

VPI+ Comprehensive Evaluation Annual Report

Year 2 (2016–2017)

August 31, 2017

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Executive Summary

In December 2014, 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 four-year-olds in 11 of Virginia's 132 school divisions that ranked highest in need on key indicators.¹ Since the PDG grant augments 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 report documents program implementation and impacts on child outcomes for Year 2 of the VPI+ grant (the 2016–2017 school year), and where relevant, compares implementation and outcomes of Year 2 to Year 1 of the grant (the 2015–2016 school year).

The PDG funds support two types of preschool classrooms in high-need communities within 11 school divisions across the state: (1) **VPI+ classrooms**: newly-opened VPI+ classrooms that implement all of the VPI+ grant requirements; and (2) **VPI Improved classrooms**: existing state-funded VPI classrooms that enhance their quality by implementing at least one of five program quality enhancements. Due to evaluation budgetary constraints, VDOE decided to focus the external evaluation on only VPI+ classroom implementation and child outcomes, given VPI+ classrooms will be receiving the full treatment of initiative supports (e.g., approved curriculum, formative assessments, evaluation and monitoring from the QRIS, summative assessments, intensive coaching and professional development, increased funding for comprehensive services and family engagement, and increased availability of instructional materials, including technology). Therefore, this report presents findings on only VPI+ classrooms and children.

To measure impact and support program improvement, the Virginia Department of Education (VDOE) contracted with SRI International (SRI) in late August 2015 to conduct a comprehensive evaluation of VPI+, including a formative evaluation of VPI+ implementation, a summative evaluation of VPI+ impact on children's school readiness and later academic outcomes, and a cost analysis to determine investments needed for desired outcomes. SRI's evaluation team also includes School Readiness Consulting and RAND Corporation.

¹ School divisions selected to participate in VPI+ were ranked in the top five on one or more of four indicators: percentage of students eligible for free and reduced-price lunch, number of Title I schools, percentage of entering kindergarten children not reaching benchmark standards on literacy screening, and number of at-risk unserved four-year-olds.

Evaluation Methods

SRI used a variety of methods and sources to learn about VPI+ implementation during the second year of the grant, including analysis of extant data on student demographic and enrollment characteristics, teacher and program characteristics, and classroom and teacher quality observations; logs on local coaching and professional development activities and interviews with coaches; summaries and documentation of technical assistance and training sessions provided by state partners to VPI+ coordinators, coaches, and family engagement coordinators; interviews and surveys with school division VPI+ coordinators; surveys of VPI+ teachers; and direct summative assessments and teacher-completed checklists to measure outcomes for VPI+ children in the areas of literacy, math, approaches to learning (task orientation), social emotional development (self-regulation, peer social skills, and behavioral control), and physical and motor development (health status and fine and gross motor skill development).

Enrollment, Attrition, and Attendance

VPI+ increased the number of high-quality slots available for at-risk four-year-olds in a preschool setting across the 11 participating school divisions. In Year 2, the VPI+ operated in 75 newly-opened high-quality preschool classrooms as well as 43 existing classrooms with blended funding that were brought up to VPI+ standards, for a total of 118 VPI+ classrooms.

Enrollment and Attrition from VPI+

- As planned, the numbers of children enrolled in VPI+ increased from Year 1 to Year 2, from 1,235 children in the spring of Year 1 to 1,365 children in the spring of Year 2, showing an 11% increase.²
- The vast majority ($n = 1,255$; 91%) of VPI+ children remained enrolled from fall to spring.
- Demographics for the children enrolled in VPI+ both in the fall and spring of Year 2 were similar to Year 1:
 - An equal percentage of males and females attended VPI+.
 - Approximately 8 percent were identified with a disability or delay, and had an Individualized Education Program (IEP) at some point during Year 2.
 - About 7 percent were identified as having fair or poor health as rated by teachers in Year 2.

² The Year 2 December 1 enrollment count of VPI+ students for the Annual Performance Report was 1,406.

- More than half of the children (63%) in Year 2 were from households with very low incomes (at or below 100% of the federal poverty level [FPL]). Approximately 21 percent were from households with incomes between 101% and 130% of the FPL, and the remaining 16 percent of children were from households with incomes between 131% and 200% of FPL.
- Nearly half (48%) of the children in Year 2 were identified by their parents as Black, 29 percent as Hispanic, 14 percent as White, and 9 percent as another race or ethnicity.
- Nearly three-fourths of VPI+ children (74%) in Year 2 spoke English at home, 21 percent spoke Spanish, two percent spoke Arabic, and three percent reported speaking various other languages. In five school divisions, fewer than five percent of VPI+ children were dual language learners (DLLs) who spoke a language other than English at home while in three divisions more than half of the students were DLLs.

Attendance

- Approximately three-fourth (74%) of VPI+ children in Year 2 attended school on a regular basis (at least 90 percent of school days), about the remaining 26 percent of students were chronically absent (attended fewer than 90 percent of school days).
- Rates of chronic absenteeism were higher for children in fair or poor health (50%), children from families with the lowest incomes (30%), and children who are from English-speaking homes (29%).

Program Implementation and Quality

All VPI+ classrooms are expected to include certain implementation components consistent with a high-quality preschool program as set forth by the Preschool Development Grant (PDG), including a highly educated work force with a deep understanding of child development, children’s and families’ access to comprehensive services, use of an evidence-based curriculum, use of formative assessment results to inform instruction, and engagement of families in children’s learning and progress. We have grouped these implementation data into the following categories:

- **Structural program characteristics.** As in Year 1, all VPI+ programs in Year 2 offered full-day schedules, providing 5.5 hours or more of instructional time each day. According to data collected in December 2016, nearly all VPI+ classrooms (98%) met the

requirement of having 18 or fewer children and averaged 17.3 children. The average child-to-instructional-staff ratio was 8.5 children to 1 teacher or assistant teacher, meeting the PDG criterion of no more than 10 children to 1 instructor.³

- **Teacher characteristics.** In Year 2, all VPI+ teachers held a bachelor's degree, more than half (53%) of VPI+ teachers who completed the survey also reported having a master's degree, and 3 percent reported having a doctorate or professional degree. Most VPI+ teachers (84%) had taught in a VPI+ class during the prior year. Only 3 percent of VPI+ teachers had no prior experience teaching preschool. Almost a third (30%) had one prior year of preschool teaching experience, a third had 3–5 years of preschool teaching experience, and the remaining third had more than five years of preschool teaching experience. Teachers in VPI+ classrooms having large numbers of dual language learners (DLL) on average had almost half of the years of experience as other VPI+ teachers (3.7 years compared to 6.4 years).
- **Curriculum and instruction.** In contrast to Year 1 when fewer than one third (32%) of teachers had prior experience with their division's curriculum, in Year 2 a large majority (88%) of VPI+ teachers across divisions were using a curriculum in that they had used previously (at least for one year). A large majority of Year 2 VPI+ teachers reported that they strongly or somewhat agreed that their classrooms had the materials to support the curriculum (93%), and they were confident in their ability to teach the curriculum (93%). Year 2 VPI+ teachers reported allocating similar amounts of instructional time to child-directed (34%) and teacher-directed (37%) activities; small group activities led by assistant teachers and transitions between activities consumed less instructional time (17% and 9%, respectively). Almost all Year 2 VPI+ teachers reported that children engaged in lessons or projects in the areas of language, literacy, and physical education on a daily basis, and they spent more time on these subjects than on others. Many Year 2 VPI+ teachers also reported daily activities focused on mathematics (78%), dance or creative movement (76%), music (76%), and art (67%).
- **Formative assessment use.** In Year 2, nearly all VPI+ teachers somewhat or strongly agreed that they felt confident both collecting data using the *GOLD*TM formative assessment (92%), and interpreting *GOLD*TM results (90%); however, coaches from about half of the divisions mentioned that reliable implementation and use of *GOLD*TM data were still areas of need for improvement. Similar to Year 1, the majority of VPI+

³ VPI requires no more than 9 children to one adult per classroom.

teachers in Year 2 reported that *GOLD*[™] was very or moderately useful for informing curricular and lesson planning, individualizing instruction for students, and evaluating the effectiveness of their own practice. VPI+ teachers were less likely to report that *GOLD*[™] was very or moderately useful for communicating children's progress to parents or guardians (49%), and informing instruction for children with disabilities (36%) and children who are dual language learners (DLL) (31%).

- **Family engagement in learning.** As in Year 1, VPI+ teachers in Year 2 used a variety of strategies to communicate with and reach out to families, including an invitation to all or most of the families to help in the classroom (90%) and sending home activities for families to do with their children (93%). Compared with VPI+ teachers in Year 1, fewer VPI+ teachers in Year 2 reported that they had reached out to connect families with additional services (72% in Year 1 vs 59% in Year 2), but more teachers reported visiting families in their homes (62% in Year 1 and 79% in Year 2). A third of Year 2 VPI+ teachers found a lack of family engagement to be a moderate or great challenge to providing the best educational experience for their children.
- **Comprehensive services.** VPI+ Coordinators reported that large majorities of the children enrolled in VPI+ programs and their families in Year 2 had readily available access to a wide range of local services and supports. A majority of VPI+ teachers also reported that several types of medical services and social service supports were available to VPI+ children and families. Fewer VPI+ teachers reported that VPI+ families had access to assistance with enrolling in insurance plans and WIC. For many types of services, markedly higher percentages of teachers reported availability in Year 2 than had done so in Year 1. Moreover, results of a survey of VPI+ parents conducted by the Virginia Department of Education in spring 2017 indicate that many families were themselves aware of supports available through VPI+.

Professional Development and Technical Assistance

In Year 2, a network of state agencies and partners trained and supported local VPI+ leaders, such as division coordinators, coaches, and family engagement coordinators. Some of the network partners also provided professional development to VPI+ classroom teachers to help them provide high-quality preschool programming to at-risk children.

Training and technical assistance for coordinators, coaches, and family engagement coordinators

- In Year 2, VDOE provided technical assistance to VPI+ coordinators, coaches, and family engagement coordinators on all components of grant implementation.
- In Year 2, Virginia Early Childhood Foundation (VECF) provided training on use of Virginia's QRIS, including the Classroom Assessment Scoring System (CLASS®) and the Early Childhood Environment Rating Scale-Revised (ECERS-R) to guide program improvement efforts.
- In Year 2, the Center for Advanced Study of Teaching and Learning (CASTL) at the University of Virginia provided coach training and support and technical assistance to school division leaders on developing continuous improvement plans, improving teacher practices, and selecting coaching models. Using Year 1 implementation findings, CASTL also developed several tools, including a website, to improve the focus and intensity of coaching.
- In Year 2, other partners such as the University of Virginia, the Maryland Department of Education, and Preschool Development Grant technical assistance providers supported VPI+ staff through professional development opportunities including webinars, introductions to toolkits and other resources, and conferences.

Professional development and coaching for VPI+ teachers

- **Training on curricula and formative assessment.** Most teachers (80%) reported receiving some professional development on the use of their curriculum and almost all (98%) teachers received some professional development on *GOLD™* during Year 1 and/or 2. On average teachers received more professional development on *GOLD™* (averaging 16.3 hours) across the two years than on the use of their curricula (averaging 12.4 hours). On average, VPI+ teachers from the eight divisions using *The Creative Curriculum®* received more hours of professional development across Years 1 and 2 than VPI+ teachers using other curricula (18.7 hours compared with 7.6 hours).
- **Training on instructional content and strategies.** More teachers reported receiving professional development on a variety of instructional strategies in Year 2 than in Year 1, particularly around strategies to support social emotional development. In Year 2, almost all VPI+ teachers received professional development on supportive environments (95%), teacher-child interactions (92%), classroom organization and management (87%), and supporting children with challenging behaviors (73%). Despite this focus, most VPI+

teachers (61%) in Year 2 reported desiring more professional development on supporting children with challenging behaviors. In Year 2, about two-thirds of VPI+ teachers received professional development on incorporating learning into transition activities (65%) and collecting and using formative assessment data (65%); and about half received professional development on family engagement (60%) and supporting the transition to kindergarten (48%). Fewer teachers reported receiving professional development on working with dual language learners (DLL) (39%) and children with special needs (29%).

- **Coaching.** In Year 2, 13 coaches supported 118 VPI+ teachers. Data from the online log of the services coaches delivered to teaching staff, which include Year 2 coaching activities (from mid-August 2016 to the end of May 2017) and Year 1 coaching activities (from November 2015 to the end of May 2016),⁴ indicate that:
 - Coaches served a larger percentage of VPI+ teachers in Year 2 (98% of VPI+ teachers in 118 VPI+ classrooms) than in Year 1 (88% of teachers in 110 VPI+ classrooms). In Year 2, VPI+ teachers, on average, received 28.6 coaching contacts totaling 21.1 hours.
 - The average number and duration of monthly coaching contacts was slightly lower in Year 2 than in Year 1 (1.9 contact versus 2.1 contacts; 3 hours versus 4 hours). However, VPI+ teachers who were new in Year 2, on average, received more intensive coaching than returning teachers (2.4 contacts versus 1.8 contacts per month; 4.2 hours versus 2.8 hours per month).
 - In Year 2, coaches offered more contacts through group training than in Year 1 (33% versus 23%) and, conversely, fewer contacts through individualized coaching sessions (67% versus 77%).
 - in Year 2, the average duration of a coaching session was 10 minutes longer than in Year 1 (96 minutes versus 86 minutes). Almost two-thirds of Year 2 coaching sessions (63%) lasted an hour or longer. Another 28 percent of coaching sessions lasted between 30 and 59 minutes. Group training sessions tended to be longer in duration than meetings with individual teachers in the classroom.

⁴ Use of the coaching logs was delayed in Year 1 by the late start of the evaluation contractor, so coaching activities occurring before November 2015 are not reflected in this report.

- In both Years 1 and 2, coaches most frequently used the strategies of discussion and observation, but Year 2 put more emphasis on discussion while Year 1 put more emphasis on observation. Other coaching strategies that increased in Year 2 included connecting teachers to curricular materials and resources, and video review.
- In most of their contacts with VPI+ teachers in Year 2, coaches addressed teacher-child interactions (63% of contacts), and domain-specific content related to the five essential domains of school readiness (55% of contacts).
- The emphasis on domain-specific content overall decreased from Year 1 to Year 2 (from 80% to 55% of contacts). However, more than half of coaching sessions included language and/or literacy (51% language and 21% literacy), which when combined was the most frequently addressed essential domain of school readiness. Social and emotional development was the next most frequent topic, addressed by coaches in 55% of Year 2 coaching contacts, a significant increase from Year 1 (25% of contacts).
- More than a third of coaching contacts in Year 2 addressed supportive environments. In Year 2, the incidence of coaching contacts that addressed the collection and use of assessment data, family engagement, and supporting children with special needs and who are DLLs was lower than for other focus areas. However, there was an increased focus on how best to support DLLs and children with special needs from Year 1 to Year 2.

Child Outcomes

Outcome data examining the fall-to-spring gains of VPI+ children in preschool as well as the kindergarten readiness of VPI+ children in fall of their kindergarten year suggest the expansion efforts in the Commonwealth continue to have clear benefits.

Fall to spring gains during preschool

- Overall, as in Year 1, children who attended VPI+ in Year 2 demonstrated statistically significant gains on early literacy and math skills between fall and spring.
- VPI+ children in Year 2 also showed statistically significant gains between fall and spring on approaches to learning (including children's enjoyment in learning, task persistence, and curiosity levels, especially when confronted with new skills or tasks) and small but

statistically significant increases in their peer social skills and behavior control skills as measured by teacher-report as well as direct assessment of self-regulation.

- VPI+ children's gains on school readiness skills varied consistently by DLL status, with DLL children often making greater fall to spring gains in Year 2 on both academic and non-academic skills than their non-DLL peers, indicating progress in closing the achievement gap between these groups during the preschool year. There were fewer consistent differences in Year 2 fall to spring gains by IEP or poverty status.

Kindergarten readiness

- Children were considered 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 development or approaches to learning).
- A majority (70%) of children who attended VPI+ in Year 1 (Cohort 1) demonstrated kindergarten readiness in fall 2016, as defined by being within or above the developmental range on norm-referenced measures. The percentage of children identified as ready for kindergarten ranged from 60% to 80% across divisions.
- Hispanic Cohort 1 children were statistically less likely to demonstrate readiness in the domain of math and overall kindergarten readiness than non-Hispanic children, after controlling for child demographic characteristics.
- Black Cohort 1 children were statistically less likely to demonstrate readiness in the domains of math and social and emotional development as well as overall kindergarten readiness than non-Black children, after controlling for child demographic characteristics.
- DLL Cohort 1 children also were less likely to demonstrate overall kindergarten readiness compared with non-DLL children. Likewise, about half (52%) of Cohort 1 children receiving special education services through an IEP demonstrated overall kindergarten readiness compared with 71% of children who do not have an IEP. About three-fifths (58%) of Cohort 1 children who were rated in fair or poor health demonstrated overall kindergarten readiness compared with 71% of children who were rated in good or excellent health. All of these differences were statistically significant, after controlling for other demographic characteristics.
- Cohort 1 children from households with incomes at or below 100% of the FPL had similar rates of kindergarten readiness compared with children from families with an income of 101 to 200% of the FPL (68% vs. 73%).

Conclusion

This report contains findings across all 11 school divisions, 118 classrooms and teachers, and child demographic and outcomes for more than 1,300 children in the second year of VPI+. As the VPI+ Implementation Team and staff from the divisions review the report, special attention should be paid to how implementation can be strengthened across sites to ensure high-quality preschool programming is occurring. The VPI+ Implementation Team and staff from the divisions may want to carefully consider what additional resources, materials, and technical assistance is needed to meet the learning and teaching needs of all involved from coordinators to teachers to children and their families.

Next Steps

With support from state VPI+ partners (including CASTL, VECF, VDOE, and the evaluation team) the school divisions are now working on specific program improvement and professional development efforts using data from the QRIS, formative assessments, and student assessments. State-level VPI+ leadership is working with school divisions around issues such as recruitment of eligible children, data collection and reporting, and fidelity of program implementation and how to effectively implement continuous improvement plans following data review. School divisions are also launching Year 3 of the VPI+ program, including expansion of the program to two new school divisions to increase access for at-risk children and their families to high-quality preschool programs.

In Year 3 of VPI+, the evaluation will continue to collect formative and student assessment data to provide feedback to improve instruction and program implementation. During Years 3 and 4, the evaluation will also conduct a Regression Discontinuity (RD) study to measure the impact of VPI+ on children's school readiness at kindergarten, begin a longitudinal study that compares VPI+ children and a matched-comparison group of children on later academic and non-academic outcomes, and carry out a cost study that examines program costs and the cost-benefit ratio.

1. Introduction

In January 2015, the Virginia Department of Education (VDOE) in the Commonwealth of Virginia was awarded a 4-year federal preschool expansion grant to improve quality in existing preschool classrooms and to expand access to high-quality preschool classrooms, referred to as the Virginia Preschool Initiative Plus (VPI+). Virginia is one of only 18 states awarded a U.S. Department of Education Preschool Development Grant (PDG). Virginia is using its PDG funds to increase access to high-quality preschool in 11 school divisions in high-need communities by expanding the number of slots available and by improving existing classrooms. (Virginia uses the term “division” rather than “district”). These activities build on Virginia’s existing preschool program, Virginia Preschool Initiative (VPI). This report documents program implementation and impacts on child outcomes for Year 2 of the VPI+ grant (the 2016–2017 school year), and where relevant, compares implementation and outcomes of Year 2 to Year 1 (the 2015–2016 school year).

The PDG funds support two types of preschool classrooms in the 11 participating school divisions:

VPI+ classrooms: newly-opened VPI+ classrooms that implement all of the VPI+ grant requirements. Further, VPI+ classrooms receive the following supports:

- Developmentally appropriate evidence-based curriculum (*The Creative Curriculum*[®] or other reviewed curriculum) that focuses on the Essential Domains of School Readiness (National Research Council, 2008):
 - Language and literacy development;
 - Cognition and general knowledge (including early mathematics and early scientific development);
 - Approaches to learning (including the utilization of the arts);
 - Physical well-being and motor development (including adaptive skills); and
 - Social and emotional development.
- Teaching Strategies[®] GOLD[™] formative assessment system and training
- Ongoing program evaluation and monitoring and improvement support from the Virginia Quality Rating Improvement System (QRIS)
- Focused coaching and professional development (e.g., curriculum implementation connected to the five essential domains of school readiness)

- External program evaluation (formative and summative assessment reports to inform program improvements)
- On-site comprehensive services, such as vision and hearing screenings, mental health, nutrition, and adult education, and referrals to additional community-based services
- Family engagement coordinators to help with outreach to hard-to-reach families and to connect families to services
- Significant additional resources (e.g., instructional technology for classrooms, curriculum support with training, classroom libraries and curriculum-based literacy materials, curriculum-based hands-on materials and learning center supplies)

In addition, classrooms within the VPI+ program must contain the following features associated with high-quality preschool programs:

- High staff qualifications, including teachers with a bachelor's degree in Early Childhood Education or in any field with state-approved pathways and teaching assistants with appropriate credentials;
- Teachers must have an active Virginia teaching license with an elementary endorsement including PreK;
- Individualized accommodations and supports so all children can access/participate fully in learning tasks;
- Child-to-instructional staff ratios of no more than 9 to 1 and class sizes of no more than 18 children;
- Staff salaries comparable to salaries of K–12 teachers;
- Full-day program; and
- Engagement of families as decision makers.

VPI Improved classrooms: existing state-funded classrooms that enhance their quality by implementing at least one of five program quality enhancements (i.e., raising private providers' teacher and/or assistant compensation to align with K–12 school division teachers, moving from a half-day program to a full-day program, reducing class size and student-teacher ratio, providing evidence-based professional development and/or coaching, and making comprehensive services available to children and their families).

In Year 1, the 11 school divisions created new preschool slots for children in 66 new VPI+ classrooms and in 44 existing blended classrooms in the 11 participating school divisions, for a

total of 110 new or blended VPI+ classrooms. In Year 2, VPI+ expanded further to include 8 new classrooms, for a total of 118 VPI+ new or blended classrooms.

Virginia also created a cross-agency and cross-sector system at the state level to support coordinated implementation of VPI+ programs. The VPI+ Implementation Team consists of both public and private partners from state and local agencies who can advise on and provide services for VPI+ and other at-risk children.

To measure impact and support program improvement, VDOE contracted with SRI International (SRI) in late August 2015 to conduct a comprehensive evaluation of VPI+, including a formative evaluation of VPI+ implementation, a summative evaluation of VPI+ impact on children's school readiness and later academic outcomes, and a cost-benefit analysis to determine investments needed for desired outcomes. Due to budgetary constraints, VDOE decided to focus the external evaluation on only VPI+ classroom implementation and child outcomes (not VPI Improved classrooms), given VPI+ classrooms will be receiving the full treatment of initiative supports (e.g., approved curriculum, formative assessments, evaluation and monitoring from the QRIS, summative assessments, intensive coaching, increased funding for comprehensive services and family engagement, and increased availability of instructional materials, including technology). Therefore, this report presents findings on only VPI+ classrooms and children.

During the first year of the project, SRI and its subcontractor, School Readiness Consulting (SRC), convened an Evaluation Advisory Board (EAB) which included a team of experts on analysis and methodology, preschool programs and curriculum, child outcomes, and quality improvement efforts. The EAB has met five times resulting in a set of recommendations that guide the evaluation design and implementation.⁵ SRI collects child assessment data for multiple purposes: (1) to comply with grant requirements to define and measure kindergarten readiness, (2) to track outcomes across school readiness domains⁶ and other areas (e.g., attendance, special education), (3) to determine impacts on key school readiness domains using a rigorous design, and (4) to provide data back to VDOE and divisions to improve instruction and program implementation. Evaluators also use formative program measures, cost

⁵ Implementation team meetings occurred on August 31, 2015 to review the logic model, September 29, 2015 to share evaluation plan with divisions and partners, and January 7, 2016, April 13, 2016, and May 3, 2016 to share updates on evaluation activities. EAB meetings occurred on October 23, 2015, February 11, 2016 and May 16, 2016 in Year 1, November 2, 2016 in Year 2, and July 10, 2017 in Year 3.

⁶ In the federal grant, VDOE set as its goal to have 85% of children in Year 1 meeting the PALS-PreK and PALS-K developmental range and readiness benchmarks. Each year the goal increases such that it is 90% in Year 2, 92% in Year 3, and 95% in Year 4. Similar goals were set for cognition, approaches to learning, social and emotional development, and physical motor skills— 85% in Year 1, 90% in Year 2, 92% in Year 3, 95% in Year 4.

data, and data from the Virginia Longitudinal Data System, to provide feedback to VDOE, divisions, and teachers to improve instruction and program implementation.

Evaluation Questions

The goal of VPI+ is to improve quality, access, and impact of services in the participating high-needs communities. Questions about access and quality are part of the formative evaluation questions. Access to high-quality preschool is expected to lead to positive child growth in the essential domains of school readiness in preschool. These positive preschool experiences and outcomes are expected to lead to greater school readiness in kindergarten, as well as increased attendance, decreased student retention, and a reduction in special education placement and other intensive reading intervention services. Our evaluation questions for the second year of implementation (2016–2017) were as follows:

1. **Enrollment and access:** How many children are served in VPI+ new classrooms and what are their characteristics (e.g., race/ethnicity, home language, and special education status)? How much VPI+ preschool did children receive?
2. **Program implementation and quality:** To what extent are new VPI+ classrooms providing high-quality teacher and learning environments that address the five school readiness domains, use formative data to individualize instruction, and provide supports to the unique needs of learners? To what extent are the new VPI+ classrooms providing comprehensive services and increasing their engagement with families and communities?
3. **Technical assistance from state partners:** To what extent are VPI+ coaches and administrators receiving professional development (PD) from the Center for Advanced Study of Teaching and Learning (CASTL) at the University of Virginia and other state partners to support implementation of an evidence-based curriculum, formative assessments to inform instruction, family engagement strategies, effective teacher-child interactions, and other practices based on CASTL's needs assessment in new VPI+ classrooms? Do these supports meet the needs of division administrators and coaches?
4. **Local coaching and professional development:** To what extent are teachers of new VPI+ classrooms receiving local coaching and PD to support implementation of an evidence-based curriculum, formative assessments to inform instruction, family engagement strategies, effective teacher-child interactions, and other practices based on CASTL's needs assessment? Do these supports meet the needs of individual

teachers?

5. **Child outcomes:** Do children in VPI+ classrooms show increased school readiness skills during preschool (i.e., from fall to spring)? What is the impact of participation in VPI+ on children’s school readiness skills at kindergarten entry? Do gains in skills vary by child characteristics (e.g., race/ethnicity, Dual Language Learners, income levels, special education status) or attendance?⁷
6. **Cost study:** What is the comprehensive per-child cost of implementing VPI+? What is the relationship between the costs of the VPI+ program and the economic benefits of the program?

Evaluation Methods

SRI used a variety of methods and sources to learn about VPI+ implementation during the second year of the grant (Exhibit 1).

Exhibit 1. Formative Evaluation Methods, by Question

	Extant data	Coaching logs and interviews	Technical assistance documentation	Observation of PD sessions	Division coordinator interview/ surveys	Teacher surveys	Child direct assessments	Teacher checklists
1. Enrollment and access	★				★			
2. Program implementation and quality	★	★			★	★		
3. Technical assistance from state partners			★	★	★			
4. Local coaching and PD		★			★	★		
5. Child outcomes	★						★	★
6. Cost study	★				★		★	★

⁷ In future reports, we will describe the results of the longitudinal study that answers questions about later school outcomes such as grade retention and need for special education services and supports. We may also examine variation in impacts by different implementation and classroom features.

SRI has used the following methods to collect evaluation data:

Extant and administrative data analysis: Each VPI+ school division provided data exports to the evaluation team on VPI+ and VPI Improved enrollment and student demographics and teacher and program characteristics in the fall, updates to student enrollment in the spring, and data on cumulative attendance and attrition, disciplinary actions (suspensions and expulsions), and updated disability status in the summer.

To measure classroom quality, SRI received data exports from the Virginia Early Childhood Foundation (VECF) with classroom observation data they collected on VPI+ classrooms in fall 2015 using the Classroom Assessment Scoring System® (CLASS®) and Early Childhood Environment Rating Scale-Revised (ECERS-R) through their involvement in a tiered Quality Rating and Improvement System (QRIS). The CLASS® and ECERS-R (described in more detail in Chapter 3) are observation measures of classroom quality and are collected as part of the professional development supports offered to VPI+ classrooms through their involvement in the QRIS. SRI also received data exports with data from a literacy screening assessment, the Phonological Awareness Literacy Screening (PALS), described below with the other summative child assessments.

Coaching logs and interviews: To learn about local coaching and professional development activities, local school division coaches used a log to track the coaching they delivered to teaching staff, including the content and intensity (hours) of coaching for individual VPI+ teachers. These logs are completed online throughout the school year. The evaluation team also interviewed all 13 coaches who provided coaching to VPI+ teachers in the spring of 2017. The interviews asked coaches about their role, how they determined which teachers to coach and which topics to address during coaching, the supports and training coaches received and its usefulness, the challenges they experienced as coaches, and their perceptions of VPI+ implementation and where it could be further strengthened.

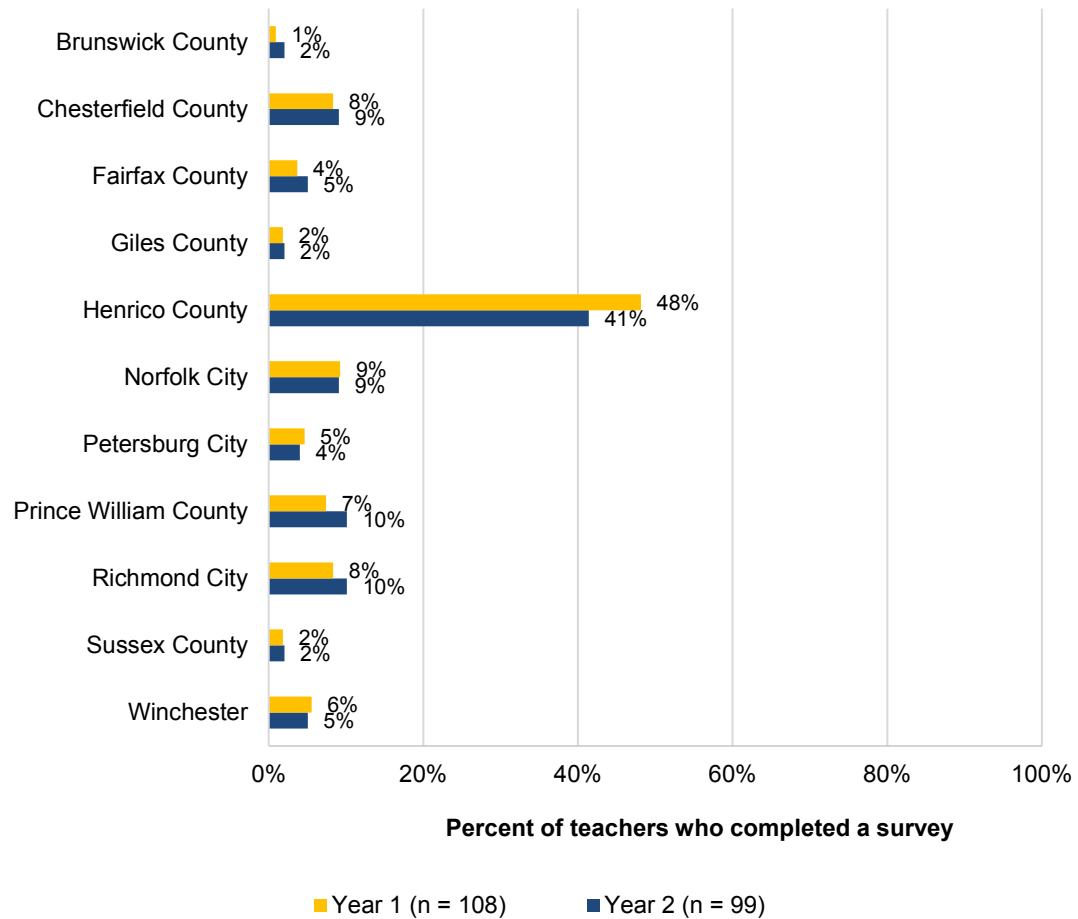
Documentation of technical assistance and observations of professional development sessions: VDOE, VECF, and CASTL provided technical assistance and support to VPI+ coordinators, coaches, and family engagement coordinators. To gather information about the type and intensity of technical assistance and support offered, SRI obtained summaries from VDOE and documentation from CASTL with the dates, hours, participant information (division, school/program, type of program, role), and the content of the technical assistance. The evaluation team has observed leadership and coach institutes led by CASTL to collect

additional information about the content of technical assistance and the ways in which CASTL is supporting school divisions with the adoption of new curricula and formative assessments, coaching, use of data, and development of individual PD plans for their teachers and continuous quality improvement plans for programs.

Division VPI+ coordinator phone interviews and surveys: To gather basic program information, the evaluation team conducted semi-structured interviews and brief surveys with the division VPI+ coordinators responsible for coordinating each division's VPI+ classrooms in the fall and spring of Years 1 and 2. The interviews gathered information about each division's local experience implementing preschool programs; the coordinator's background, experiences, and qualifications; experiences with implementation of the curriculum and formative assessment; the characteristics of programs (e.g., full-day, size, staffing, staff qualifications, public or private); and program budget information. The phone interviews and surveys also focused on accomplishments; the role and influence of CASTL's needs assessment; the types and usefulness of the support local administrators received from CASTL around PD planning; local program improvement activities; the structure and focus of VPI+ teacher coaching; facilitators of and barriers to the VPI+ work (e.g., availability of teachers and coaches who meet qualifications, availability of classroom space, buy-in to the new formative assessment and curriculum, budget changes, and evaluation feedback); and updated staffing and budget information.

Teacher surveys: SRI conducted an online survey with VPI+ teachers in the spring of 2016 and 2017 to learn about teachers' backgrounds, experiences, and qualifications; participation in PD and coaching; perceived usefulness of PD and coaching; their classroom practices, including use of certain curricula, formative assessments to inform instruction, and selected family and community engagement activities; buy-in for the new curriculum and formative assessment; perceived access to and use of comprehensive services by their students; and facilitators and barriers to VPI+ implementation. Nearly all VPI+ teachers (108 of 110 in 2016 and 99 of 118 in 2017) participated in the survey. The number of teachers who responded to each survey item varies because sometimes not all teachers responded to an item, or an item was only answered by a subset of teachers based on a survey skip pattern. Furthermore, nearly half of the VPI+ teachers who responded to the teacher survey taught in one school division, Henrico County Public Schools (Exhibit 2).

Exhibit 2. VPI+ Teachers Who Participated in the Teacher Survey, by VPI+ School Division, Years 1 and 2



Summative evaluation methods, measures, and analysis. To address the evaluation questions and evaluate the impact of VPI+, we will use multiple study designs, including a regression discontinuity study and a longitudinal study. In this report, we describe the fall to spring assessment results for the first two years of VPI+ children. We then describe whether these learning gains vary by different subgroups of interest. Finally, we share the results of the descriptive study of kindergarten readiness for the children who participated in the first year of VPI+ in 2015–16 and examine differences in kindergarten readiness overall and by domain in different subgroups.⁸

⁸ In the Year 3 Annual Report (August 2018), we will report the findings from the first regression discontinuity study which will provide an estimate of the impact of VPI+ using a rigorous experimental design. The results of the longitudinal study and the no PreK comparison group will also be included in the Year 3 Annual Report.

Exhibit 3 lists the summative assessments that were collected on VPI+ children in fall and spring of preschool in Years 1 and 2.⁹ SRI selected a battery of assessments to measure children's development in all five Essential School Readiness Domains based on criteria included in Virginia's request for proposals for this evaluation. When available, SRI used norm-referenced measures to permit the VPI+ Implementation Team and VDOE more broadly to determine the extent to which children in the program are meeting or exceeding normative averages.¹⁰ All measures have been used with children 4 to 6 years of age, children living in different geographic regions, and children from different socioeconomic backgrounds and from different racial/ethnic groups. In short, these assessments have been widely used with similar populations of children as those who are participating in the VPI+ program. Brief descriptions of the measures are included below in the text and more detail about the reliability and validity of the measures is included in Appendix A.

Student assessments in fall and spring of preschool were collected on all children in the VPI+ classrooms. Trained SRC assessors (with a criminal background check and TB clearance) conducted the two direct assessments: Woodcock Johnson III Revised (applied problems subtest) and Head Toes Knees Shoulders¹¹, as described below.¹² Beginning in the spring of 2016, the direct assessments also included assessment of both gross and fine motor skills. Starting in spring 2016, SRC assessors administered the Preschool Motor Development Direct Assessment, and starting in fall 2016, division personnel administered the state-mandated Virginia Fine/Gross Motor Screening at Kindergarten and provided the data to SRI. Teachers complete a brief teacher checklist (Teacher-Child Rating Scale 2.1) using a secure online survey. Data also are collected from student records and teacher-administered assessment of students' literacy skills (Phonological Awareness Literacy Screening – PALS) as described below.

⁹ Assessment data were also collected on VPI Improved children in Years 1 and 2 in 44 existing classrooms in the Henrico school division that were brought up to VPI+ standards.

¹⁰ Only the Woodcock-Johnson® III Applied Problems subtest and the Teacher-Child Rating Scale are considered norm-referenced measures.

¹¹ Due to the lack of discriminant validity in previous research and in combination with the fall 2015 VPI+ sample results which showed 47% of the sample could not pass the first phase which is sorting cards by color correctly in five of six trials as well as additional information from developers on the limitations of the current paper/pencil version of the task, SRI suggested removing this task from the battery. Therefore, the DCCS measure was only used in year 1 of the study.

¹² SRI and SRC are working on behalf of VDOE and the school divisions to help them administer predictive tests and improve instruction. The Family Educational Rights and Privacy Act (FERPA) allows for the disclosure of personally identifying student information to organizations conducting studies on their behalf when the researcher enters into a written agreement with the educational institution that contains specific assurances on data confidentiality.

Children were assessed in English or Spanish based on a language screener conducted at the beginning of the assessment. All children whose home language was not English were screened for appropriateness of assessing the child in English. The same was true in the spring. If a child did not pass the English language screener, but the child's home language was Spanish, then the child was tested in Spanish using the norm-referenced Bateria III Woodcock-Muñoz™ (Bateria III) (Muñoz-Sandoval, Woodcock, McGrew, & Mather, 2005) a parallel Spanish version of the Woodcock-Johnson® III (WJ III®) (Woodcock, McGrew, & Mather, 2001) and a developer-translated version of the HTKS. Approximately 20% to 25% of participating VPI+ children were identified as speaking a language other than English at home by parent report. The English language screening protocol was still being piloted in the first two years. As a result, the percentage of children passing the English language screener varies widely ranging from 80% in Year 1¹³ to 30% in Year 2.¹⁴

¹³ Some of the children in Year 1 may have needed to be assessed in Spanish but the assessment team ran out of time or did not have enough bilingual assessors to complete the Spanish assessments before the data collection window ended.

¹⁴ Because of this variation, the evaluation team consulted with two of the EAB members to identify a better and more consistent approach to screening children for language of assessment.

Exhibit 3. Child Assessment Measures, by Domain

Domain	Skills	Measure	Source	Data Collection Time Periods
Language and Literacy	Phonological awareness Print and word awareness Name writing ability Alphabet recognition	Phonological Awareness Literacy Screening for Preschoolers (PALS-PreK) Phonological Awareness Literacy Screening (PALS)	Teachers administer	PALS-PreK every fall and spring of preschool Starting Year 2, PALS in fall and spring for K and in spring for 1st grade
	Receptive vocabulary	Peabody Picture Vocabulary Test (PPVT-4) ^b	Direct assessment (DA) SRI/SRC assessors	Starting Year 3, fall and spring of preschool and fall of kindergarten
Cognition and general knowledge ^a	Numeracy, counting	Woodcock Johnson III Revised (applied problems subtest)	DA SRI/SRC assessors	Every fall and spring of preschool and fall of kindergarten
Social and Emotional	Self-Regulation Social Skills Problem Behaviors	Head Toes Knees Shoulders (HTKS) Teacher-Child Rating Scale (T-CRS 2.1) Teacher-Child Rating Scale (T-CRS 2.1)	DA SRI/SRC assessors Teacher report Teacher report	Every fall and spring of preschool and fall of kindergarten
Approaches to Learning	Task Persistence	Teacher-Child Rating Scale (T-CRS 2.1)	Teacher report	Every fall and spring of preschool and fall of kindergarten
Physical Health and Motor Development	General health Gross motor development Fine motor development	Standard survey items Motor tasks identified in the literature to assess gross motor, fine motor, and balance-coordination skills	Teacher report DA SRI/SRC assessors	Every fall and spring of preschool and fall of kindergarten

^aIn Year 1, evaluators used the Dimensional Change Card Sort (DCCS) but stopped using this because it produced very similar findings to HTKS and was under revision by the publisher.

^bStarting in Year 3, the assessors also will administer the Peabody Picture Vocabulary Test (PPVT-4) to measure receptive language development.

Child direct assessment measures to be collected:

- **Woodcock-Johnson (WJIII-R) Applied Problems subtest (Woodcock, et al., 2001):** The Applied Problems subtest is a widely used norm-referenced measure of a limited number of early math skills (e.g., counting, number sense) in which the assessor asks a child a series of questions and records the child's answers until the child answers incorrectly for six items consecutively. It takes about 10 to 15 minutes to administer.¹⁵ There is a Spanish version of the Applied Problems subtest that we will use for English learners (Woodcock, Munoz-Sandoval, McGrew, & Mather, 2005), which is considered comparable to the English version.
- **Head Toes Knees Shoulders (HTKS; Ponitz et al., 2008; Ponitz, et al., 2009):** The HTKS is a brief assessment of children's behavioral self-regulation, which are aspects of executive functioning as well as part of a child's social and emotional development. It takes approximately 10 minutes to administer and requires children to play a game in which they must do the opposite of what the assessor asks. It is available in Spanish and has been used with children who are bilingual. This measure does not have norm references yet.
- **Preschool Motor Development Direct Assessment.** A brief, direct assessment of children's fine and gross motor skills was created to capture children's abilities in this domain. Children are asked to copy a line and circle in order to examine their fine motor skills; then are asked to perform a number of gross motor tasks (e.g. jumping, hopping, and balancing on one foot). Children are scored based on their ability to complete the request (e.g., "hop three times on each foot") using a yes/no scale. The assessment takes approximately 5-10 minutes to administer and can be administered in both English and Spanish.
- **Virginia Fine/Gross Motor Screening at Kindergarten.** The Virginia Fine/Gross Motor Screening at Kindergarten assesses both fine and gross motor skills, and is administered by division personnel during the first 60 administrative days of school. To assess fine motor skills, children are asked to copy a circle and place five pegs into a pegboard using only one hand. Children are also asked to demonstrate a number of gross motor skills (e.g., balancing on one foot, jumping and clapping, tossing a ball).

¹⁵ We also reviewed the Research-based Early Mathematics Assessment-Short Version (REMA-SV) because it assesses a broader range of early math skills believed to be predictive of school success. There is some evidence that REMA-SV is sensitive to differences in young children's early math skills (Weiland et al., 2012). However, it does not have norm references.

Each child is allowed two attempts to pass each skill, and the assessor indicates whether the child passed or did not pass the task. No psychometric information is available for these items.

Teacher-report child measures to be collected:

- **Teacher-Child Rating Scale (T-CRS 2.1; Hightower & Perkins, 2010):** The T-CRS 2.1 asks teachers to rate students on 38 items and has 4 subscales: task orientation, assertiveness, peer social skills, and behavior control. The task orientation subscale taps into the construct identified by the National Research Council's definition of approaches to learning. The peer social skills and behavior control subscales of the T-CRS will be used to assess the social and emotional development domain. It takes about 5 minutes to complete for each child.
- **Phonological Awareness Literacy Screening (PALS) PreK and K:** PALS is a measure already being used by all VPI+ teachers as part of the VPI+ initiative, and PALS is also the state-provided screening tool for Virginia's Early Intervention Reading Initiative for kindergarten through third grade.¹⁶ SRI will collect student-level results from these assessments through division exports. These data will be used to examine the impact of VPI+ on literacy, one of the five Essential Domains of School Readiness. PALS measures young children's knowledge of important literacy fundamentals (e.g., phonological awareness, alphabet knowledge, knowledge of letter sounds, spelling, concept of word, word recognition in isolation, and oral passage reading). Only two tasks are identical on both PALS-PreK and PALS-K – lower-case alphabet recognition and letter sounds. Starting in fall 2017, VPI+ preschool teachers will be asked to administer lower-case alphabet recognition and letter sounds even if children do not score above the threshold on certain prerequisite tasks.¹⁷ All students are screened using PALS during the fall and spring of kindergarten and spring of first grade. PALS is only administered to students in the fall of first grade and in second grade if the student is new to the division or the student continues to score low or require services on the assessment/screener. In the spring of third grade all students take the Standards of Learning English/reading test (PALS 1-3 is not administered).¹⁸

¹⁶ <http://www.doe.virginia.gov/instruction/english/elementary/>

¹⁷ On PALS-PreK, if a child correctly identifies 16 or more upper case letters, lower case letter recognition task is administered. If a child identifies 9 or more lower case letters on lower-case alphabet awareness, the letter-sound task is administered.

¹⁸ http://www.doe.virginia.gov/instruction/english/elementary/reading/assessment_schedule.pdf

- **Physical health items:** Teachers are also asked to rate children’s physical health and well-being in the online survey, as well as rate children’s fine and gross motor skills.

Cost study data sources. To measure the costs of VPI+ implementation, the evaluation team will use existing administrative data on costs, including data on VPI+ grant reimbursements submitted by each division to VDOE via the Oracle and Online Management of Education Grant Awards (OMEGA) systems, documentation of matching costs maintained by each division, and other local administrative data on costs not included in either of these data sources.

Report Overview

This report presents findings on VPI+ implementation and outcomes for Year 2, and compares those findings to Year 1 where relevant. Chapter 2 presents enrollment, attrition and attendance patterns overall and by subgroups. Chapter 3 describes VPI+ program implementation and quality including program structural characteristics, teacher characteristics, curriculum and instruction, use of formative assessments, family engagement, comprehensive services, and classroom quality ratings. Chapter 4 highlights professional development and technical assistance provided to VPI+ coordinators, coaches, and family engagement coordinators by state partners, and it summarizes professional development and coaching efforts aimed at VPI+ teachers. Chapter 5 examines child outcomes for VPI+ students overall and by subgroups, including gains made during the preschool year and kindergarten readiness outcomes for Year 1 children. Chapter 6 describes the cost study and its timeline. Chapter 7 concludes the report with a discussion of potential implications from the Year 2 evaluation for VPI+ implementation moving forward.

2. Enrollment, Attrition, and Attendance

This chapter presents the enrollment, program retention rates, demographics, and program attendance of children in VPI+ classrooms in Year 2. Where relevant, the chapter includes comparisons to the children who were enrolled in VPI+ during Year 1.

Enrollment

As planned, the numbers of children enrolled in VPI+ increased from Year 1 to Year 2.

In Year 2, VPI+ operated in 75 newly-opened high-quality preschool classrooms as well as 43 existing classrooms with blended funding that were brought up to VPI+ standards, for a total of 118 VPI+ classrooms. The numbers of children enrolled in VPI+ increased from Year 1 to Year 2, from 1,235 children in the spring of Year 1 to 1,365 children¹⁹ in the spring of Year 2.²⁰ Year 2 enrollment represents an 11 percent increase from Year 1. Enrollment increases were particularly large in Brunswick (133%), Fairfax County (24%), Norfolk City (17%), Prince William County (33%), Richmond City (25%), and Sussex County (20%).

Exhibit 4. Number of VPI+ Classrooms and Children, Years 1 and 2

School Division	Year 1 (2015–2016)		Year 2 (2016–2017)	
	Number of Classrooms	Number of Children Enrolled Spring 2016	Number of Classrooms	Number of Children Enrolled Spring 2017
Brunswick County	1	12	2	28
Chesterfield County	9	141	10	159
Fairfax County	4	70	5	87
Giles County	2	34	2	36
Henrico County	54	359	53	338
Norfolk City	10	155	11	181
Petersburg City	5	79	5	63
Prince William County	8	144	11	192
Richmond City	9	120	11	150
Sussex County	2	20	2	24
Winchester	6	101	6	107
TOTAL	110	1,235	118	1,365

¹⁹ This includes 14 Title I children, and 172 Head Start in Henrico County Public Schools (HCPS) VPI+ blended classrooms.

²⁰ The Year 2 December 1 enrollment count of VPI+ students for the Annual Performance Report was 1,406.

Attrition from VPI+

Almost all (91%) of children who enrolled in VPI+ in the fall of Year 2 remained in the program throughout the school year.

In fall 2016, 1,379 children were enrolled in VPI+. By spring 2017, 1,255 or 91 percent of the 1,379 children from the fall were still enrolled in VPI+. This program retention rate is slightly lower than what was observed in Year 1 (95 percent of children from the fall were still enrolled). In Year 2 retention rates ranged from a low of 78 percent in one division to a high of 96 percent in another division. By the spring of Year 2, 110 new children (8 percent of all children who were enrolled in VPI+) had joined the program since the fall. This was slightly higher than in Year 1, when 5 percent of all of the children who were enrolled in VPI+ in the spring had enrolled after the fall.

Demographic Characteristics of Children Who Attended the Full Year

This section presents demographic data for the 1,255 children who enrolled in VPI+ in both the fall and spring of Year 2. Where relevant, the chapter includes comparisons to the 1,174 children who were also enrolled in VPI+ in both the fall and spring of Year 1.

The demographic characteristics of VPI+ children in Year 2 were similar to those children who participated in VPI+ in Year 1.

About half of the Year 2 children were female. Based on administrative data collected from the divisions in October, March, and June of Year 2, about 8 percent of the children were identified with a disability or delay, and had an Individualized Education Program (IEP) at some point during the school year. A small percentage of children (7%) were identified as having fair or poor health as rated by teachers in Year 2.

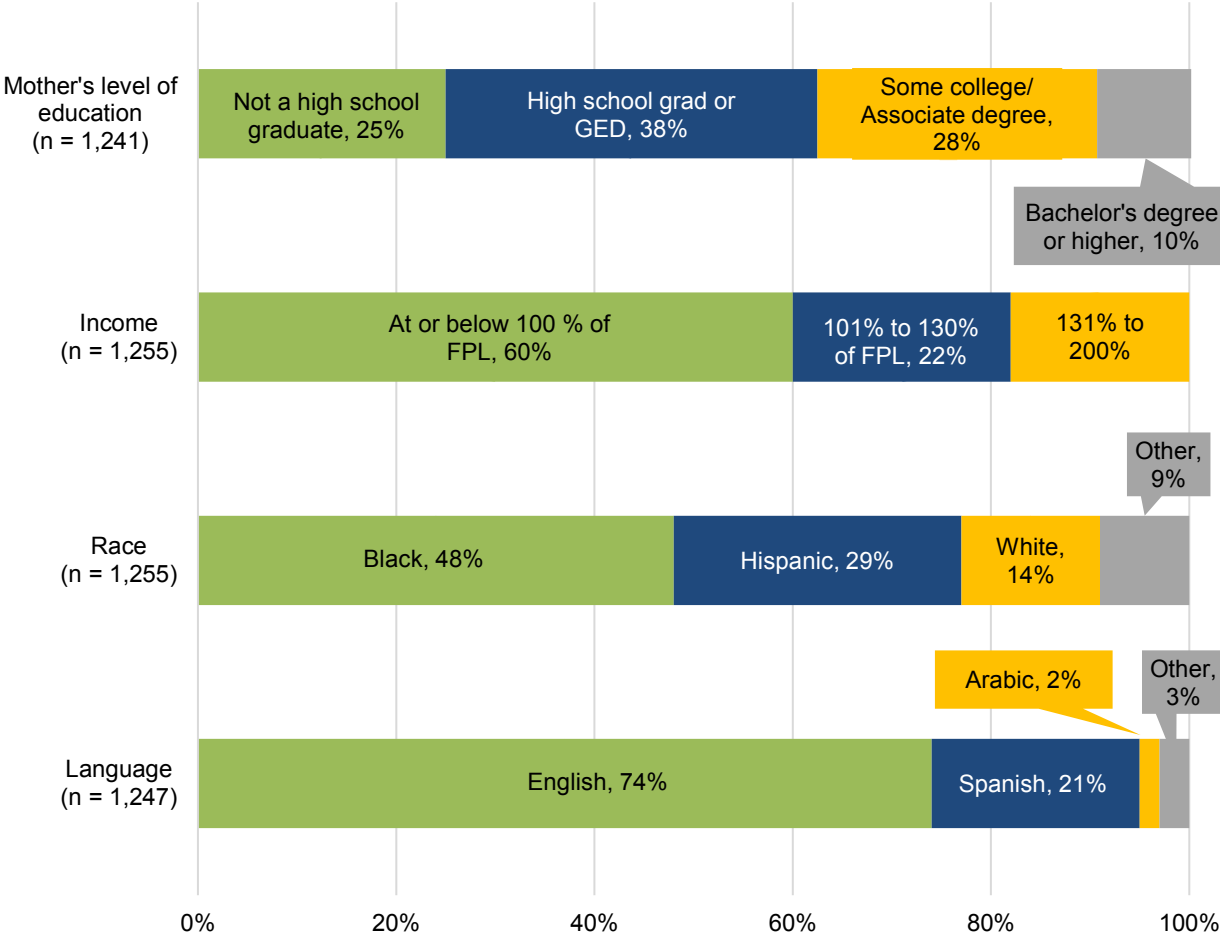
The majority of the mothers of Year 2 VPI+ children reported having completed high school (38%) or some college (28%). One quarter of the mothers of Year 2 VPI+ children reported that they had not completed high school and 10 percent reported having earned a bachelor's or some other advanced degree.

Children were only eligible to be enrolled in VPI+ if their families' incomes were at or below 200% of the Federal Poverty Level (FPL). More than half of Year 2 children (63%) were from households with very low incomes (at or below 100% of the FPL). Approximately 21 percent were from households with incomes between 101% and 130% of the FPL, and the remaining

16 percent of children were from households with incomes between 131% and 200% of FPL. These numbers were similar to those for Year 1 VPI+ students.

Nearly half (48%) of the Year 2 children were identified by their parents as Black, 29 percent were identified as Hispanic, 14 percent were identified as White, and the remaining 9 percent were identified as another race. Children’s families indicated on VPI+ registration forms the primary language spoken at home. Nearly three-fourths of Year 2 children (74%) spoke English at home, 21 percent spoke Spanish at home, two percent spoke Arabic, and three percent reported speaking another language. The percentage of VPI+ children whose home language was English varied across divisions. In five school divisions, fewer than five percent of VPI+ children spoke a language other than English at home while in three divisions more than half of the students spoke a language other than English at home.

Exhibit 5. Child and Family Demographics, Year 2



Attendance

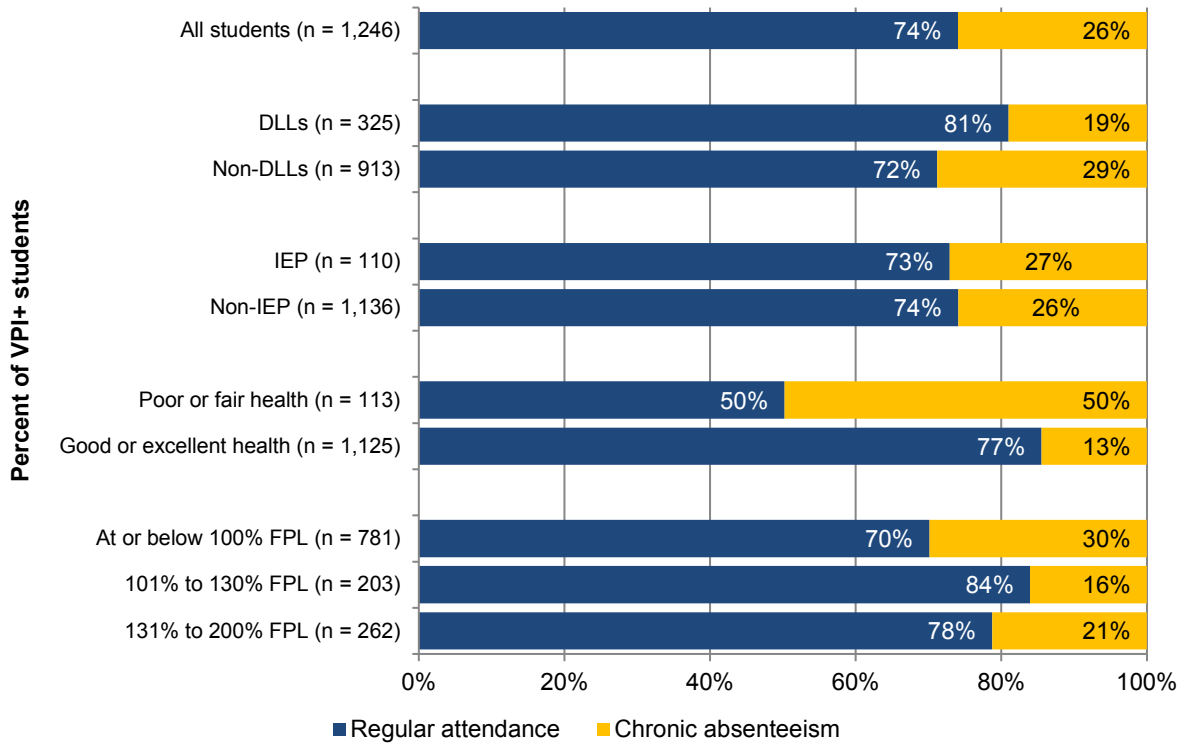
Attendance was generally high in Year 2 of VPI+, but there were differences across student subgroups.

Ensuring the expansion of and enrollment in high-quality preschool for those children most in need is just the first step. Dosage is also of great importance. In the case of VPI+ and preschool programming more broadly, attendance serves as a proxy for dosage, and measuring attendance can help illuminate the relationship between VPI+ participation and child outcomes. The limited research that exists suggests that children with better preschool attendance are more prepared for kindergarten, particularly if those children entered preschool with low skills (Ehrlich et al., 2014). In these studies, researchers typically examine chronic absenteeism—missing 10% or more of all school days – which may be particularly worrisome because it has been found to be correlated with future absenteeism and lower reading scores in second grade (Ehrlich et al., 2014).

To examine the attendance of VPI+ children and associations with children’s gains on the outcome measures, school divisions provided administrative data that contained days of attendance for each VPI+ child who was enrolled in Year 2 and the total number of days their VPI+ program was in session. Most divisions reported a total of 180 program days, but the number of school days varied slightly across divisions due to differences in school calendars and days in which programs were closed due to snow. We account for these differences in calculating children’s attendance rates. Further, we restricted the analysis of attendance rates to only those VPI+ students who began the program in the fall and remained through the spring.

Approximately three quarters (74%) of Year 2 VPI+ children, who were enrolled in the fall and remained in the spring, attended school on a regular basis (at least 90 percent of school days). The remaining 26 percent of students were chronically absent (attended less than 90 percent of school days). Rates of chronic absenteeism were higher for children in fair or poor health (50%) compared to their peers who were in good or excellent health (23%). Chronic absenteeism was also more common among children from families with the lowest incomes (30%) compared to children from families with slightly higher incomes (22%); as well as among non-DLL children (29%) compared to DLL children (19%).

Exhibit 6. Rates of Attendance, by Demographics, Year 2



3. Program Implementation and Quality

This chapter describes the extent to which VPI+ classrooms included the elements of high-quality preschool programs of the VPI+ model.

High-Quality Program Characteristics

The Preschool Development Grant (PDG) requirements specify implementation components that are consistent with a high-quality preschool program, and the grant provides VPI+ programs with support in implementing these features. As reported in the Virginia Preschool Initiative-Plus Formative Evaluation Report (February 2017), each division provided data in December 2016 about the components of the VPI+ programs. These data confirmed that all VPI+ programs met the PDG expectations for:

- structural program characteristics (such as class size, child-to-instructional-staff ratio, full day scheduling, and teachers' salaries);
- VPI+ teacher characteristics and training (such as teachers' educational and licensure credentials and high-quality professional development and coaching of teachers);
- use of a developmentally-appropriate, evidence-based curriculum and formative assessments;
- inclusion and full participation of children with disabilities, including individualized accommodations;
- support for families (such as engagement with families as decision makers, availability of on-site comprehensive services for children and families, and targeted outreach to hard-to-reach families);
- program evaluation to ensure continuous improvement through the Virginia Quality Rating Improvement System (QRIS); and
- summative assessments in fall and spring.

Below we present specific information about the features and implementation of the VPI+ programs during Year 2. Data on program implementation came from data exports, semi-structured interviews and surveys with program coordinators, and surveys of VPI+ teachers.

Structural program characteristics

VPI+ programs all had the structural features associated with high-quality preschools.

All VPI+ programs offered full-day schedules, providing 5.5 hours or more of instructional time each day.²¹ The average salary for a VPI+ teacher was \$48,463 and salaries averaged and ranged from \$34,445 to \$88,127. This makes the average annual salary for VPI+ teachers \$6,000 lower than that of K-12 teachers in Virginia, whose average salary was \$54,486,²² which may have been due to VPI+ teachers, on average, having fewer years of experience within their divisions than their K-12 colleagues. In addition, nearly all VPI+ classrooms (98%) met the requirement of having 18 or fewer children: VPI+ class sizes ranged from 11 to 19 and averaged 17.3 children. The average child-to-instructional staff ratio was 8.5 children to 1 teacher, meeting the PDG criterion of no more than 10 children to 1 instructor.²³

Teacher characteristics

VPI+ teachers have a high level of education and relevant experience

A research-based quality standard for preschool programs is to employ teachers who have, at a minimum, a bachelor's degree and specific training in early childhood education.²⁴ In Year 2, all VPI+ teachers held a bachelor's degree, more than half (53%) of VPI+ teachers who completed the survey also reported having a master's degree, and 3 percent reported having a doctorate or professional degree. VPI+ teachers were most likely to hold a bachelor's degree in elementary education (38%), and more than a fifth had studied early childhood education (22%). Nearly half of VPI+ teachers who held a master's degree (46%) had a degree in the fields of teaching, education, or elementary education, 25 percent in early childhood education, and another 13 percent had studied curriculum and instruction.

In addition to their educational credentials, nearly all VPI+ teachers (97%) had prior experience teaching in preschools, and most VPI+ teachers (84%) had taught in a VPI+ class during the prior year. Many of these teachers were in their second year of teaching, having experienced their first year of teaching in Year 1. A third of VPI+ teachers brought 3 to 5 years of preschool

²¹ Information on hours of instruction was reported by VDOE to SRI.

²² DLAS Document Summary: 2015–2016 Teacher Salary Survey Results: http://www.doe.virginia.gov/teaching/workforce_data/salaries/2015-2016_salary_report.pdf

²³ VDOE required divisions to have a lower child-to-instructional staff ratio than PDG. All but one division met the more conservative VDOE ratio.

²⁴ The State of Preschool 2013: <http://www.nieer.org/sites/nieer/files/yearbook2013.pdf>

teaching experience, and an equivalent number had more than five years of preschool teaching experience. Only a small minority (9%) of VPI+ teachers were new to their school this year, and only three of these teachers (3%) were also new to teaching preschool. VPI+ teachers in classrooms with a high percentage of high-needs children²⁵ had, on average, fewer years of preschool teaching experience than did their colleagues working in classrooms with a low percentage of high-needs children. This was particularly true among classrooms with large numbers of dual language learners (DLL) where VPI+ teachers on average had almost half of the years of experience of other VPI+ teachers (3.7 years compared to 6.4 years).

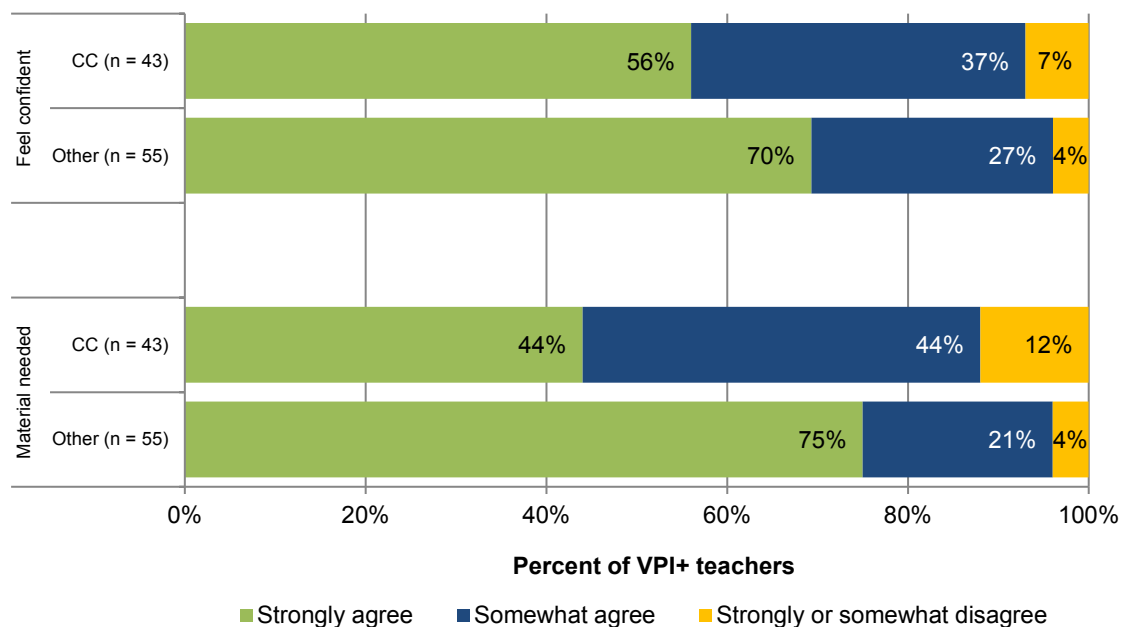
Curriculum and instruction

VPI+ teacher report having experience, materials and support to implement curricula

Four different curricula have been adopted and implemented across the 11 VPI+ school divisions. Eight of the eleven divisions are using *The Creative Curriculum*[®]. Three divisions used “other” curricula: one school division used Houghton Mifflin Harcourt, another school division used High Scope curriculum, and one school division used a locally developed curriculum that was vetted by VDOE (Exhibit 7). In contrast to Year 1 when fewer than one third (32%) of teachers had prior experience with their division’s curriculum, a large majority (88%) of VPI+ teachers across divisions were using a curriculum in Year 2 that they had also used in a past year. A large majority of VPI+ teachers reported that they strongly or somewhat agreed that their classrooms had the materials to support the curriculum (93%), and they were confident in their ability to teach the curriculum (93%). Notably, a smaller percentage of teachers using *The Creative Curriculum*[®] reported that they strongly agree with these positive statements compared to teachers using the other curricula (Exhibit 7).

²⁵ A classroom was considered to have a high number of high-needs children if (a) more than 50% of children were English language learners ($n = 24$ classrooms), (b) more than 25% of children were not meeting developmental benchmarks at prekindergarten entry ($n = 46$), or (c) more than 66% of children received free and reduced priced lunch ($n = 42$). There were ten classrooms classified as having high numbers of high needs-children on the basis of these criteria.

Exhibit 7. Preparedness to Use Curricula, by Curriculum Used, Year 2

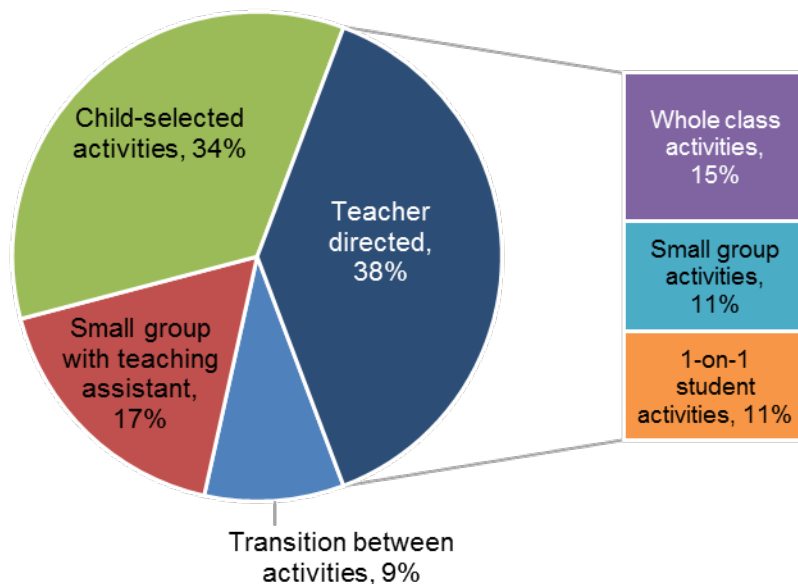


Children in VPI+ classrooms spent much of their instructional day in teacher and assistant teacher directed activities, but also spent a third of their time in child-directed activities.

On average, VPI+ teachers reported approximately 5.5 hours of instructional time on a typical day during Year 2. In making these estimates VPI+ teachers were asked to include time spent on meals and recess, but to exclude time during which students took naps.

VPI+ teachers reported allocating similar amounts of instructional time to child-directed (34%) and teacher-directed (37%) activities. Among teacher-directed activities, whole group instruction, on average, accounted for the largest percentage of time (15%) followed by similar proportions of time in teacher-directed small groups (11%) and teacher-directed one-on-one (11%) activities. Small group activities directed by assistant teachers also accounted for a substantial amount of classroom time (17%). Transitions between activities, on average, accounted for the remaining instructional time (9%) (Exhibit 8).

Exhibit 8. Proportion of Time Children Spent in Various Types of Activities, Year 2

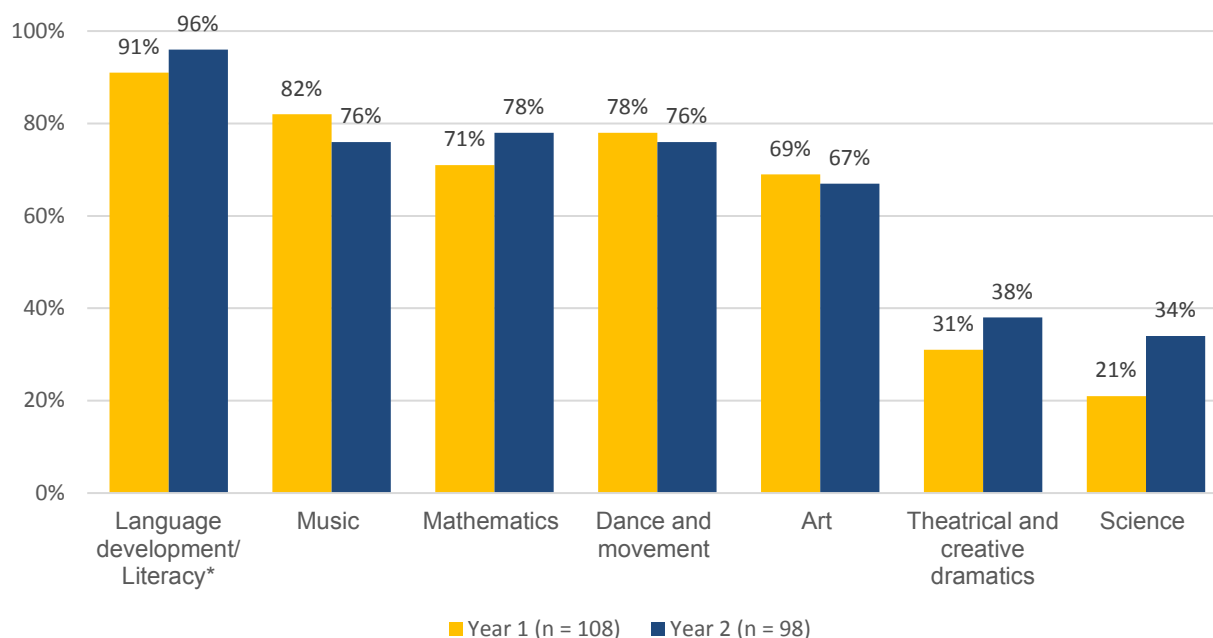


The balance of teacher- versus child-directed activities differed across classrooms, with some classrooms favoring one mode of instruction over the other. For example, the proportion of time VPI+ teachers reported allocating to child-selected activities (0–66%) and to teacher-selected activities similarly (1–66%) ranged greatly among classrooms. Children in classrooms with high numbers of DLL students spent statistically more time in child-directed activities (41% versus 35%) and less time in teacher-directed activities (33% versus 38%).

Children in VPI+ classrooms received instruction in a wide range of content areas, but nearly all VPI+ teachers emphasized language and literacy activities.

Almost all VPI+ teachers reported that children engaged in lessons or projects in the areas of language, literacy, and physical education on a daily basis. Many VPI+ teachers also reported daily activities focused on mathematics (78%), dance or creative movement (76%), music (76%), and art (67%). Although theatrical and creative dramatics and science were the least frequent activities with only 38% and 34% of VPI+ teachers reporting daily activities in these areas, these represent sharp increases from Year 1 (see Exhibit 9).

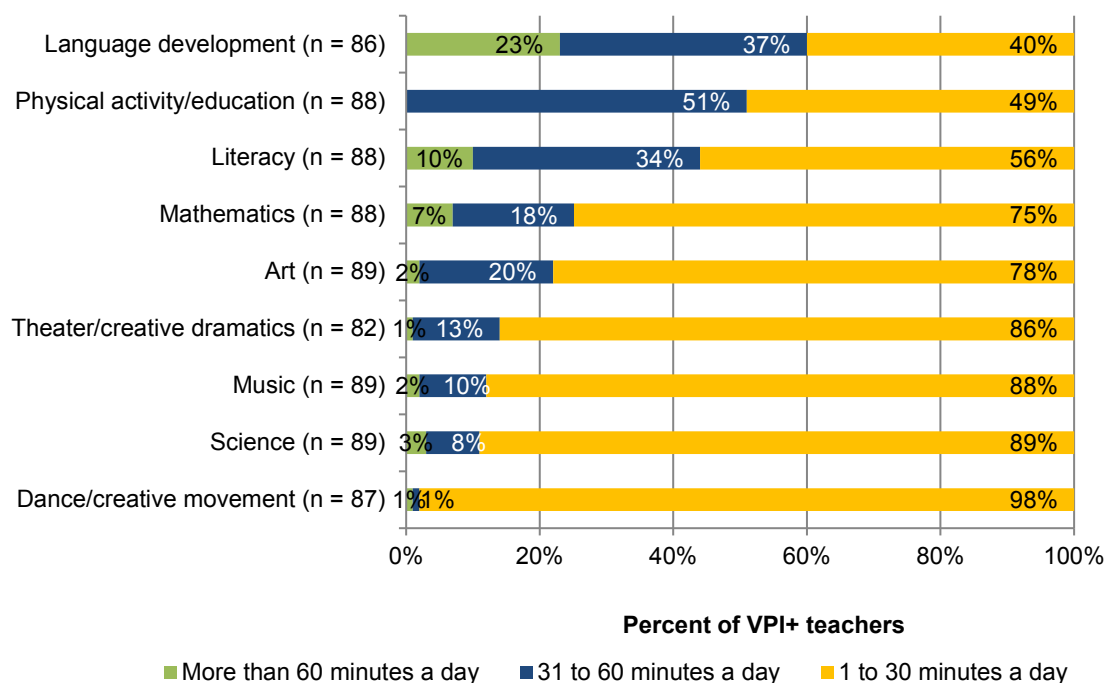
Exhibit 9. Frequency Subject Areas Taught in VPI+ Classrooms, Years 1 and 2



*Note. In Year 1, teachers were asked to report on the frequency of instruction in reading and language arts rather than “Language and literacy.”

Although most VPI+ teachers reported engaging children in many instructional topic areas daily in Year 2, a larger amount of time was spent on language, literacy, and physical education. Across all subjects, VPI+ teachers reported that children usually spent 30 minutes or less on each lesson or project in a day when it was addressed. Most VPI+ teachers reported spending 30 minutes or less on dance and creative movement (98%), science (89%), music (88%), art (78%), and mathematics (75%). Teachers reported spending more time on language and literacy development. More than half of VPI+ teachers (60%) reported that language development activities typically lasted 31 minutes or more and 44 percent of teachers reported that literacy activities lasted 31 minutes or more. About half of VPI+ teachers (51%) also reported spending more than 31 minutes on physical education activities (Exhibit 10).

Exhibit 10. Amount of Time Subject Is Taught on a Day When Taught, Year 2



Formative assessment use

Most teachers reported feeling confident in collecting and using assessment data, but many did not find the formative assessment helpful in supporting children with disabilities and dual language learners.

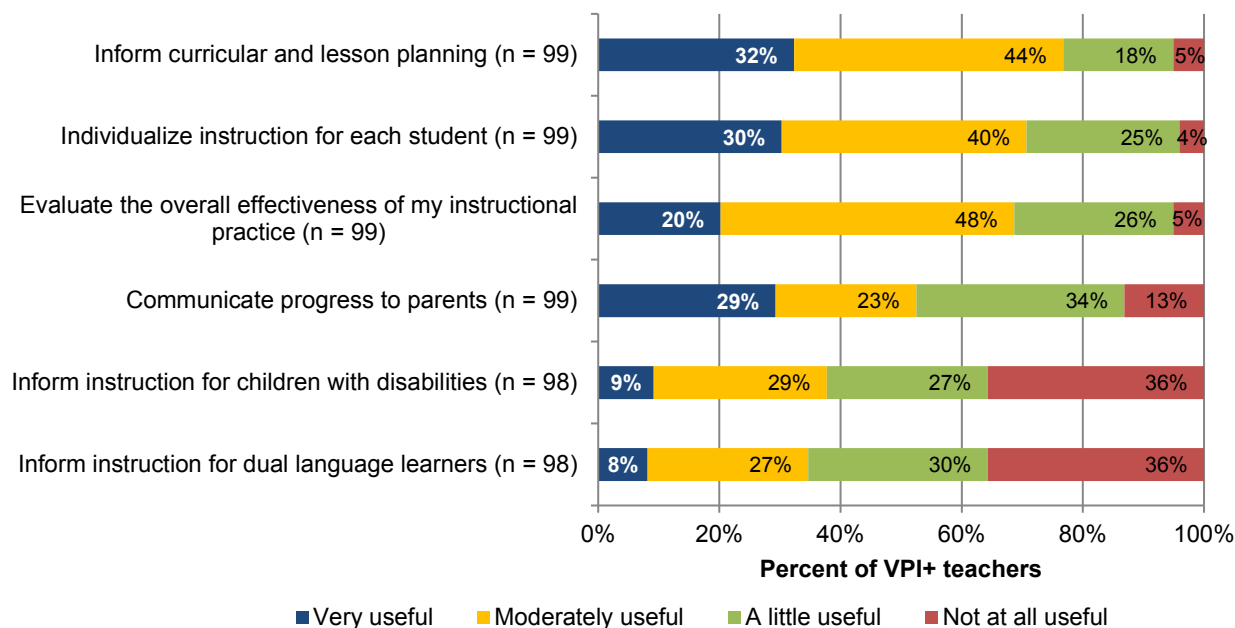
To help teachers individualize instruction, monitor the effectiveness of their own instruction, plan lessons, communicate children’s progress with families, and support children who are dual language learners (DLL) and those who have disabilities, all VPI+ teachers were required to use the *GOLD*[™] formative assessment multiple times a year.

Nearly all VPI+ teachers somewhat or strongly agreed that they felt confident both collecting data using the *GOLD*[™] formative assessment (92%), and interpreting *GOLD*[™] results (90%). However, coaches from five divisions mentioned reliable implementation and use of *GOLD*[™] data as areas of need for improvement, and coaches from six divisions reported providing informal coaching and check-ins around *GOLD*[™] data to supplement the group trainings and webinars that VPI+ teachers received from Teaching Strategies[®].

Similar to VPI+ teachers in Year 1, the majority of teachers in Year 2 reported that *GOLD*[™] was very or moderately useful for informing curricular and lesson planning, individualizing instruction

for students, and evaluating the effectiveness of their own practice (Exhibit 11). About half of VPI+ teachers (49%) reported that *GOLD*[™] was very or moderately useful for communicating children’s progress to parents or guardians. Fewer VPI+ teachers agreed that *GOLD*[™] was very or moderately useful for informing instruction for children with disabilities (36%) or for children who are dual language learners (31%).

Exhibit 11. Perceived Usefulness of *GOLD*[™] for Instruction, Year 2



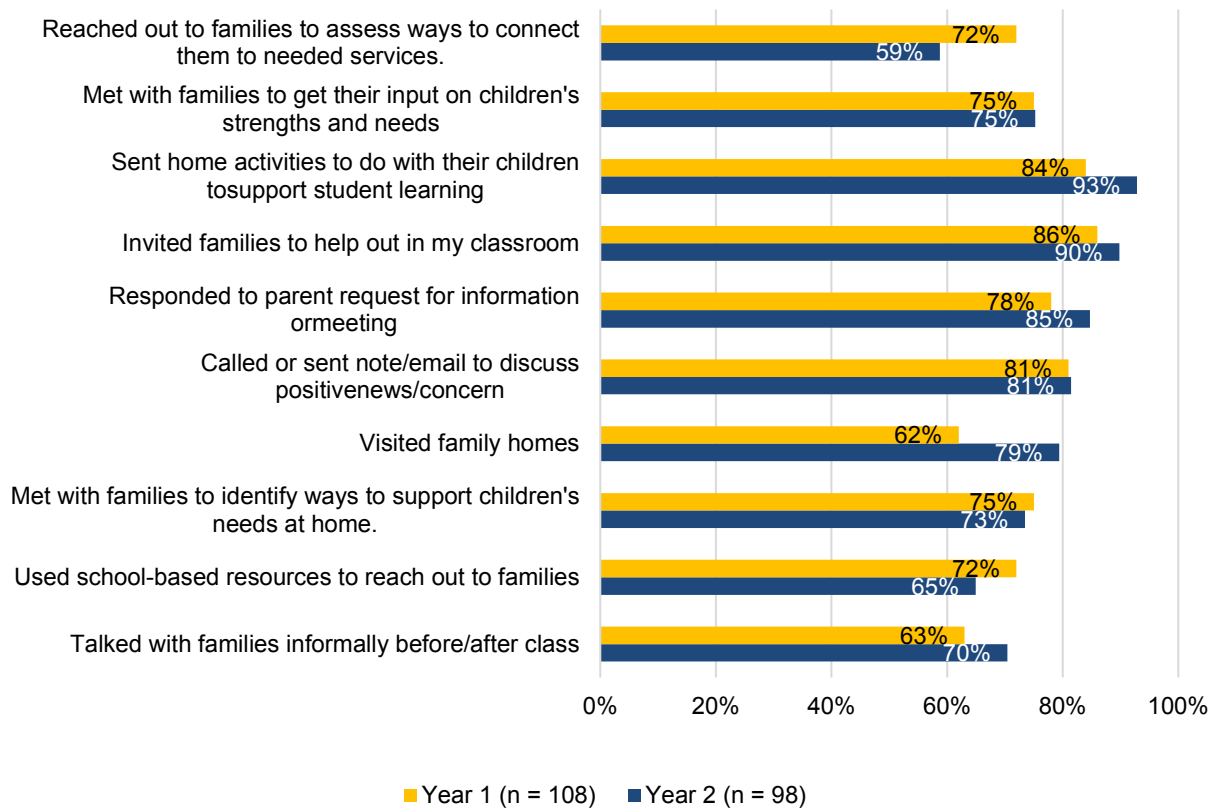
Family engagement in learning

VPI+ teachers continued to report high levels of engagement with students’ families in Year 2.

VPI+ teachers communicated with all of most of their students’ families in a variety of ways during Year 2 (Exhibit 12). Similar to VPI+ teachers in Year 1, a large majority of VPI+ teachers (90%) in Year 2 invited all or most of their students’ families to help in the classroom and sent home activities for families to do with their children (93%). Also similar to VPI+ teachers from Year 1, most VPI+ teachers in Year 2 reported that they communicated with families through notes or emails (81%), responded to requests for information or meetings (85%), met with parents or guardians to discuss their children’s strengths and needs (75%), or talked with their students’ parents or guardians informally before or after class (70%). A lower percentage of VPI+ teachers in Year 2 reported that they had reached out to assess ways to connect families

with additional services 59% compared to 72% in Year 1, while a higher percentage of teachers in Year 2 reported visiting families in their homes (79 % in Year 2 compared to 62% in Year 1). Despite these efforts, about a third of VPI+ teachers in Year 2 found a lack of family engagement to be a great or moderate challenge to providing the best educational experience for their children.

Exhibit 12. Proportion of VPI+ Teachers Who Engaged All or Most Families in Various Ways, Years 1 and 2



Comprehensive services

VPI+ students and their families continued to have access to a range of services during Year 2.

Family well-being 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.²⁶ As part of the PDG grant, VPI+ programs receive increased funding to provide a comprehensive set of services to children and families to increase family engagement in children's learning. Accordingly, in surveys and interviews, VPI+ Coordinators reported that large majorities of children enrolled in VPI+ programs and their families had readily available access to a wide range of local services and supports.

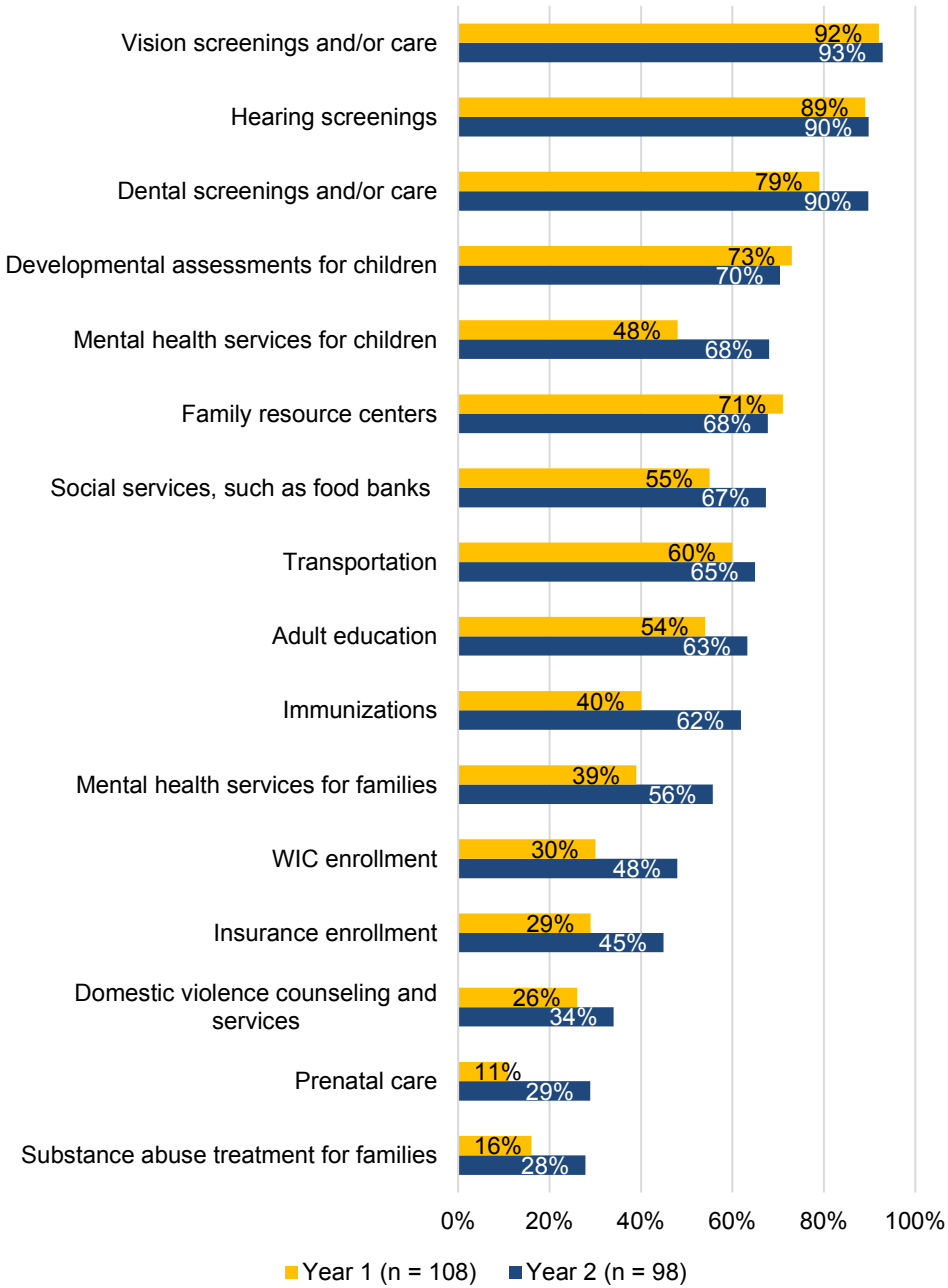
VPI+ teachers reported on the services they believed were readily available to their students and their families.²⁷ A large majority of VPI+ teachers reported believing that medical services such as vision, hearing, and dental screenings and care (93%, 90%, and 90%) were readily available; fewer VPI+ teachers thought that immunizations were readily available (62%). More than half of VPI+ teachers also reported that mental health services were available for children (68%) and families (56%), and that children had access to developmental screenings (70%). Other services that most VPI+ teachers believed were readily available included family resource centers (68%), social services such as food banks and emergency housing (67%), transportation (65%), and adult education (63%). Fewer than half of VPI+ teachers reported that families could access assistance with enrolling in insurance plans (45%) and WIC (48%). For many items, the percentages of teachers who reported that services were readily available was markedly higher in Year 2 as compared to Year 1 (see Exhibit 13).

Results of a survey of VPI+ parents conducted by VDOE in spring 2017 show that many families received information about supports as a result of their participation in VPI+. Among parents who responded to the survey (N = 893, 64% of those surveyed) a majority reported receiving information about dental care (72%) medical health care (70%), parenting skills (70%), where to receive healthy food or have it sent home (e.g., food backpacks or local food banks) (66%), adult education classes or job training (66%), and information about health insurance (59%). Fewer parents reported receiving information about social service programs (54%), mental health services (53%), emergency housing (40%).

²⁶ 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>

²⁷ Note that it is possible that teachers may not be aware of all services that were available to families.

Exhibit 13. Teacher Reports of Services Being Readily Available to VPI+ Children and Families in Years 1 and 2



4. Professional Development and Technical Assistance

This chapter discusses the broad range of professional development activities and technical assistance delivered in the first year of VPI+ implementation. The grant enabled a network of state agencies and partners to train and support local VPI+ leaders, such as division coordinators, coaches, and family engagement coordinators, as they took on new roles and responsibilities. It also promoted intensive professional development of VPI+ classroom teachers as they worked to establish high-quality preschool programming for children. The first section of this chapter discusses the technical assistance and trainings delivered by state partners to VPI+ division coordinators, coaches, and family engagement coordinators. The next section describes training and professional development delivered to VPI+ teachers, in particular through individualized and group coaching.

Training and Technical Assistance for Coordinators, Coaches, and Family Engagement Coordinators

Using a variety of formats, the following Virginia state agencies and partners provided technical assistance and trainings for VPI+ coordinators, coaches, and family engagement coordinators:

- Virginia Department of Education (VDOE) provided technical assistance to VPI+ coordinators, coaches, and family engagement coordinators on all components of grant implementation.
- Virginia Early Childhood Foundation (VECF) provided training on use of Virginia's QRIS, including CLASS[®] and the ECERS-R to guide program improvement efforts.
- The Center for Advanced Study of Teaching and Learning (CASTL) at the University of Virginia provided coach training and support and technical assistance to school division leaders on the development of continuous improvement plans, improving teacher practices, and selecting coaching models.

Below we present the content and format of the professional development activities that each partner implemented in Year 1.

Virginia Department of Education (VDOE) technical assistance and trainings

VDOE provided technical assistance to VPI+ coordinators, coaches, and family engagement coordinators on several components of grant implementation.

VDOE led several activities from August 2016 to May 2017 to support VPI+ staff in their professional development. These included in person meetings, webinars, and calls, visits, and emails with school division's VPI+ teams.

Meetings. In September 2016, VDOE co-hosted an implementation meeting themed, "Learning through Data," with support from VECF and CASTL staff (see section on CASTL technical assistance and trainings). The meeting offered five break-out sessions on topics related to using VPI+ data from Year 1 of the grant. In addition to inviting all VPI+ coordinators, coaches, and family engagement coordinators, VDOE encouraged the attendance of other important school division staff and community partners, such as early childhood special education coordinators, school principals or assistants, and lead VPI+ teachers.

VDOE also hosted a one-day training and networking opportunity for family engagement coordinators in September 2016. This training included small group sessions on topics such as dual language learners, health resources, building relationships with families to increase program participation, supporting families experiencing homelessness, complying with family engagement grant requirements, sharing successful division family engagement initiatives, and learning about the benefits of community collaboration, home visiting, and support available from Head Start resources.

In May 2017, VDOE hosted another day-long implementation team meeting focused on a variety of topics, including family engagement, CLASS® and QRIS data, behavior and social-emotional needs, executive functioning, math, and meeting needs of dual language learners. Presenters included representatives from eight school divisions, VDOE, Teaching Strategies®, and VECF.

Webinars. VDOE held two webinars. Both provided updates regarding the grant and reviewed evaluation activities and results. VDOE also sponsored webinars on topics such as professional-family partnerships, family engagement, inclusion, curriculum fidelity, and mental health resources.

Phone calls and site visits. VDOE staff also conducted quarterly phone calls and annual site visits with each school division. These contacts provided opportunities to discuss divisions' progress in engaging at-risk families and children for the VPI+ program, recruitment of children for available VPI+ classroom slots, grant and budget compliance, and plans for Year 2 of VPI+.

Email updates. VDOE also regularly (twice a month) provided information to divisions through an email update on other relevant opportunities for professional development including conferences and institutes (i.e., Infant and Early Childhood Mental Health Institute Conference, Virginia Head Start Conference, National Early Childhood Inclusion Institute's 2017 Institute).

Virginia Early Childhood Foundation (VECF) technical assistance and trainings

VECF staff built the capacity of VPI+ coordinators and coaches to use data from classroom observations for improving program quality.

VECF staff members provided support to VPI+ coordinators and coaches through trainings on the Classroom Assessment Scoring System (CLASS®) and the Early Childhood Environment Rating Scale-Revised (ECERS-R). At the September VDOE implementation meeting, VECF staff co-hosted two breakout sessions with CASTL staff on interpreting and using QRIS data to plan improvements to teacher-child interactions and classroom environments. At the coaching training in month/year, VECF partnered with CASTL to present on: (1) ways teachers can maximize learning opportunities during transition times (an area of concern on quality ratings); (2) ways to get children thinking and moving more in their learning centers, such as adding dramatic play accessories that promote certain content skills and using Bloom's taxonomy questioning for extending children's higher-order thinking; and (3) how to observe and assess change in teacher-child interactions through video review. At the spring 2017 VDOE implementation meeting, VECF presented on using the CLASS® to measure and improve academic rigor.

At the request of divisions, VECF held ten individual or regional trainings for VPI+ coaches and teachers about the use of quality rating scales for program improvement: five trainings on ECERS-R®; two trainings on the CLASS® domains of Emotional Support and Classroom Organization, and three trainings on the CLASS® PreK observation tool (one for teachers and one for teaching assistants).

VECF also held a one-hour call with VPI+ coordinators, family engagement coordinators, and Smart Beginnings to discuss how VECF can support divisions with birth–third grade alignment and division successes, challenges, and strategies or assistance needed to be successful in their work related to birth–third grade alignment.

CASTL technical assistance and trainings

CASTL staff provided technical assistance and professional development for VPI+ coordinators and coaches related to curriculum, teacher professional development, and use of data for continuous improvement planning.

Year 2 activities were developed based on observations during division site visits, communication with VPI+ division leadership and coaches, and the formative and summative VPI+ reports developed by SRI in Year 1. CASTL provided technical assistance to school division leaders on planning for Year 2, including using their evaluation data, developing continuous improvement plans, and identifying division-specific coaching priorities. CASTL staff members also provided professional development for coaches. These activities, discussed below, included regional consultation meetings, onsite visits to VPI+ school divisions, and individual and group phone calls.

School division consultation and technical assistance. School division VPI+ coordinators received consultation and technical assistance from CASTL, which included the following activities:

- One in-person meeting with each school division to review Year 1 data (QRIS, *GOLD*[™], and evaluation data) and plan for Year 2 improvements using continuous improvement plans (June 2016 to September 2016). Meeting participants included the VPI+ coordinator, VPI+ coaches, the family engagement coordinator, and other division administrators and staff (e.g., superintendents, principals, preschool administrators and teachers).
- One break-out session during the VPI+ Implementation Team Meeting on interpreting and using QRIS data to plan improvements to interactions/environments (September 2016).
- Two regional VPI+ Leadership Academies for VPI+ coordinators, coaches, and family engagement coordinators were held (each division team attended one) in February 2017. The Academies focused on planning, both in division teams and by roles across divisions (e.g., coaches, VPI+ coordinators, family engagement coordinators). Topics included reviewing and interpreting data sources; using data to support transitions, and reflecting on strengths and challenges with creating sustainable, high-quality preschool programming.

- Three consultation calls across the preschool year with each division’s VPI+ team (the VPI+ coordinator, coach(es), and family coordinator) to discuss progress and challenges with continuous improvement plans; review fall 2016 SRI evaluation data and *GOLD*[™] data; get feedback about Leadership Academies; discuss the plans for each division for supporting transition to kindergarten; and identify areas in which divisions wanted to build sustainability.

Coach Training and Support from CASTL. CASTL provided professional development to VPI+ coaches, with three objectives: (1) promoting coaching intensity (contact frequency, use of intensive support strategies), (2) supporting ongoing coaching focus (on effective teacher-child interactions and content area practices aligned with divisions’ continuous improvement plans), and (3) building a community of learning among coaches across VPI+ divisions. Coaches received approximately 21 hours of training and support from CASTL staff between August 2016 and December 2016. These activities included:

- A 2-day training (September 2016) focused on introducing new tools to support coaching focus and intensity, including content checklists, environment 1-pagers, and a video clip directory
- Monthly learning community calls (October 2016–December 2016) focused on math and social-emotional practice
- A call with each school division’s coordinator and coaching team (November 2016) to review coaching log data and plan coaching focus and intensity for Year 2 (1 hour).
- Between two and five individual coaching calls for each division’s coach or coaches (October 2016–December 2016) to discuss coaching focus and intensity through case studies and data-based feedback, motivational interviewing strategies, and coaching models for some divisions (on average, 3 hours per division)
- A three-day coach training focused on coaching to support mathematics and social and emotional development, working with dual language learners, inclusion of children with special needs, using the CLASS[®] in combination with video review to work on teaching quality, incorporating more learning into transition time and learning centers, and motivational interviewing
- A special training was held for new coaches in three divisions that introduced them to practice-based coaching and professional development planning

- Three one-hour community learning calls focused on inclusion practices related to specific content areas, action and end-of-year planning, and individual coach presentations on their personal coaching successes
- Four one-hour monthly individual calls with coaches to review their coaching focus and intensity, and to receive updates on their use of motivational interviewing and action planning, including the use of checkpoint data to guide action planning and professional development planning.

Professional Development Resources from CASTL. Based on Year 1 Implementation findings, CASTL developed several tools to improve the focus and intensity of coaching including 1-page briefs on teaching practices for specific content and observational tools to use when observing certain content domains (e.g., language, literacy, math). CASTL also developed a website (www.vpiplus.org) that included a searchable database of professional development resources and videos.

Other state partner technical assistance and trainings

VPI+ staff had access to professional development activities delivered by entities such as The Annie E. Casey Foundation, the University of Virginia, the Maryland Department of Education, and the Preschool Development Grant TA providers. These included a webinar hosted by the Annie E. Casey Foundation on a self-assessment for engaging parents and developing leaders (October 2016); three webinars offered by the University of Virginia on using PALS data (October 2016); and one webinar hosted by the Preschool Development Grant TA provider as part of a Family Engagement Community of Practice on Maryland's family engagement framework and their new family engagement toolkit (December 2016).

In the spring, VPI+ staff had access to Preschool Development Grant webinar presentations on family engagement by the Center for the Study of Social Policy, supporting DLL students by National Institute for Early Education Research and AEM Corporation, supporting children with incarcerated parents by Missouri Department of Corrections, and language and literacy development by various state representatives. They also received an introduction to the Substance Abuse Mental Health Service Administration's *Toolbox for Infant and Early Childhood Mental Health Consultation* by the Early Childhood Mental Health Institute, and a Health and Human Service resource, *Enhancing Trusting Partnerships at the Systems and Practice Levels: Reciprocal Opportunities for Professionals and Families*. In addition, they had opportunities to participate in the National Early Childhood Inclusion Institute Conference, the Early Childhood

Mental Health Institute Conference, the Virginia ASCD PreK-Kindergarten conference on creating age-appropriate classrooms, and a webinar sponsored by the Early Childhood Technical Assistance Center on family engagement.

Professional Development and Coaching for VPI+ Teachers

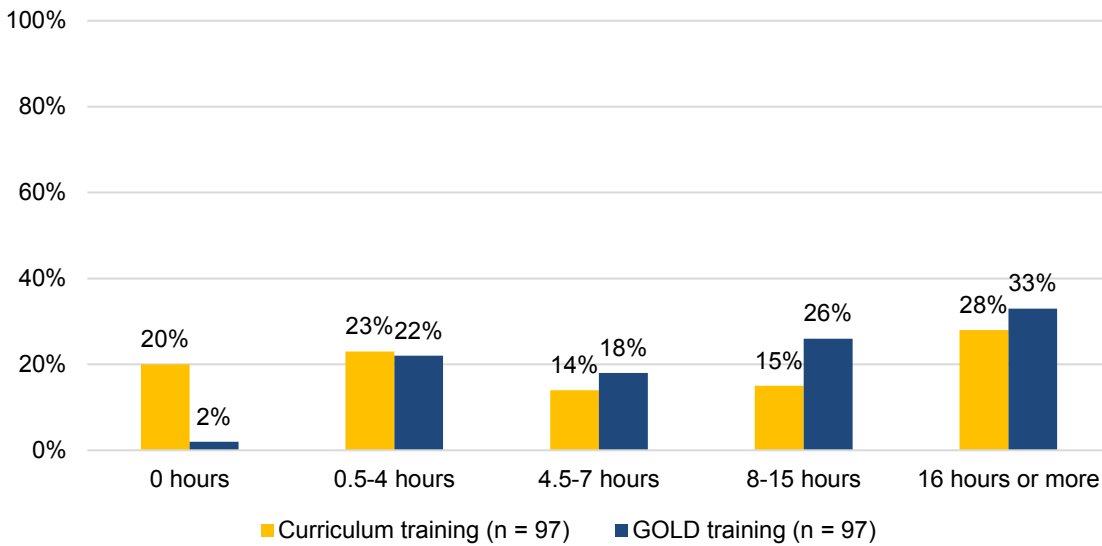
Local school divisions also offered professional development through a procured list of options or through other vendors approved by VDOE and through local VPI+ coaches. These opportunities included local in-person training sessions, online modules, webinars, and coaching. The grant requires that each VPI+ teacher completes at least 30 hours of professional development focused on early learning environments and receives up to 40 hours of coaching. This section provides information about the professional development and coaching of VPI+ classroom teachers.

Training on Curriculum and Formative Assessment

More VPI+ teachers received training on formative assessment than on use of their curriculum during Years 1 and 2.

Almost all (98%) teachers received some professional development on *GOLD*[™] and most teachers (80%) reported receiving some professional development on the use of their curriculum during Year 1 or 2 (Exhibit 14). On average teachers received more professional development on *GOLD*[™] across the two years than on the use of their curriculum. Teachers received an average of 16.3 hours of professional development on *GOLD*[™] over Years 1 and 2 combined and an average 12.4 hours of professional development on their curriculum.

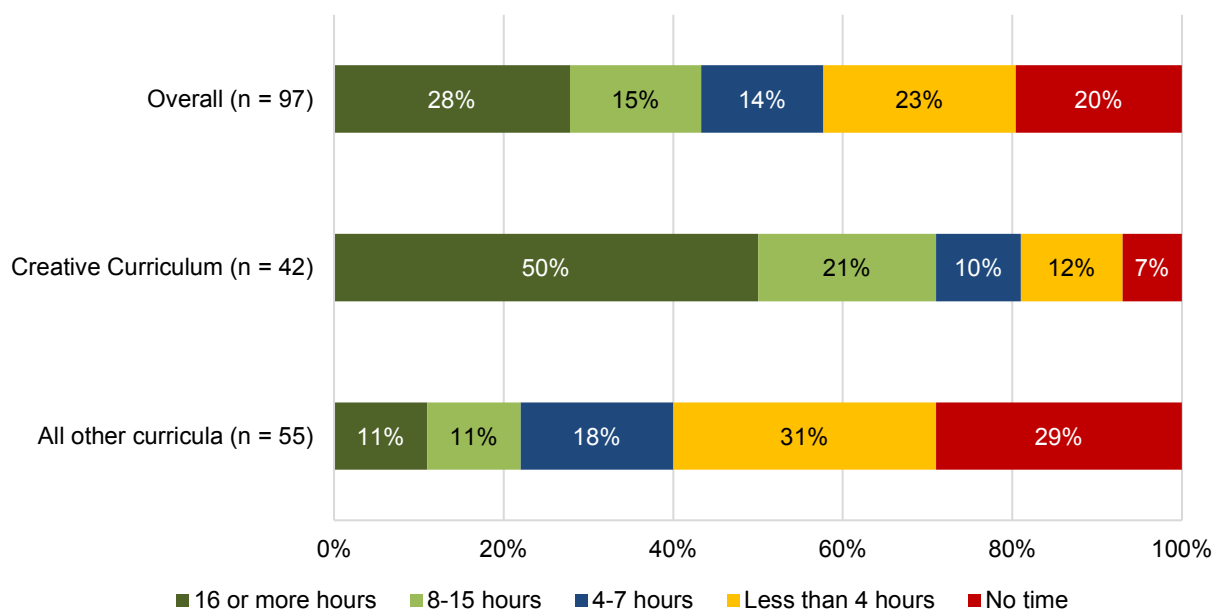
Exhibit 14. Amount of Professional Development that VPI+ Teachers Received on Using Curricula and GOLD™, Years 1 and 2 Combined



Note. Four different curricula have been adopted across the 11 divisions: *The Creative Curriculum*®; High Scope, Houghton Mifflin Harcourt, and a locally develop curriculum that was vetted by VDOE.

The amount of training teachers received varied by curriculum. As mentioned earlier, four different curricula have been adopted and implemented across the 11 VPI+ school divisions. Eight of the eleven divisions are using *The Creative Curriculum*®; one school division is using Houghton Mifflin Harcourt; another school division is using High Scope curriculum, and another is using a locally developed curriculum that was vetted by VDOE. Teachers using *The Creative Curriculum*® received an average of 18.7 hours of professional development across Years 1 and 2 and teachers using other curricula receiving an average of 7.6 hours of professional development on their respective curriculum. A significant minority of teachers (29%) using a curriculum other than *The Creative Curriculum*® reported receiving no professional development on their curriculum (Exhibit 15).

Exhibit 15. Amount of Professional Development that VPI+ Teachers Received on Using Curricula, by Curriculum Used, Years 1 and 2 Combined



Note. Four different curricula have been adopted across the 11 divisions: *The Creative Curriculum*®; High Scope, Houghton Mifflin Harcourt, and a locally develop curriculum that was vetted by VDOE.

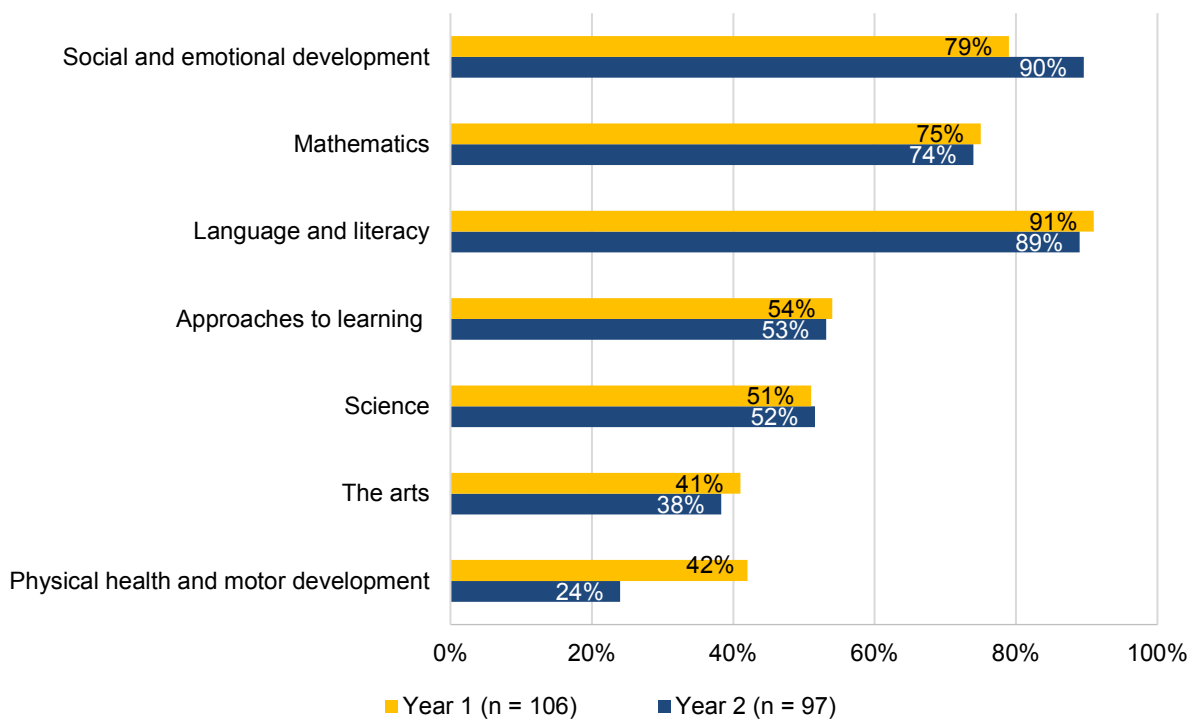
Training on instructional content and strategies

VPI+ teachers most often received professional development in the domains of social and emotional development, literacy and language, and math (cognition).

On the 2017 spring teacher survey, VPI+ teachers indicated the topics of professional development they received in Year 2 (Exhibit 16). Professional development was defined as including in-person training sessions, online modules, webinars, and/or coaching. Most VPI+ teachers received professional development on the content areas of literacy (79%) and language (73%) (89% for literacy and language combined), and math (74%). Fewer teachers received professional development in the content areas of approaches to learning (53%), science (52%), arts (38%), and physical health and motor development (24%).

Overall, a similar percentage of teachers reported receiving professional development on various content areas and domains in Year 2 as in Year 1. However, there was an increase in the percent of teachers receiving professional development on social and emotional development and a decrease in those receiving it on physical and motor development.

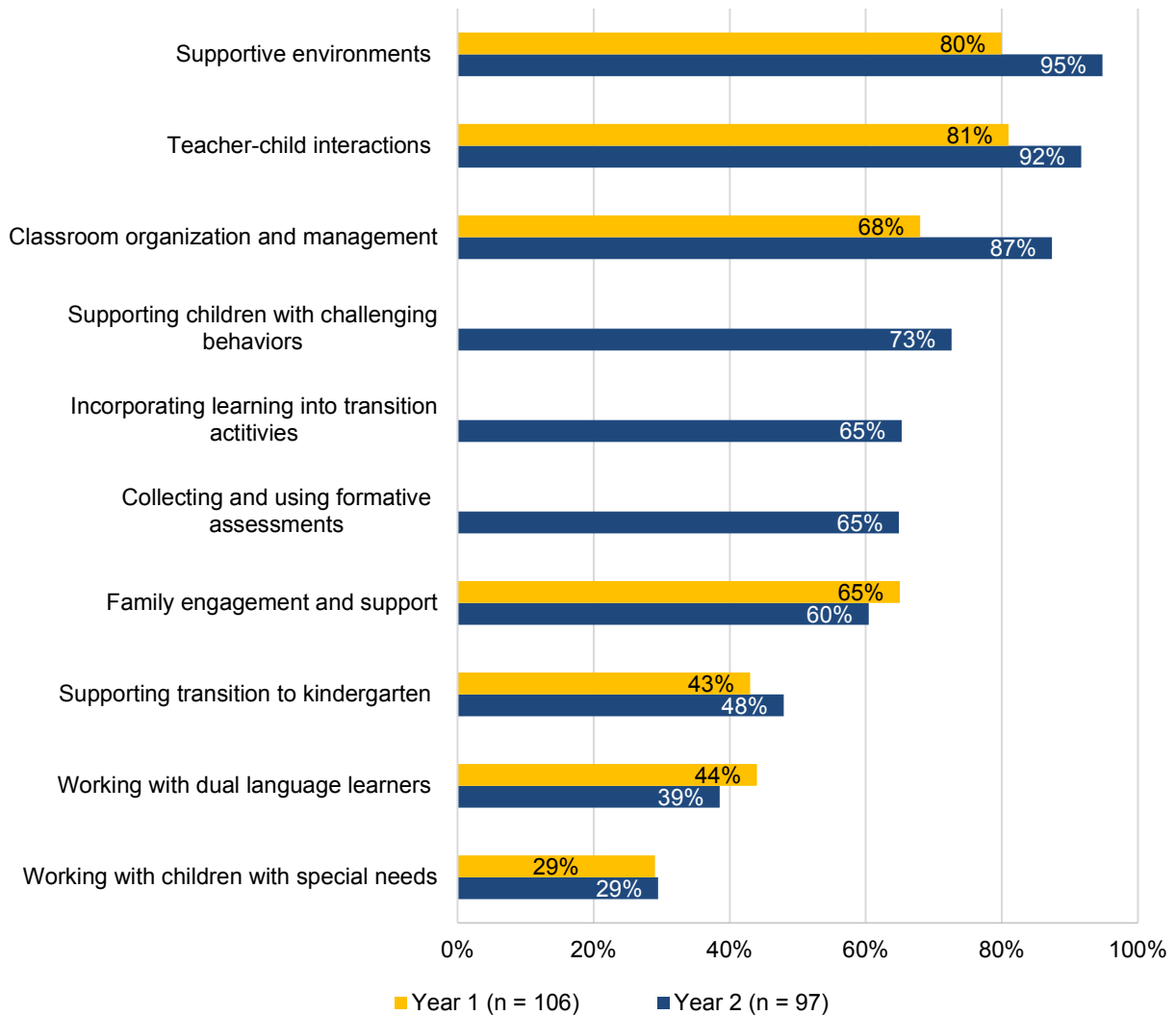
Exhibit 16. VPI+ Teachers Who Received Professional Development in Specific Content/Domain Areas, Years 1 and 2



More teachers reported receiving professional development on a variety of instructional strategies in Year 2 compared to Year 1, and this was especially true for strategies tied to supporting social and emotional development.

In Year 2, almost all VPI+ teachers received professional development on supportive environments (95%), teacher-child interactions (92%), classroom organization and management (87%), and supporting children with challenging behaviors (73%). The emphasis on social-emotional well-being and skills increased between Years 1 and 2. Also, in Year 2, about two-thirds of VPI+ teachers received professional development on incorporating learning into transition activities (65%) and collecting and using formative assessment data (65%). About half of VPI+ teachers received professional development on family engagement (60%) and supporting the transition to kindergarten (48%). About a third of VPI+ teachers received professional development on working with dual language learners (39%), and children with special needs (29%).

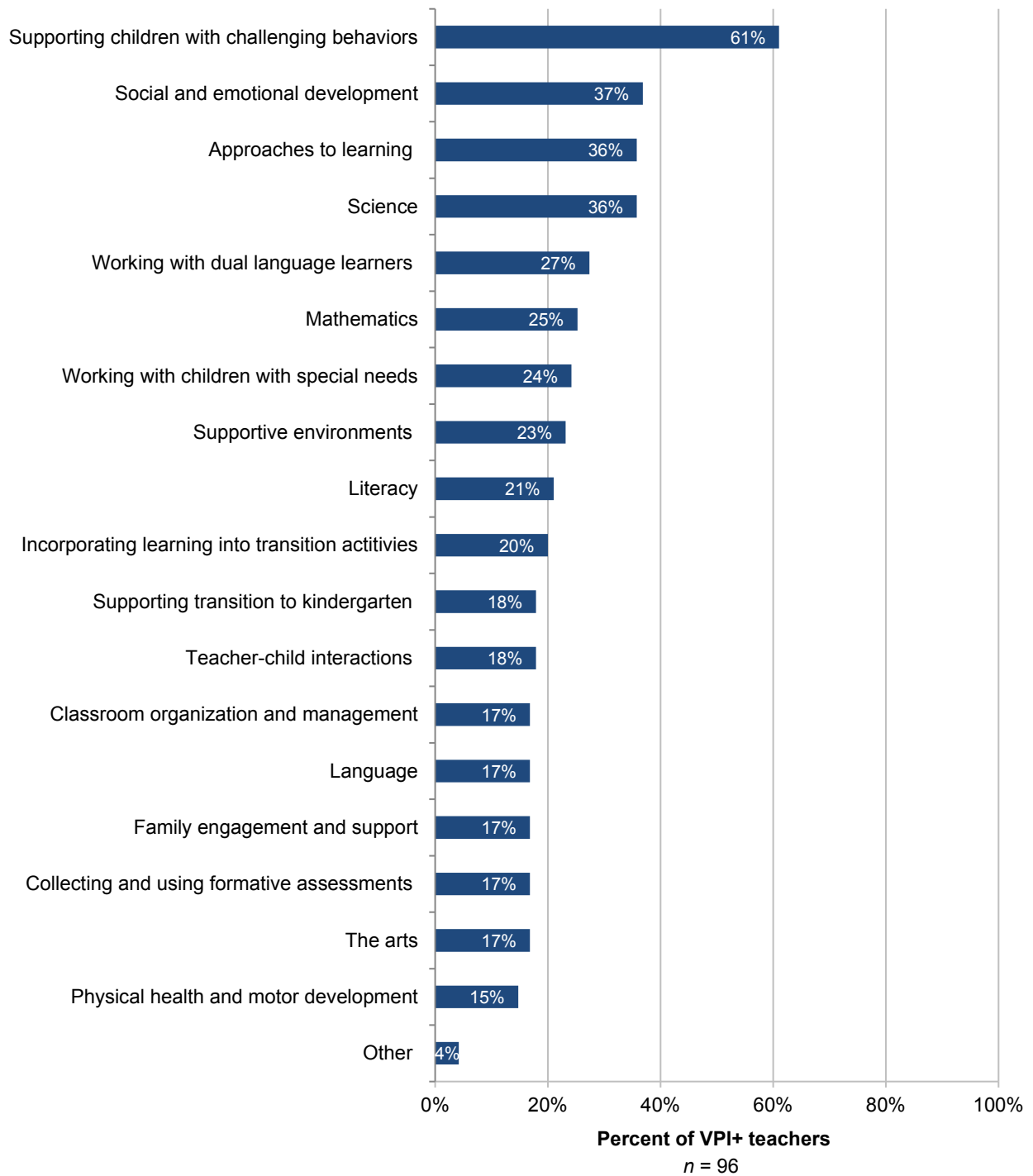
Exhibit 17. VPI+ Teachers Who Received Professional Development in Specific Instructional Practices, Years 1 and 2



Note. The evaluation did not ask about PD regarding supporting children with challenging behaviors, incorporating learning into transition activities, and collecting and using formative assessments in Year 1.

In the spring 2017 teacher survey, VPI+ teachers also reported on subjects and instructional strategies on which they desire more professional development via in-person training sessions, online modules, webinars, and/or coaching (Exhibit 18). VPI+ teachers most often identified the area of supporting children with challenging behaviors. Other areas of interest included social and emotional development, approaches to learning, and science. There was not strong consensus on most of the proposed topics.

Exhibit 18. Topics on Which VPI+ Teachers Desire More Professional Development, Year 2



Coaching of VPI+ teachers

To help VPI+ classrooms achieve implementation of all the components of a high-quality preschool program, VPI+ coaches are tasked to help teachers:

- implement evidence-based curricula to target learning in the five essential domains of school readiness (language and literacy, early mathematics and early scientific development, approaches to learning, physical well-being and motor development, and social and emotional development),
- engage in effective teacher-child interactions, and
- individualize instruction based on formative assessments.

In Year 2, 13 (11.6 FTE) coaches supported 118 VPI+ teachers. On average, each coach FTE was responsible for 10.2 VPI+ teachers (including both VPI+ and VPI Improved classrooms), but this varied considerably by school division (ranging from 2 to 32 VPI+ teachers per coach). Some coaches played other roles in their divisions, as well.

Coaches kept an online log of the services they delivered to teaching staff, including the content and intensity (hours) of coaching for individual VPI+ teachers. The coaching log data presented below cover activities that occurred in Year 2 from mid-August 2016 to the end of May 2017, and coaching activities that occurred in Year 1 from November 2015 to the end of May 2016.²⁸

Local coaches worked with more VPI+ teachers in Year 2 compared to Year 1. This meant that each teacher received slightly less coaching time on average.

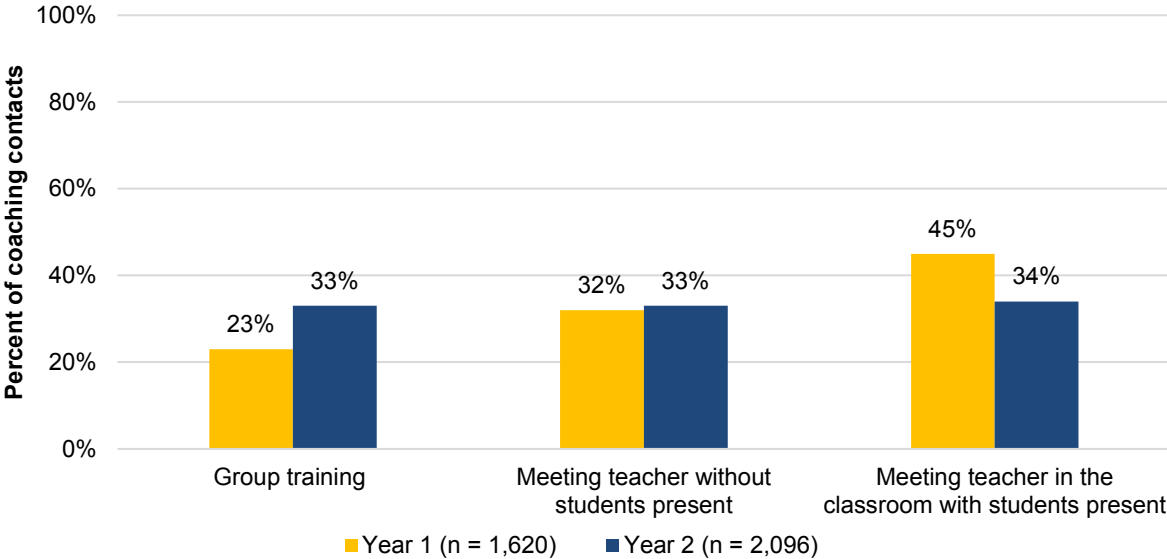
In Year 2, coaches served 98% of teachers in the 118 VPI+ classrooms ($n = 118$), compared to 88% of teachers in the 110 VPI+ classrooms in Year 1. In Year 2, VPI+ teachers, on average, received 28.6 coaching contacts totaling 21.1 hours of coaching between mid-August 2016 and May 31, 2017. The amount of monthly coaching was slightly lower in Year 2 (1.9 coaching contacts and 3 hours per month) compared to Year 1 (2.1 contacts and 4 hours per month).

Coaching intensity was greater for teachers who joined VPI+ in Year 2 ($n = 18$) than teachers who also taught for VPI+ in Year 1 ($n = 100$); new teachers received an average of 2.4 contacts and 4.2 hours of coaching per month, whereas returning teachers received an average of 1.8 contacts and 2.8 hours of coaching per month.

²⁸ Use of the coaching logs was delayed in Year 1 by the late start of the evaluation contractor, so coaching activities occurring before November 2015 are not reflected in this report.

Coaches supported VPI+ teachers using three types of contacts: (1) working with them in classrooms with students present, (2) holding individualized coaching sessions in person or by phone, and (3) facilitating group trainings. The emphasis on group training (percentage of coaching contacts) increased from Year 1 to Year 2 (23% to 33%) and the focus on individualized coaching sessions conversely decreased (77% to 67%).

Exhibit 19. Distribution of Coaching Contacts, by Type of Coaching Session, Years 1 and 2



Almost two-thirds (63%) of coaching sessions in Year 2 lasted an hour or longer, and 28% of coaching sessions lasted between 30 and 59 minutes. Very few sessions lasted less than half an hour (10%). Group trainings on average tended to be much longer sessions (167 minutes), than individual coaching sessions in the classroom with students present (59 minutes) or meeting with teachers before or after class in person or by phone (63 minutes). Across types of coaching sessions, the average length of a coaching session in Year 2 (96 minutes) tended to last a bit longer than in Year 1 (86 minutes).

Exhibit 20. Distribution of Coaching Contacts, by Length of Coaching Session, Years 1 and 2

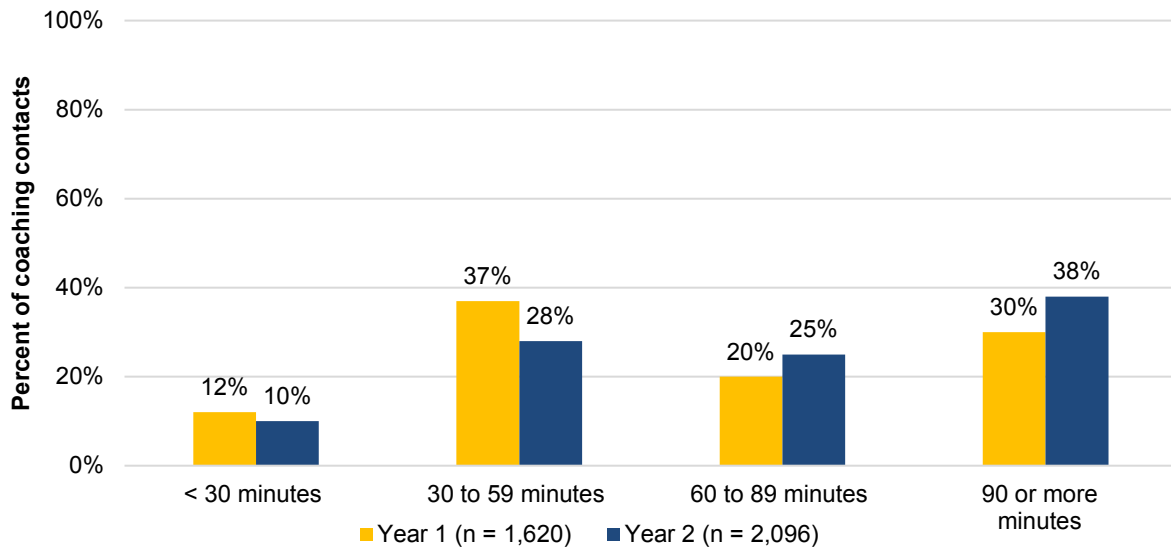
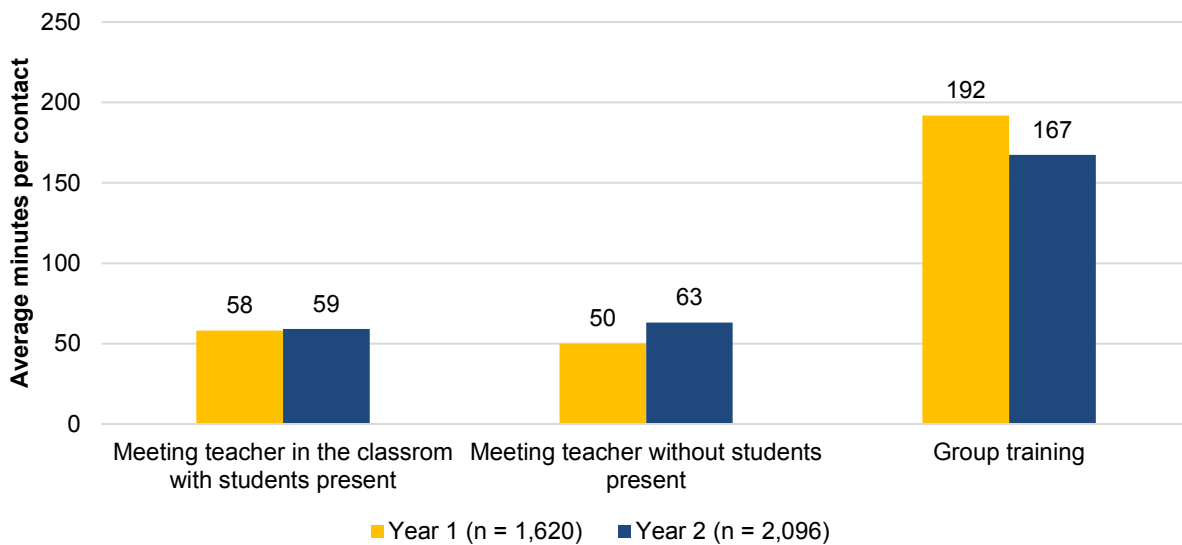


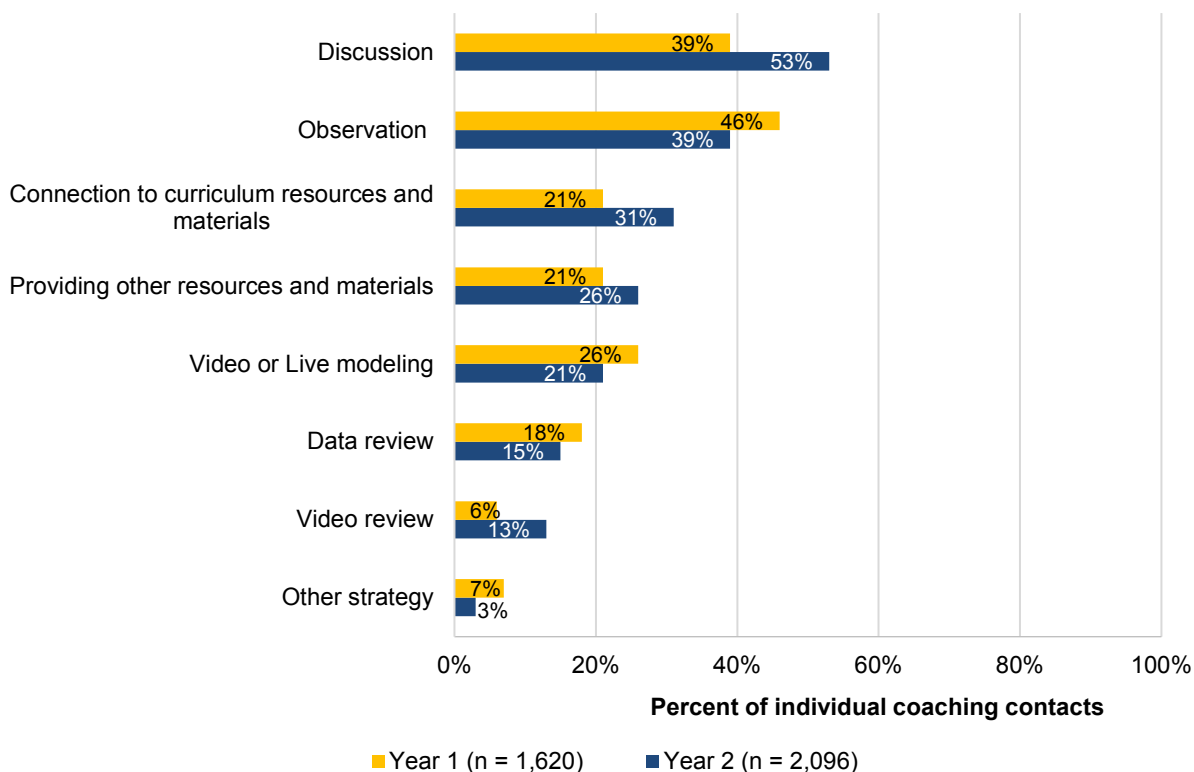
Exhibit 21. Average Minutes of Coaching Per Contact, by Format, Years 1 and 2



Discussion and observation continued to be the most common coaching strategies.

Coaches used a variety of coaching strategies when working individually with teachers (Exhibit 22). Discussion and observation were the most frequency used strategies, occurring in 53% and 39% of coaching contacts, respectively, but the use of observation declined a little in Year 2. In Year 2, there was a greater emphasis on discussion, connecting teachers to curricular materials and resources, and video review compared to Year 1.

Exhibit 22. Coaching Strategies for Individual Coaching Contacts With VPI+ Teachers, Years 1 and 2



Note. A given contact could include multiple strategies.

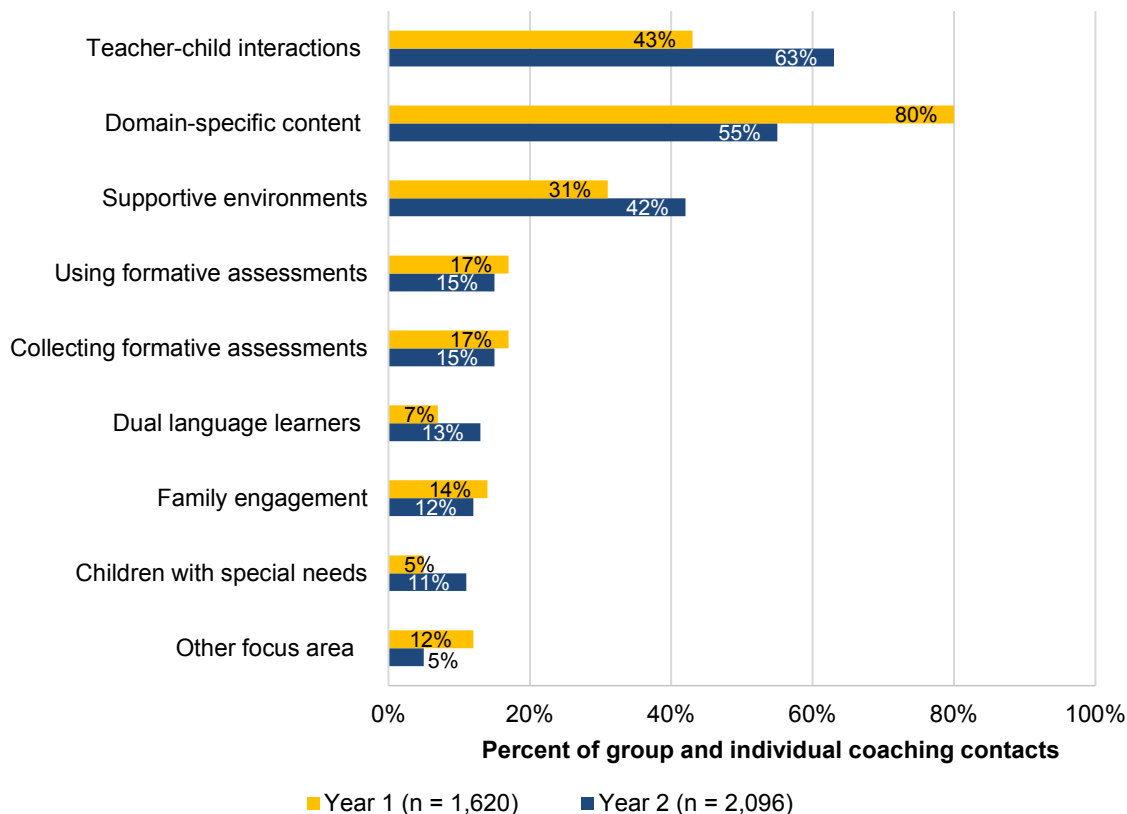
Coaches increased their focus on social and emotional development and related practices, such as teacher-child interactions and supportive environments. They also increased their focus on mathematics and approaches to learning.

Coaches had some discretion over the content of the topics they covered with teachers, and in a few school divisions, teachers had some input into the coaching topics as well. According to VPI+ coordinators and coaches, coaching often was tailored to meet individual teachers’ needs.

Coaches addressed a variety of focus areas in individual coaching and group trainings with teachers (Exhibit 23). A given contact could include work on more than one focus area. In most of their contacts with VPI+ teachers in Year 2, coaches addressed teacher-child interactions (63% of contacts), and domain-specific content related to the five essential domains of school readiness (55% of contacts). However, the emphasis on domain-specific content decreased from Year 1 to Year 2 (80% to 55% of contacts). More than a third of coaching contacts in Year 2 addressed supportive environments. While the incidence of coaching contacts in Year 2 for collecting and using assessment data, family engagement, and supporting children with

special needs and who are DLLs was lower than for other focus areas, there was an increase in the emphasis on DLLs and children with special needs from Year 1 to Year 2.

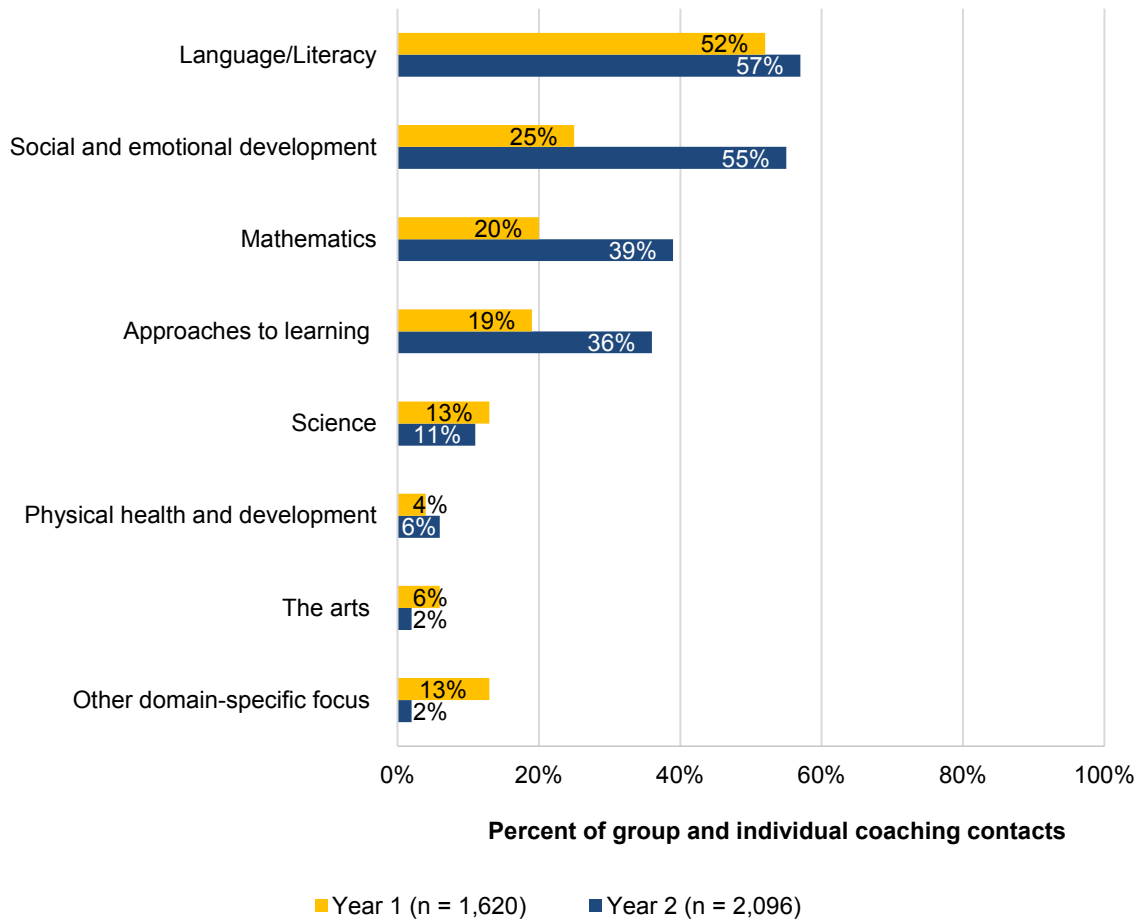
Exhibit 23. Individual Coaching and Group Training Contacts with VPI+ Teachers, by Focus Area, Years 1 and 2



Note. A given contact could include multiple focus areas.

Exhibit 24 provides additional detail on the domain-specific focus areas, showing the percentage of coaching contacts that incorporated each of the five essential domains of school readiness. More than half of coaching sessions included language and/or literacy (51% language and 21% literacy), which when combined was the most frequently addressed domain. This emphasis was consistent with the high dosage of language and literacy activities that teachers were providing in their classrooms, as discussed in the Program Implementation and Quality chapter. Social and emotional development was the next most frequent topic, addressed by coaches in 55% of Year 2 coaching contacts, a significant increase from Year 1 (25% of contacts). Coaches also spent more of their sessions with VPI+ teachers in Year 2 compared to Year 1 addressing mathematics (39% vs. 20%) and approaches to learning (36% vs. 19%). Coaches continued to rarely address science, physical health and development, or the arts.

Exhibit 24. Individual Coaching and Group Training Contacts with VPI+ Teachers Incorporating Domain-Specific Focus Areas, Years 1 and 2



Note. A given contact could include multiple domain-specific focus areas.

5. Child Outcomes

This chapter examines child outcomes for VPI+ overall and by subgroups, including gains during the preschool year and kindergarten readiness. For each domain, we first examine whether the gains in school readiness skills were statistically significant for the entire sample of children for whom there are data for both fall and spring. We present the overall gains for children who participated in VPI+ during Year 2. For each domain, we then highlight whether VPI+ children in Year 2 identified as dual language learners (DLL), as defined by parent-reported home language, made greater gains over the course of the preschool year than their non-DLL peers.²⁹ We also look at whether the gains were smaller or larger for other subgroups of interest, including having an Individualized Education Program (IEP), and coming from a household that is at or below 100% of the FPL. Additionally, we examine for VPI+ children in Year 2 whether having high or low attendance was associated with gains in school readiness skills in preschool. Finally, we describe the kindergarten readiness outcomes for children who attended VPI+ in Year 1 (Cohort 1) during the fall of their kindergarten year, after having participated in the VPI+ program.

Sample Assessed Both Fall and Spring

Below, we examine fall to spring gains for children who had assessment data at both time points.³⁰ During Year 2, 1,588 children were assessed in both the fall and spring.³¹ See chapter 2 for a description of the sample and attrition during Year 2.

Analysis Approach

To answer the question of whether participating VPI+ children made gains in school readiness skills overall during Year 2 and to examine differential gains for the subgroups of interest for Year 2, we conducted a series of three-level hierarchical linear models (HLMs) (Raudenbush & Bryk, 2002) with assessment scores in four domains – literacy, general knowledge and cognition (math), approaches to learning and social-emotional development. Assessment observations (fall or spring assessment data) were nested within children, and children were

²⁹ We focus on DLL versus non-DLL subgroup findings for Year 2 children because this is the only subgroup that had consistent significantly different outcomes across domains. Outcome differences by IEP status or poverty status were not consistent across domains; however, we describe these findings in the text.

³⁰ To be included in the analyses in this report, children's assessment results had to be available from both the fall and spring of their VPI+ preschool year.

³¹ Note that these sample sizes are larger because they include children who were age- and income-eligible for VPI+ and were enrolled in one of the 44 existing classrooms in Henrico with blended funding that were brought up to VPI+ standards.

nested within classrooms, with division included as a fixed effect. Nesting the data in this way allows us to control for some of the shared variance that exists within children and for children within the same classroom. HLM simultaneously controls for child background characteristics including race/ethnicity, gender, health, DLL status, IEP status, and poverty status.³² Therefore, it can estimate the average gain from fall to spring more efficiently and accurately than other methods. We also computed adjusted means at fall and spring for each child outcome measure, controlling for the child demographic characteristics described above. These adjusted means are included in Appendix B and Appendix C and Exhibits 25–36. Finally, to understand whether child characteristics are associated with Cohort 1 children’s kindergarten readiness as assessed in the fall of kindergarten, we conducted a set of two-level HLMs (child’s fall kindergarten readiness scores nested in classroom). Again, this allowed us to understand whether kindergarten readiness is associated with a child characteristic controlling for other characteristics. See Appendix D for a more detailed description of how the analyses were conducted.

Fall to Spring Gains

Children who attended VPI+ in Year 2 made statistically significant gains from fall to spring across all domains—literacy, math, approaches to learning, and social and emotional development—although for some of the areas, the gains were small.

Below we present the overall findings for fall to spring gains on measured skills in each domain for VPI+ children in Year 2. We highlight significant findings for differences in fall to spring gains by DLL status. We describe any significant differences by IEP status and poverty status at the end of the section. We also discuss the relationship between high attendance (defined as 90% or more of the days offered) and gains on the outcome measures. Similar data on the influence of subgroups and attendance were already reported for children who participated in VPI+ during Year 1 in the Year 1 Annual Report. In general, fall to spring gains for VPI+ children in Year 1 were similar to the gains for VPI+ children in Year 2.

³² We did not control for maternal education, in part, because we wanted to use the same analysis models for Year 1 and Year 2, and Year 1 annual report analyses did not include maternal education due to missing data for a large percentage of children for this variable.

Literacy skills (PALS-PreK)

VPI+ children in Year 2 experienced statistically significant gains on all PALS-PreK literacy skills between fall and spring, with average spring scores for all PALS-PreK skills meeting or exceeding the expected developmental thresholds.

To measure children's early literacy skills, the evaluation used the Phonological Awareness Literacy Screening for Preschool (PALS-PreK) which includes the following six skills: name writing, uppercase alphabet knowledge, beginning sound awareness, print and word awareness, rhyme awareness, and nursery rhyme awareness. VPI+ children in Year 2 made statistically significant gains over the course of their preschool year. At the beginning of the VPI+ program, children's average scores for all PALS-PreK skills were below the expected developmental thresholds for the spring of preschool. The developmental range criteria for each of the four domains is presented in Appendix E.

By the spring of the VPI+ program, VPI+ children's average scores for all PALS-PreK skills met or exceeded the expected developmental thresholds. These statistically significant gains may reflect a long history of focusing on literacy in VPI and now VPI+ programs. As discussed in the Program Implementation and Quality chapter, a vast majority of teachers reported spending time every day building and supporting literacy skills. The overall fall to spring gains for VPI+ children in Year 2 are shown in Exhibits 25a to 25f.

DLLs in Year 2 entered VPI+ with lower literacy skills and made statistically greater gains on five PALS-PreK skills than their non-DLL peers during the preschool year.

DLLs in Year 2 started the VPI+ program in the fall with lower scores than non-DLLs on all PALS-PreK skills: name writing, upper-case alphabet recognition, beginning sound awareness, print and word awareness, rhyme awareness, and nursery rhyme awareness.³³ However, DLLs made statistically greater gains than non-DLLs on five of the six PALS-PreK skills. The only literacy skill in which DLLs did not make greater gains than non-DLLs was rhyme awareness. These data are also displayed in Exhibits 26a to 26f.

³³ We did not statistically test for differences between subgroups at the fall and spring because the study did not have the sample size, and thus power, to run these analyses.

Exhibit 25a-f. Gains in Adjusted Mean Scores on PALS PreK Tasks, Year 2

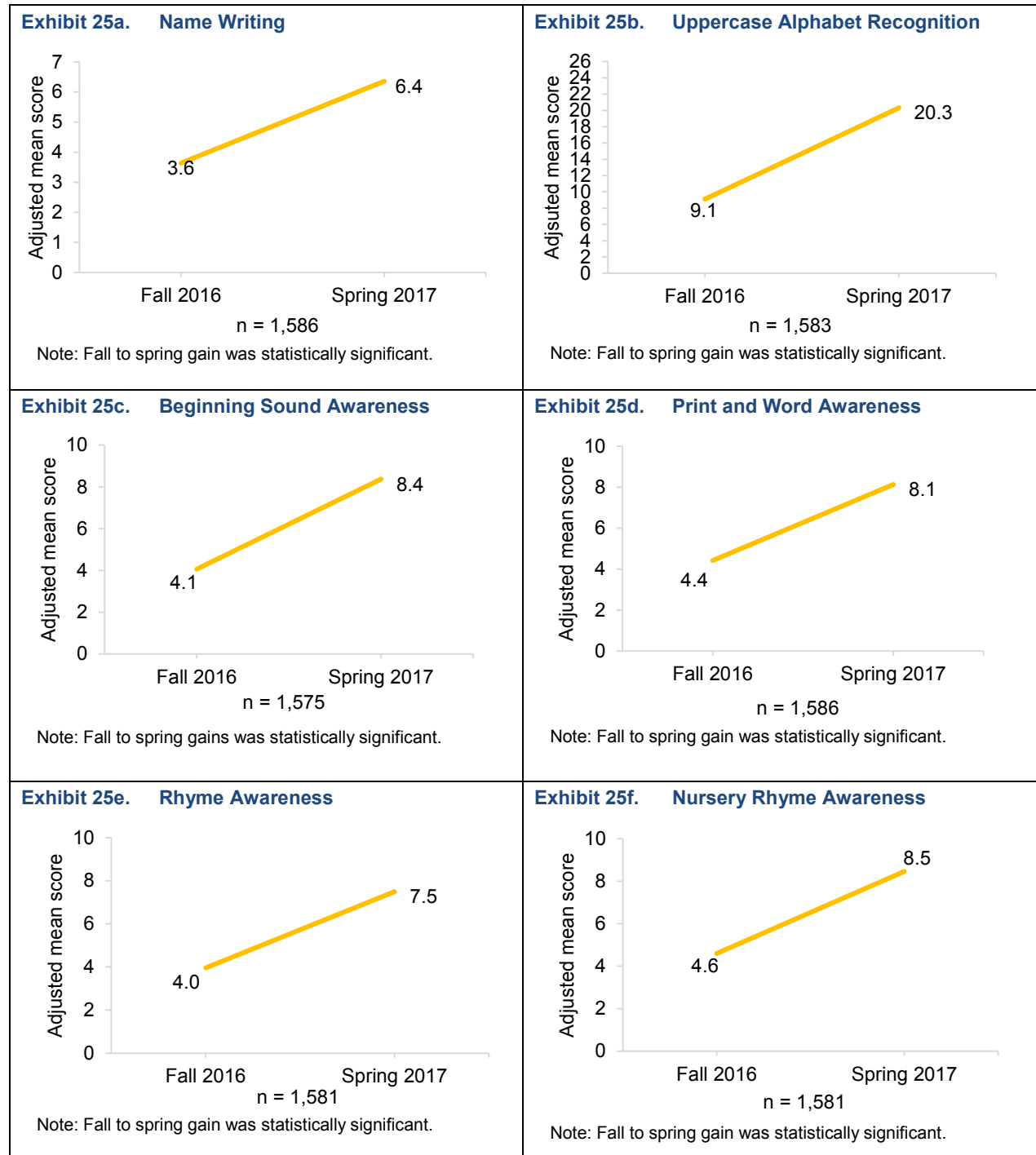
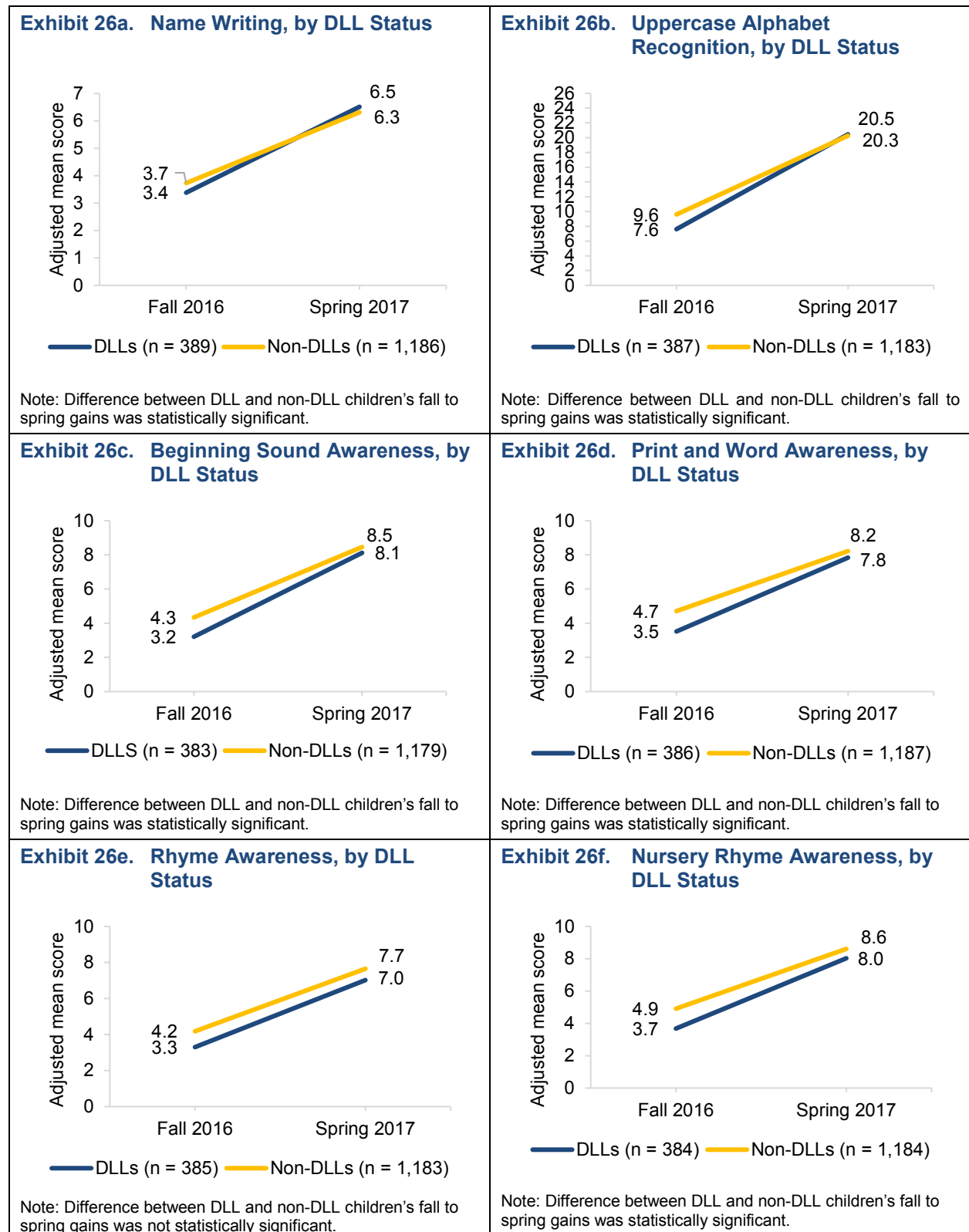


Exhibit 26a-f. Gains in Adjusted Mean Scores on PALS-PreK Tasks, by DLL Status, Year 2



It is encouraging that children who are DLLs are making such large gains from fall to spring and starting to close the achievement gap with non-DLLs. By the spring, the gaps in scores between DLLs and non-DLLs look to be smaller than they were at the beginning of the VPI+ program in the fall (e.g., for upper-case alphabet recognition, the adjusted mean for DLL children in the fall was 2 units lower than non-DLL children but by spring, the adjusted means were nearly identical, 20.3 and 20.5).

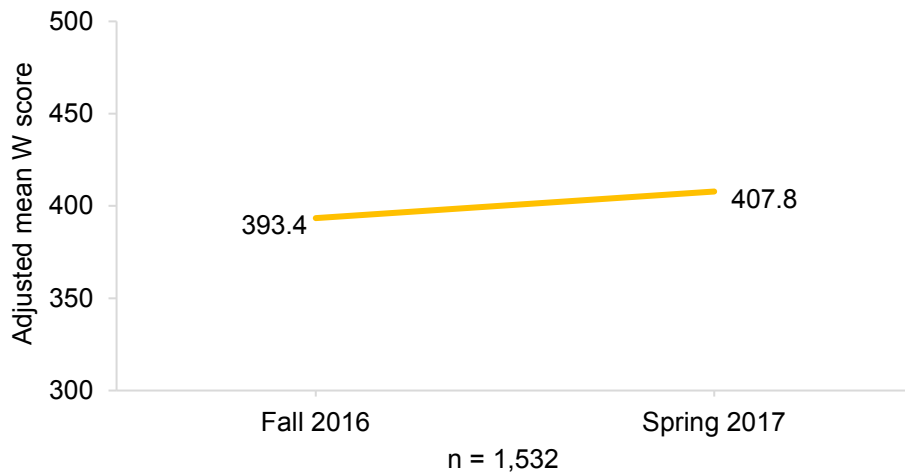
General knowledge and cognition

VPI+ children in Year 2 experienced small but statistically significant gains in early math skills between fall and spring.

To measure general knowledge and cognition, the evaluation examined early math skills using the Woodcock-Johnson® III Applied Problems subtest. VPI+ children in Year 2 experienced significant gains on the Applied Problems subtest of early math skills between fall and spring based on W scores.³⁴ The W scores consider both the child's ability as well as the difficulty of each item. For example, a child in fifth grade is expected to have a skill level and score around 500. Younger children are expected to have scores, and skill levels, lower than 500 (Burchinal, et al., 2011). After controlling for child demographic characteristics, children increased an average of 8.9 W units from fall to spring (Exhibit 27).

³⁴ In previous reports, we have reported the applied problems raw scores and standard scores, the latter of which adjust scores based on children's age and raw scores. We are now reporting W scores because this is the most appropriate score when combining results across children who were administered the English version of applied problems and the Spanish version of this assessment (i.e., the Bateria). For the reader's reference, we also find statistically significant gains on raw and standard scores for children in Year 2: raw scores changed from 6.75 to 9.02 and standard scores changed from 97.92 to 98.82. These mean standard scores are within the developmental ranges identified for this assessment. See Appendix E.

Exhibit 27. Gains in Adjusted Mean W Scores on Woodcock Johnson Applied Problems, Year 2

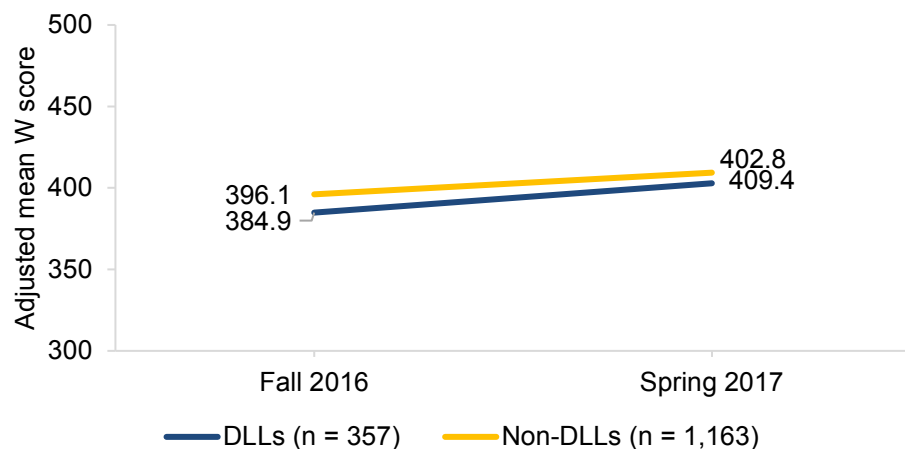


Note. Fall to spring gain was statistically significant.

DLLs in Year 2 started VPI+ with lower early math skills, but made statistically greater gains than non-DLLs.

While DLLs in Year 2 started the VPI+ program with lower Applied Problems subtest scores in the fall, they made statistically greater gains (increasing an average of 17.9 W units from fall to spring) than their non-DLL peers over the course of the preschool year (who increased an average of 13.3 W units from fall to spring). On average, the difference in fall to spring gains between DLL and non-DLL children was 4.6 W units, controlling for child demographic characteristics (Exhibit 28).

Exhibit 28. Gains in Adjusted Mean W Scores on Woodcock Johnson Applied Problems, by DLL Status, Year 2



Note. Difference between DLL and non-DLL children's fall to spring gains was statistically significant.

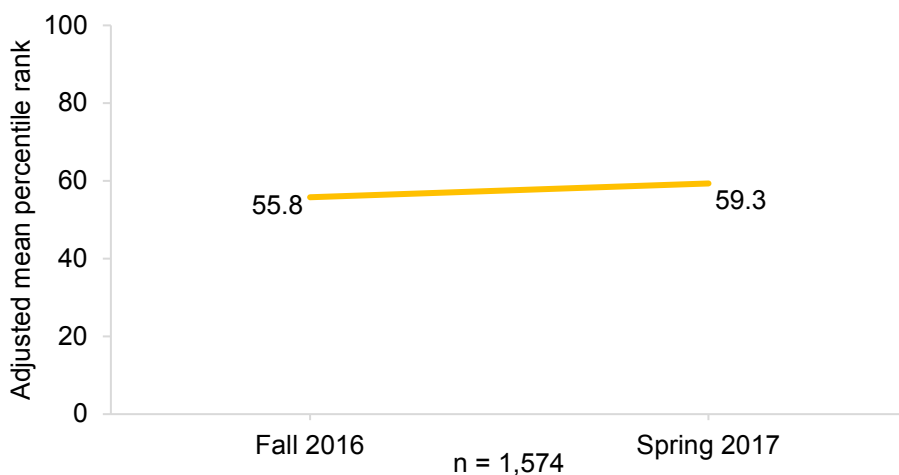
It is important to note that the Applied Problems subtest only assesses a limited set of math concepts (i.e., number sense, counting skills, simple addition). Still, these data suggest children are entering the VPI+ program with at least some basic knowledge of counting and are showing small gains in their knowledge across the year. Divisions may want to consider seeking additional resources to support math instruction across classrooms, and additional PD supports could benefit VPI+ teachers to support increased math learning and early math skills across an even wider range of skills.

Approaches to learning

VPI+ children in Year 2 demonstrated statistically significant gains between fall and spring on children’s enjoyment in learning, task persistence, and curiosity levels, especially when confronted with new skills or tasks.

We used the teacher-reported Task Orientation subscale of the T-CRS 2.1 to measure the approaches to learning domain. The T-CRS 2.1 subscales are scored such that higher scores reflect higher ratings of children’s enjoyment in learning, task persistence, and curiosity levels, especially when confronted with new skills or tasks. In examining the average percentile rank in the fall and spring, after controlling for child demographic characteristics, we found statistically significant gains overall for VPI+ children in Year 2 (from a 55.8 percentile rank to a 59.3 percentile rank) (Exhibit 29). These mean percentile rank scores are also within or above the developmental ranges for these scales.

Exhibit 29. Gains in Adjusted Mean Percentile Rank on Task Orientation, Year 2

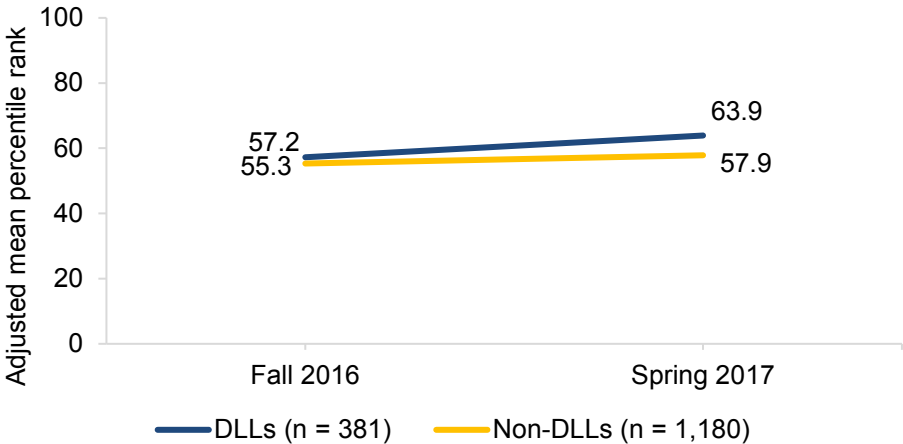


Note. Fall to spring gain was statistically significant.

DLLs in Year 2 started VPI+ with slightly higher task orientation ratings in fall and also made statistically greater gains than non-DLLs.

In examining the average percentile rank for DLLs and non-DLLs in the fall and spring of Year 2, after controlling for child demographic characteristics, we found that DLL children started the preschool year with slightly higher task orientation ratings by teachers and made statistically greater gains (from a 57.2 percentile rank to a 63.9 percentile rank) than their non-DLL counterparts (from a 55.3 percentile rank to a 57.9 percentile rank) which translated into higher ratings in the spring of preschool (Exhibit 30).

Exhibit 30. Gains in Adjusted Mean Percentile Rank on Task Orientation, by DLL Status, Year 2



Note. Difference between DLL and non-DLL children’s fall to spring gains was statistically significant.

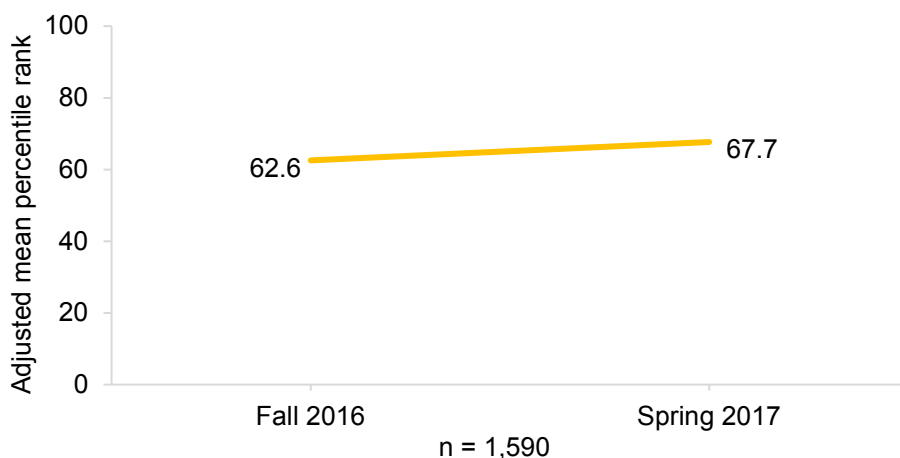
Social and emotional development

To measure children’s social and emotional development, we again used the teacher-reported T-CRS 2.1 to assess children’s ability to get along with others (Peer Social Skills subscale) and children’s ability to regulate their emotions and frustrations (Behavior Control subscale), and we used the Head Toes Knees Shoulders (HTKS) task to measure self-regulation. The T-CRS 2.1 subscales are scored such that higher scores reflect better functioning, with higher percentile ranks on peer social skills indicating getting along well with others and higher percentile ranks on behavior control indicating less acting out and defiance. The HTKS task only yields raw sum scores with higher scores reflecting a greater ability to regulate behavior.

VPI+ children in Year 2 experienced small but significant increases in their peer social skills from fall to spring.

In examining the average percentile rank in the fall and spring, after controlling for child demographic characteristics, we found that VPI+ children in Year 2 showed small but statistically significant increases in their peer social skills, increasing from a 62.6 to 67.7 average percentile rank scores (Exhibit 31). These mean percentile rank scores are also within or above the developmental ranges for these scales.

Exhibit 31. Gains in Adjusted Mean Percentile Rank on Peer Social Skills, Year 2

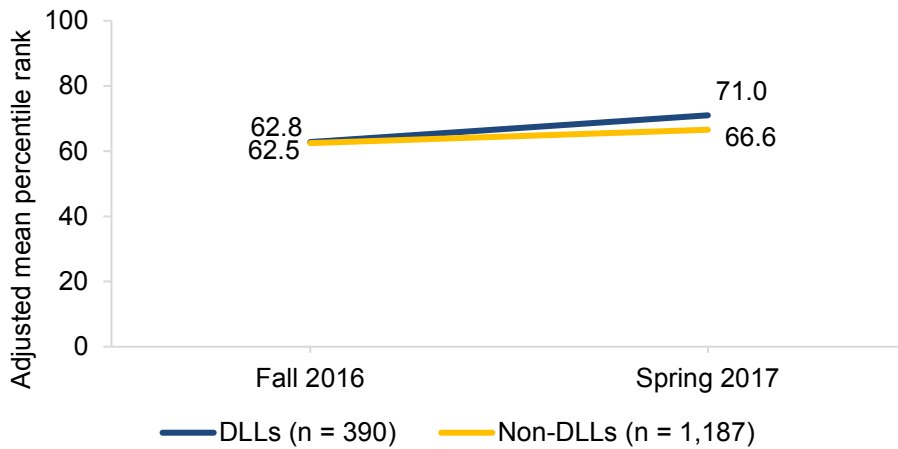


Note. Fall to spring gain was statistically significant.

DLLs in Year 2 started VPI+ with similar ratings on peer social skills as non-DLLs, but DLLs made statistically greater gains on these social emotional skills over the course of the school year.

After accounting for other child demographic characteristics, both DLL and non-DLL children in Year 2, on average, started the preschool year in the low 60th percentile rank average scores for peer social skills. However, DLL children made statistically greater gains, increasing to an average percentile rank score of 71.0 by the spring, while non-DLL students only increased to an average percentile rank score of 66.6 (Exhibit 32).

Exhibit 32. Year 2 Gains in Adjusted Mean Percentile Rank on Peer Social Skills, by DLL Status, Year 2

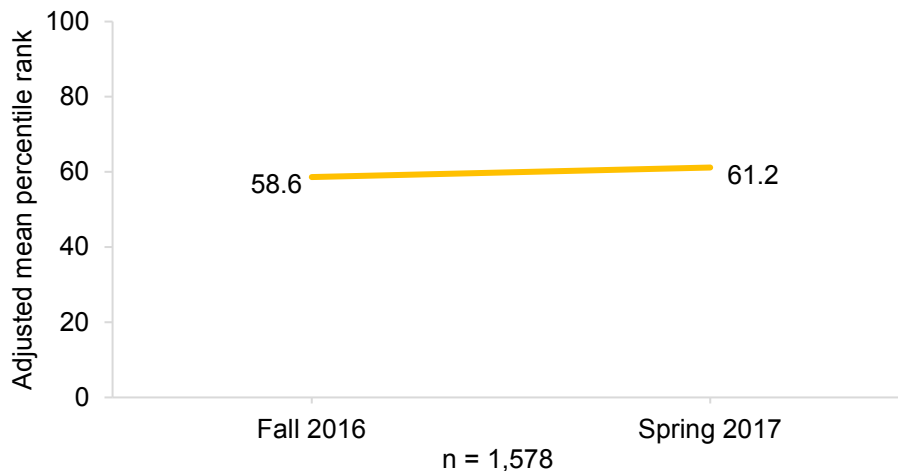


Note: Difference between DLL and non-DLL children’s fall to spring gains was statistically significant.

VPI+ children in Year 2 overall experienced small but statistically significant increases in their behavior control skills from fall to spring.

We found that VPI+ children in Year 2 overall experienced small but statistically significant increases in their behavior control skills (from an average 58.6 percentile rank score to an average 61.2 percentile rank score) over the course of the preschool year, after controlling for child demographic characteristics (Exhibit 33).

Exhibit 33. Gains in Adjusted Mean Percentile Rank on Behavior Control, Year 2

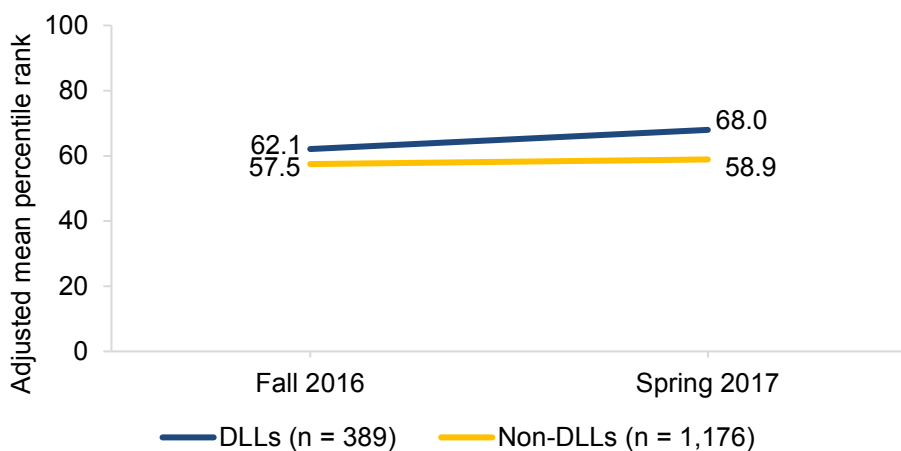


Note. Fall to spring gain was statistically significant.

DLLs in Year 2 started VPI+ with slightly higher ratings on behavior control and also made statistically greater gains on behavior control over the course of the preschool year compared to non-DLLs.

At the beginning of the VPI+ program, teachers tended to rate DLLs as having slightly higher behavior control than non-DLLs (an average 62.1 percentile rank score vs. an average 57.5 percentile rank score, respectively). After controlling for other child demographic characteristics, DLLs also made greater gains on behavior control, increasing from 62.1 in the fall to 68.0 in the spring, as compared to non-DLLs who showed less improvement over the course of the year (a 57.5 percentile rank in the fall and a 58.9 percentile rank in the spring) (Exhibit 34).

Exhibit 34. Gains in Adjusted Mean Percentile Rank on Behavior Control, by DLL Status, Year 2

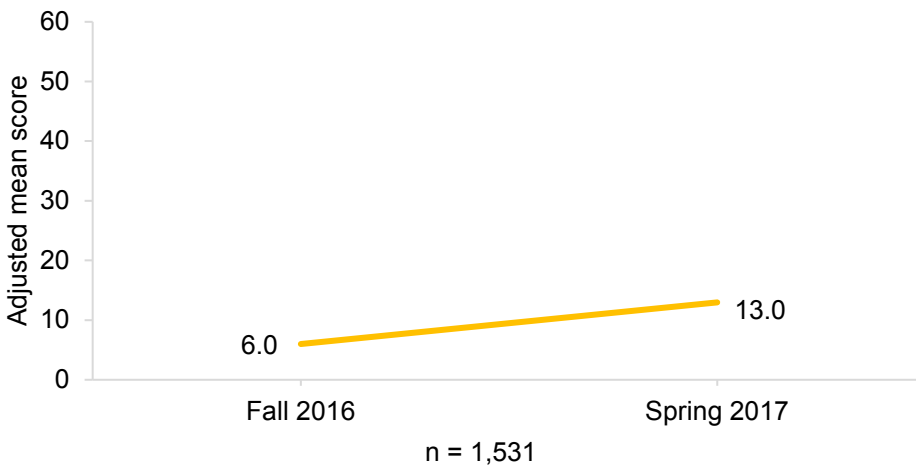


Note: Difference between DLL and non-DLL children’s fall to spring gains was statistically significant.

VPI+ children in Year 2 experienced statistically significant improvements in self-regulation scores between fall and spring.

VPI+ children in Year 2 made significant gains over the course of the school year. On average, children increased from an adjusted mean score of 6.0 in the fall to 13.0 in the spring (Exhibit 35). These gains also are in line with developmental expectations in that most children’s ability to inhibit behavior when needed increases with age, and most children’s working memory increases during this period—skills that are both necessary to complete the HTKS task. These scores are similar to other published findings of preschool children’s self-regulation as measured by the HTKS (McClelland et al., 2007).

Exhibit 35. Gains in Adjusted Mean Scores on Self-Regulation, Year 2



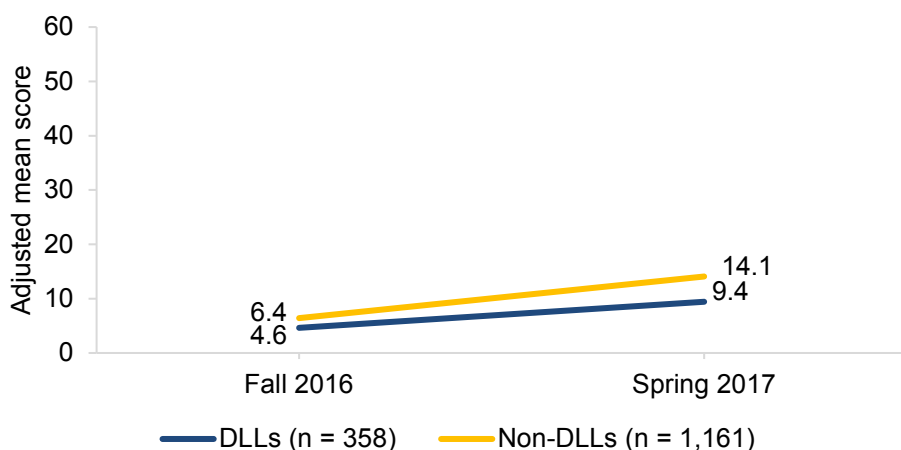
Note. Fall to spring gain was statistically significant.

DLLs in year 2 started VPI+ with lower self-regulation scores based on the HTKS task, and made statistically fewer gains than non-DLLs.

Self-regulation based on the HTKS task is the only social emotional measure in which DLLs started the VPI+ program with lower scores and made statistically fewer gains than non-DLLs. Non-DLLs started with higher adjusted mean HTKS scores in the fall as compared to DLLs (6.4 vs. 4.6) and made statistically greater gains over the course of the school year. In the spring, non-DLLs children had an adjusted mean score of 14.1 while DLLs' adjusted mean score was 9.4 (Exhibit 36).³⁵

³⁵ These scores for DLL children may be influenced by the language of assessment. Some DLL children were assessed in Spanish and some were assessed in English and thus, language of assessment may have affected the DLL children's scores since they were asked to both understand the directions in a different language AND do a difficult task regardless of language. This assessment does not have reliability and validity evidence to support the Spanish-translated version of the measure.

Exhibit 36. Gains in Adjusted Mean Scores on Self-regulation, by DLL Status, Year 2



Note: Difference between DLL and non-DLL children's fall to spring gains was statistically significant.

Exhibit 37 summarizes whether or not there were statistically significant differences in gains between risk groups and their reference group. Overall, Year 2 children experienced statistically significant gains from fall to spring on all measures. Generally, DLL children made statistically greater gains from fall to spring than non-DLL children. Meanwhile, on most measures, there were no statistically significant differences in gains between children with an IEP and children without an IEP as well as between children in households at or below 100% FPL and children in households above 100% FPL.

Fall to spring gains, by subgroups for VPI+ children in Year 2

DLLs in Year 2 tended to start VPI+ with lower skills but make statistically greater fall to spring gains than their non-DLL peers on several of the school readiness skills.

However, the patterns of growth in fall to spring gains by IEP or poverty status varied by skill.

As described above, across academic domains (literacy and math), DLL children in Year 2 tended to start the VPI+ program with lower scores on nearly all skills (with the exception of nursery rhyme awareness), yet make statistically greater gains between the fall and spring as compared with their non-DLL peers. Furthermore, DLL children also started the VPI+ program with social and emotional and task orientation skills comparable to their non-DLL peers (with the exception of self-regulation), and made statistically greater gains on these skills from fall to spring. In addition to examining growth during the preschool year by DLL status, we also

examined how growth varied by IEP status and poverty status (i.e., children living in households at or below 100% of the FPL), but found less consistent differences for these subgroups.

- **IEP status.** Children with an IEP started the VPI+ program with lower literacy skills (uppercase alphabet recognition and rhyme awareness scores) and made statistically fewer gains on these skills between the fall and spring as compared to children without an IEP. Children with an IEP also started the VPI+ program with lower teacher ratings on behavior control, but in this case made statistically greater gains than children without an IEP.
- **Poverty status.** Children from households at or below 100% of the FPL started the VPI+ program with lower name writing scores, but made statistically greater gains than children from households between 100-200% of the FPL on this measure. In contrast, children from households at or below 100% of the FPL started VPI+ with lower scores on rhyme awareness and early math skills and made statistically significant fewer gains on these skills from fall to spring as compared to children from households 100-200% of the FPL.³⁶

³⁶ We conducted statistical tests two ways – one including all children in the sample which is reported here and one where we excluded children from Henrico to assess if the large proportion of children in Henrico in the total sample (i.e., children in Henrico are 35% of the total sample) may have influenced the overall findings for Year 2. The results are the same with a few exceptions – the statistically significant greater gain on uppercase alphabet recognition for children without an IEP compared to those with an IEP is not significant when we exclude children from Henrico. Additionally, the finding that children from households at or below 100% of the FPL made fewer gains on rhyme awareness and early math skills compared with children from households between 100-200% FPL is not significant when we exclude Henrico.

Exhibit 37. VPI+ Children’s Gains, by Domain and Subgroup, Year 2

	Literacy						Social emotional			Approaches to learning	Cognition and general knowledge
	Upper-Case Alphabet	Beginning Sounds	Name Writing	Print & Word	Rhyming	Nursery Rhyming	Self-regulation	Behavior	Peer Social Skills	Task Orientation	Early Math
DLL vs Non-DLL	DLL > Non-DLL ***	DLL > Non-DLL **	DLL > Non-DLL ***	DLL > Non-DLL ***	No diff	DLL > Non-DLL ***	Non-DLL > DLL **	DLL > Non-DLL ***	DLL > Non-DLL **	DLL > Non-DLL *	DLL > Non-DLL **
IEP vs Non-IEP	Non-IEP > IEP **	No diff	No diff	No diff	Non-IEP > IEP **	No diff	No diff	IEP > Non-IEP **	No diff	No diff	No diff
Poor vs Low-income	No diff	No diff	Poor > Low-income **	No diff	Low-income > Poor **	No diff	No diff	No diff	No diff	No diff	Low-income > Poor *

Yellow cells in the table represent findings where the non-risk group made greater gains than the risk group.

Blue cells in the table represent findings where the risk group made greater gains than the non-risk group.

* significant at the <.05 level ** significant at the <.001 level *** significant at the < .0001 level

Note. For the purposes of the exhibit, we used the term “poor” for children in households less than 100% of the FPL and low-income for children in households between 100 and 200% of the FPL. No diff = no significant difference in gain scores between the two groups.

Attendance for VPI+ children in Year 2

VPI+ children in Year 2 who attended more days of VPI+ made greater gains on some literacy skills than children who attended fewer days.³⁷

VPI+ children with better attendance (i.e., defined as attending 90% or more days) showed statistically greater fall to spring gains on print and word awareness, rhyme awareness, and nursery rhyme awareness. However, we did not find any significant relationships between attendance and gains on any of the other academic (i.e., early math skills) or non-academic (i.e., task orientation, social skills, behavior control, self-regulation) outcome measures.³⁸

Kindergarten Readiness

The Virginia Board of Education has adopted a definition of school readiness,³⁹ but Virginia has not set benchmarks for measuring kindergarten readiness. There is very little consensus on the exact definition of kindergarten readiness (Snow, 2011). For the purposes of reporting kindergarten readiness for the PDG annual report, the evaluation team in collaboration with VDOE needed to identify a kindergarten readiness benchmark. VDOE received input from the core implementation planning team (including a division representative), SRI, and early childhood assessment experts from the VPI+ EAB. Based on the input, VDOE decided to use a definition of kindergarten readiness that combined results across the student assessment measures that have norm references into a single index. First, for each measure, we categorized children on the basis of their scores as falling within or above the developmental range. The developmental range generally refers to the level and types of skills children of a given age are expected to demonstrate. Examining the data in this manner helps capture the variation in how children are doing in each domain of school readiness. For some measures (PALS-PreK and PALS-K), the assessment developers have identified a range of scores that are considered to be within the developmental range for preschool and kindergarten children. However, for other measures where the developmental range is less well-defined, members of the VPI+ EAB which is comprised of early childhood and research methodology experts, met

³⁷ We did not use a continuous variable for attendance because this would assume a linear relationship between the number of days a child attended VPI+ and fall to spring gains. Based on a visual inspection of the data using a histogram, we could not assume such a linear relationship. Therefore, we modeled attendance as a dichotomous variable.

³⁸ Children who did not attend at least 90% of the 180 school days missed at least 18 or more days of school. This aligns with the definition of chronic absenteeism (i.e., missing at least 15 days of school throughout the school year) in the K-12 literature and the few studies that have looked at PreK attendance described above in Chapter 2.

³⁹ http://www.doe.virginia.gov/instruction/early_childhood/school_readiness/index.shtml

with VDOE and SRI to determine the best approach for defining developmental ranges based on existing research of low-income preschool children. For norm-referenced measures that provide information about whether a child performs better or worse than a hypothetical average child⁴⁰ (e.g., T-CRS 2.1, WJIIIIR), the EAB advisors suggested defining children as within the developmental range if their scores were at or above the mean or no more than two-thirds of a standard deviation⁴¹ below the mean (referred to as “within or above the developmental range”). That is, children could score a certain amount below the mean and still be considered within the developmental range. The group decided that based on prior research, requiring a child to score at the mean or higher is too stringent, and that there should be some flexibility to account for children who may have scored below the mean by chance. The developmental range criteria for each of the measures is presented in Appendix E. Second, children were considered to demonstrate overall kindergarten readiness if they were within or above the developmental range⁴² in both of the academic domains (literacy and math) and at least one of the other domains (social and emotional or approaches to learning).⁴³

The criteria for each of the 4 domains as shown in Exhibit 38.

Exhibit 38. Criteria for Demonstrating Kindergarten Readiness in the Four Domains

Domain	Task	Criteria for Scoring Within or Above Developmental Range	Total Range
Literacy	PALS-K Summed Score	29 or above	0-120
Cognition and general knowledge	Woodcock Johnson Tests of Achievement Applied Problems Standard Score	90 or above	0-131
Social and emotional development ⁴⁴	T-CRS 2.1 Peer social skills subscale	26 th percentile or above	0-99
Social and emotional development	T-CRS 2.1 Behavior control subscale	26 th percentile or above	0-99
Approaches to learning	T-CRS 2.1 Task orientation subscale	26 th percentile or above	0-99

⁴⁰ When using norm-referenced tests, one can compare a child’s score against a sample of same-age or same-grade level test takers that presumably are representative of all children that age or grade.

⁴¹ Standard deviation is a measure of variation across observations in a sample. In a normal distribution, it is expected that about 72.5% of children would score at or above two-thirds of a standard deviation below the mean.

⁴² For norm-referenced measures, children are considered as “within or above the developmental range” if their scores were at or above the mean or no more than two-thirds of a standard deviation below the mean. For other measures, the assessment developers identified a range of scores that are considered to be within the developmental range for kindergarten children. The developmental range criteria for each of the four domains is presented in Appendix E.

⁴³ Although motor development is critical for children to be ready for kindergarten, delays in these areas are less common and not necessarily the primary focus of the VPI+ program. Therefore, based on consensus from a subcommittee of the Evaluation Advisory Board, motor development was not included in the criteria for kindergarten readiness. In addition, 99% of children passed the kindergarten motor development screener.

⁴⁴ To be ready in the social and emotional development domain, we decided to include children who exhibited both behavior control as well as strong social skills as this approach most closely aligned with the way social and emotional development is conceptualized in Virginia’s *Foundation Blocks for Early Learning*.

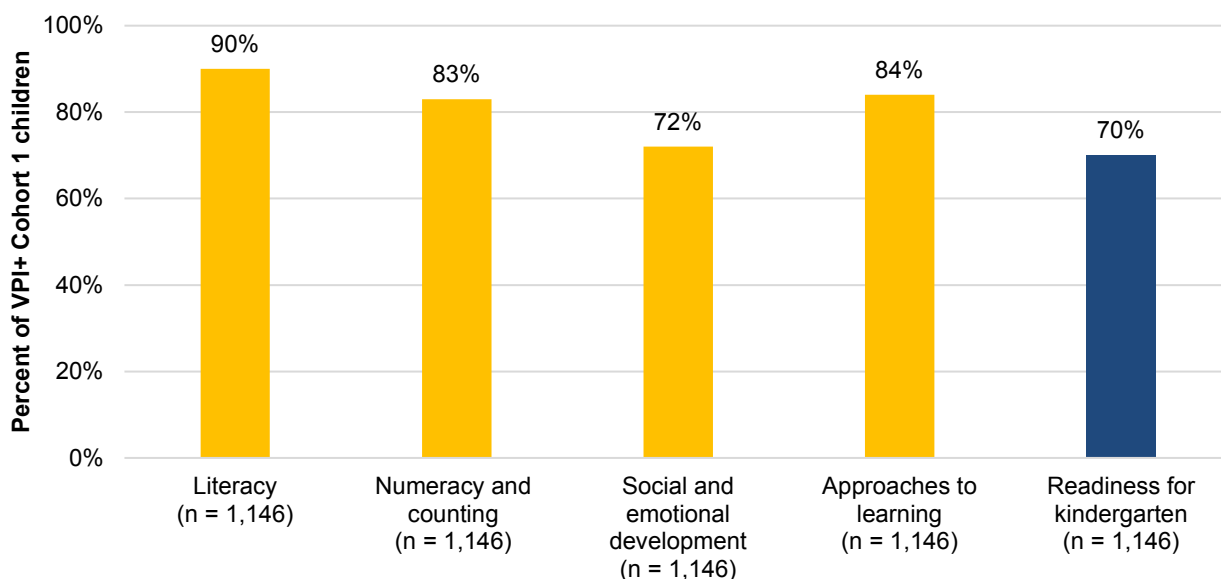
At this time, HTKS task measure does not have norm-referenced data to use to identify whether VPI+ children are performing at or above normative averages. To our knowledge, there are no assessments in this domain that provide normative data. The benchmarks for kindergarten readiness were used to help address the research question on kindergarten readiness outcomes.

Cohort 1 VPI+ children kindergarten readiness results, overall and by subgroup

Overall, 70% of Cohort 1 VPI+ children in fall 2016 demonstrated kindergarten readiness, and this ranged from 60% to 80% of VPI+ children across divisions.

Virginia’s PDG application had an ambitious goal of having 85% of Cohort 1 VPI+ children demonstrate readiness in literacy and other school domains by kindergarten entry. Most Cohort 1 VPI+ children (90%) demonstrated readiness in literacy, surpassing the PDG application goal. The majority of Cohort 1 VPI+ children also demonstrated readiness in numeracy and counting (83%) and approaches to learning (84%). About three-fourths of children in Cohort 1 (72%) demonstrated readiness in the social and emotional domain, which was 13% less than the goal (Exhibit 39).

Exhibit 39. Kindergarten Readiness for Cohort 1 VPI+ Children



The percentage of Cohort 1 VPI+ children who demonstrated overall kindergarten readiness and readiness by domain at the beginning of kindergarten varied by child demographic and academic risk characteristics.

Below we present the percentages of children who demonstrated overall kindergarten readiness by subgroup (Exhibit 40 and Exhibit 41). We also describe whether differences in kindergarten readiness by student subgroups are significant, after controlling for other child demographic characteristics (i.e., gender, race/ethnicity, DLL status, IEP status, poverty status, and health) and accounting for children being nested within classrooms.

- **Gender.** A higher percentage of females (74%) demonstrated overall kindergarten readiness compared with males (66%). After controlling for child demographic characteristics, this difference was found to be statistically significant. In addition, females were statistically more likely to demonstrate readiness in the domains of literacy and approaches to learning in comparison to males.
- **Race/ethnicity.** A lower percentage of Hispanic (64%) and Black children (69%) demonstrated overall kindergarten readiness compared with White children (81%). After controlling for child demographic characteristics, Hispanic children were statistically less likely to demonstrate readiness in the domain of math and overall kindergarten readiness in comparison to non-Hispanic children. While not statistically significant, a higher percentage of Hispanic children (80%) demonstrated readiness in the social and emotional domain than non-Hispanic children (69%). After controlling for child demographic characteristics, Black children were statistically less likely to demonstrate readiness in the domains of math and social and emotional development as well as overall kindergarten readiness in comparison to non-Black children.
- **DLL status.** Fewer DLL children demonstrated overall kindergarten readiness compared with non-DLL children (65% vs. 72%). After controlling for child demographic characteristics, this difference was found to be statistically significant. In addition, non-DLL children were statistically more likely than DLL children to demonstrate readiness in the domain of math. While not statistically significant, a higher percentage of DLL children (79%) demonstrated readiness in the social and emotional domain as compared to non-DLL children (69%).
- **IEP or disability status.** About half (52%) of children receiving special education services through an IEP demonstrated overall kindergarten readiness compared with 71% of children who do not have an IEP. After controlling for child demographic

characteristics, this difference was found to be statistically significant, and children without an IEP were also statistically more likely to demonstrate readiness in the domains of literacy and math in comparison to children with an IEP.

- **Poverty status.** Children from households with incomes at or below 100% of the FPL had similar rates of kindergarten readiness compared with children from families with an income of 101 to 200% of the FPL (68% vs. 73%). After controlling for child demographic characteristics, one income group was not more likely than the other to demonstrate readiness in a particular domain or overall kindergarten readiness.
- **Health status.** About three-fifths (58%) of children who were rated in fair or poor health demonstrated overall kindergarten readiness compared with 71% of children who were rated in good or excellent health. After controlling for child demographic characteristics, this difference was found to be statistically significant. Furthermore, children in good/excellent health were also statistically more likely than children in fair/poor health to demonstrate readiness in the domain of literacy in comparison to children rated as in fair/poor health.

Exhibit 40. Kindergarten Readiness for Cohort 1 VPI+ Children, by Demographics

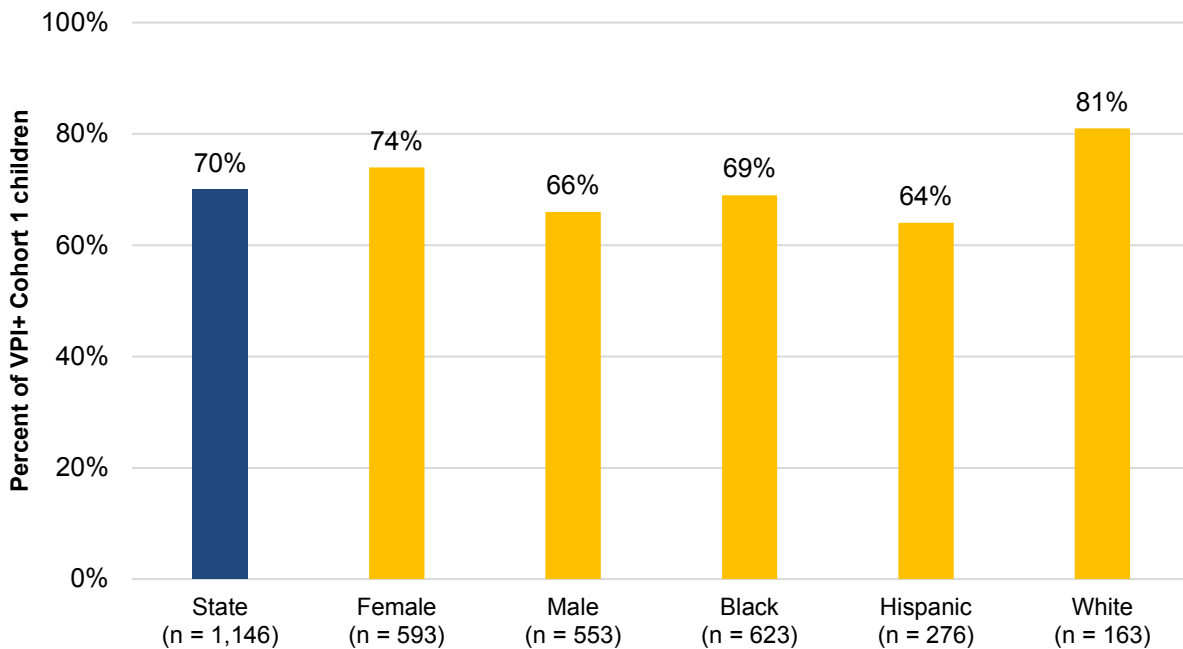
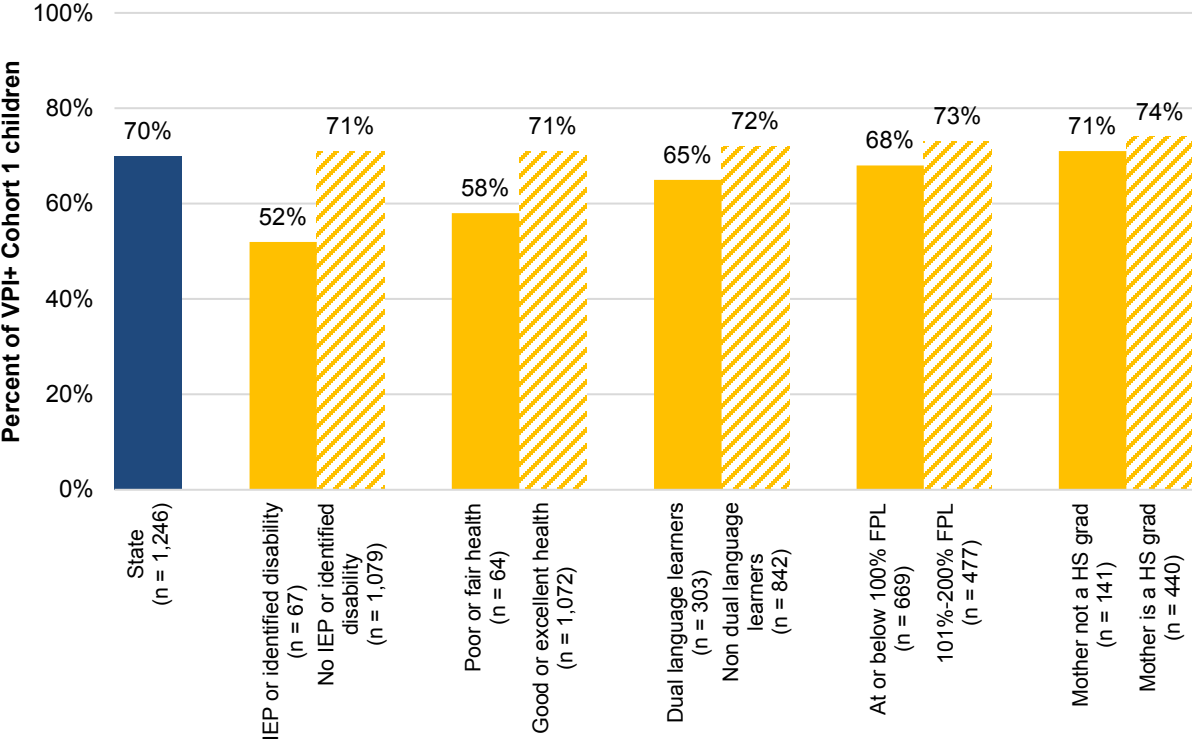


Exhibit 41. Kindergarten Readiness for Cohort 1 VPI+ Children, by Risk Factors



The exhibit in Appendix F shows the association between child race/ethnicity, IEP status, DLL status, health and poverty status and child kindergarten readiness in spring of kindergarten.

Limitations

While the Year 2 findings document significant growth for VPI+ children between fall and spring, without a comparison group, we do not know to what extent these gains can be attributed to development alone and what portion of these gains can be attributed to children’s experience in VPI+ classrooms. Also, it is important to note that assessments are limited in their scope and precision, as most measures were developed to be brief, standard assessments for research purposes and not developed to be authentic measures of the skills and abilities children have across domains. However, the data allow us to confirm that children who participated in Year 2 of the VPI+ program are learning and demonstrating improvement across all school readiness domains.

6. Cost Study

This chapter provides an overview of the cost study, describes the results of initial cost interviews with divisions about the cost data they have available, and includes a summary of next steps for the cost study.

Overview of Cost Study

In a landscape of limited resources and extensive need, it is crucial to understand whether public investments are making effective use of public and private dollars. VDOE is interested in the value of the investment in VPI+ preschool, relative to the value of its impact on children's school readiness outcomes. The state and federal investment in VPI+ can be quantified using available cost data. This financial investment is used to support higher-quality preschool classrooms and instruction, which in turn are thought to have a positive effect on future outcomes for children. While worthwhile in and of themselves, these outcomes also represent monetary benefits to the school division and to society as a whole.

Drawing from child outcomes data collected for the VPI+ impact evaluation and administrative cost data collected from the state and divisions, the cost study will include a descriptive analysis of VPI+ costs and a benefit-cost analysis if the impact evaluation yields significant impact estimates. The descriptive analysis will examine the full costs incurred per child to operate the VPI+ program and variability in those costs among divisions. The benefit-cost analysis will compare the aggregated per-child cost estimates for VPI+ to an estimate of the economic benefits resulting from the program. The research questions for the cost study include:

- What is the comprehensive per-child cost of implementing VPI+? How does the per-child cost vary by division?
- What is the relationship between the costs of the VPI+ program and the economic benefits of the program?

To measure the comprehensive costs of VPI+ implementation in each division, the evaluation team will use administrative data on costs that are billed partially or entirely to the grant, document local matching costs, and have school divisions provide local administrative data for or estimate any remaining costs.

The first step will be for the evaluation team to obtain existing administrative data on costs, including data on VPI+ grant reimbursements submitted by each division to VDOE via the Oracle and Online Management of Education Grant Awards (OMEGA) systems. These

administrative data will be collected from VDOE and each participating division for Years 2 and 3 of the grant, because they are the two years included in the impact evaluation. To measure costs of VPI+ implementation, the evaluation team will enter the cost data from all sources of administrative data into a cost data capture tool developed for the study. The evaluation team developed an Excel-based cost data capture tool through a series of steps, which included speaking with VPI+ administrators and data experts at VDOE, and conducting telephone interviews with VPI+ administrators and data experts in each of the 11 divisions participating in the evaluation to determine the availability of data on costs. The evaluation team will consult with the divisions while completing the cost data capture tool to ensure accuracy. The cost data capture tool will generate a total cost of VPI+ in each division and a total cost of VPI+ across all participating divisions. The cost data capture tool will also include information about VPI+ enrollment and will generate a per-child cost for VPI+ in each division and across all divisions.

The benefit-cost analysis will compare the aggregated per-child cost estimates for VPI+ to an estimate of the economic benefits resulting from the program. The benefit-cost analysis will be conducted only if the regression discontinuity analysis yields significant impact estimates. To measure the economic benefits resulting from VPI+, the evaluation team will monetize benefits based on proximal outcomes or those that occur within the scope of the evaluation (i.e., between preschool and second grade). The proximal outcomes will be derived from regression discontinuity impact estimates that will be calculated using school readiness outcomes data collected for the VPI+ impact study, as well as estimates of schooling outcomes from a propensity score matched comparison sample. These analyses will combine data collected on children enrolled in VPI+ during Year 2 and Year 3. The benefit-cost analysis will draw from existing economic literature in order to monetize the benefits associated with the VPI+ program, by determining the long-term economic benefits associated with a given magnitude of program impact on school readiness skills and schooling outcomes. The relationship between cost inputs and monetary benefits can be expressed as a benefit-cost ratio. A benefit-cost ratio will be computed by dividing the estimate of the average economic benefit of VPI+ by the estimated per-child cost for VPI+ across all divisions.

Results of Cost Interviews with Divisions

In spring 2017, the evaluation team members working on the cost study completed telephone interviews with representatives of all 11 divisions that are participating in the evaluation. The evaluation team used an interview protocol with guiding questions to gather specific information about the distribution of costs across funding sources, the distribution of VPI+ grant funds

between VPI+ classrooms and VPI Improved classrooms, idiosyncrasies of the data, and the timeline of data availability. Below, we summarize responses across the 11 divisions.

Distribution of Costs Across Funding Sources

Divisions do not bill all the costs of operating VPI+ classrooms to the VPI+ grant. Therefore, the cost study will need to go beyond use of state administrative data to document matching and other costs not billed to the grant.

The full cost of implementing VPI+ includes costs billed entirely to the grant, costs billed partially to the grant, and costs that are not billed to the grant at all. Costs that are not billed to the grant are further divided into a) matching costs, or costs that the division contributes to support VPI+ and documents as local matching funds, and b) other costs, or costs that are incurred by the division to operate VPI+ but are not billed to the grant or documented systematically as matching costs. Some divisions document local matching costs using the same cost categories (“object codes”) used for grant reimbursement from VDOE, while other divisions use different cost categories or no categorization in the documentation of matching costs.

After the evaluation collects administrative data housed at VDOE for costs that are billed partially or entirely to the grant, documentation of matching costs, gaps in information will be noted. The evaluation team will then request that divisions provide the evaluation team with their VPI+ matching funds documentation as well as any available administrative data that can be used to fill any gaps in costs that may be incurred during VPI+ implementation.

Data will be collected on the following types of costs: salaries and benefits for classroom staff (including teachers, assistant teachers, and aides), professional development costs for classroom staff (such as training and coaching), curriculum costs (including curricular materials and training), classroom materials (such as educational supplies and equipment), food costs, transportation costs, costs of comprehensive services (such as hearing and vision screenings and family support services), and shared administrative costs (including a broad range of school-wide services such as administrator salaries, the school library, the nurse, and building and facilities costs).

All divisions allocate the salaries and benefits of classroom staff to the VPI+ grant. Almost all divisions allocate at least some professional development costs, curriculum costs, and classroom materials costs to the grant, but many divisions also allocate some of these costs to matching funds or to other division resources that are not documented for the grant (other

costs). Divisions vary in how they handle comprehensive service costs and in the types of comprehensive services they offer. Some divisions allocate at least some comprehensive services to the grant. Other divisions do not bill these costs to the grant but may document them as matching costs. In some instances, divisions have access to free services including vision and hearing screenings that are donated by local agencies. The evaluation team discussed strategies for estimating these costs using existing administrative data with each division.

In most divisions, food and transportation costs are not billed to the grant, although they sometimes are documented as local matching costs. Food costs are sometimes covered by the Child and Adult Care Food Program (CACFP), and divisions using CACFP typically have administrative data on food costs that are reimbursed by that program as well as any remaining food costs that could be used to estimate the cost for VPI+. Similarly, divisions that do not bill transportation costs to the grant or document them for local matching, often have administrative data available that can be used to estimate costs along with information about how many VPI+ students participate in transportation.

Divisions vary in the amount of shared administrative costs they have; larger divisions typically have a broader array of shared costs than smaller divisions. Divisions have different strategies for allocating shared administrative costs. Divisions may allocate a proportion of shared administrative costs to the VPI+ grant, document at least some shared administrative costs for the local match, or exclude shared administrative costs from cost documentation for the grant. Divisions that do not document shared administrative costs usually do have access to school-wide or division-wide data on these costs, and the costs may be prorated for VPI+ classrooms and students (such as prorating the cost using the percentage of all students in the division enrolled in VPI+).

Another category of other costs includes the cost value of free or donated goods and services, such as classroom volunteers and fundraising efforts. The evaluation team worked with divisions to identify any free or donated goods and services that are part of VPI+ implementation. The evaluation team will estimate the value of all free or donated goods and services reported by divisions.

Cost Allocation for VPI+ and VPI Improved Classrooms

Most divisions with VPI+ grants are using some of the VPI+ grant funds to support quality improvement in existing VPI classrooms that have been designated as VPI Improved classrooms.

VPI Improved classrooms are existing VPI classrooms that are receiving VPI+ grant funds to improve program quality in one or more of the five program improvement areas permitted by the Preschool Development Grant. Due to evaluation budgetary constraints, VDOE decided to focus the external evaluation, including the cost study, on only VPI+ classrooms because they will be receiving the full treatment of initiative supports. Further, only the new VPI+ classrooms will have child outcome data. Therefore, the evaluation team will attempt to exclude any grant costs that are used in VPI Improved classrooms in the cost estimation.

Most divisions use VPI+ funds to support professional development of teachers in VPI Improved classrooms, and in most divisions the professional development costs can easily be prorated to only include VPI+ teachers. Several divisions also use VPI+ funds for comprehensive services, and these costs can be prorated using the percentage of preschool children in VPI+ classrooms or the percentage of children using these services that are in VPI+ classrooms. Most divisions do not use VPI+ grant funds to support salaries and benefits of VPI Improved classroom staff, with the exception of one division that is using VPI+ funds to have an additional adult in VPI Improved classrooms to improve the adult to child ratio.

Idiosyncrasies of Division Data

Some divisions have unique circumstances—community-based child care partners, summer programs, blended funding, and start-up costs—that impact how cost study data need to be collected and analyzed.

Child care partners. Some divisions have VPI+ classrooms located in child care partner programs. The child care partner programs may not collect cost data in a way that can be easily analyzed for the cost study. In these divisions, the per-child cost may be calculated by excluding the costs and enrollment figures for the child care partner programs.

Summer programs. Several divisions operate summer sessions or programs under VPI+. In some cases, the summer session falls entirely within the preceding fiscal year, and in those cases the costs of the summer program can be included in the cost analysis for that year if those students were also included in the VPI+ impact evaluation. However, in some

circumstances the summer sessions may stretch across two fiscal years, and some grantees indicated that they may bill the summer session to two different fiscal years. In those cases, the researchers may request extant data for the remaining months of the summer program in order to capture the full cost of the program for that year.

Blended funding. One division has fully braided funding across all preschool funding sources, meaning that all funding resources are combined to provide the same kind of preschool to all enrolled children in the division. The braided funding sources include VPI, VPI+, Head Start, and Title I. It will be very difficult to obtain data in specific cost categories that is unique to VPI+ because the use of resources is not documented in that way for preschool. The evaluation team will request all available data from the division and will work with the division to determine how a percentage of the costs can be allocated to the VPI+ children included in the impact study.

Start-up costs. Start-up costs represent one-time spending that is not required to continue operating VPI+ classrooms, at least for several years. Some divisions opened new classrooms in Year 2 and incurred start-up costs for one-time purchases such as furniture or technology for the classroom. The evaluation team plans to examine these costs separately to see if they can be differentiated in the administrative cost data.

Next Steps for the Cost Study

The next steps for the cost study involve collecting and analyzing the cost data for Year 2.

In September and October of 2017, the evaluation team will request administrative data from VDOE as well as each division. The evaluation team will then use these data to complete the cost data capture tool and provide each division with their own cost summary for vetting and review. The evaluation team will engage in discussions with divisions as needed to ensure that the cost summaries are accurate and to tease out the nuances to best capture an accurate depiction of costs. The evaluation team will ask divisions for their local administrative data and documentation of matching costs for the 2016–2017 preschool year in late summer or early fall of 2017. The Year 3 Annual Report will present interim findings on VPI+ program costs overall, by program component, and by division, and an estimated per-child cost of VPI+. In September and October of 2018, the evaluation team will repeat the process of requesting cost data from VDOE and each division, and repeat a similar process for the review and augmentation of their cost summary. The final cost study report will be completed in May 2019, and will include a final

description of program costs as well as the results of a benefit-cost analysis if the VPI+ impact study finds significant impacts on children's school readiness outcomes.

7. Conclusion

VPI+ state and local partners accomplished a great deal during the first two years of the grant. Through intensive and creative recruitment efforts, VPI+ staff enrolled approximately 11% more children in Year 2 compared with Year 1. VPI+ staff and teachers received extensive professional development in many formats that, overall, VPI+ teachers found to be useful and effective in improving their teaching practices. In Year 2, PD and support focused on new areas (e.g., social and emotional development, supportive environments, and incorporating learning into transition activities), which were identified as areas of needed improvement in Year 1. With strong support from family engagement coordinators, a large number of children enrolled in VPI+ programs and their families had readily available access to a wide range of local comprehensive services. Finally, child outcomes data revealed that VPI+ children, overall, and across several subgroups, made statistically significant gains from fall to spring on measures of literacy, mathematics, approaches to learning, and social and emotional development. Gains were similar in years 1 and 2. The findings suggest that VPI+ supported positive outcomes for children in subgroups who tended to begin preschool with lower scores on some skills. For example, school readiness skills among DLLs were lower in the fall, but their gain was greater compared with their non-DLL peers, especially in literacy and early math. There were fewer consistent differences in fall to spring gains by IEP or poverty status. In addition to these accomplishments, there are some findings about VPI+ implementation and impact that suggest potential targets for further strengthening during Year 3 of the grant.

Potential Targets for Program Improvement

VPI+ programs successfully enrolled many children in the fall of Years 1 and 2; however, attrition from fall to spring was higher in Year 2. Also, despite enrolling more children earlier in the year, the average number of days children attended their VPI+ programs did not increase in Year 2. Given the relationship between dosage of programming and outcomes,⁴⁵ VPI+ programs should attempt to recruit and enroll children early in the year and encourage consistent attendance throughout the year. Implementation and division staff may want to consider examining ways to support attendance and maintain enrollment, as well as how best to support children that start VPI+ halfway through the year.

⁴⁵ Pre-K Attendance –Why It’s Important and How to Support It: Fact Sheet
http://ceelo.org/wp-content/uploads/2016/02/ceelo_fastfact_state_ece_attendance_2016_02_01_final_for_web.pdf

There are some other content areas and strategies that could be further addressed in teachers' training and technical assistance. The formative evaluation revealed that teachers focused most of their instructional time on building language and literacy skills in the classroom, and less so on math and science. Also, the summative child assessment results suggest less growth in the areas of math skills than literacy skills. In the future, teachers could benefit from more training on other school readiness domains, such as mathematics and science. Helping teachers integrate math and science into other activities (e.g., language and literacy), might help increase the time spent on all subjects. Also, integrating art, creative movement, and music into content areas (e.g., language, literacy, math) might help increase the amount of time students are active during learning.

A major focus of VPI+ is the use of an evidence-based curriculum. On average, teachers received 12.4 hours of training on the use of their curriculum across the two grant years. However, a fifth of teachers received no training on their curriculum during the two years of the grant, and half did not receive any curriculum training in Year 2. Many of these teachers may have received training on their curriculum preceding the grant or in the first year of the grant, but probably could have benefitted from additional training related to their curriculum, such as on ways to integrate content areas together.

Another special feature of VPI+ is the use of formative assessment to individualize instruction. Nearly all VPI+ teachers felt confident both collecting data using the *GOLD*[™] formative assessment and interpreting its results, but coaches from five divisions mentioned reliable implementation and use of *GOLD*[™] data as an area of need for improvement. Also, teachers reported finding *GOLD*[™] useful for informing curricular and lesson planning, individualizing instruction for students, and evaluating the effectiveness of their own practice. But most teachers did not find it useful for informing instruction for children with disabilities or for children who are dual language learners. Divisions may need more guidance from Teaching Strategies[®] on the collection and interpretation of data for DLL children and children with disabilities. Also, more than half of VPI+ teachers also reported that insufficient time to use their formative assessment data was a challenge to successful program implementation. Divisions may need to set time aside to help teachers to use reports on regular intervals.

In general, teachers found the professional development for VPI+ to be useful, but some teachers desired more training on certain topics. VPI+ teachers reported being most interested in having more professional development on supporting children with challenging behaviors,

non-cognitive skills such as approaches to learning and social and emotional development, academic subjects such as math and science, and supporting children who are dual language learners and children with special needs.

Next Steps for the VPI+ Program and Evaluation

With support from state VPI+ partners (including CASTL, VECF, VDOE, and the evaluation team), the school divisions are now working on specific program improvement and professional development efforts using data from the QRIS, formative assessments, and student assessments. State-level VPI+ leadership is working with school divisions around issues such as family engagement, attendance, use of data to improve instructional quality, inclusion for children with disabilities, supports for DLLs, and implementation of continuous improvement plans following data review. School divisions are also launching Year 3 of the VPI+ program, including expansion of the program to more classrooms, and to two new divisions, one of which has never had public preschool.

In Year 3 of VPI+, the evaluation will continue to collect formative and student assessment data to provide feedback to improve instruction and program implementation. During Years 3 and 4, the evaluation will conduct a Regression Discontinuity (RD) study to measure the impact of VPI+ on children's school readiness at kindergarten. Also in Years 3 and 4, the evaluation will begin a longitudinal study that compares VPI+ children and a matched-comparison group of children in Kindergarten who did not receive preschool in the division but are similar to the VPI+ children on school readiness outcomes, participation in special education, grade retention, attendance, and achievement in kindergarten and first grade. Cost study data collection and analysis also will occur in Year 3 and Year 4.

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Appendix A. Additional Information on the Child Summative Assessment Measures

Measure	Reliability ⁴⁶	Validity ⁴⁷	Direct assessment (DA) or teacher report (TR) ⁴⁸	Measures variation in children's abilities ⁴⁹	Appropriate for children in diverse communities	Align with Foundation Blocks for Early Learning and SOL for kindergarten	Norm-referenced ⁵⁰
PALS-PreK	Yes	Yes	DA administered by teachers	Yes	Yes	Yes	Yes
PALS-K	Yes	Yes	DA administered by teachers	Yes	Yes	Yes	Yes
WJIIIR Applied Problems subtest	Yes	Yes	DA	Limited	Yes	No ⁵¹	Yes
DCCS ⁵²	Yes	Yes	DA	Floor effects	Yes	No	No
T-CRS:2 Task orientation subscale	Yes ⁵³	Yes	TR	Yes	Yes	Yes ⁵⁴	Yes
T-CRS:2 Peer social skills	Yes	Yes	TR	Yes	Yes	Yes ⁵⁵	Yes
T-CRS:2 Behavior control	Yes	Yes	TR	Yes	Yes	Yes ⁵⁶	Yes
Head Toes Knees Shoulders (HTKS)	Yes	Yes	DA	Yes (floor effects for young children)	Yes	Yes ⁵⁷	No
Preschool Motor Development Direct Assessment	No	No	DA	Yes	Not Available	Yes	Not Available ⁵⁸
Virginia Fine/Gross Motor Screening at Kindergarten	No	No	Administered by school staff	Yes	Not available	Yes	Not available

⁴⁶ Demonstrate strong internal consistency, or a Cronbach's alpha of .80 or greater. If applicable, inter-rater reliability of Kappa/ICC greater than 0.70.

⁴⁷ Demonstrate construct validity, including confirmatory factor analyses that indicate the presence of hypothesized constructs (and meet acceptable fit criteria, such as RMSEA < .05, CFI < 0.90, and SRMR < 0.08). Measures must also be related to other measures of similar constructs in expected directions at a magnitude of $r > 0.30$, as a means of demonstrating concurrent (convergent and discriminant) and predictive validity.

⁴⁸ Preference for assessments administered by trained and reliable assessors.

⁴⁹ Include sufficient variability to measure children at different places in the learning and development continuum, from preschool through kindergarten, and ability to identify children who are performing below, at or near, and above grade-level expectations.

⁵⁰ Have norm-referenced data available at the state or national level to permit the VPI+ team to determine the extent to which children in the program are meeting or exceeding normative averages.

⁵¹ Applied Problems aligns with one of the six standards for mathematics.

⁵² In Year 1, evaluators used the Dimensional Change Card Sort (DCCS) but stopped using this because it produced very similar findings to HTKS and was under revision by the publisher.

⁵³ Available psychometric data are for children in kindergarten and older.

⁵⁴ Task orientation scale aligns with the approaches to learning standard in the personal and social development foundation blocks.

⁵⁵ Peer social skills scale aligns with the interaction with others standard in the personal and social development foundation blocks.

⁵⁶ Behavior problems scale aligns with several standards across the personal and social development foundation blocks.

⁵⁷ HTKS task aligns with the self-regulation standard of the personal and social development foundations.

⁵⁸ These skills develop from 3-6 years of age, so there are no national norms for four-year olds in preschool.

Appendix B. Adjusted Mean Scores and Gains from Fall to Spring For Years 1 and 2

	Year 1 (2015–2016)				Year 2 (2016–2017)			
	n	Fall Adjusted Mean Score (SE)	Spring Adjusted Mean Score (SE)	Gain	n	Fall Adjusted Mean Score (SE)	Spring Adjusted Mean Score (SE)	Gain
Literacy								
Name Writing	1427	3.87 (0.05634)	6.40 (0.05634)	2.54*** (0.0531)	1588	3.64 (0.05314)	6.36 (0.05314)	2.76*** (0.0662)
Upper Case Alphabet Recognition	1430	9.69 (0.2532)	20.61 (0.2532)	10.92*** (0.2087)	1583	9.10 (0.24)	20.32 (0.24)	11.21*** (0.20)
Beginning Sound Awareness	1410	4.32 (0.1289)	8.48 (0.1289)	4.16*** (0.09347)	1575	4.06 (0.12)	8.37 (0.12)	4.31*** (0.12)
Print and Word Awareness	1431	4.79 (0.09384)	8.28 (0.09384)	3.49***	1586	4.42 (0.0860)	8.13 (0.0860)	3.77*** (0.0879)
Rhyme Awareness	1432	4.31 (0.08915)	7.74 (0.08915)	3.43*** (0.07367)	1581	3.96 (0.086)	7.50 (0.086)	3.78*** (0.09461)
Nursery Rhyme Awareness	1402	4.40 (0.09224)	8.43 (0.09224)	4.03*** (0.06215)	1581	4.61 (0.08833)	8.46 (0.08833)	3.9707*** (0.0772)
Cognition and general knowledge								
WJ AP W Scores	966	401.9 (0.5761)	410.83 (0.5761)	8.92*** (0.5766)	1532	393.41 (0.5193)	407.82 (0.5193)	14.28*** (0.6913)
Approaches to learning								
Task orientation	1028	57.55 (1.168)	61.13 (1.168)	3.58*** (0.5886)	1574	55.7898 (0.8818)	59.34 (0.8818)	3.90*** (0.7588)
Social and emotional development								
Peer social skills	1028	64.55 (1.189)	67.82 (1.189)	3.27*** (0.5704)	1590	62.55 (1.0159)	67.67 (1.0159)	5.00*** (0.7197)
Behavior control	1015	60.74 (1.1367)	62.76 (1.1367)	2.02*** (0.5282)	1578	58.6318 (0.9296)	61.1668 (0.9296)	2.06** (0.6713)
Self regulation	950	10.07 (0.6651)	17.62 (0.6551)	7.55*** (0.5156)	1531	5.994 (0.3959)	12.9782 (0.3959)	7.6224*** (0.5309)

Note. Nested models controlling for the following covariates: race/ethnicity, gender, dual language learner status, IEP status, household income level, health status, and division.

Appendix C. Adjusted Mean Scores and Differences for Year 2 Fall to Spring Gains Between Subgroups

	Upper Case Alphabet Recognition				Beginning Sound Awareness				Name Writing				Print and Word Awareness				Rhyme Awareness				Nursery Rhyme Awareness			
	n	Fall Mean Score	Spring Mean Score	Diff. in Gains	n	Fall Mean Score	Spring Mean Score	Diff. in Gains	n	Fall Mean Score	Spring Mean Score	Diff. in Gains	n	Fall Mean Score	Spring Mean Score	Diff. in Gains	n	Fall Mean Score	Spring Mean Score	Diff. in Gains	n	Fall Mean Score	Spring Mean Score	Diff. in Gains
DLLs vs. Non-DLLs																								
DLLs	387	7.61 (0.53)	20.45 (0.53)	2.16*** (0.46)	383	3.21 (0.21)	8.12 (0.21)	0.92** (0.26)	389	3.38 (0.11)	6.51 (0.11)	0.55*** (0.11)	386	3.52 (0.15)	7.84 (0.15)	0.82*** (0.14)	385	3.30 (0.17)	7.02 (0.17)	0.25 (0.16)	384	3.68 (0.15)	8.03 (0.15)	0.65*** (0.13)
Non-DLLs	1183	9.60 (0.29)	20.27 (0.29)		1179	4.34 (0.13)	8.46 (0.13)		1186	3.73 (0.06)	6.31 (0.06)		1187	4.71 (0.10)	8.22 (0.10)		1183	4.18 (0.10)	7.65 (0.10)		1184	4.91 (0.10)	8.61 (0.10)	
Students with IEP vs. students with no IEP																								
IEP	145	8.07 (0.69)	17.63 (0.69)	-1.82** (0.68)	143	2.95 (0.27)	6.90 (0.27)	-0.40 (0.30)	146	2.92 (0.14)	5.89 (0.14)	0.2714 (0.168)	146	3.85 (0.20)	7.26 (0.20)	-0.3249 (0.2172)	144	3.20 (0.22)	5.99 (0.22)	-0.82** (0.24)	145	3.81 (0.19)	7.75 (0.19)	0.09 (0.20)
No IEP	1438	9.21 (0.25)	20.59 (0.25)		1432	4.17 (0.12)	8.52 (0.12)		1442	3.71 (0.05)	6.41 (0.05)	1440	4.48 (0.09)	8.21 (0.09)	1437		4.04 (0.09)	7.65 (0.09)	1436		4.69 (0.09)	8.54 (0.09)		
Students at or below 100% FPL vs. students above 100% RPL																								
At or Below 100% FPL	978	8.40 (0.29)	19.67 (0.29)	0.13 (0.41)	974	3.8984 (0.1324)	8.22 (0.1324)	0.02 (0.18)	984	3.46 (0.06)	6.28 (0.06)	0.27** (0.10)	982	4.35 (0.10)	8.02 (0.10)	-0.09 (0.13)	978	3.93 (0.10)	7.31 (0.10)	-0.42** (0.15)	978	4.50 (0.10)	8.39 (0.10)	0.07 (0.12)
Above 100% FPL	605	10.22 (0.36)	21.36 (0.36)		601	4.31 (0.15)	8.62 (0.15)		604	3.94 (0.08)	6.49 (0.08)		604	4.53 (0.11)	8.29 (0.11)		603	4.00 (0.12)	7.80 (0.12)		603	4.77 (0.11)	8.58 (0.11)	

Note. Nested models controlling for the following covariates: race/ethnicity, gender, dual language learner status, IEP status, household income level, health status, and division.

		WJ AP W Scores			Task Orientation				Peer Social Skills				Behavior Control				Self Regulation			
	n	Fall Mean Score	Spring Mean Score	Diff. in Gains	n	Fall Mean Score	Spring Mean Score	Diff. in Gains	n	Fall Mean Score	Spring Mean Score	Diff. in Gains	n	Fall Mean Score	Spring Mean Score	Diff. in Gains	n	Fall Mean Score	Spring Mean Score	Diff. in Gains
DLLs vs. Non-DLLs																				
DLLs	357	384.85 (1.32)	402.84 (1.32)	4.68*** (1.22)	381	57.24 (1.73)	63.91 (1.73)	4.14** (1.34)	390	62.79 (1.66)	71.00 (1.66)	4.11** (1.24)	389	62.09 (1.69)	67.97 (1.69)	4.46*** (1.16)	358	4.63 (1.03)	9.43 (1.03)	-2.86** (0.94)
Non-DLLs	1163	396.06 (0.64)	409.36 (0.64)		1180	55.32 (1.00)	57.85 (1.00)		1187	62.47 (1.10)	66.57 (1.10)		1176	57.48 (1.04)	58.90 (1.04)		1161	6.42 (0.49)	14.08 (0.49)	
Students with IEP vs. students with no IEP																				
IEP	134	384.38 (1.75)	399.46 (1.75)	0.72 (1.84)	146	44.58 (2.18)	49.06 (2.18)	1.03 (1.99)	150	51.10 (2.02)	57.28 (2.02)	1.17 (1.84)	150	48.69 (2.08)	56.16 (2.08)	5.46** (1.70)	132	4.94 (1.37)	10.29 (1.37)	-1.79 (1.39)
No IEP	1398	394.28 (0.54)	408.63 (0.54)		1428	56.94 (0.91)	60.40 (0.91)		1440	63.75 (1.03)	68.77 (1.03)		1428	59.68 (0.95)	61.70 (0.95)		1399	6.09 (0.42)	13.23 (0.42)	
Students at or below 100% FPL vs. students above 100% RPL																				
At or below 100% FPL	946	391.09 (0.66)	406.48 (0.66)	2.54* (1.07)	972	54.11 (1.02)	57.17 (1.02)	-1.26 (1.19)	982	61.55 (1.11)	66.39 (1.11)	-0.73 (1.11)	979	57.98 (1.05)	59.92 (1.05)	-1.54 (1.03)	945	5.13 (0.5)	11.96 (0.51)	-0.38 (0.80)
Above 100% FPL	586	397.11 (0.84)	409.96 (0.84)		602	58.47 (1.20)	62.79 (1.20)		608	64.15 (1.24)	69.72 (1.24)		599	59.69 (1.21)	63.18 (1.21)		586	7.38 (0.6)	14.59 (0.65)	

Note. Nested models controlling for the following covariates: race/ethnicity, gender, dual language learner status, IEP status, household income level, health status, and division.

Appendix D. Description of Outcome Models

We conducted a series of three-level hierarchical linear models (HLMs) (Raudenbush & Bryk, 2002) to protect against biased estimation of regression coefficients and variance components that often result from correlated errors structures in clustered data (Kim & Frees, 2006; Murray, 1998). The first set of HLMs were used to estimate fall to spring growth in various outcomes of children who participated in the VPI+ program after controlling for child background characteristics and the nesting structure of the data. Each assessment observation (fall or spring assessment data) was nested within students, and students were nested within classrooms. A time variable at level 1 takes on the value of 0 for fall and 1 for spring. Given this time coding, the intercept at level 1 represents the fall outcome level, and the slope (i.e., the coefficient associated with the time variable) represents the growth/change in outcome from fall to spring. Level 2 is child level. Child-level covariates, including child demographic characteristics, such as DLL status, IEP status, poverty status, race/ethnicity, gender, and health, were grand mean centered so that the intercepts indicate the average values for all students instead a particular reference group. Level 3 is classroom level. Random intercept models at levels 2 and 3 were specified to allow both children and classrooms to vary randomly in terms of their fall outcomes.

To account for the clustering of classrooms within school divisions that exists in the research design, a fixed effect strategy (Allison, 2009) at level 3 was utilized. Here, classroom level dummy variables reflecting division membership are entered into the level 3 model. Henrico serves as the reference school division, and all division dummy variables are grand mean centered to allow the intercept to reflect average values across divisions. This fixed-effects strategy was chosen only after fitting an analogous four-level HLM with division at level 4. Though preferable, the four-level HLM showed no significant random variation in division level intercepts or slopes. Consequently, the model was reduced to the three-level HLM, and a fixed effects strategy was utilized to attempt to account for fixed division differences.

The second set of HLMs added child attendance rate and its interaction with time to level-2 with a goal to understand how child attendance is associated with fall level and fall to spring growth on various child outcomes. Attendance rate was coded as 1 if children attended at least 90% of school days and 0 if the child attended less than 90% of school days. The intercept reflects the estimated average value of children in the less than 90% attendance group attendance. The coefficient associated with attendance variables tells us whether children in the 90% or above

attendance rate group performed better than children in the less than 90% attendance rate group. The coefficient associated with time and 90% attendance interaction term indicates whether the growth rate from fall to spring differ between the two attendance groups.

The third set of HLMs estimate the difference in fall and slope of growth from fall to spring by student subgroup. For example, differences in scores in fall and gains from fall to spring by DLL status were estimated by specifying the appropriate cross-level time by DLL interaction. Please note that time, DLL, and interaction between time and DLL were not centered but the rest of the covariates were grand-mean centered. We estimated fall and spring average values for DLL and non-DLL group and are presented in a figure. Similarly, a time by IEP interaction term was added to the HLM and estimated average values for fall and spring were calculated for IEP vs. non IEP students. We also ran similar analysis for children from households below 100% FPL vs. children from households above 100% FPL.

Appendix E. Cut Points for Within or Above Developmental Range for Each Score

Task	Within or Above Developmental Range	Total Range
PALS-PreK Name writing	5 or above	0-7
PALS-PreK Upper-case alphabet recognition	12 or above	0-26
PALS-PreK Lower-case alphabet (not required)	9 or above	0-26
PALS-PreK Letter sounds (not required)	4 or above	0-26
PALS-PreK Beginning sound awareness	5 or above	0-10
PALS-PreK Print and word awareness	7 or above	0-10
PALS-PreK Rhyme awareness	5 or above	0-10
PALS-PreK Nursery rhyme awareness	6 or above	0-10
PALS-K Summed Score	29 or above	0-120
Woodcock Johnson Tests of Achievement Applied Problems Standard Score	90 or above	0-131
T-CRS 2.1 Task orientation subscale	26 th percentile or above	0-99
T-CRS 2.1 Peer social skills subscale	26 th percentile or above	0-99
T-CRS 2.1 Behavior control subscale	26 th percentile or above	0-99
Preschool fine motor skills	Pass all 4 tasks	0-4
Preschool gross motor skills	Pass all 3 tasks	0-3
Virginia School Health Guidelines: Fine/Gross Motor Screening	Did not pass if the child failed two out of the three gross motor tasks and both of the fine motor tasks	Gross motor 0-3 Fine motor 0-2

Note. PALS-PreK skills only have expected developmental ranges for spring of preschool which we have presented here. We calculated and present the percentage of children who pass all 4 fine motor tasks and all 3 gross motor tasks to describe the level of proficiency in motor development at preschool entry. However, this approach should not be considered an indicator of “within or above developmental range.” They most likely reflect the percentage of children who are above average in their motor skills. Also, the K motor screener used by VDOE is a screener for major delays in motor development. It is not an assessment of whether children are within or above the developmental range for motor skills. SRI used the criteria provided in the screener guideline which was developed by VDOE to determine whether each child failed the motor screener (see p. 196 of the Virginia School Health Guidelines)

Appendix F. Kindergarten Readiness Model Estimates and Odds Ratio Estimates

Predictors	Literacy		Math		Social and Emotional		Approaches to Learning		Overall	
	Coefficient (s.e.)	Odds Ratio	Coefficient (s.e.)	Odds Ratio	Coefficient (s.e.)	Odds Ratio	Coefficient (s.e.)	Odds Ratio	Coefficient (s.e.)	Odds Ratio
Intercept	2.39*** (0.13)		1.64*** (0.09)		0.96*** (0.08)		1.70*** (0.09)		0.89*** (0.08)	
Non-DLL	0.23 (0.35)	1.26	0.60* (0.27)	1.83*	-0.14 (0.23)	0.87	-0.05 (0.28)	0.96	0.55* (0.23)	1.74*
No IEP	0.98** (0.36)	2.68**	0.67* (0.30)	1.95*	-0.10 (0.29)	0.90	0.44 (0.31)	1.56	0.95*** (0.28)	2.58***
100-200% FPL	0.37 (0.23)	1.45	0.07 (0.16)	1.08	0.03 (0.14)	1.03	0.01 (0.17)	1.01	0.15 (0.14)	1.16
Hispanic	-0.70 (0.37)	0.50	-0.83** (0.28)	0.44**	0.01 (0.25)	1.01	-0.14 (0.29)	0.87	-0.66** (0.24)	0.52**
Black	-0.22 (0.33)	0.80	-0.86** (0.26)	0.42**	-0.62** (0.19)	0.54**	-0.28 (0.23)	0.75	-0.80*** (0.21)	0.45***
Female	0.67** (0.22)	1.96**	0.12 (0.16)	1.13	0.06 (0.13)	1.06	0.45** (0.17)	1.57**	0.30* (0.14)	1.35*
Good Health	0.85* (0.37)	2.35*	0.38 (0.32)	1.46	0.13 (0.28)	1.13	0.59 (0.31)	1.80	0.65* (0.27)	1.92*

Note. s.e. = standard error

Odds ratios are used to compare the relative odds of the occurrence of the outcome of interest (e.g. a child is measured to be kindergarten ready), given the variable of interest (e.g. child background characteristic).

OR=1 Characteristic does not affect odds of being kindergarten ready

OR>1 Characteristic associated with higher odds of being kindergarten ready

OR<1 Characteristic associated with lower odds of being kindergarten ready

* $p < .05$, ** $p < .01$, *** $p < .001$