's learning and to meet the health, mental health, and nutrition needs of children and families. VPI+ programs included a family

> engagement coordinator who developed an awareness of families' needs through home visits, helped families access comprehensive services, and strengthened families' positive connection to their child's school.

Why access to comprehensive supports matters

Family wellbeing is a strong predictor of children's school readiness, and federal guidance encourages schools to systematically support families in promoting their children's learning, development, and health.[11] Early childhood programs that have focused on health outcomes (e.g., integrating comprehensive screenings) have been associated with improved receipt of medical and dental care (Yoshikawa et al., 2013). Modeling positive interactions for parents and providing them with opportunities to practice and receive feedback is tied to enhancing children's skill development (Yoshikawa et al., 2013).

Comprehensive services for VPI+ children and families

VPI+ coordinators reported that the majority of children enrolled in VPI+ had readily available access to a wide range of critical services. According to VPI+ coordinators, the most commonly available services included vision, hearing, and dental services; adult education including workshops on parenting and child development; and home or other non-school visits. Some services, such as mental health services for children and families and substance abuse treatment for families, were less accessible. VPI+ coordinators also reported that VPI+ family engagement coordinators connected children and families to school and community services, helped families build positive relationships with school personnel, fostered relationships among parents, referred parents to resources to support their education and employment goals, organized activities and events to engage families, and conducted home visits.

Teachers reported that they directly engaged with all or most of their VPI+ children's families. Teachers reported in annual surveys they engaged all or most of their families by sending home activities for families to support their child's learning (94%), inviting parents to help out in the classroom (89%), calling or sending a note/email to discuss positive news (86%), responding to parent requests for information or a meeting (82%), meeting with families to identify ways to support children's needs at home (78%), and visiting family homes (76%).

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[11] U.S. Department of Health and Human Services and U.S. Department of Education. (May 5, 2016). Policy Statement on Family Engagement from the Early Years to the Early Grades. Retrieved from https://www2.ed.gov/about/inits/ed/earlylearning/files/policy-statement-on-family-engagement.pdf

Did VPI+ improve children's school readiness skills and outcomes?

The evaluation examined the impact of VPI+ children on their school readiness in three ways. We compared the school readiness rate for VPI+ with the rate found by a separate study conducted by UVA researchers (Williford et al., 2018) using a sample of children across Virginia as part of the Virginia Kindergarten Research Program. The study team also conducted a rigorous regression discontinuity design study to examine whether children who had participated in VPI+ had better school readiness skills than similar children who had not yet participated in VPI+. Finally, the evaluation included a longitudinal study that followed VPI+ children as they continued in school to examine whether they performed better than similar peers who had not participated in a division preschool program both at the end of kindergarten and then the end of first grade. In the next section, we describe our approach to conducting each of these studies and share the findings.

The evidence on the impacts of participation in public preschool programs on children's development is mixed. Local programs in Boston, Massachusetts (Weiland & Yoshikawa, 2013) and Tulsa, Oklahoma (Gormley, Gayer, Phillips, & Dawson, 2005) indicate that the provision of high-quality preschool across a large school district can yield large short-term positive impacts on the development of 4-year old children's skill development, ranging from .44 to .79 for language/literacy outcomes and .38 to .60 for math outcomes. A recent quasi-experimental examination of eight state-funded preschool programs indicated that these programs, on average, yield positive results on a range of early academic skills, with similar effect sizes (Barnett et al., 2018). Yet, experimental evidence from Tennessee calls into question whether these positive early results persist as children progress through elementary school (Lipsey, Farran, & Durkin, 2018).

### What percentage of VPI+ children were ready for kindergarten?

To assess children's readiness for kindergarten, benchmarks for each school readiness domain and for overall kindergarten readiness were established jointly by VDOE, the core VPI+ implementation planning team, and the VPI+ evaluation advisory board. The group decided to set the benchmark to "falling within or above the developmental range[12] expected for each domain." The group defined children as "kindergarten ready" if they were within or above the developmental range in both of the academic domains (literacy and math) and at least one of the other domains (social and emotional or approaches to learning). Assessments included The Phonological Awareness Literacy Screening (PALS-K) to assess literacy skills, the Woodcock-Johnson® Tests of Achievement – Applied Problems to assess

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[12] When only mean scores were available, falling within or above the developmental range included children scoring at or above one-third of a standard deviation below the mean.

math skills, and the Teacher-Child Rating Scale (T-CRS 2.1) to assess children's social and emotional and approaches to learning skills.

Two thirds (67%) of VPI+ children were ready for kindergarten, significantly surpassing the percentage of economically disadvantaged children who were ready in Virginia overall. Sixty-seven percent of children who participated in VPI+ during the 2016–2017 school year and entered kindergarten in fall 2017 demonstrated kindergarten readiness.[13] As a reminder, these children were economically disadvantaged, coming from families at or below 200 percent of the FPL. When compared to a sample of economically disadvantaged children from the *Virginia Kindergarten Readiness Program* study who also started kindergarten in fall 2017 but did not attend VPI+, a higher percentage of VPI+ children demonstrated kindergarten readiness (67% versus 52%). Particularly noteworthy is that the percentage of VPI+ children who were ready for kindergarten (67%) was similar to that of non-economically disadvantaged children from the *Virginia Kindergarten Readiness Program* study (Exhibit 8). Kindergarten readiness rates for the other years of VPI+ were: 70 percent of children who participated in VPI+ during the 2015–2016 school year and entered kindergarten in fall 2016 (Cohort 1) and 63 percent of children who participated in VPI+ during the 2017–2018 school year and entered kindergarten in fall 2017 (Cohort 3). Overall, across the three cohorts, two thirds of children who participated in VPI+ entered kindergarten ready to learn.

Exhibit 8. *Percentage of children in VPI+ and the Virginia Kindergarten Readiness Program Study who were ready for kindergarten, 2017*
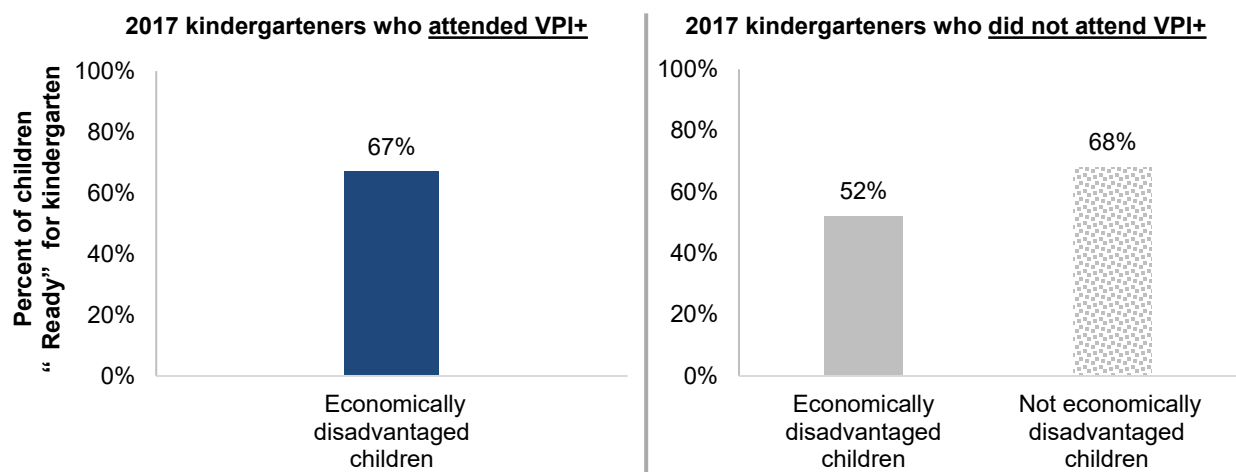
Note. Measures of kindergarten readiness differed slightly for children who attended VPI+ and children who did not attend VPI+. Kindergarten children who did not attend VPI+ included 21,944 children from 64 school divisions (see Williford, Whittaker & McGinty Presentation to Virginia's Children's Cabinet, November 13, 2018). Retrieved from https://www.governor.virginia.gov/media/governorvirginiagov/governor-of-virginia/childrens-cabinet/Early-Childhood-and-School-Readiness-Workgroup-11_13-Meeting-Slides-(1).pdf

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[13] We report on children who participated in VPI+ during the 2016–2017 school year (Cohort 2) because this aligns with the time point of the most recent data from the *Virginia Kindergarten Readiness Program (VKRP) study.*

Did participating in VPI+ impact children's school readiness skills and outcomes at kindergarten entry?

> To assess the impact of VPI+ participation on children's school readiness skills at kindergarten entry, we used a regression discontinuity design (RDD). We assessed children's performance in the areas of receptive language (measured using the Peabody Picture Vocabulary Test; PPVT-4), early mathematics (measured using the Woodcock Johnson® Tests of Achievement, 3rd edition - Applied Problems subtest), self-regulation (measured using the Head Toes Knees Shoulder task; HTKS), and literacy [measured using the Phonological Awareness Literacy Screening (PALS) letter sounds and lowercase letter recognition tasks].

Regression discontinuity sample and analysis approach

We assessed the short-term impact of participation in VPI+ on the kindergarten academic skills of children who attended VPI+ during the 2016–2017 and 2017–2018 school years (Cohorts 2 and 3).[14] Because it is not possible to randomly assign children to receive or not receive VPI+, we used a regression discontinuity design (RDD) to address this question. This approach has been used to assess the impact of publicly funded preschool programs in multiple U.S States and schools districts (e.g., Barnett et al., 2018; Gormley, Phillips, Newmark, Welti, & Adelstein, 2011; Weiland & Yoshikawa, 2013).

The analysis took advantage of the program requirement that children be age 4 years by September 30 of the preschool year. We created two comparable groups of (similarly aged) children: one group who enrolled in VPI+ in a given year and another group who enrolled in the program in the subsequent year. That is, we identified children who were just old enough to enroll in one year (just made the September 30 cutoff) to children who were just too young (just missed the September 30 cutoff) but enrolled the following year. We then compared the two groups of children (i.e., children who are just beginning the VPI+ program to those who recently completed the VPI+ program) on their literacy skills (phonological awareness and letter recognition), language development (vocabulary), early math, and self-regulation. This data collection process is described in Exhibit 9.

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[14] When reporting about children's outcomes, we refer to cohorts instead of years. Cohort 1 VPI+ children participated in the VPI+ program during the 2015–2016 school year, Cohort 2 VPI+ children participated in VPI+ during the 2016–2017 school year, Cohort 3 VPI+ children participated in VPI+ during the 2017–2018 school year, and Cohort 4 VPI+ children participated in VPI+ during the 2018–2019 school year.

Exhibit 9.   VPI+ pre-K participation by cohort and testing procedures
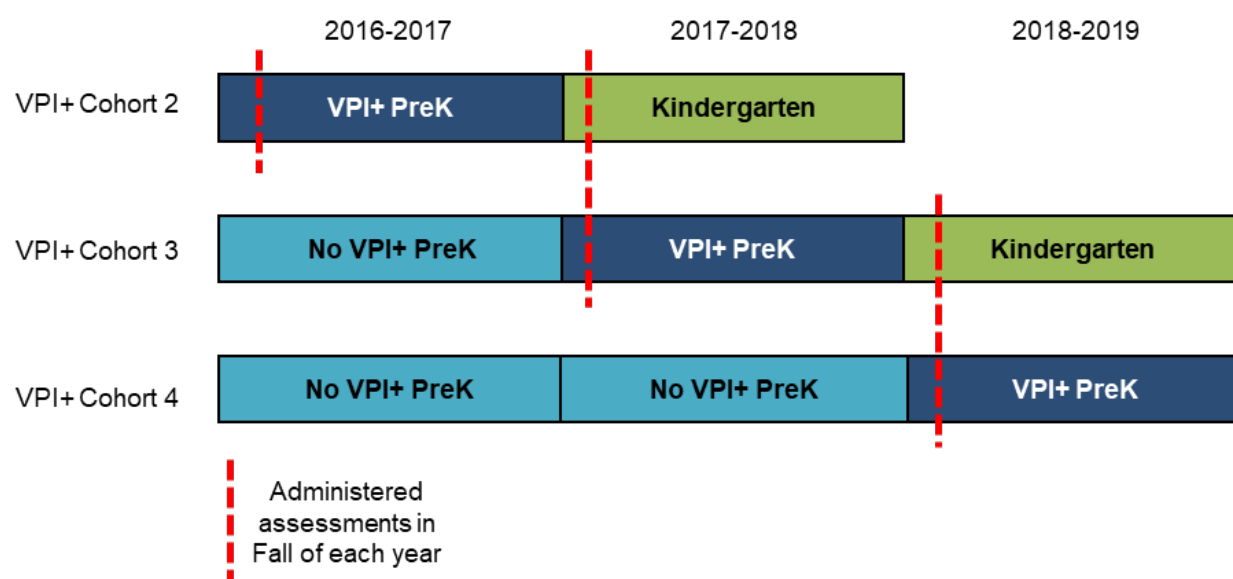
Following guidance for conducting RDD studies in the context of preschool (Lipsey, Weiland, Yoshikawa, Wilson, and Hofer, 2015), we conducted a series of data analyses which indicate that (a) these data are appropriate for use in RDD analyses and (b) the results of the analyses can support causal interpretation, that is, we can attribute any significant differences to the impact of the VPI+ program.[15]

Regression discontinuity design study findings

The regression discontinuity design study found that attending VPI+ had a positive impact on children's academic and behavioral skills, with the largest impact on literacy skills. The RDD analysis found that enrollment in VPI+ yielded positive, statistically significant impacts for participating children across a range of skills critical for school success (Exhibit 10). Impacts on children's literacy skills (recognition of lowercase letters and letter sounds) were large for both Cohort 2 and Cohort 3 VPI+ participants (effect sizes between 0.95 and 1.12). Both cohorts of children demonstrated moderately sized impacts on their self-regulation and mathematics skills (effect sizes between 0.29 and 0.36). Impacts on children's vocabulary skills were smaller but still statistically significant (effect sizes between 0.17 and 0.29).[16]

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[15] A detailed explanation of the approach to the analyses is provided in the appendix.

[16] These results should be interpreted with caution. Sensitivity analysis indicates that the magnitude of the impacts is smaller and, in some cases, not statistically significant when we limit the analyses to only those children who are near the age eligibility cut-off. A technical report with details is available upon request.

Exhibit 10.   Effect sizes from regression discontinuity design analyses

	Effect size	
	Cohort 2	Cohort 3
Language/Vocabulary (Peabody Picture Vocabulary Test; PPVT-4)	0.17**	0.29***
Early mathematics (Woodcock Johnson III Revised Applied Problems)	0.36**	0.33***
Self-regulation (Head Toes Knees Shoulders; HTKS)	0.33**	0.29***
Literacy skills (phonological awareness) (PALS Letter sounds)	1.12***	0.95***
Literacy skills (PALS lowercase letter recognition)	1.12***	0.96***

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Taken together these analyses provide evidence that participating in VPI+ accelerated children's development of important school readiness skills. In the 12 months period between enrolling in VPI+ and beginning kindergarten, attending VPI+ led children to develop more than 15 months of mathematics skills and more than 20 months of literacy skills (Exhibit 11).[17] These impacts are consistent with findings from other analyses of high-quality public preschool programs (Gormley et al., 2011; Weiland & Yoshikawa, 2013).

Exhibit 11.   Mathematics and literacy skill growth, in months, as a result of attending VPI+

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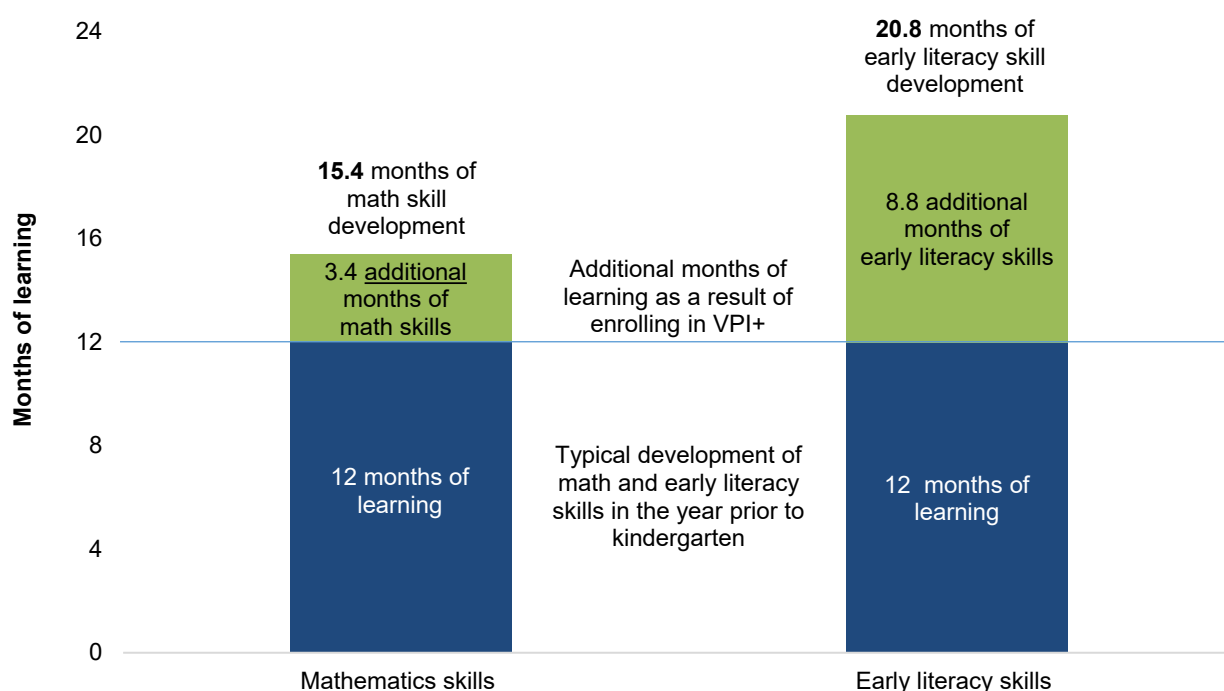
[17] Effect sizes for reading and mathematics skills were translated into months of learning using the procedures presented in Hill, C. J., Bloom, H. S., Black, A. R., & Lipsey, M. W. (2008). Empirical benchmarks for interpreting effect sizes in research. *Child Development Perspectives*, *2*(3), 172–177. Benchmarks for translating the vocabulary and attention effect sizes are not available.

Are there longer-term outcomes that can be attributed to participation in VPI+?

> To examine if children's participation in VPI+ was linked to children's later academic performance in kindergarten and in first grade, we tracked VPI+ children over time and compared them to a matched comparison group of children who did not attend pre-K. We identified the matched comparison group of children using administrative record data and examined differences between the two groups on literacy outcomes, attendance rates, and rates of children with an IEP.

Longitudinal study sample and analysis approach

We assessed longer-term impacts of VPI+ participation on children's literacy skills, school attendance, and disability status in the spring of kindergarten and again in the spring of first grade. We did this by comparing children who attended VPI+ as part of Cohort 2 with their kindergarten peers who did not enroll in VPI+. Children whose families chose to enroll them in VPI+ are different in important ways from those whose families did not. We attempted to reduce these differences analytically in two ways. First, we limited our analyses to only those children who would likely have been eligible for VPI+ had they chosen to enroll. This means that they were (a) enrolled in one of the 11 school divisions for kindergarten in the 2017–2018 school year, (b) between the ages of 60 months and 71 months on September 30, 2017, and (c) were flagged as economically disadvantaged (defined as eligible for free and reduced-price lunch, receives Temporary Assistance for Needy Families, or eligible for Medicaid).[18] Second, we used coarsened exact matching (CEM; Iacus, King, & Porro, 2012) to identify comparable groups of VPI+ and non VPI+ children for the analyses.

Longitudinal study findings

Children who attended VPI+ performed better on literacy assessments in the fall and spring of kindergarten than did children who did not attend VPI+, but by spring of first grade the differences were no longer statistically different. The large differences found in the fall of kindergarten are generally consistent with the differences observed in the regression discontinuity study (described above). By the end of kindergarten, differences in literacy scores between children who attended VPI+ and those who did not were smaller but still statistically significant. By the spring of first grade, the differences in literacy scores between the two groups of children further decreased and were no longer statistically significant (Exhibit 12). This is consistent with the findings from other examinations of the impacts of preschool on children's cognitive skills (Bailey, Duncan, Odgers, & Yu). However, other studies indicate that even if

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[18] The criteria for being categorized as "economically disadvantaged" are more restrictive than the VPI+ income eligibility criteria. This means that the non-VPI+ group was, on average, more economically disadvantaged than the VPI+ group. Approximately 20 percent of children who enrolled in VPI+ did not qualify as economically disadvantaged at kindergarten.

there are no differences apparent in early elementary school, high quality preschool programs can yield benefits on early adult outcomes such as high school graduation, college attendance, criminality, and teen parenthood (Deming, 2009).

Exhibit 12.   Effect sizes on literacy skills from longitudinal study
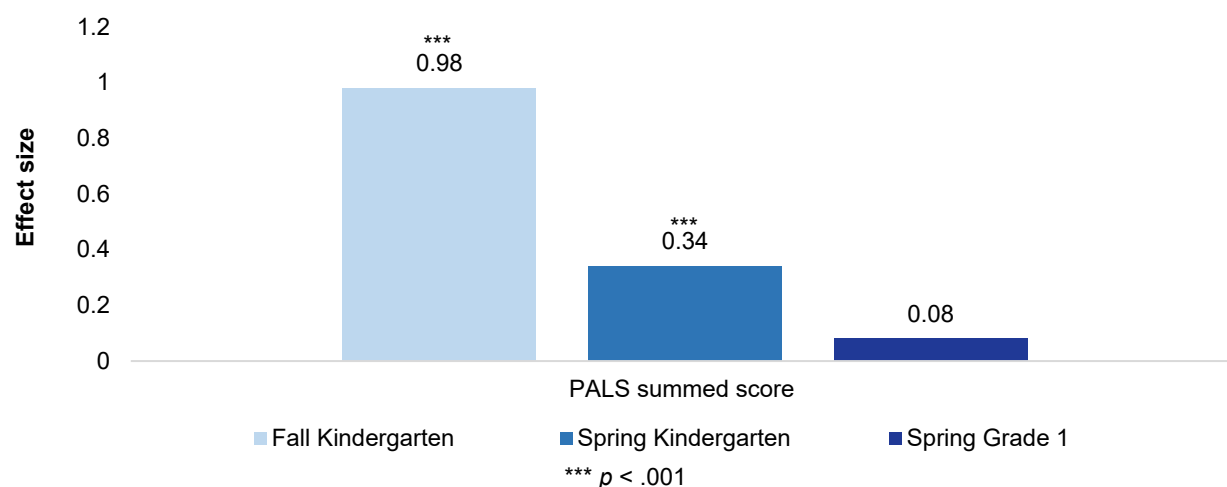
Children who attended VPI+, on average, had higher rates of attendance in kindergarten than did similar children who did not attend VPI+. There are 180 days in a school year; when a child misses 10% or more of school days (that is, 18 days) that child is considered to be chronically absent.[19] Our analysis found that VPI+ children were less likely to be chronically absent than similar children who did not attend VPI+ (26% compared to 32%, respectively).

VPI+ children were also more likely to be identified as having a disability by the end of kindergarten than peers who did not attend VPI+. The implications of this finding are unclear. As has been noted in other recent research (see Shapiro and Weiland, 2019), it may be the case that in high-quality preschool programs more staff are qualified to identify children who might need additional support, and thus, more children might be referred for special education services. This could lead to a higher rate of disability identification among VPI+ children in comparison to children who did not participate in preschool.

What factors supported and challenged successful implementation of VPI+?

The evaluation documented what factors VPI+ leaders and practitioners felt helped and hindered them in implementing VPI+.

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[19] https://www.attendanceworks.org/chronic-absence/the-problem/

> Using data from semi-annual interviews and surveys of VPI+ coordinators in each school division, interviews with coaches, and surveys with teachers, we identified key factors that supported and hindered successful implementation of VPI+ across the 4 years of the initiative.

Staffing can make or break a program. The importance of finding individuals with the appropriate experience and education to implement high-quality preschool instruction and coaching cannot be underestimated. VPI+ coordinators consistently reported throughout the initiative that the ability to hire qualified coaches and/or teachers was a key facilitator to the successful implementation of their program. VPI+ coordinators in rural divisions reported more challenges than other coordinators in hiring qualified teachers and coaches.

Sufficient funding was critical to supporting VPI+ program implementation. VPI+ coordinators described the importance of receiving adequate levels of funding from the federal grant to hire the many professionals necessary to fully support VPI+ children. School divisions hired coaches, teachers, paraprofessionals, and other staff such as interpreters to support children who were dual language learners, and transportation coordinators to ensure children who needed to could attend VPI+ programs in schools outside of their zones. Coordinators also reported that the available federal funding was instrumental in enabling their division to purchase trainings, curricula, learning materials for classrooms, and field trips, as well as being able to offer competitive salaries to teachers.

Buy-in from leaders, including superintendents and elementary school principals, was essential for the successful implementation and sustainability of VPI+. Having the support of division administrators, particularly from administrators who understood the importance of preschool, helped to build buy-in from elementary school principals and ensure VPI+ classrooms had the requested funding and resources. Elementary school principals showed their support by creating an inclusive environment where preschool classrooms and teachers were integrated into the larger school community. VPI+ coordinators described how they worked to strengthen their relationships with school principals by holding regular meetings to share progress, successes, and challenges.

Having access to clear suspension and expulsion policies and useful resources for supporting children with challenging behaviors helped division leaders and teachers better respond to the needs of children and reduce exclusionary discipline practices. School divisions worked to reduce exclusionary discipline practices that deprive children of valuable early learning experiences. In February 2018, VDOE provided guidelines for the prevention of suspension and expulsion of young children and supporting children with challenging behavior in early childhood settings. Further, some coordinators described having division-level polices that prohibited the use of expulsions and described efforts to prevent suspensions. Divisions coupled these policies with training teachers on strategies to effectively prevent disruptive behavior and to ensure teachers have the resources to meet the needs of

children with challenging behavior. For example, they provided coaching and training on social-emotional curricula such as the Pyramid Model, Promoting Alternative Thinking Systems (PATHS), Al's Pals, and Conscious Discipline. In addition, some divisions also provided access to behavioral professionals such as behavior intervention support specialists, mental health specialists, licensed play specialists, counselors, and social workers, to support individual children who may need more intensive supports. Despite these supports to address the needs of children with challenging behaviors, teachers consistently reported wanting additional PD on this topic. Exploratory analyses from teacher surveys indicated that the percentage of teachers reporting exclusionary discipline in the VPI+ program decreased in Years 3 and 4 from Years 1 and 2 (in particular, the rate for permanently removing children from the classroom decreased to zero). This decrease may be related to having clearer state and division policies that ban these practices and/or teachers receiving more support and training.

Receiving data on student learning and classroom quality and support with how to use it helped VDOE and local school division leaders to improve the quality of children's preschool experiences. VDOE leaders reported using enrollment data from the first 2 years of the initiative to identify geographic locations where it was challenging to fill VPI+ slots. In another example, VDOE leaders used data to inform their decision to shift resources and funds to provide additional access to high-quality preschool for two more at-risk communities in Virginia. VDOE officials also found improvements in CLASS scores to be an indicator that improvements in teacher-child interactions are possible when PD is focused on those interactions and informed by observation data. Thus, moving forward, Virginia is planning to conduct external observations in every classroom to inform teacher needs and tailor PD supports. Nearly all VPI+ coordinators reported using evaluation data to inform their local school division improvement plans, and almost half of coordinators said they received data interpretation support from CASTL. Most coaches reported using data available through PALS, CLASS®, and GOLD™ in their coaching sessions with teachers. Coaches described using PALS and GOLD™ data to help teachers differentiate instruction, identify children who may need additional support, and group children based on their level of need. Coaches used CLASS® data to guide action planning with teachers and to inform the focus of group PD sessions on language modeling and quality of feedback.

Availability of developmentally appropriate classroom space was a challenge in some school divisions. Coordinators explained that it was a challenge to acquire developmentally appropriate spaces for pre-K classrooms, with one issue being that available classrooms often did not have direct access to a bathroom within or adjacent to the classroom. This challenge may be more common when housing preschool classrooms in elementary schools that were not built with young children's physical needs in mind.

Having policies and practices to fill vacant slots and encourage regular attendance was important to ensure children were able to get the full benefit of the VPI+ program. More

than half of VPI+ coordinators described using an active waitlist to fill vacated VPI+ slots after the initial enrollment process and using a scoring system to prioritize enrollment of children with the highest risk factors (e.g., child with a disability, low maternal education). The vast majority of VPI+ coordinators also stated that their division encouraged and expected regular attendance in their VPI+ programs and had a process for reaching out to and engaging with families if a child did not regularly attend. For example, family engagement coordinators made home visits, provided families with alarm clocks, developed an attendance improvement plan or contract, and helped families develop routines to help improve attendance. Despite these efforts, more than a third of children across divisions were reported to be chronically absent and may not have attended preschool regularly enough to get the full benefits of the program. Attendance may have been affected by limited transportation options in some school divisions.

Conclusion

VPI+ state and local partnerships accomplished a great deal during the grant. Enrollment in VPI+ programs continued to increase, including through the participation of two new divisions beginning in Year 3. Across the 13 divisions VPI+ programs served more than 5,000 children of high need, including children who speak a language other than English and children who have an IEP. VPI+ classrooms were staffed by experienced preschool teachers with educational credentials, who received support in using their curricula and the GOLD™ formative assessment. VPI+ children received instruction in a wide range of content areas, with teachers spending the most time on language development, recognized as an area that supports development and learning across domains. VPI+ teachers also continued to engage their children' families in a variety of ways and reported that many types of services were available to families in their larger communities with VPI+ working to refer and connect families to these services. CLASS® domain scores revealed that the quality of emotional, organizational, and instructional supports VPI+ teachers provided in the classroom was relatively high and improved significantly from Year 1 to Year 3. VPI+ coordinators, coaches, and teachers continued to have access to a wide range of professional development activities and formats to support high quality practices and continuous improvement.

VPI+ resulted in positive outcomes for children. Overall, more than two thirds of children who participated in the VPI+ program during the 2016–2017 school year were ready for kindergarten in fall 2017. More importantly, a rigorous, regression discontinuity impact study showed that participating in VPI+ had a positive impact on children's academic and behavioral skills, with the largest impact on literacy skills. Furthermore, a longitudinal follow-up study found that children who participated in VPI+ performed better on literacy assessments in the fall and spring of kindergarten than did children who did not attend VPI+, but like other state public preschool programs, by spring of first grade the differences were no longer statistically different. This comprehensive evaluation generated evidence that scaling a state-funded preschool program for 4-year-olds can accomplish the twin goals of maintaining and improving quality early learning

experiences and instruction that result in children's school readiness skills. VDOE and its partners, including CASTL and VECF, accomplished the successful scaling of high-quality preschool in high-needs communities serving thousands of at-risk children. Further, their efforts resulted in children's improved school readiness and a stronger early learning system for Virginia.

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