VPI+ Comprehensive Evaluation Annual Report

Year 3 (2017–2018)

August 31, 2018

Prepared for:
Virginia Department of Education, Office of Humanities and Early Childhood
VPI+ Core Planning Team

Prepared by:
SRI International
   Erika Gaylor
   Kirby Chow
   Todd Grindal
   Shari Golan
   Betsy Davies-Mercier
   Jenna Nguyen
   Tejaswini Tiruke
   Cyndi Williamson

with support from
School Readiness Consulting
Appendix E. Virginia Quality QRIS Ratings ................................................................. E-1
Appendix F. Approach to Analyses for Assessing Preschool Outcome Gains ........... F-1
Appendix G. Adjusted Mean Scores and Gains from Fall to Spring for Cohorts 1, 2, and 3 .................................................................................................................. G-1
Appendix H. Adjusted Mean Scores and Differences for Cohort 3 Fall to Spring Gains Between Subgroups ............................................................................................................. H-1
Appendix I. Methods for Determining Kindergarten Readiness .............................. I-1
Appendix J. Kindergarten Readiness Model Estimates and Odds Ratio Estimates, Cohort 3 .......................................................................................................................... J-1
# Exhibits

<table>
<thead>
<tr>
<th>Exhibit</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhibit 1</td>
<td>Evaluation Methods, by Question</td>
<td>16</td>
</tr>
<tr>
<td>Exhibit 2</td>
<td>Child Assessment Measures, by Domain</td>
<td>20</td>
</tr>
<tr>
<td>Exhibit 3</td>
<td>Number of VPI+ Classrooms and Children, Years 1, 2, and 3</td>
<td>23</td>
</tr>
<tr>
<td>Exhibit 4</td>
<td>Child and Family Demographics, Year 3</td>
<td>25</td>
</tr>
<tr>
<td>Exhibit 5</td>
<td>Percentage of VPI+ Teachers Who Reported Feeling Prepared to Use the Curriculum, Years 1, 2, and 3</td>
<td>32</td>
</tr>
<tr>
<td>Exhibit 6</td>
<td>Proportion of Time Children Spent in Various Types of Activities, Year 3</td>
<td>33</td>
</tr>
<tr>
<td>Exhibit 7</td>
<td>Frequency Content Areas Taught in VPI+ Classrooms Daily, Years 1, 2, and 3</td>
<td>34</td>
</tr>
<tr>
<td>Exhibit 8</td>
<td>Frequency of Selected Content Areas Taught in VPI+ Classrooms at Least Three Times a Week, Years 1, 2, and 3</td>
<td>34</td>
</tr>
<tr>
<td>Exhibit 9</td>
<td>Content Areas Taught for 31 Minutes or More, Years 1, 2, and 3</td>
<td>36</td>
</tr>
<tr>
<td>Exhibit 10</td>
<td>Percentage of VPI+ Teachers Who Reported GOLD™ was Very or Moderately Useful for Instruction of Children from Special Populations, Years 1, 2, and 3</td>
<td>37</td>
</tr>
<tr>
<td>Exhibit 11</td>
<td>Proportion of VPI+ Teachers Who Engaged All or Most Families in Various Ways, Years 1, 2, and 3</td>
<td>40</td>
</tr>
<tr>
<td>Exhibit 12</td>
<td>Teacher Reports of Services Readily Available to VPI+ Children and Families, Years 1, 2, and 3</td>
<td>43</td>
</tr>
<tr>
<td>Exhibit 13</td>
<td>Number of VPI+ Classrooms and Program Sites that Received CLASS®, ECERS-R, and Virginia Quality Ratings in Year 1 and 3</td>
<td>45</td>
</tr>
<tr>
<td>Exhibit 14</td>
<td>Percentage of Classrooms that Met the Virginia QRIS Thresholds in Year 1 and Year 3, by CLASS® Domain</td>
<td>46</td>
</tr>
<tr>
<td>Exhibit 15</td>
<td>Percentage of Classrooms that Met the Virginia QRIS Thresholds for ECERS-R in Year 1 and Year 3, by Subscale</td>
<td>48</td>
</tr>
<tr>
<td>Exhibit 16</td>
<td>Percentage of Program Sites that Received a Level 3, 4, or 5 Virginia Quality Rating, Matched Sample</td>
<td>49</td>
</tr>
<tr>
<td>Exhibit 17</td>
<td>Change in Average CLASS® Domain Scores from Year 1 to Year 3, Matched Teacher Sample</td>
<td>50</td>
</tr>
<tr>
<td>Exhibit 18</td>
<td>Change in Average ECERS-R Subscale Scores for Year 1 and Year 3, Matched Sample</td>
<td>51</td>
</tr>
<tr>
<td>Exhibit 19</td>
<td>Amount of Professional Development that VPI+ Teachers Received on Using GOLD™, Years 1, 2, and 3</td>
<td>57</td>
</tr>
<tr>
<td>Exhibit 20</td>
<td>Amount of Professional Development that VPI+ Teachers Received on Using Curricula by Curricula, Years 1, 2, and 3</td>
<td>58</td>
</tr>
</tbody>
</table>
Exhibit 21. VPI+ Teachers Who Received Professional Development in Specific Content/Domain Areas, Years 1, 2, and 3..........................................................59
Exhibit 22. VPI+ Teachers Who Received Professional Development in Specific Instructional Practices, Years 1, 2, and 3..........................................................60
Exhibit 23. Areas in Which VPI+ Teachers Desire More Professional Development, Years 1, 2, and 3 ................................................................................................ 62
Exhibit 24. Coach Log Data for VPI+ Teachers, Years 1, 2, and 3 .................................64
Exhibit 25. Distribution of Coaching Contacts, by Type of Coaching Session, Years 1, 2, and 3 ............................................................................................................. 65
Exhibit 26. Distribution of Coaching Contacts, by Length of Coaching Session, Years 1, 2, and 3 ............................................................................................................. 66
Exhibit 27. Average Minutes of Coaching Per Contact, by Format, Years 1, 2, and 3 ......................................................................................................................... 66
Exhibit 28. Individual Coaching and Group Training Contacts with VPI+ Teachers, by Focus Area, Years 1, 2, and 3................................................................. 67
Exhibit 29. Individual Coaching and Group Training Contacts with VPI+ Teachers Incorporating Domain-Specific Focus Areas, Years 1, 2, and 3 ............................ 68
Exhibit 30. Coaching Strategies for Individual Coaching Contacts With VPI+ Teachers, Years 1, 2, and 3....................................................................................... 69
Exhibit 31a–f. Gains in Adjusted Mean Scores on PALS PreK Tasks, Year 3 ..........................74
Exhibit 32. Gains in Adjusted Mean Standard Scores on Vocabulary, Cohort 3.........................75
Exhibit 33. Gains in Adjusted Mean W Scores on General Knowledge and Cognition: Early Math, Cohort 3......................................................................................... 75
Exhibit 34. Gains in Adjusted Mean Percentile Rank on Task Orientation, Cohort 3 .........................76
Exhibit 35. Gains in Adjusted Mean Percentile Rank on Peer Social Skills, Cohort 3......................................................................................................................... 76
Exhibit 36. Gains in Adjusted Mean Percentile Rank on Behavior Control, Cohort 3......................................................................................................................... 77
Exhibit 37. Gains in Adjusted Mean Scores on Self-Regulation, Cohort 3 .........................77
Exhibit 38. Differences Between Fall to Spring Gains for Children Across Cohorts......78
Exhibit 39. VPI+ Children’s Gains, by Domain and Subgroup, Year 3 .................................80
Exhibit 40. Kindergarten Readiness of VPI+ Children, by Cohort ......................................82
Exhibit 41. VPI+ Pre-K participation by Cohort and testing procedures.................................84
Exhibit 42. Effect Sizes from RDD Analyses........................................................................85
Exhibit 43. Additional Months of Mathematics and Literacy Skills as a Result of Attending VPI+............................................................................................................... 86
Exhibit B-1. Measures Used to Assess Child Outcomes...................................................... B-5
Exhibit C-1. Domains and Dimensions of the CLASS® ..................................................... C-1
Exhibit D-1. ECERS-R Subscale Components ................................................................. D-1
Exhibit E-1. Requirements and Year 3 Frequencies for Level 3, Level 4, and Level 5 Ratings of Virginia’s QRIS ................................................................. E-1
Exhibit I-1. Criteria for Demonstrating Kindergarten Readiness in the Four Domains ............................................................................................................ I-2
Executive Summary

In January 2015, the Virginia Department of Education (VDOE) in the Commonwealth of Virginia was awarded a four-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. (Virginia uses the term “division” rather than “district.”) 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 evaluation report primarily documents program implementation and impacts on child outcomes for Year 3 of the VPI+ grant (the 2017–2018 school year) for the 11 school divisions that have participated since 2015.

The PDG funds support two types of preschool classrooms in high-need communities in participating 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+ classrooms in the original 11 school divisions, given these VPI+ classrooms receive 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) for the duration of the federal grant.

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 external 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 (SRC) and RAND Corporation.

Evaluation Methods

SRI used a variety of methods and sources to learn about VPI+ implementation during Year 3 of the grant. These included: (1) analysis of extant data on student demographic and enrollment characteristics, teacher and program characteristics, and classroom and teacher quality observations; (2) logs on local coaching and professional development activities and interviews
with coaches; (3) summaries and documentation of technical assistance and training sessions provided by state partners to VPI+ coordinators, coaches, and family engagement coordinators; (4) interviews and surveys with school division VPI+ coordinators; (5) surveys of VPI+ teachers; and (6) direct assessments and teacher-completed checklists to measure outcomes for VPI+ children in the areas of language and literacy, mathematics, approaches to learning, social and emotional development, and physical well-being 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 Commonwealth. In the beginning of Year 3, Virginia used its PDG funds to further increase access to high-quality preschool by adding new classrooms in two additional high-need communities, expanding its reach to 13 school divisions. These 13 school divisions operated 121 VPI+ classrooms (78 newly-opened high-quality preschool classrooms as well as 43 existing classrooms with blended funding that were brought up to VPI+ standards). Overall, in the three grant years, the number of children enrolled in VPI+ increased by 15 percent, from 1,235 children in the spring of Year 1 to 1,422 children in the spring of Year 3.

**Enrollment and Attrition from VPI+**

- More than half of Year 3 children (56%) were from households with very low incomes, at or below 100% of the Federal Poverty Level (FPL). Approximately 19 percent were from households with incomes between 101% and 130% of the FPL, and about one-quarter of children (25%) were from households with incomes between 131% and 200% of FPL.
- In most VPI+ divisions, the number of enrolled children increased or was maintained between Year 1 and Year 3. However, two divisions substantially decreased enrollment in new classrooms, one to serve more children in VPI Improved classrooms and one experienced fewer families applying for the program, most likely due to the changing demographics of the surrounding community.
- In the original participating 11 divisions, most children (92%) who were enrolled in fall of Year 3 in VPI+ classrooms remained in the program throughout the school year.
- Student demographics for the children enrolled in VPI+ both in the fall and spring of the 2017–2018 school year in the 11 original participating divisions varied modestly with those of children enrolled in VPI+ classrooms during the previous two school years. Specifically, Year 3 VPI+ programs enrolled fewer Black children and children living in
extreme poverty and more dual language learners and children with a disability compared with previous years.

- According to parent report, nearly half (46%) of the Year 3 children were identified as Black, 29 percent as Hispanic, 18 percent as White, and the remaining 7 percent as another race.
- Just over two-thirds of Year 3 children (68%) spoke English at home, 25 percent spoke Spanish at home, 3 percent spoke Arabic, and 4 percent reported speaking other languages. These percentages varied across divisions, with more than half of children in three divisions speaking a language other than English at home.
- Approximately 9 percent of VPI+ children were identified with a disability or delay and had an Individualized Education Program (IEP) at some point during the school year.
- A similar percent (8%) of VPI+ children were identified as having fair or poor health as reported by their teacher.

Attendance
- Administrative data provided by school divisions revealed that, on average, VPI+ children attended 161 days of the program during the Year 3 school year. Most divisions reported offering a total of 180 program days, but this number varied across divisions due to differences in school calendars.
- Among children who were enrolled in VPI+ in the fall and remained in the spring, 62 percent attended on a regular basis (at least 90 percent of program days), and 38 percent were considered chronically absent. The percentage of children who were chronically absent was significantly greater than in Year 2 (26%).

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.
Program Characteristics

- **Structural program characteristics.** As in previous grant years, all Year 3 VPI+ programs offered full-day schedules, providing on average 5 hours 20 minutes of instructional time each day. Nearly all VPI+ classrooms met the requirement of having 18 or fewer children: VPI+ class sizes ranged from 10 to 19 and averaged 17.1 children. The average child-to-instructional staff ratio was 8.4 children to 1 teacher, meeting the PDG criterion of no more than 10 children to 1 instructor.

- **Teacher characteristics.** In Year 3, nearly all VPI+ lead teachers held a bachelor’s degree. Half (50%) of VPI+ lead teachers who completed the teacher survey also reported having a master’s degree, and 3% reported having a doctorate or professional degree. Approximately 57 percent of VPI+ teachers majored in education as undergraduates including one-fourth who majored in early childhood. Nearly all VPI+ teachers (92%) had prior experience teaching preschool, with an average of 6.2 years of preschool teaching experience. However, more than half (53%) of VPI+ teachers had four or fewer years of preschool teaching experience (including VPI+).

- **Curriculum and instruction.** Most Year 3 VPI+ teachers agreed with statements about their curriculum being good for preparing children for kindergarten, having needed materials to support the curriculum, and feeling confident implementing it, and most had some familiarity and experience with the curricula. Similar to previous years, Year 3 VPI+ teachers reported children spending somewhat similar amounts of instructional time in teacher-directed and child-initiated activities (39% of time and 34% of time respectively), with less time spent on meals (18%) and transitions between activities (9%). Almost all VPI+ teachers reported that children engaged daily in lessons or projects in the areas of language/literacy (95%) and physical activity (90%). Many VPI+ teachers also reported daily activities focused on music (86%), dance and movement (78%), mathematics (76%), and art (64%).

- **Formative assessment use.** Most VPI+ teachers reported feeling confident both collecting data using the GOLD™ and interpreting GOLD™ results. Similar to findings from Years 1 and 2, about three-quarters of Year 3 VPI+ teachers reported that GOLD™ was very or moderately useful for informing curricular and lesson planning (76%), individualizing instruction (74%), and evaluating the effectiveness of their practice (71%). More than half of VPI+ teachers (55%) 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 (46%) or for children who are dual language learners (44%); nevertheless, these percentages increased by 10 percent or more since Year 2.

- **Responses to challenging child behavior.** Across divisions, 22 percent of Year 3 VPI+ teachers reported that at least one child’s family was asked to keep the child home for *at least one day*, and 15 percent reported that at least one child’s family was asked to keep a child home for *part of a day* for challenging behaviors, findings that are similar to those reported for Year 2. However only 2 percent of Year 3 VPI+ teachers reported that a child had been asked to leave the VPI+ program permanently, a decrease from 8 percent of VPI+ teachers in Year 2.

- **Family engagement in learning.** As in previous years, a large majority of Year 3 VPI+ teachers reported using several approaches to communicate with all or most of their students’ families to share information and resources and to support children’s needs. Compared with Year 1, more Year 3 VPI+ teachers sent home activities to support student learning (100% versus 84%), visited family homes (81% versus 62%), and met with families to get input on children’s strength and needs (81% versus 75%).

- **Comprehensive services.** 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. A majority of VPI+ teachers also reported that several types of medical and social services supports were available to VPI+ children and families. Fewer than half of VPI+ teachers reported that families had access to food banks and assistance with enrolling in WIC. For many services, the percentages of teachers who reported that services were readily available have increased since Year 1.

**Program Quality Ratings**

As part of Virginia’s tiered quality rating and improvement system (QRIS), called *Virginia Quality*, the Virginia Early Childhood Foundation (VECF) conducted observations of VPI+ classrooms using the Classroom Assessment Scoring System® (CLASS®) and Early Childhood Environment Rating Scale-Revised (ECERS-R) in Years 1 (fall 2015) and 3 (fall 2017) of the initiative.

- **Overall quality for VPI+ classrooms was higher in Year 3 than in Year 1.**
  - More VPI+ classrooms in Year 3, compared with Year 1, met the threshold for quality on all CLASS® domains: emotional support (96% versus 84%), classroom
organization (91% versus 70%), and instructional support (59% versus 39%). These differences are statistically significant.

- More VPI+ program sites in Year 3, compared with Year 1, met the threshold for the environmental ratings on the ECERS-R activity subscale (72% versus 34%) and the program structure subscale (68% versus 42%). These differences are statistically significant. At least three-quarters of program sites in both Years 1 and 3 met the thresholds for the language-reasoning subscale (79% and 90%), interaction subscale (83% and 93%), and ECERS-R average (76% and 88%), although these are not statistically significant.

- In Year 3, more than half of program sites (57%) met Level 4 or Level 5 Virginia QRIS requirements. This was a substantial improvement from Year 1 when only 38 percent of program sites met Level 4 or Level 5 requirements.

- Analyses of a matched sample that included only those teachers who taught in VPI+ programs during both Years 1 and 3 showed a similar pattern of improved quality since the beginning of the grant.

### Professional Development and Technical Assistance

In Year 3, a network of state agencies and partners continued to train and support local VPI+ leaders, such as division coordinators, coaches, and family engagement coordinators. VPI+ classroom teachers also received professional development through the grant as they worked to provide high-quality preschool programming for children.

### Training and Technical Assistance for 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. VDOE offered supports through in-person meetings, webinars, calls, visits, and emails with school divisions’ VPI+ teams.

- **Virginia Early Childhood Foundation (VECF)** provided training on use of Virginia’s QRIS, including CLASS® and the ECERS-R to guide program improvement efforts. VECF provided support through trainings, individual conference calls, and emails with answers to frequently asked questions.

- **The Center for Advanced Study of Teaching and Learning (CASTL) at the University of Virginia** provided coach training, support, and technical assistance to school division leaders with a focus on supporting social-emotional development, reducing challenging
behaviors, and providing coaching to groups of teachers. CASTL also continued to work with school division leaders on developing and making progress on their continuous improvement plans.

Professional Development and Coaching for VPI+ Teachers

- **Training on curricula and formative assessment.** A majority of VPI+ teachers received professional development on the formative assessment (GOLD™), but the number of hours spent decreased since Year 2. Only 13 percent of Year 3 VPI+ teachers received 16 or more hours of training, a sharp drop from 33 percent in Year 2. Likewise, 14 percent of VPI+ teachers in Year 3 received no professional development on GOLD™ in Year 3, compared with just 2 percent of VPI+ teachers in Year 2. More than half of VPI+ teachers also received professional development on their curriculum, and as in previous years, teachers using The Creative Curriculum® reported receiving more hours of training than teachers using other curricula. Two-thirds of teachers using other curricula reported receiving no professional development in Year 3, compared with only 14 percent of teachers using The Creative Curriculum®.

- **Training on instructional content and strategies.** VPI+ teachers most often received professional development in the content areas of literacy and language, social-emotional development, and mathematics. For the first time since the grant began, a majority of VPI+ teachers also received professional development in physical health and motor development (64%) and the arts (50%). Compared with previous grant years, more Year 3 VPI+ teachers reported receiving professional development on several instructional strategies such as supportive classroom environments, classroom organization and management, supporting the transition to kindergarten, and working with children with special needs. Teachers most often reported wanting more professional development around supporting children with challenging behaviors, approaches to learning, and working with DLLs.

- **Coaching.** In Year 3, 14 coaches supported 115 VPI+ teachers. Data from the online log of the services coaches delivered to teaching staff indicate that:
  
  - Similar to previous years, Year 3 VPI+ teachers, on average, received 19.6 coaching contacts totaling 31.3 hours across the year. New VPI+ teachers in Year 3 received an average of 2.4 contacts and 4.5 hours of coaching per month, whereas returning teachers received an average of 1.9 contacts and 2.9 hours of coaching per month.
More than half of coaching contacts in Year 3 addressed teacher-child interactions (63% of contacts), and supportive environments (54%), both representing increases since the start of the grant. The percentages of coaching contacts addressing social-emotional development (46%), mathematics (39%), and approaches to learning (36%) also increased since the start of the grant. Fewer than half of Year 3 coaching contacts (43%) addressed language and literacy, the smallest percentage of contacts since the grant began.

The percentages of coaching contacts that addressed DLLs and children with special needs more than tripled in Year 3 compared with Year 1 (22% versus 7% and 19% versus 5%, respectively).

As in previous years, discussion and observation were the most frequently used coaching strategies, occurring in about half of Year 3 coaching contacts (49% and 48%, respectively). Using video and reviewing data continued to be infrequent strategies (occurring in fewer than 20% of contacts).

As in previous grant years, nearly all VPI+ teachers in Year 3 either strongly or somewhat agreed that they had a positive relationship with their coach, and that their coach was available when they needed help, knowledgeable about priority areas, provided useful resources, and provided practical suggestions for improving teaching. However, fewer teachers agreed that they changed their practice as a result of coaching in Year 3 compared to Year 1 (75% versus 86%).

Child Outcomes
VPI+ continues to benefit the learning and development outcomes of many children in high-need communities.

Fall to Spring Gains During Preschool
- VPI+ children who attended VPI+ in Year 3 made significant gains from fall to spring across all school readiness domains: literacy, math, approaches to learning, and social and emotional development. Gains on literacy were larger than gains made on math, task orientation, peer social skills, and behavior control skills.
- Cohort 3 VPI+ children generally made greater fall-to-spring skill gains than VPI+ children in Cohorts 1 and 2, especially in literacy, early math, and social skills and behavior control.
- DLLs showed greater gains than their counterparts, indicating progress in closing the learning gaps found at preschool entry. DLLs experienced particularly strong gains over
the course of the preschool year with few exceptions. Self-regulation continued to be the only measure in which DLLs started the VPI+ program with lower scores and made statistically fewer gains than non-DLLs.

**Kindergarten Readiness**

- The majority (67%) of VPI+ Cohort 2 children who entered kindergarten in fall 2017 demonstrated 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 or approaches to learning). The percentage of children identified as ready for kindergarten ranged from 60% to 81% across divisions. These findings are very similar to those from Cohort 1.
- Kindergarten readiness varied by child demographic and academic risk characteristics after controlling for other demographics. Children who were African American, Hispanic, DLL, male, receiving special education services, or rated as in poor or fair health were all less likely to demonstrate overall kindergarten readiness than peers without those demographic or risk characteristics.

**Impact of VPI+ on Kindergarten Readiness Skills**

- Attending VPI+ had a positive impact on children’s academic and behavioral skills, with the largest impact on literacy skills. Using a regression discontinuity design (RDD) study, we found that enrollment in VPI+ yielded large, positive impacts on children’s literacy skills (effect sizes between 1.0 to 1.12); moderate impacts on the development of children’s early mathematics skills and self-regulation (effect sizes equal to 0.33 and 0.38, respectively); and small impacts on vocabulary skills (effect sizes equal 0.15).
- RDD findings revealed that participation in VPI+ accelerated children’s development of important school readiness skills. Children who participated in VPI+ show an additional 8.8 months of learning for early literacy skills, totaling 20.8 months of early literacy skill development during the 12 months prior to starting kindergarten. Children who participated in VPI+ show an additional 3.4 months of learning for math skills, totaling 15.4 months of math skill development during the 12 months prior to starting kindergarten. These impacts are consistent with findings from other analyses of high-quality public preschool programs.
Exhibit ES-1. Additional Months of Mathematics and Literacy Skills as a Result of Attending VPI+

- **Mathematics skills**
  - 12 months of typical development
  - 3.4 additional months of math skills
  - 15.4 additional months of math skill development

- **Early literacy skills**
  - 12 months of typical development
  - 20.8 months of early literacy skill development
  - 8.8 additional months of early literacy skills

**Conclusion**

Over the past 3 years, VPI+ has increased its enrollment to 1,422, continued to meet its high-quality program standards for teacher education and child-to-teacher ratio, improved the quality of its classrooms, and demonstrated positive child outcomes, especially in the areas of early literacy and math skills. Teachers have become very comfortable using their curriculum and the formative assessment as they become more experienced. Teachers also are engaging more of their students’ families in a variety of ways. Training and coaching have shifted toward having an increased focus on supporting DLLs and children with special needs, but Year 3 VPI+ teachers continued to report a desire for more training around supporting children with challenging behaviors. According to data from divisions, chronic absenteeism (missing 10% or more days) may be an issue needing further attention. With support from state VPI+ partners (including CASTL, VECF, VDOE, and the evaluation team) the school divisions are using evaluation and other data (QRIS and GOLD™) to work on specific program improvement goals and professional development efforts. In Year 4, the evaluation will continue to provide formative and student assessment as well as cost benefit analysis findings to inform VPI+ and others interested in scaling up high-quality preschool programs.
1. Introduction

Initiative Overview

In January 2015, the Virginia Department of Education (VDOE) in the Commonwealth of Virginia was awarded a 4-year federal Preschool Development Grant (PDG) – Expansion Grant to expand access to 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+). In fall 2017, Virginia used its PDG funds to further increase access to high-quality preschool by adding new classrooms in two additional high-need communities, expanding its reach to 13 school divisions. (Virginia uses the term “division” rather than “district.”) This report documents program implementation and impacts on child outcomes for Year 3 of the VPI+ grant (the 2017–2018 school year) for the original participating 11 school divisions that began in 2015, and where relevant, compares implementation and outcomes of Year 3 to Years 1 and 2 of the grant (the 2015–2016 and 2016–2017 school years, respectively).² This report also includes information about student enrollment in the two new school divisions that were added in the 2017–2018 school year, but these divisions do not participate in the evaluation and therefore are not represented in any other section of this report.

The PDG funds support two types of preschool classrooms in the 13 participating school divisions: VPI+ classrooms and VPI Improved classrooms.

VPI+ classrooms are preschool classrooms newly opened at or since the start of the grant that implement all of the VPI+ grant requirements. 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

---

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.
² When reporting about children’s outcomes in Chapter 5, we refer to cohorts instead of years. Cohort 1 VPI+ children participated in the VPI+ program during the 2015–2016 school year, Cohort 2 VPI+ children participated in VPI+ during the 2016–2017 school year, and Cohort 3 VPI+ children participated in VPI+ during the 2017–2018 school year.
• 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)
• 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; and
• 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** are existing state-funded classrooms that enhance their quality by implementing at least one of five program quality enhancements:

• 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 original participating 11 school divisions created new preschool slots for children in 66 new VPI+ classrooms and in 44 existing blended classrooms\(^3\) for a total of 110 new or blended VPI+ classrooms. In Year 2, VPI+ expanded to include 9 new classrooms, for a total of 118 VPI+ new or blended classrooms in the 11 participating school divisions. In Year 3, VPI+ added 2 school divisions which added 6 VPI+ classrooms and converted 3 VPI+ classrooms in one school division into VPI Improved classrooms, for a total of 121 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 would 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

---

\(^3\) In one school division, new slots were spread across existing classrooms that implemented all the VPI+ guidelines and received all the VPI+ supports, creating 44 blended classrooms.
services and family engagement, and increased availability of instructional materials, including technology). 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 curricula, child outcomes, and quality improvement efforts.

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 domains 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 to VDOE and divisions to improve instruction and program implementation. Evaluators also use formative program measures, cost 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 and questions about impact of the VPI+ program are part of the summative evaluation. 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. The evaluation questions addressed in the Year 3 annual report are as follows:

1. **Enrollment and access:** How many children are served in VPI+ 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 VPI+ classrooms providing high-quality teaching 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 VPI+ classrooms providing

---

4 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, and 95% in Year 4.
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 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 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 VPI+ classrooms receiving local coaching and professional development 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)? Do gains vary by child or family characteristics? Do gains vary by cohort? What is the impact of participation in VPI+ on children’s school readiness skills at kindergarten entry? What percentage of children are deemed “ready for kindergarten”? Does readiness vary by child or family characteristics? What are the long-term outcomes for VPI+ participants that can be attributed to participation in VPI+?\(^5\)

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?\(^6\)

**Evaluation Methods**

SRI used a variety of methods and sources to learn about VPI+ implementation during the third year of the grant (Exhibit 1). The methods to collect evaluation data are described below.

---

\(^5\) 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.

\(^6\) See Appendix A for a description of completed activities for the cost study and the analyses that will be conducted for the interim (October 2018) and final (June 2019) cost study reports.
### Exhibit 1. Evaluation Methods, by Question

<table>
<thead>
<tr>
<th>Timing of data collection</th>
<th>Fall only</th>
<th>Fall and spring</th>
<th>Spring only</th>
<th>Fall and spring</th>
<th>Fall only</th>
<th>Spring only</th>
<th>Fall and spring</th>
<th>Fall and spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Enrollment and access</td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Program implementation and quality</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Technical assistance from state partners</td>
<td></td>
<td></td>
<td>★</td>
<td></td>
<td>★</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Local coaching and PD</td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td>★</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Child outcomes</td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>6. Cost study</td>
<td>★</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>★</td>
<td>★</td>
</tr>
</tbody>
</table>

**Extant and administrative data analysis.** Each VPI+ school division provided data exports to the evaluation team on VPI+ and VPI Improved enrollment and child 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 and fall 2017 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. In Year 3, 15 coaches (14 who coached VPI+ teachers and one who coached only VPI Improved teachers) provided coaching log data. The evaluation team also interviewed all 14 coaches who provided coaching to VPI+ teachers in spring 2018. Three divisions had two coaches and eight divisions had one coach. The interviewers asked coaches about their background and experience, 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 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 offered, SRI obtained summaries from VDOE, VECF, and CASTL about the content, recipients, dates, duration, and frequency of the support.

Division VPI+ coordinator phone interviews and surveys. To gather basic program information, the evaluation team conducted semi-structured interviews and surveys with the division VPI+ coordinators responsible for coordinating each division’s VPI+ classrooms in the fall and brief surveys in the spring. The interviews gathered information about any major changes within the division that impacted VPI+, program access and attendance, and experiences with implementation of the curriculum and formative assessment. The phone interviews and surveys also focused on the types and usefulness of the support local administrators received from VDOE, VECF, and CASTL; 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); family engagement; and updated staffing information.

Teacher surveys. SRI conducted an online survey with VPI+ teachers in spring 2016, 2017, and 2018 to learn about teachers’ backgrounds, experiences, and qualifications; participation in and perceived usefulness of professional development and coaching; their classroom practices, including use of certain curricula, formative assessments to inform instruction, response to children with challenging behaviors, 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 families; and facilitators and barriers to VPI+ implementation. In spring 2018, teachers also answered questions about teacher efficacy and job stress. Most VPI+ teachers (108 of 110 teachers in Year 1, 99 of 118 teachers in Year 2, and 102 of 115 teachers in Year 3) 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 (48% in Year 1, 41% in Year 2, and 47% in Year 3). Each of the remaining 10 divisions comprised about 2–10% of teachers of the total survey sample across the three years.

**Teacher Checklists.** Teachers completed a brief teacher checklist [Teacher-Child Rating Scale (T-CRS) 2.1] for each of their students using a secure online survey in the fall and spring of preschool and then again at the start of kindergarten. We used three subscales from T-CRS 2.1: task orientation, peer social skills, and behavior control. Teachers were also asked to rate children’s physical health and well-being on the online survey. See Exhibit 2.

**Child Direct Assessments.** In the fall and spring of preschool and again in the fall of kindergarten, trained assessors conducted three direct assessments: Woodcock Johnson III Revised, Applied Problems subtest measuring early numeracy skills, Head Toes Knees Shoulders (HTKS) measuring self-regulation skills, and the Peabody Picture Vocabulary Test, 4th edition (PPVT-4) measuring receptive language development (starting in fall 2017). See Exhibit 2.

**Extant data.** Data also were collected from student records and teacher-administered assessments of students’ literacy skills using the Phonological Awareness Literacy Screening (PALS). PALS is being used by all VPI+ teachers as part of the VPI+ initiative and is also the state-provided screening tool for Virginia’s Early Intervention Reading Initiative for kindergarten.

---

7 Children who spoke a language other than English at home received an English language screening to see if they could understand and express themselves in English well enough to complete assessments in English. In Year 3, 55% of those children passed the screener in the fall, and 82% passed the screener in the spring. If a child did not pass the English language screener, and the child’s home language was Spanish, then the child was tested in Spanish using the norm-referenced Batería III Woodcock-Muñoz™ (Batería 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.
through third grade. All children are screened using PALS during the fall and spring of kindergarten and spring of first grade.
## Exhibit 2. Child Assessment Measures, by Domain

<table>
<thead>
<tr>
<th>Domain</th>
<th>Skills</th>
<th>Measure</th>
<th>Source</th>
<th>Data Collection Time Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Language and Literacy</strong></td>
<td>Phonological awareness Print and word awareness Name writing ability</td>
<td>Phonological Awareness Literacy Screening for Preschoolers (PALS-PreK)</td>
<td>Teachers administer</td>
<td>PALS-PreK every fall and spring of preschool</td>
</tr>
<tr>
<td></td>
<td>Alphabet recognition (lower and upper case)</td>
<td>Phonological Awareness Literacy Screening for Kindergarteners (PALS-K)</td>
<td></td>
<td>Starting Year 2, PALS-K in fall and spring of K and PALS 1–3 in spring of 1st grade</td>
</tr>
<tr>
<td></td>
<td>Letter sounds Rhyme awareness Nursery rhyme awareness Spelling Concept of word</td>
<td>Phonological Awareness Literacy Screening for Grades 1–3 (PALS 1–3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Receptive vocabulary</td>
<td>Peabody Picture Vocabulary Test (PPVT-4)</td>
<td>Direct assessment (DA) by trained assessors</td>
<td>Starting Year 3, fall and spring of preschool and fall of kindergarten</td>
</tr>
<tr>
<td><strong>Cognition and General Knowledge a</strong></td>
<td>Numeracy, counting</td>
<td>Woodcock Johnson III Revised (Applied Problems subtest) Batería III Woodcock-Muñoz™ (problemas aplicados)</td>
<td>DA by trained assessors</td>
<td>Every fall and spring of preschool and fall of kindergarten</td>
</tr>
<tr>
<td><strong>Social and Emotional</strong></td>
<td>Self-regulation</td>
<td>Head Toes Knees Shoulders (HTKS)</td>
<td>DA by trained assessors</td>
<td>Every fall and spring of preschool and fall of kindergarten</td>
</tr>
<tr>
<td></td>
<td>Social skills Behavior control</td>
<td>Teacher-Child Rating Scale (T-CRS 2.1)</td>
<td>Teacher report Teacher report</td>
<td></td>
</tr>
<tr>
<td><strong>Approaches to Learning</strong></td>
<td>Task persistence</td>
<td>Teacher-Child Rating Scale (T-CRS 2.1)</td>
<td>Teacher report</td>
<td>Every fall and spring of preschool and fall of kindergarten</td>
</tr>
<tr>
<td><strong>Physical Health and Motor Development</strong></td>
<td>General health Gross motor development Fine motor development</td>
<td>Standard survey items Motor tasks identified in the literature to assess gross motor, fine motor, and balance-coordination skills</td>
<td>Teacher report DA by trained assessors</td>
<td>Every fall and spring of preschool and fall of kindergarten</td>
</tr>
</tbody>
</table>

*a In Year 1, evaluators used the Dimensional Change Card Sort (DCCS) but starting in Year 2 shortened the battery to only include one executive function task – the Head Toes Knees Shoulders (HTKS).

*b Starting in Year 3, the assessors administered the Peabody Picture Vocabulary Test (PPVT-4) to measure receptive language development.
See Appendix B for more information on the measures used to assess child outcomes.

**Cost study data sources.** To measure the costs of VPI+ implementation, the evaluation team is using existing administrative data on costs, including data on VPI+ grant reimbursements submitted by each division to VDOE, 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 3 and compares those findings to Years 1 and 2 where relevant. Specifically, throughout the report, we highlight differences of 10 percentage points or more when examining classroom- or division-level data between Years 3 and 1 and between Years 3 and 2. Generally, in addition to demonstrating meaningful change over the duration of the grant, most of these differences are statistically significant.

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, responses to challenging student behavior, 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+ children overall and by subgroups, including gains made during the preschool year, kindergarten readiness outcomes, and regression discontinuity study impact findings. Chapter 6 concludes the report with a discussion of potential implications from the Year 3 evaluation for VPI+ implementation moving forward.
2. Enrollment, Attrition, and Attendance

This chapter presents findings about the enrollment, attrition, demographics, and program attendance of children in VPI+ classrooms in Year 3. Where relevant, the chapter includes comparisons to the children who were enrolled in VPI+ during Years 1 and 2.

Enrollment

As planned, the number of children enrolled in VPI+ increased from Year 1 to Year 3, with most divisions maintaining enrollment and some divisions increasing enrollment. Two divisions substantially decreased enrollment in new classrooms to focus on improving other classrooms or because of a reduction in eligible children and families.

From Year 1 to Year 3, the VPI+ program increased the number of classrooms serving children from 110 to 121 (Exhibit 3). Between Year 1 and Year 2, school divisions added 8 new classrooms and between Year 2 and Year 3, two new divisions were added (with 6 VPI+ classrooms) and one division added 1 classroom for a total of 7 new classrooms. In Year 3, VPI+ school divisions operated 78 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 121 VPI+ classrooms. Overall, in the three grant years, the number of children enrolled in VPI+ increased by 15 percent, from 1,235 children in the spring of Year 1 to 1,422 children in the spring of Year 3. Enrollment increases between Years 1 and 3 were particularly large in Brunswick County, with other large increases in Prince William County, Richmond City, Sussex County, and Fairfax County. Two divisions (Norfolk City and Petersburg City) significantly decreased the number of new VPI+ classrooms in operation in Year 3 and instead served children from those classrooms in VPI improved classrooms or experienced a reduction in eligible children and families.

---

8 This includes 5 Title I children and 166 Head Start children in Henrico County Public Schools (HCPS) VPI+ blended classrooms.

9 The Year 3 December 1 enrollment count of VPI+ students for the Annual Performance Report was 1,445.
Exhibit 3. Number of VPI+ Classrooms and Children, Years 1, 2, and 3

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Classrooms</td>
<td>Number of Children Enrolled Spring 2016</td>
<td>Number of Classrooms</td>
</tr>
<tr>
<td>Brunswick County</td>
<td>1</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Chesterfield County</td>
<td>9</td>
<td>141</td>
<td>10</td>
</tr>
<tr>
<td>Fairfax County</td>
<td>4</td>
<td>70</td>
<td>5</td>
</tr>
<tr>
<td>Giles County</td>
<td>2</td>
<td>34</td>
<td>2</td>
</tr>
<tr>
<td>Henrico County</td>
<td>54</td>
<td>359</td>
<td>53</td>
</tr>
<tr>
<td>Norfolk City</td>
<td>10</td>
<td>155</td>
<td>11</td>
</tr>
<tr>
<td>Petersburg City</td>
<td>5</td>
<td>79</td>
<td>5</td>
</tr>
<tr>
<td>Prince William County</td>
<td>8</td>
<td>144</td>
<td>11</td>
</tr>
<tr>
<td>Richmond City</td>
<td>9</td>
<td>120</td>
<td>11</td>
</tr>
<tr>
<td>Sussex County</td>
<td>2</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>Winchester</td>
<td>6</td>
<td>101</td>
<td>6</td>
</tr>
<tr>
<td>SUBTOTAL</td>
<td>110</td>
<td>1,235</td>
<td>118</td>
</tr>
<tr>
<td>Frederick County (new in Year 3)</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Virginia Beach (new in Year 3)</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>TOTAL</td>
<td>110</td>
<td>1,235</td>
<td>118</td>
</tr>
</tbody>
</table>

Attrition from VPI+

Most children (92%) enrolled in VPI+ in fall of Year 3 remained in the program throughout the school year.

In fall 2017, 1,339 children were enrolled in VPI+ classrooms in the original 11 school divisions. By spring 2018, 1,234 or 92 percent of these children were still enrolled in VPI+. This program retention rate is slightly lower than what was observed in Year 1 (95% of children from the fall were still enrolled). In Year 3 retention rates ranged from a low of 87 percent in one division to a high of 96 percent in another division. VPI+ school divisions had 80 new children enrolled by spring 2018, replacing most of the slots of the 105 children who left the program since the fall.

Demographic Characteristics of Children Who Attended the Full Year

This section presents demographic data for the 1,234 children who were enrolled in VPI+ classrooms in the original 11 school divisions in both the fall and spring of Year 3.\(^\text{10}\) Where

\(^{10}\) This count does not include eligible children enrolled in Henrico's VPI Improved classrooms. It also does not include children in the two new school divisions.
relevant, the chapter includes comparisons to the children who were enrolled in VPI+ in both the fall and spring of Year 1 \((n = 1,174)\) and Year 2 \((n = 1,255)\).

The demographic characteristics of VPI+ children modestly changed across years, with VPI+ programs enrolling slightly fewer children in extreme poverty, fewer Black children, and more children who were DLLs or who had a disability in Year 3 compared with previous years.

Children’s families completed enrollment forms with information about themselves, their household, and the children being enrolled, including information about maternal education levels, household income, child’s race/ethnicity, and home language. Exhibit 4 presents these demographics.

The majority of the mothers of Year 3 VPI+ children reported having completed high school (39%), some college (18%), an associate’s degree (7%), or a bachelor’s/advanced degree (11%) with the remaining mothers (25%) reporting that they had not completed high school.

Children were only eligible for VPI+ if their families’ incomes were at or below 200% of the Federal Poverty Level (FPL). More than half of Year 3 children (56%) were from households with very low incomes (at or below 100% of the FPL). Approximately 19 percent were from households with incomes between 101% and 130% of the FPL, and one-quarter of children (25%) were from households with incomes between 131% and 200% of the FPL.

Based on enrollment forms, nearly half (46%) of the Year 3 children were identified as Black, 29 percent as Hispanic, 18 percent as White, and the remaining 7 percent as another race. Children’s families also indicated on VPI+ registration forms the primary language spoken at home. Just over two-thirds of Year 3 children (68%) spoke English at home, 25 percent spoke Spanish at home, 3 percent spoke Arabic, and 4 percent reported speaking other languages. The percentage of VPI+ children whose home language was English varied across divisions. In five school divisions, fewer than ten percent of VPI+ children spoke a language other than English at home while in three divisions more than half of the children spoke a language other than English at home. About half of the Year 3 children were female.

Based on administrative data collected from the school divisions in October, March, and June of Year 3, about 9 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. Approximately the
same percentage of children (8%) were identified as having fair or poor health as rated by their teacher in Year 3.

**Exhibit 4. Child and Family Demographics, Year 3**

Across the three years, there were some statistically significant differences in demographic characteristics:

- Fewer Year 3 VPI+ children were in the lowest income category (at or below 100% of the FPL) than Year 1 or Year 2 children.
- Fewer Year 3 VPI+ children were Black compared with Year 1 children.
- More Year 3 VPI+ children spoke a language other than English at home compared with Year 1 and Year 2 children.
- More Year 3 VPI+ children had an IEP than Year 1 children.
• There were no differences across years of cohorts on gender, health status, or maternal education.

Attendance

Attendance varied by division and across years.

In the Year 3 annual report, we examined VPI+ participants’ attendance in Year 3 and compared both the mean number of days attended and the percentage of students chronically absent to Year 2 (i.e., the first year we assessed attendance in VPI+ classrooms). School divisions provided administrative data that contained days of attendance for each VPI+ child who was enrolled in Year 3 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. We accounted for these differences when calculating children’s attendance rates. Further, we restricted the calculation of attendance rates and chronic absenteeism to only those VPI+ children who were assessed in the fall and assessed in the spring, to avoid inadvertently counting children who were enrolled for shorter periods as chronically absent.

On average, children attended 161 days of the school year in Year 3, ranging from 65 days to 180 days across children. The average days attended varied across divisions from 148 days in one division to 172 days in another division. The average number of days attended by VPI+ children in Year 2 was 164, ranging from 35 to 180 days across children and from 152 to 169 days across divisions. In Year 3, 62% of VPI+ children who were enrolled in the fall and spring attended VPI+ on a regular basis (at least 90 percent of program days). The remaining 38 percent of students were chronically absent (attended less than 90 percent of school days) which was significantly greater than the percentage who were chronically absent in Year 2 (26%).

The evaluation team confirmed with each of the divisions that the data they provided to SRI in June and July 2018 were accurate and that there were no data entry errors. These additional queries of divisions revealed that all divisions identified attendance as a key driver of achieving positive child outcomes and all divisions had put systems and supports in place to accurately collect and track attendance as well as address challenges either to tracking and/or ensuring adequate attendance. About two-fifths (18%) of the divisions noted discrepancies occur when

11 Attendance data were not collected in Year 1.
staff are asked to record attendance in two systems and 36% of the divisions reported no challenges in tracking attendance. Challenges related to ensuring adequate attendance were mostly confined to transportation issues (e.g., children miss the bus or there is not a nearby bus stop) and an unfortunately bad flu year. Divisions have made a concerted effort to engage family advocates, teachers, and parents in identifying solutions under their control. One division shared that families were provided alarm clocks, reminders or incentives, as needed to support attendance.

Summary and Implications of Enrollment, Attrition, and Attendance

One of the primary goals of VPI+ is to increase enrollment of children into high-quality preschool in the most high-need communities in Virginia. As planned, the number of children enrolled in VPI+ increased from Year 1 to Year 3 with most divisions maintaining enrollment and some divisions increasing enrollment. In addition, two new divisions were added to VPI+ in Year 3 which also increased enrollment. Two divisions substantially decreased enrollment in new classrooms, one to serve more children in VPI Improved classrooms and one experienced a reduction in the demand of eligible families/children in the community. Our analyses of the demographic characteristics of children enrolled in VPI+ confirm that VPI+ is reaching the types of children who benefit most from preschool. Year 3 VPI+ children came from families with low incomes and many spoke a language other than English at home. These are precisely the types of children that prior research suggests benefit most from attending high-quality, publicly funded preschool programs (Bitler, Hoynes, & Domina, 2014).

But ensuring the expansion of and enrollment in high-quality preschool for those children most in need is just the first step. Consistent attendance is also of great importance. In the case of VPI+ and preschool programming more broadly, tracking attendance can help illuminate the relationship between VPI+ participation and child outcomes. Prior research 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). Poor preschool attendance has also been found to correlate with future absenteeism and lower reading scores in second grade (Ehrlich et al., 2014). Research efforts are underway around the country to learn how best to increase attendance in the highest risk preschool children especially in places like Chicago Public Schools where more than one-third of preschool students are chronically absent (Ehrlich et al., 2014).
The VPI+ attendance data, reported to SRI by the participating divisions, suggest considerable variability across divisions and cohorts. Overall, 62 percent of Cohort 3 VPI+ children attended at least 90 percent of program days, meaning that 38 percent were chronically absent, a significant increase from 26 percent of children in Cohort 2. Across divisions, the percentage of chronically absent Cohort 3 children ranged from 3 percent to 50 percent. This suggests that many VPI+ students may not be attending preschool regularly enough to get the full benefits of the program with research showing the strong correlation between chronic absenteeism and poor academic outcomes (Ehrlich et al., 2014). Divisions confirmed that these data were accurate and identified transportation as the main challenge or barrier to higher rates of attendance. In Year 4, additional data on effective strategies for promoting attendance should be gathered and shared with the divisions that are struggling.
3. Program Implementation and Quality

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

Program Elements and 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 (March 2018), each division provided data in December 2017 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 3. 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.

The structural features of VPI+ programs have remained stable over the three grant years. As in the previous two years, all Year 3 VPI+ programs offered full-day schedules, providing on average 5 hours 20 minutes of instructional time each day.\(^{12}\) The average salary for a VPI+ teacher was $49,938 and salaries ranged from $34,407 to $91,555. This makes the average annual salary for VPI+ teachers $6,413 lower than that of K–12 teachers in Virginia, whose average salary was $56,351,\(^{13}\) which may have been due to VPI+ teachers, on average, having fewer years of experience in their divisions than their K–12 colleagues. In addition, nearly all VPI+ classrooms (99%) met the requirement of having 18 or fewer children: VPI+ class sizes ranged from 10 to 19 and averaged 17.1 children. The average child-to-instructional staff ratio was 8.4 children to 1 teacher, meeting the PDG criterion of no more than 10 children to 1 instructor.\(^{14}\)

**Teacher characteristics**

VPI+ teachers met or exceeded the grant requirements for education levels and most had at least 1 to 2 years of prior preschool teaching experience with the VPI+ program.

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.\(^{15}\) As in the previous years of the grant, in Year 3 nearly all VPI+ lead teachers (99%) held a bachelor’s degree,\(^{16}\) and approximately 57 percent majored in education as undergraduates including 24 percent who majored in early childhood education. Half (50%) of VPI+ lead teachers who completed the teacher survey also reported having a master’s degree, and 3% reported having a doctorate or professional degree. All of the masters or doctoral/professional degrees were education related.

In addition, nearly all VPI+ teachers (92%) had prior experience teaching in preschools, a large increase from the 68% of VPI+ teachers in Year 1 with prior preschool teaching experience. The

\(^{12}\) Information on hours of instruction was reported by VDOE to SRI.

\(^{13}\) DLAS Document Summary: 2017–2018 Teacher Salary Survey Results: [https://rga.lis.virginia.gov/Published/2018/RD42/PDF](https://rga.lis.virginia.gov/Published/2018/RD42/PDF)

\(^{14}\) VDOE required divisions to have a lower child-to-instructional staff ratio than PDG. All but one division met the more conservative VDOE ratio.


\(^{16}\) One teacher was a long-term substitute who reported currently working to earn a degree.
average years of preschool teaching was 6.2 years, however, more than half (53%) of VPI+ teachers had four or fewer years of preschool teaching experience (including VPI+). Most (83%) of the VPI+ teachers started teaching in a VPI+ classroom prior to Year 3.

**Curriculum and instruction**

VPI+ teachers reported having the experience, materials, and support needed to successfully implement curricula.

The VPI+ school divisions are using four different curricula. In Year 3, VPI+ teachers in 8 of the 11 divisions used *The Creative Curriculum®* (40 teachers). Teachers in the largest VPI+ division used Houghton Mifflin Harcourt (48 teachers), one school division used High Scope curriculum (9 teachers), and one school division used a locally developed curriculum that was vetted by CASTL (8 teachers). In contrast to Year 1, when only 32 percent of VPI+ teachers had prior experience using their division’s curriculum, a large majority (88%) of VPI+ teachers in Years 2 and 3 had prior experience with the curriculum.

Large majorities of VPI+ teachers in Year 3 agreed with statements about their curriculum being good for preparing children for kindergarten, having needed materials to support the curriculum, and feeling confident implementing it. Generally, teachers using *The Creative Curriculum®* were less likely to agree with these statements than teachers using other curricula. However, between Year 1 and Year 3, increasingly higher percentages of *The Creative Curriculum®* teachers reported strongly or somewhat agreeing that the curriculum was good for preparing children for kindergarten (from 80% to 90%) and that they were confident implementing it (from 88% to 100%) (Exhibit 5).
Exhibit 5. Percentage of VPI+ Teachers Who Reported Feeling Prepared to Use the Curriculum, Years 1, 2, and 3

<table>
<thead>
<tr>
<th>Year 1 (n = 108)</th>
<th>Year 2 (n = 98)</th>
<th>Year 3 (n = 102)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC</td>
<td>CC</td>
<td>CC</td>
</tr>
<tr>
<td>Other</td>
<td>Other</td>
<td>Other</td>
</tr>
</tbody>
</table>

- Good for preparing children to be ready for K
- Have material needed to support curriculum
- Feel confident implementing

Note. Percentages reflect teachers who strongly agreed or somewhat agreed with the statements. In Year 2, teachers were not asked about the curriculum being good for preparing children to be ready for kindergarten.

Children in VPI+ classrooms spent similar amounts of time in activities directed by teachers as in child-initiated activities.

On average, VPI+ teachers reported approximately 5 hours 20 minutes of instructional time on a typical day during the 2017–2018 school year. These estimates include time spent on meals and recess, but not time during which children took naps. VPI+ teachers reported children spending somewhat similar amounts of instructional time in teacher-directed (39%) and child-initiated (34%) activities. Whole class instruction, on average, accounted for the largest percentage of time spent on teacher-directed activities (15%), followed by similar proportions of time in teacher-directed small groups (12%) and teacher-directed one-on-one activities (12%). Mealtimes and transition activities (which also included some teacher- or assistant teacher-involved small group interactions) accounted for 18 percent and 9 percent, respectively, of the remaining instructional time (Exhibit 6). These findings were very similar to those reported in Year 2 of the grant.
Children in VPI+ classrooms received instruction in a wide range of content areas, with a strong emphasis on language and literacy activities and physical activity, and a growing emphasis on science and creative dramatics.

Most VPI+ teachers reported engaging children in many instructional topic areas daily. Almost all teachers reported daily instruction in language (95%), literacy (93%), and physical activity (90%). Fewer than half of teachers reported spending time daily on science (42%) and creative dramatics (40%), but these percentages increased notably since the beginning of the grant. The percentage of VPI+ teachers engaging in daily science activities doubled from 21 percent in Year 1 to 42 percent in Year 3 (Exhibit 7). The percentage of teachers providing science activities at least three times a week also increased, from 45 percent in Year 1 to 77 percent in years 2 and 3. Many more teachers were also providing creative dramatics activities at least three times a week, up from 39 percent in Year 1 to 71 percent in Year 3 (Exhibit 8).
Exhibit 7. Frequency of Content Areas Taught in VPI+ Classrooms Daily, Years 1, 2, and 3

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Year 1 (n = 108)</th>
<th>Year 2 (n = 98)</th>
<th>Year 3 (n = 102)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language / Literacy*</td>
<td>96%</td>
<td>90%</td>
<td>95%</td>
</tr>
<tr>
<td>Physical activity**</td>
<td>94%</td>
<td>82%</td>
<td>90%</td>
</tr>
<tr>
<td>Music</td>
<td>76%</td>
<td>71%</td>
<td>71%</td>
</tr>
<tr>
<td>Mathematics</td>
<td>86%</td>
<td>76%</td>
<td>78%</td>
</tr>
<tr>
<td>Dance and movement</td>
<td>84%</td>
<td>76%</td>
<td>78%</td>
</tr>
<tr>
<td>Art</td>
<td>80%</td>
<td>76%</td>
<td>78%</td>
</tr>
<tr>
<td>Creative dramatics</td>
<td>31%</td>
<td>38%</td>
<td>64%</td>
</tr>
<tr>
<td>Science</td>
<td>21%</td>
<td>40%</td>
<td>34%</td>
</tr>
</tbody>
</table>

Notes. *In Year 1, teachers were asked to report on the frequency of instruction in reading and language arts rather than “language and literacy.” We report here the Year 3 percentage of teachers who reported daily instruction in language for the language/literacy domain. **In Year 1, teachers were not asked to report on the frequency of instruction in physical activity.

Exhibit 8. Frequency of Selected Content Areas Taught in VPI+ Classrooms at Least Three Times a Week, Years 1, 2, and 3

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Year 1 (n = 108)</th>
<th>Year 2 (n = 98)</th>
<th>Year 3 (n = 102)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science</td>
<td>45%</td>
<td>77%</td>
<td>77%</td>
</tr>
<tr>
<td>Dance and movement</td>
<td>85%</td>
<td>93%</td>
<td>95%</td>
</tr>
<tr>
<td>Creative dramatics</td>
<td>39%</td>
<td>64%</td>
<td>71%</td>
</tr>
</tbody>
</table>

Notes. *In Year 1, teachers were asked to report on the frequency of instruction in reading and language arts rather than “language and literacy.” We report here the Year 3 percentage of teachers who reported daily instruction in language for the language/literacy domain. **In Year 1, teachers were not asked to report on the frequency of instruction in physical activity.
Year 3 VPI+ teachers reported providing instruction on more content areas during the preschool week than teachers in previous grant years, but they also reported spending shorter periods of time in a given day focusing on particular content areas.

Compared with teachers in previous years, we identified some interesting changes in the focus and time spent in different content areas, including the following:

- Year 3 VPI+ teachers were more likely to report shorter amounts of time (i.e., 30 minutes or less) on literacy, language, mathematics, creative dramatics, music, and art compared to Year 2 VPI+ teachers. Specifically, over the three grant years, the percentages of VPI+ teachers who reported spending longer amounts of time on these areas (i.e., more than 30 minutes) decreased (Exhibit 9), while the percentage of VPI+ teachers who reported focusing on these areas for shorter amounts of time (i.e., 30 minutes or less) increased.

- The decreased amount of time spent covering these six content areas may be a function of the fact that, by Year 3, many more teachers were incorporating topics such as science and creative dramatics activities more frequently into their week (see Exhibits 7 and 8), leaving less time for other content areas.

- In addition, more than half of VPI+ teachers (58%) reported spending more than 30 minutes in physical activity on a typical day suggesting the decrease in time on academic content areas could have been replaced with more physical activity and play (see Exhibit 9).

- Teachers also reported having slightly less instructional time in a school day in Year 3 than in Year 2 (5 hours and 20 minutes versus 5 hours and 30 minutes).
Exhibit 9. Content Areas Taught for 31 Minutes or More, Years 1, 2, and 3

Note. Year 1 VPI+ teachers were not asked about time spent on literacy or language separately. In Year 1, 48 percent of VPI+ teachers reported spending 31 minutes or more on “Reading and language arts” on days when they addressed that topic. In Year 1 teachers were not asked about physical activity.

Formative assessment use

Most VPI+ teachers continued to feel confident in collecting and using the GOLD™ assessment data, and more teachers in Year 3 reported finding it useful for informing their instruction of students who are DLLs or who have a disability than teachers in prior years.

To help teachers individualize instruction, monitor the effectiveness of their instruction, plan lessons, communicate children’s progress with families, and support children who are DLLs and those who have disabilities, VPI+ requires all teachers to use the GOLD™ formative assessment multiple times a year.

As in previous grant years, nearly all VPI+ teachers somewhat or strongly agreed that they felt confident both collecting data using the GOLD™ (91%) and interpreting GOLD™ results (89%). The MyTeachingStrategies™ company developed The Creative Curriculum® and a companion formative assessment resource called GOLD™. While GOLD™ can be used with any developmentally appropriate curriculum, it is designed to align with the The Creative Curriculum® objectives. VPI+ teachers using The Creative Curriculum® were the most confident about collecting data using GOLD™ (94%) and interpreting the data (95%), but the vast majority
of teachers using other curricula were also confident collecting (89%) and interpreting (86%) \textit{GOLD}™ data. These percentages are very similar to those reported in Year 2.

Also similar to findings from Years 1 and 2, approximately three-quarters of VPI+ teachers in Year 3 reported that \textit{GOLD}™ was very or moderately useful for informing curricular and lesson planning (76%), individualizing instruction for students (74%), and evaluating the effectiveness of their own practice (71%). More than half of VPI+ teachers (55%) reported that \textit{GOLD}™ was very or moderately useful for communicating children’s progress to parents or guardians.

Fewer VPI+ teachers agreed that \textit{GOLD}™ was very or moderately useful for informing instruction for children with disabilities (46%) or for children who are DLLs (44%). Nevertheless, these percentages increased by 10 percent or more since Year 2, indicating that in Year 3 more VPI+ teachers found \textit{GOLD}™ to be helpful for informing instruction of children from these special populations (Exhibit 10).

\textbf{Exhibit 10. Percentage of VPI+ Teachers Who Reported \textit{GOLD}™ was Very or Moderately Useful for Instruction of Children from Special Populations, Years 1, 2, and 3}
Responses to challenging child behavior

Teacher-reported rates of suspensions remained fairly stable from Year 2 to Year 3, but the percentage of VPI+ teachers reporting an expulsion of one or more children from their classroom decreased from Year 2 to Year 3.

Responses to children’s challenging behaviors that exclude the child from the learning environment include asking the child to leave early or stay home temporarily (suspension) or asking the child to leave the program permanently (expulsion). Across divisions, 22 percent of Year 3 VPI+ teachers reported that at least one child’s family was asked to keep the child home for at least one day, compared with 21 percent of teachers in Year 2. The percentage of teachers reporting that at least one child’s family was asked to keep the child home for part of a day due to challenging behavior also was similar in Years 2 and 3 (15% and 13%, respectively). However, in Year 3, only 2 percent of VPI+ teachers reported that a child was asked to leave the program permanently, a decrease from 8 percent of VPI+ teachers in Year 2.

We asked teachers to report the number of instances of each of these exclusionary disciplinary actions during the past year. In total, Year 3 VPI+ teachers reported 45 instances of these types of exclusionary disciplinary action due to children’s challenging behavior and concerns for safety. These included instances in which a child or children in their classroom was asked to leave a program early (15 instances), stay home for one or more days (28 instances), and leave their program permanently (2 instances). VPI+ teachers who reported exclusionary disciplinary actions almost always noted concerns regarding the safety of the child, the child’s peers, or program staff as a primary reason for a child being suspended or expelled.

Family engagement in learning

VPI+ teachers reported reaching out to most or all of their students’ families in several ways, and more Year 3 teachers reported sending activities home, visiting their students’ homes, and soliciting family input on student needs than teachers in previous years.

Similar to teachers in the previous grant years, a large majority of Year 3 VPI+ teachers invited all or most families to help out in the classroom (82%), responded to parents requests for information or a meeting (79%), called or sent a note/email to discuss positive news or concerns (89%), met with families to identify ways to support children’s needs at home (79%), talked with families informally before or after class (73%), and used school-based resources to reach out to families (76%) (Exhibit 11). For some types of engagement, larger percentages of VPI+
teachers in Year 3 reported reaching out to all or most families than VPI+ teachers in previous years. For example, as compared with Year 1 VPI+ teachers, more Year 3 VPI+ teachers sent home activities to support student learning (100% versus 84%), visited family homes (81% versus 62%), and met with families to get input on children’s strength and needs (81% versus 75%). Over the course of the grant, the percentage of VPI+ teachers engaging families decreased for only one type of engagement, reaching out to families to assess ways to connect them to needed services (62% in Year 3 versus 72% in Year 1).
Exhibit 11. Proportion of VPI+ Teachers Who Engaged All or Most Families in Various Ways, Years 1, 2, and 3

<table>
<thead>
<tr>
<th>Activity</th>
<th>Year 1 (n = 108)</th>
<th>Year 2 (n = 98)</th>
<th>Year 3 (n = 102)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sent home activities to do with their children to support student learning</td>
<td>84%</td>
<td>93%</td>
<td>100%</td>
</tr>
<tr>
<td>Called or sent note/email to discuss positive news/concerns</td>
<td>81%</td>
<td>81%</td>
<td>89%</td>
</tr>
<tr>
<td>Invited families to help out in the classroom</td>
<td>86%</td>
<td>82%</td>
<td>90%</td>
</tr>
<tr>
<td>Visited family homes</td>
<td>62%</td>
<td>79%</td>
<td>81%</td>
</tr>
<tr>
<td>Met with families to get their input on children’s strengths and needs</td>
<td>75%</td>
<td>75%</td>
<td>81%</td>
</tr>
<tr>
<td>Responded to parent request for information or meeting</td>
<td>78%</td>
<td>85%</td>
<td>79%</td>
</tr>
<tr>
<td>Met with families to identify ways to support children’s needs at home</td>
<td>75%</td>
<td>73%</td>
<td>79%</td>
</tr>
<tr>
<td>Used school-based resources to reach out to families</td>
<td>65%</td>
<td>72%</td>
<td>76%</td>
</tr>
<tr>
<td>Talked with families informally before/after class</td>
<td>63%</td>
<td>70%</td>
<td>73%</td>
</tr>
<tr>
<td>Reached out to families to assess ways to connect them to needed services</td>
<td>59%</td>
<td>62%</td>
<td>72%</td>
</tr>
</tbody>
</table>
Comprehensive services

VPI+ teachers reported that students and their families have readily available access to a wide range of services through the VPI+ program and other local agencies.

Family wellbeing is a strong predictor of children’s school readiness, and federal guidance encourages schools to systematically support families in promoting their children's learning, development, and health.\(^{17}\) As part of the PDG grant, VPI+ programs receive funding to provide a comprehensive set of services to children and families to increase family engagement in children’s learning and to meet the health, mental health, and nutrition needs of children and families. Accordingly, in surveys, 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 also reported on the services they believed were readily available to their students and their families (Exhibit 12).\(^{18}\) As in previous years, a large majority of VPI+ teachers reported believing that medical services such as vision, dental, and hearing screenings and care were readily available (94%, 92%, and 91%); fewer VPI+ teachers thought that immunizations were readily available (65%). More than half of VPI+ teachers also reported that mental health services were available for children (71%) and families (64%), and that children had access to developmental assessments (72%). Other services that most VPI+ teachers believed were readily available included family resource centers (77%), transportation (72%), and adult education (66%). Fewer than half of VPI+ teachers reported that families could access social services such as food banks (42%), and assistance with enrolling in WIC (49%). For many items, the percentages of teachers who reported that services were readily available increased since Year 1. Still, fewer than half of Year 3 VPI+ teachers believed that several types of services are readily available to families, such as substance abuse treatment, prenatal care, domestic violence services, and WIC enrollment. Notably, fewer teachers believed social


\(^{18}\) The percentages in this paragraph refer to the total percentage of VPI+ children/families who have readily available access to specific comprehensive services based on coordinator-report. For example, if a division had 100 children in VPI+ classrooms and reported that mental health services for children are readily available, then those 100 children are considered to have readily available access to mental health services in the calculations for the overall sample. One important limitation with this approach is that coordinators may not have been aware of all services that were available to all families.
services such as food banks were readily available in Year 3 (42%) than in the other years (55% in Year 1 and 67% in Year 2).
Exhibit 12. Teacher Reports of Services Readily Available to VPI+ Children and Families, Years 1, 2, and 3

- Vision screenings and/or care: Year 1 (92%), Year 2 (90%), Year 3 (91%)
- Dental screenings and/or care: Year 1 (79%), Year 2 (90%), Year 3 (92%)
- Hearing screenings: Year 1 (71%), Year 2 (68%), Year 3 (77%)
- Family resource centers: Year 1 (68%), Year 2 (77%), Year 3 (77%)
- Developmental assessments for children: Year 1 (73%), Year 2 (70%), Year 3 (72%)
- Transportation: Year 1 (60%), Year 2 (65%), Year 3 (72%)
- Mental health services for children: Year 1 (48%), Year 2 (68%), Year 3 (71%)
- Adult education: Year 1 (54%), Year 2 (64%), Year 3 (66%)
- Immunizations: Year 1 (40%), Year 2 (62%), Year 3 (65%)
- Mental health services for families: Year 1 (39%), Year 2 (56%), Year 3 (64%)
- Insurance enrollment: Year 1 (29%), Year 2 (45%), Year 3 (55%)
- WIC enrollment: Year 1 (30%), Year 2 (48%), Year 3 (49%)
- Social services, such as food banks: Year 1 (42%), Year 2 (55%), Year 3 (67%)
- Domestic violence counseling and services: Year 1 (26%), Year 2 (34%), Year 3 (42%)
- Prenatal care: Year 1 (11%), Year 2 (29%), Year 3 (41%)
- Substance abuse treatment for families: Year 1 (16%), Year 2 (28%), Year 3 (34%)
Results of a survey of VPI+ parents conducted by VDOE in spring 2018 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 (79%), medical health care (75%), parenting skills (70%), where to receive healthy food or have it sent home (e.g., food backpacks or local food banks) (68%), adult education classes or job training (65%), and information about health insurance (65%). Fewer parents reported receiving information about social service programs (56%), mental health services (54%), and emergency housing (45%).

**Program Quality: CLASS®, ECERS-R, and QRIS Ratings**

As part of Virginia’s tiered quality rating and improvement system (QRIS), called *Virginia Quality*, the VECF staff conducted observations of VPI+ classrooms using the Classroom Assessment Scoring System® (CLASS®) and Early Childhood Environment Rating Scale-Revised (ECERS-R) in Year 1 (fall 2015) and Year 3 (fall 2017) of the initiative.

In Virginia’s QRIS, quality level ratings are awarded at the school/site level (not the classroom level). The QRIS protocol requires that at each program site a CLASS® and ECERS-R observation be conducted in 1 out of 3 randomly selected classrooms. Therefore, not every class receives an ECERS-R rating. However, to guide teacher-level professional development, all VPI+ classrooms that were not selected for the full Virginia QRIS rating received a CLASS® observation, so that every VPI+ classroom teacher had at least a CLASS® score. Exhibit 13 shows the number of classrooms and program sites that received CLASS®, ECERS-R, and QRIS ratings during the grant.

This section first describes what VPI+ program quality looked like in Year 3 across the 11 divisions and how it changed from Year 1. For these descriptive analyses, we used all completed observation data and describe the percentage of classrooms that met quality thresholds in Year 1 and Year 3 and the percentage of program sites that met the requirements for a Level 3, 4, or 5 QRIS rating. See Exhibits 14, 15, and 16. Because these descriptive analyses do not account for the fact that some of the same teachers were observed at both time points, it’s difficult to know whether the change is driven by the addition of new teachers to the sample or actual improvements in classroom instruction and quality. To understand change in classroom quality in the same teachers, we examined the average mean level change from Year 1 to Year 3 using a matched-sample. See “*Growth in VPI+ teachers from year 1 to year 3*...
(matched sample)” that focuses on this subgroup of VPI+ teachers across the 11 divisions who stayed in the VPI+ program and were observed in both Years 1 and 3 (see Exhibits 17 and 18).

Exhibit 13. Number of VPI+ Classrooms and Program Sites that Received CLASS®, ECERS-R, and Virginia Quality Ratings in Year 1 and 3

<table>
<thead>
<tr>
<th></th>
<th>Year 1 (Fall 2015)</th>
<th>Year 3 (Fall 2017)</th>
<th>Matched teacher sample (across Year 1 and 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASS®</td>
<td>64 classrooms</td>
<td>70 classrooms</td>
<td>40 teachers</td>
</tr>
<tr>
<td>ECERS-R</td>
<td>53 classrooms</td>
<td>58 classrooms</td>
<td>35 teachers</td>
</tr>
<tr>
<td>Virginia Quality (QRIS)</td>
<td>53 program sites</td>
<td>58 program sites</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Classroom Assessment Scoring System® (CLASS®)**

The CLASS® is a tool that measures the daily interactions between teachers and students and among students. The CLASS® measures interactions in three domains: emotional support (the level of responsiveness and sensitivity of caregivers), classroom organization (the overall organization of the classroom that teachers provide), and instructional support (the extent to which teachers provide and scaffold in-depth learning). Each domain comprises multiple dimensions (see Appendix C for a list of dimensions). CLASS® scores range from 1 to 7. The Virginia Quality Rating Improvement System (QRIS), known as Virginia Quality, set thresholds at 5.00 or higher in the emotional support/classroom organization domains (i.e., the average score across emotional support and classroom organization must be 5.00 or higher) and 3.25 or higher in the instructional support domain for programs to receive a Level 4 QRIS rating (the second highest rating a VPI+ program can receive). Below, we use these same thresholds to examine quality in classroom scores.22

**VPI+ classroom CLASS® scores**

Most VPI+ programs met Virginia Quality thresholds for teacher-child interactions captured by CLASS®, with a higher proportion of VPI+ classrooms meeting the

---

19 For the purposes of the QRIS, only newly-opened VPI+ classrooms were included in the observations and QRIS ratings, which was 66 VPI+ classrooms in Year 1 and 78 in Year 3.
20 At one program site, two classrooms received an ECERS-R rating. In this case, the average scores of these two classrooms were used to compute the ECERS-R rating and Virginia QRIS level for this program site. In all other cases, scores from only one classroom were used to calculate a program site’s ECERS-R and Virginia QRIS level.
21 Virginia Quality (QRIS) scores are program site-level ratings that may combine data across more than one teacher; therefore, analyses did not include a matched teacher sample.
22 For the purposes of our analyses we present the emotional support and classroom organization domains separately and apply a threshold of 5 for each of these domains independently. This differs from how the Virginia QRIS assesses classrooms in that the QRIS applies a threshold of 5 to the overall combined average of the emotional support and classroom organization domains.
thresholds for emotional, organizational, and instructional supports in Year 3 than in Year 1.

Nearly all VPI+ classrooms met Virginia Quality thresholds for emotional (96%) and organizational support (91%) in Year 3, and 59 percent of classrooms met the threshold for instructional support, all increasing significantly from Year 1. Additionally, significantly more classrooms in Year 3, compared with Year 1, met the threshold for quality on each of the three CLASS® domains: emotional support (96% versus 84%), classroom organization (91% versus 70%), and instructional support (59% versus 39%) (Exhibit 14). All of these differences are statistically significant.

Exhibit 14. Percentage of Classrooms that Met the Virginia QRIS Thresholds in Year 1 and Year 3, by CLASS® Domain

Early Childhood Environment Rating Scale-Revised (ECERS-R)
The ECERS-R is an observation tool that measures the process quality and structures of early childhood classrooms serving children ages 2 through 5. Process quality focuses on the interactions that happen in a classroom between children and staff, parents, other children, and the materials and activities in the learning environment. Structures include features such as space, schedule, and materials that relate to these interactions.
The ECERS-R has seven subscales, however, only four of the subscales were used for the purposes of the Virginia QRIS: Language-Reasoning, Activities, Interaction, and Program Structure. Thus, we focused our analyses on these subscales. ECERS-R scores range from 1.00 to 7.00. The Virginia QRIS set minimum thresholds at 4.00 or higher across the four ECERS-R subscales. The average of all items in the four subscales yields a total scale score (ECERS-R Average). For additional information about the ECERS-R measure, see Appendix D.

**VPI+ ECERS-R scores**

Most VPI+ programs (88%) met the overall *Virginia Quality* threshold for ECERS-R, with a significantly higher proportion of VPI+ classrooms meeting the *Virginia Quality* thresholds for ECERS-R subscales of Activities and Program Structure subscales in Year 3 than in Year 1.

Most VPI+ classrooms met the Virginia Quality threshold for overall ECERS-R scores (88%), Further, more Year 3 program sites, compared with Year 1, met the threshold for the ECERS-R activities subscale (72% versus 34%) and the program structure subscale (68% versus 42%), and these differences are statistically significant. There was a similar trend of more program sites meeting the threshold in Year 3 compared to Year 1 for the language-reasoning subscale (90% versus 79%), interaction subscale (93% versus 83%), and ECERS-R average (88% versus 76%), although these differences are not statistically significant (Exhibit 15).

---

23 ECERS-R subscales are: (1) Language-Reasoning, (2) Activities, (3) Interaction, (4) Program Structure, (5) Space and Furnishings, (6) Personal Care Routines, and (7) Parents and Staff.
Exhibit 15. Percentage of Classrooms that Met the Virginia QRIS Thresholds for ECERS-R in Year 1 and Year 3, by Subscale

Virginia Quality – A Quality Rating and Improvement System

More than half of VPI+ program sites met Level 4 or Level 5 Virginia QRIS requirements in Year 3, which was an improvement in comparison to Year 1.

Virginia Quality is a quality rating and improvement system (QRIS) that measures and supports the use of program standards to promote continuous quality improvement. The QRIS is administered statewide through a public-private partnership between the Virginia Department of Social Services’ Office of Early Childhood Development and the VECF. Virginia Quality awards ratings of quality to child care and preschool programs based on four elements: education and qualifications, curriculum and assessment, environment as measured by CLASS®, and interactions as measured by ECERS-R. Participating programs (or sites) are given a rating level of 1 to 5, with 1 indicating lower quality, and 5 indicating higher quality. All standards for the first two elements (education and qualifications; curriculum and assessment) must first be met at Level 3 before an unbiased, trained observer conducts observations to determine if the program qualifies for a Level 4 or Level 5 rating (see Appendix E for information about QRIS ratings). As part of Virginia’s QRIS 2.0 “fast track” process, all VPI+ sites started at a Level 3. This “fast track” process allows programs in Virginia that are participating in other quality improvement
efforts to be able to get recognition within Virginia’s QRIS 2.0 for the quality they’re currently demonstrating to another organization such as the Virginia Preschool Initiative, Head Start, or a national accreditation program (K. Meyers, personal communication, September 27, 2018).

Exhibit 16 shows the percentage of VPI+ program sites that received a Level 3, 4, or 5 rating in Years 1 and 3. In Year 3, more than half of program sites (57%) met Level 4 or Level 5 Virginia QRIS requirements. This was an improvement from Year 1 when only 38 percent of program sites met Level 4 or Level 5 requirements. In Year 3, 22 percent of program sites met Level 5 requirements, a substantial increase from only 2 percent in Year 1.

**Exhibit 16. Percentage of Program Sites that Received a Level 3, 4, or 5 Virginia Quality Rating, Matched Sample**

[Bar chart showing percentage of program sites that received Level 3, 4, or 5 ratings in Years 2015-2016 and 2017-2018]

**Growth in VPI+ teachers from year 1 to year 3 (matched sample)**

The quality of emotional, organizational, and instructional supports as measured by CLASS® improved in classrooms of VPI+ teachers who taught in both Years 1 and 3.

Below we show the results of a matched teacher sample where we examined whether their CLASS® and ECERS-R ratings changed over the course of the grant by conducting paired samples t-tests to assess mean-level changes in scores from Year 1 to Year 3.

On average, there was a statistically significant improvement in the matched sample of VPI+ classroom teachers’ CLASS® domain scores from Year 1 to Year 3 (Exhibit 17). The average emotional support domain score increased from 5.77 to 6.27 (increasing from the mid-range to
high-range); the average classroom organization domain score increased from 5.36 to 5.88 (staying in the mid-range); and the average instructional support domain score increased from 3.01 to 3.55 (staying in the mid-range).24

Exhibit 17. Change in Average CLASS® Domain Scores from Year 1 to Year 3, Matched Teacher Sample

<table>
<thead>
<tr>
<th>CLASS® Domain</th>
<th>Matched teacher sample (across Year 1 and 3)</th>
<th>n = 40 teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year 1</td>
<td>Year 3</td>
</tr>
<tr>
<td>Emotional support</td>
<td>5.8</td>
<td>6.3</td>
</tr>
<tr>
<td>Classroom organization</td>
<td>5.4</td>
<td>5.9</td>
</tr>
<tr>
<td>Instructional support</td>
<td>3.0</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Aspects of the process and structural quality as measured by ECERS-R improved in classrooms of VPI+ teachers who taught in both Years 1 and 3.

On average, there was statistically significant improvement in VPI+ classrooms’ ECERS-R ratings on most subscales and the total scale score in the matched sample of VPI+ classroom teachers from Year 1 to Year 3 (Exhibit 18). The average language reasoning subscale score increased from 4.93 to 5.40 (staying within the “good” range); the average activities subscale score increased from 3.44 to 4.38 (moving from the “minimal” to “good” range); the average interaction subscale score increased from 5.43 to 6.09 (moving from the “good” to the “excellent” range); the average program structure score increased from 3.73 to 4.71 (moving from the “minimal” to “good” range”); and the total scale score increased from 4.38 to 5.15 (staying within the “good” range).25

24 CLASS® scores fall within ranges: Low-range scores fall between 1.00 and 2.99; mid-range scores fall between 3.00 and 5.99; and high-range scores fall between 6.00 and 7.00. (Pianta, La Paro, & Hamre, 2008).

25 The ECERS-R developer has assigned the following categories for score ranges: scores that fall between 1.00 and 1.99 are considered “inadequate”; scores that fall between 2.00 and 3.99 are considered “minimal”; scores that fall between 4.00 and 5.99 are considered “good”; and scores that fall between 6.00 and 7.00 are considered “excellent.”
Exhibit 18. Change in Average ECERS-R Subscale Scores for Year 1 and Year 3, Matched Sample

<table>
<thead>
<tr>
<th>ECERS-R Subscale</th>
<th>Matched teacher sample (across Year 1 and Year 3)</th>
<th>n = 34 teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year 1</td>
<td>Year 3</td>
</tr>
<tr>
<td>Language Reasoning</td>
<td>4.9</td>
<td>5.4</td>
</tr>
<tr>
<td>Activities</td>
<td>3.4</td>
<td>4.4</td>
</tr>
<tr>
<td>Interaction</td>
<td>5.4</td>
<td>6.1</td>
</tr>
<tr>
<td>Program Structure</td>
<td>3.7</td>
<td>4.7</td>
</tr>
<tr>
<td>ECERS-R Average</td>
<td>4.4</td>
<td>5.2</td>
</tr>
</tbody>
</table>

Summary and Implications of Program Implementation and Quality

In Year 3 the evaluation team examined trends in process quality, or improvements in classroom quality, including classroom organization, instructional activities and interactions, and emotional support as measured by CLASS® and ECERS-R observations as well as data collected on the annual teacher survey about time spent in different types of classroom activity and content areas.

Overall, children spent similar amounts of time in activities directed by teachers as well as in child-directed activities. Large proportions of the day and week were spent on language and literacy activities and physical exercise and play, with a growing emphasis on science and creative dramatics as evidenced by the increased percentage of VPI+ teachers reporting spending time regularly on these content areas in Year 3. The regular inclusion of these additional content areas may help to explain why more teachers spent less time in a given day on several subjects (i.e., they were covering more topics overall than in past years). These shifts in how the instructional time is spent on any given day might also reflect an increasing focus on activities that involve play and foster creativity and imagination. Finding ways to integrate physical activity, particularly through free play, into the preschool day is consistent with recent recommendations from the American Academy of Pediatrics to use play time to foster not only motor development, but also children’s social-emotional, cognitive, self-regulation, and language skills (Yogman et al., 2018).

Other supports in place to ensure and improve quality, including use of GOLD™ assessment data and trainings on how to implement the curricula well and with fidelity, continue to be available and useful to teachers. In particular, despite generally spending less time on GOLD™ training than in previous years, more Year 3 VPI+ teachers reported finding GOLD™ useful for
informing instruction of children with disabilities and dual language learners than VPI+ teachers in Year 2. More Year 3 VPI+ teachers also reported receiving professional development on working with children with special needs than teachers in previous years, which may have contributed to teachers’ increased understanding of how GOLD™ data could inform work with those students. However, there was no corresponding increase in professional development around working with DLLs (only about a third of VPI+ teachers reported having professional development to support these students), even though the number of DLLs enrolled increased in Year 3.

In addition, there seems to be a trend for fewer VPI+ teachers to report exclusionary discipline practices in the classroom with all Year 3 VPI+ teachers noting concerns regarding the safety of the child, the child’s peers, or program staff as a primary reason for a child being suspended or expelled. Only 2 percent of VPI+ teachers reported that a child was asked to leave a program permanently, compared with 8 percent of teachers in Year 2. However, less extreme forms of exclusionary discipline, such as asking a child to stay home for at least one day or for part of a day due to challenging behavior did not decrease between Years 2 and 3. In Year 4, VPI+ might want to consider more intensive professional development in this area. VDOE and CASTL could also consider sharing with divisions resources with guidance on reducing or eliminating exclusionary discipline practices, such as the website preventexpulsion.org and other policy statements that provide specific policies, programs, or practices that can support teachers in addressing challenging behavior in the classroom.

Consistent with known best practices to support student learning, VPI+ also emphasizes supporting families to engage in their children’s preschool experience. A substantial research literature documents the importance of family involvement in the education of young learners (particularly for literacy and mathematics outcomes) and confirms that parents from diverse backgrounds, when given direction, can engage effectively with their children to promote positive school outcomes (Van Voorhis, Maier, Epstein, & Lloyd, 2013). Year 3 VPI+ teachers promoted family involvement by reaching out to most or all of their students’ families in several ways. In Year 3, VPI+ teachers increased their use of sending activities home, home visits, and soliciting family input on student needs compared to previous years. Engaging with parents in these ways helps support young children’s learning at school and at home. Identifying and supporting additional needs families might have is also essential. VPI+ teachers reported that students and their families have readily available access to a wide range of services through the VPI+ program and other local agencies. However, VDOE could consider encouraging more
VPI+ teachers to reach out to families to connect them with needed services, as this was the least common form of family engagement reported by VPI+ teachers. It may be important also to identify ways in which communities can continue to partner with other agencies to support the needs of families and their children.

Overall VPI+ classroom and program quality were higher in Year 3 than in Year 1 for both the cross-sectional and matched samples. This may be an indication that the various professional development and coaching supports, which included a focus on supportive environments, classroom organization and management, and teacher-child interactions are helping to improve teachers’ skills in these areas. It is encouraging that the program as a whole is improving in quality and that individual teachers are moving in the direction of higher quality. These global averages and percentages may not provide enough detail to gauge more nuanced areas that need support (e.g., instructional support around vocabulary and language complexity). The final comprehensive report will examine other aspects of quality (e.g., dimensions on the CLASS observation) and associations with implementation, PD, and child outcomes.
4. Professional Development and Technical Assistance

This chapter discusses the broad range of professional development activities and technical assistance delivered in the third year of VPI+ implementation. The grant enabled a network of Virginia 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 VPI+ Implementation Team partners to VPI+ division coordinators, coaches, and family engagement coordinators. The later 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 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. VDOE offered supports through in-person meetings, webinars, calls, visits, and emails with school divisions’ VPI+ teams.

- Virginia Early Childhood Foundation (VECF) provided training on use of Virginia’s QRIS, including CLASS® and the ECERS-R to guide program improvement efforts. VECF provided support through trainings, individual conference calls, and emails with answers to frequently asked questions.

- The Center for Advanced Study of Teaching and Learning (CASTL) at the University of Virginia provided coach training, support, and technical assistance to school division leaders with a focus on supporting social-emotional development, reducing challenging behaviors, and providing coaching to groups of teachers. CASTL also continued to work with school division leaders on developing and making progress on their continuous improvement plans.

For more detail about the content and format of the professional development activities that each partner implemented in Year 3 please see the fall 2017 and spring 2018 formative reports available at http://vpiplus.org/report/annual.php.
Year 3 included two large-scale professional development opportunities. First was a set of regional meetings focused on inclusion held in October and November 2017, that was co-hosted by VDOE and the Head Start Collaboration Office. The meetings, called the *Early Childhood Education Leaders Collaborative Institutes*, focused on building and leading high-quality inclusive programs; discussing best practices for inclusion of children with disabilities; examining challenges to inclusion; and understanding the regulations, state initiatives, and program-level policies regarding inclusion. Meeting invitations were extended to VPI+ leaders, as well as early childhood special education leaders and Head Start disabilities specialists.

The second major professional development activity was the Leadership Academy. This was a 2-day event in April 2018 co-hosted by VDOE and CASTL that provided VPI+ coordinators, coaches, and family engagement staff an opportunity to work on division-level and collective grant-level improvement. In preparation for the Leadership Academy, CASTL held a call with each division to discuss, plan for, and review the divisions’ continuous improvement projects to be shared at the Leadership Academy. These calls focused on analyzing and synthesizing progress divisions had made in the continuous improvement process according to five steps: (1) observing patterns in their division data that indicated areas in need of further understanding, (2) determining a specific challenge area that division staff were interested in learning more about, (3) learning more about potential root causes of the challenge area, (4) selecting one action step to try out to address the root cause of the challenge, and (5) collecting and analyzing checkpoint data to evaluate the extent to which their selected action step was having the intended impact. Divisions were invited to send CASTL the raw data collected in step 5; CASTL then organized and analyzed the data and prepared graphics of descriptive statistics for easy data interpretation and sharing.

Day 1 of the Leadership Academy focused on the power of storytelling in continuous improvement efforts. Participants explored the ways that divisions can combine data and personal stories to create powerful narratives that guide their broader vision and day-to-day work and facilitate sustainability by effectively communicating with school and community leaders. Day 2 focused on creating a story with lasting impact, including stories of sustainability and PreK–3 alignment and allowed time for peer coaching in specific areas of need. The VECF Quality Coordinator facilitated a small group table discussion on PreK–K alignment. Participants had opportunities to plan with their own division teams and to participate in cross-division groups to discuss challenges and resources around topics such as sustainability, family engagement, alignment, and effective communication with school administrators.
VPI+ school division staff had access to professional development activities delivered by entities such as Early Impact Virginia, Greater Richmond Stop Child Abuse Now (SCAN), and the Preschool Development Grant TA providers. These included a training on using story time to develop resilience, hosted by Greater Richmond SCAN (September 2017); a training offered by Early Impact Virginia on trauma informed practice (December 2017); and six webinars hosted by the Preschool Development Grant TA provider regarding support for DLLs, sustainability, and children experiencing trauma (September, October, and November 2017).

**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 in-person training sessions focused on social-emotional development, math, language and literacy, and family engagement, as well as early childhood conferences such as the National Association for the Education of Young Children (NAEYC), Virginia Association for the Education of Young Children conference, and a Head Start conference. 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 in Year 3.

**Training on curricula and formative assessment**

A majority of teachers received professional development on **GOLD™**, but the number of hours of training decreased since Year 2.

A large majority of VPI+ teachers (86%) received training on **GOLD™**, with about a third of teachers (31%) receiving 4–7 hours. Only 13 percent of Year 3 VPI+ teachers received 16 or more hours of training, a sharp drop from 33 percent in Year 2. Likewise, 14 percent of VPI+ teachers in Year 3 received no professional development on **GOLD™** in Year 3, compared with just 2 percent of VPI+ teachers in Year 2 (Exhibit 19). This finding aligns with the expectation that time spent in training and professional development on using formative assessment tools would decrease after the initial years of program implementation.
Most VPI+ teachers of The Creative Curriculum® received training on use of the curriculum compared with fewer than half of teachers using other curricula.

Overall, more than half (53%) of VPI+ teachers received some professional development on the use of their curriculum during Year 3, with 14 percent of VPI+ teachers receiving less than 4 hours and about 19 percent receiving 16 or more hours. As in the previous grant years, teachers using *The Creative Curriculum®* reported receiving more hours of training than teachers using other curricula (Exhibit 20). For example, 29 percent of VPI+ teachers of *The Creative Curriculum®* reported receiving 16 hours or more of training, compared with only 14 percent of teachers using other curricula. Likewise, only 14 percent of teachers using *The Creative Curriculum®* reported receiving no training in Year 3, compared with 66 percent of teachers using other curricula. Divisions that were using other curricula often had been using the curricula for several years before VPI+ implementation. Therefore, most teachers likely had experience using the curriculum and thus the division provided fewer hours of training in comparison to divisions that had recently adopted *The Creative Curriculum®*. 
Exhibit 20. Amount of Professional Development that VPI+ Teachers Received on Using Curricula by Curricula, Years 1, 2, and 3

<table>
<thead>
<tr>
<th>Year 1 (n = 108)</th>
<th>Year 2 (n = 98)</th>
<th>Year 3 (n = 102)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC</td>
<td>Other</td>
<td>CC</td>
</tr>
<tr>
<td>No time</td>
<td>23%</td>
<td>0%</td>
</tr>
<tr>
<td>Less than 4 hours</td>
<td>23%</td>
<td>71%</td>
</tr>
<tr>
<td>4–7 hours</td>
<td>25%</td>
<td>66%</td>
</tr>
<tr>
<td>8–15 hours</td>
<td>34%</td>
<td>0%</td>
</tr>
<tr>
<td>16 or more hours</td>
<td>45%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Training on instructional content and strategies

In Year 3, VPI+ teachers most often received professional development in the domains of language and literacy, social-emotional development, and mathematics; and for the first time, a majority of VPI+ teachers received professional development in the arts and physical health and motor development.

On the 2018 spring teacher survey, VPI+ teachers indicated the topics of professional development they received in Year 3 (Exhibit 21). Professional development was defined as including in-person training sessions, online modules, webinars, and/or coaching. Consistent with Years 1 and 2, the majority of VPI+ teachers received professional development on the content areas of language and literacy (91%), social and emotional development (86%), and mathematics (72%). However, compared with VPI+ teachers in previous years, more teachers in Year 3 received professional development on approaches to learning, the arts, and particularly physical health and motor development.
Exhibit 21. VPI+ Teachers Who Received Professional Development in Specific Content/Domain Areas, Years 1, 2, and 3

VPI+ teachers reported receiving professional development on a variety of instructional strategies, with more teachers receiving professional development around classroom organization and management, supporting transition to kindergarten, and working with children with special needs than in previous years.

In Year 3, a large majority of VPI+ teachers received professional development on supportive environments (91%), teacher-child interactions (89%), classroom organization and management (86%), and supporting children with challenging behaviors (73%). Similar to the Year 2 findings, about two-thirds of Year 3 VPI+ teachers received professional development on incorporating learning into transition activities (65%) collecting and using formative assessment data (66%), and family engagement (67%). About a third of VPI+ teachers received professional development on working with DLLs (36%), and children with special needs (41%). Compared with previous years, a higher percentage of VPI+ teachers in Year 3 received professional development on supportive environments (91% compared with 80% in Year 1), classroom organization and management (86% compared with 79% in Year 2), and supporting children with challenging behaviors (73% compared with 65% in Year 2).
organization and management (86% compared with 68% in Year 1), supporting children’s
transition to kindergarten (61% of teachers in Year 3, compared with 48% in Year 2 and 43% in
Year 1), and working with children with special needs (41% in Year 3, compared with 29% in
Years 1 and 2) (Exhibit 22).

Exhibit 22. VPI+ Teachers Who Received Professional Development in Specific
Instructional Practices, Years 1, 2, and 3

<table>
<thead>
<tr>
<th>Instructional Practice</th>
<th>Year 1 (n = 106)</th>
<th>Year 2 (n = 97)</th>
<th>Year 3 (n = 102)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supportive environments</td>
<td>68%</td>
<td>81%</td>
<td>89%</td>
</tr>
<tr>
<td>Teacher-child interactions</td>
<td>80%</td>
<td>92%</td>
<td>92%</td>
</tr>
<tr>
<td>Classroom organization and management</td>
<td>73%</td>
<td>65%</td>
<td>67%</td>
</tr>
<tr>
<td>Supporting children with challenging behaviors</td>
<td>73%</td>
<td>67%</td>
<td>67%</td>
</tr>
<tr>
<td>Incorporating learning into transition activities</td>
<td>65%</td>
<td>65%</td>
<td>66%</td>
</tr>
<tr>
<td>Family engagement and support</td>
<td>60%</td>
<td>66%</td>
<td>67%</td>
</tr>
<tr>
<td>Collecting and using formative assessments</td>
<td>43%</td>
<td>48%</td>
<td>61%</td>
</tr>
<tr>
<td>Supporting transition to kindergarten</td>
<td>29%</td>
<td>29%</td>
<td>41%</td>
</tr>
<tr>
<td>Working with children with special needs</td>
<td>29%</td>
<td>29%</td>
<td>41%</td>
</tr>
<tr>
<td>Working with dual language learners</td>
<td>39%</td>
<td>44%</td>
<td>39%</td>
</tr>
</tbody>
</table>

Note. In Year 1 teachers were not asked about supporting children with challenging behaviors and incorporating learning into transition activities.
VPI+ teachers most often reported wanting more professional development around supporting children with challenging behaviors and approaches to learning, but fewer VPI+ teachers in Year 3 desired additional professional development, overall, than in previous years.

In the spring 2018 survey, VPI+ teachers reported on topics and instructional strategies on which they feel they need more professional development via in-person training sessions, online modules, webinars, and/or coaching (Exhibit 23). Year 3 VPI+ teachers most often reported wanting more professional development around supporting children with challenging behaviors (45% of Year 3 VPI+ teachers). The second most requested topic for professional development was approaches to learning, reported by 32% of Year 3 VPI+ teachers, followed by working with DLLs (31%). Compared with Year 2, there was a decrease in the percentages of VPI+ teachers wanting more professional development across all of the domains and instructional strategies. This decline may be because teachers are satisfied with the training they have received and want and need less training after taking advantage of the professional development and supports offered by the VPI+ implementation team and partners. Alternatively, teachers may prefer different formats for professional development or trainings and supports that address different topic areas or some combination of these potential explanations.
Exhibit 23. Areas in Which VPI+ Teachers Desire More Professional Development, Years 1, 2, and 3

- **Supporting children with challenging behaviors**: Year 1 (61%), Year 2 (50%), Year 3 (45%)
- **Approaches to learning**: Year 1 (32%), Year 2 (36%), Year 3 (31%)
- **Working with dual language learners**: Year 1 (27%), Year 2 (31%), Year 3 (29%)
- **Science**: Year 1 (30%), Year 2 (36%), Year 3 (39%)
- **Social and emotional development**: Year 1 (29%), Year 2 (37%), Year 3 (49%)
- **Working with children with special needs**: Year 1 (24%), Year 2 (37%), Year 3 (40%)
- **Incorporating learning into transition activities**: Year 1 (20%), Year 2 (24%), Year 3 (20%)
- **Classroom organization and management**: Year 1 (18%), Year 2 (17%), Year 3 (17%)
- **Family engagement and support**: Year 1 (17%), Year 2 (17%), Year 3 (17%)
- **Literacy**: Year 1 (16%), Year 2 (15%), Year 3 (15%)
- **Language**: Year 1 (17%), Year 2 (16%), Year 3 (15%)
- **Supportive environments**: Year 1 (15%), Year 2 (23%), Year 3 (36%)
- **Collecting and using formative assessments**: Year 1 (17%), Year 2 (15%), Year 3 (15%)
- **Mathematics**: Year 1 (14%), Year 2 (25%), Year 3 (41%)
- **Supporting transition to kindergarten**: Year 1 (13%), Year 2 (18%), Year 3 (37%)
- **The arts**: Year 1 (11%), Year 2 (17%), Year 3 (33%)
- **Physical health and motor development**: Year 1 (7%), Year 2 (15%), Year 3 (20%)
- **Teacher-child interactions**: Year 1 (6%), Year 2 (18%), Year 3 (25%)
- **Other**: Year 1 (4%), Year 2 (18%), Year 3 (25%)

**Note.** Year 1 VPI+ teachers were not asked if they would like more professional development on supporting children with challenging behaviors.
**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 3, 14 (12.8 full-time equivalent) coaches supported 115 VPI+ teachers. On average, each full-time equivalent coach was responsible for nine VPI+ teachers, but this varied considerably by school division (ranging from 2 to 12 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 period of time covered by the coaching log varied across years. Specifically, the coaching log data presented below cover Year 3 coaching activities that occurred between August 2017 and the end of May 2018 (a period of 10 months), Year 2 activities that occurred between mid-August 2016 and the end of May 2017 (a period of 9.5 months), and Year 1 activities that occurred between November 2015 and the end of May 2016 (a period of 7 months).^{26}

Local coaches worked with more VPI+ teachers in Years 2 and 3 than in Year 1, but the number and duration of coaching contacts were stable across the three years.

In Years 2 and 3, coaches served nearly all VPI+ teachers (98% in Year 2, 99% in Year 3), an increase from the 88 percent of teachers coached in Year 1. In Year 3, VPI+ teachers, on average, received a total of 19.6 coaching contacts totaling 31.3 hours. The average number of monthly coaching contacts and hours spent per month were very similar across the grant years (Exhibit 24).

Coaching intensity was greater for teachers who joined VPI+ in Year 3 (n = 20) than teachers who also taught for VPI+ in Year 1 or 2 (n = 95); new teachers received an average of 2.4

---

^{26} Use of the coaching logs started later in Year 1 because of the timing of the start of the evaluation, so coaching activities occurring before November 2015 are not reflected in this report.
contacts and 4.5 hours of coaching per month, whereas returning teachers received an average of 1.9 contacts and 2.9 hours of coaching per month.

Exhibit 24. Coach Log Data for VPI+ Teachers, Years 1, 2, and 3

<table>
<thead>
<tr>
<th>Year</th>
<th>Duration of time captured by coach log</th>
<th>Number of coaches who coached VPI+ teachers</th>
<th>Total coach FTE</th>
<th>Teacher-to-coach ratio</th>
<th>Percent of VPI+ teachers who received coaching</th>
<th>Average number of coaching contacts per year per teacher</th>
<th>Average total number of hours of coaching per year per teacher</th>
<th>Average number of coaching contacts per month per teacher</th>
<th>Average number of hours of coaching per month per teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>November 2015 – end of May 2016</td>
<td>14</td>
<td>11.9</td>
<td>9.2</td>
<td>88% of teachers in 110 VPI+ classrooms</td>
<td>14.7 coaching contacts*</td>
<td>21.1 hours</td>
<td>2.1 coaching contacts</td>
<td>3 hours/month</td>
</tr>
<tr>
<td>Year 2</td>
<td>Mid-August 2016– end of May 2017</td>
<td>13</td>
<td>11.6</td>
<td>10.2</td>
<td>98% of teachers in 118 VPI+ classrooms</td>
<td>17.8 coaching contacts</td>
<td>28.6 hours</td>
<td>1.9 coaching contacts</td>
<td>3 hours/month</td>
</tr>
<tr>
<td>Year 3</td>
<td>August 2017 – end of May 2018</td>
<td>14</td>
<td>12.8</td>
<td>9.0</td>
<td>99% of teachers in 115 VPI+ classrooms</td>
<td>19.6 coaching contacts</td>
<td>31.3 hours</td>
<td>2.0 coaching contacts</td>
<td>3.1 hours/month</td>
</tr>
</tbody>
</table>

* This excludes coaches who only coached VPI Improved teachers.

Note. Year 1 included fewer months so the average number of contacts and hours per year is less.

Over the three grant years, the use of group coaching increased, while the length of those sessions decreased. In contrast the use of individualized coaching sessions decreased, but the length of those sessions increased.

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. For all three years, a majority of coaching contacts were with individual teachers. However, the emphasis on group training increased over the three grant years, with the percentage of group training contacts nearly doubling (23% of contacts in Year 1, 33% in Year 2, and 42% in Year 3) (Exhibit 25). Conversely, the percentage of individualized coaching sessions (with and without students present) decreased (from 77% in Year 1 to 67% in Year 2, and to 58% in Year 3).
In Year 3, more than two-thirds (71%) of coaching sessions lasted an hour or longer. Across types of contacts, the average length of a coaching session in Years 2 and 3 was 96 minutes, slightly longer than in Year 1 (86 minutes).

Over the three grant years, there was an increase in the percentage of coaching contacts that lasted 60–89 minutes (41% in Year 3, up from 20% and 25% in Years 1 and 2, respectively) (Exhibit 26). This increase may be explained, in part, by the corresponding increase in the number of group coaching contacts, which tended to last longer than individual coaching sessions. In Year 3, group coaching sessions averaged 133 minutes, compared with 80 minutes for individual coaching sessions in the classroom with students present and 55 minutes for meetings with teachers before or after class in person or by phone. Nevertheless, in Year 3, the average duration of group coaching sessions decreased by about 1 hour from Year 1 and a half-hour from Year 2 (Exhibit 27). About one-fifth (21%) of coaching sessions in Year 3 lasted between 30 and 59 minutes. Very few sessions lasted less than half an hour (8%).
Exhibit 26. Distribution of Coaching Contacts, by Length of Coaching Session, Years 1, 2, and 3

Exhibit 27. Average Minutes of Coaching Per Contact, by Format, Years 1, 2, and 3
Coaches increased their focus on supportive environments, DLLs, and children with special needs, but most of their coaching continued to focus on domains of school readiness and teacher-child interactions.

Coaches addressed a variety of focus areas in individual coaching and group trainings with teachers (Exhibit 28). A given contact could include work on more than one focus area. Similar to Year 2, most coaching contacts with VPI+ teachers in Year 3 addressed teacher-child interactions (63% of contacts), and domain-specific content related to the five Essential Domains of School Readiness (64% of contacts). More than half (54%) of coaching contacts in Year 3 addressed supportive environments, an increase from Years 1 and 2 (31% and 42%, respectively). The percentages of contacts that addressed DLLs and children with special needs tripled since Year 1, but in Year 3 they still represented only about one-fifth of coaching contacts (22% and 19%, respectively).

Exhibit 28. Individual Coaching and Group Training Contacts with VPI+ Teachers, by Focus Area, Years 1, 2, and 3

Note. A given contact could include multiple focus areas.
Social-emotional development and language/literacy continued to be the most common school readiness domains focused on during coaching.

Exhibit 29 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. Social-emotional development was most frequent topic, addressed by coaches in 46% of Year 3 coaching contacts, a significant increase from Year 1 (25% of contacts) yet a decline from Year 3 (55%). Language and/or literacy was the next most frequent topic in Year 3 (43% of contacts), yet this was a decline from Year 1 (52%) and Year 3 (57%). A similar percentage of coaching contacts in Years 2 and 3 addressed mathematics (39% and 31%) and approaches to learning (36% and 34%), which were increases from Year 1 (when 20% of contacts addressed mathematics and 19% addressed approaches to learning). As in previous years, coaches rarely addressed science, physical health and development, or the arts.

**Exhibit 29. Individual Coaching and Group Training Contacts with VPI+ Teachers Incorporating Domain-Specific Focus Areas, Years 1, 2, and 3**

- **Social and emotional development**
  - Year 1 (25%)
  - Year 2 (43%)
  - Year 3 (55%)

- **Language/Literacy**
  - Year 1 (19%)
  - Year 2 (36%)
  - Year 3 (57%)

- **Approaches to learning**
  - Year 1 (20%)
  - Year 2 (34%)
  - Year 3 (39%)

- **Mathematics**
  - Year 1 (13%)
  - Year 2 (31%)
  - Year 3 (39%)

- **Science**
  - Year 1 (11%)
  - Year 2 (16%)
  - Year 3 (16%)

- **The arts**
  - Year 1 (4%)
  - Year 2 (6%)
  - Year 3 (10%)

- **Physical health and development**
  - Year 1 (3%)
  - Year 2 (6%)
  - Year 3 (6%)

- **Other domain-specific focus**
  - Year 1 (2%)
  - Year 2 (5%)
  - Year 3 (13%)

**Note.** A given contact could include multiple domain-specific focus areas.
Discussion and observation continued to be the most common coaching strategies during individualized coaching sessions.

Coaches used a variety of coaching strategies when working individually with teachers (Exhibit 30). As in previous years, discussion and observation were the most frequently used strategies, occurring in about half of Year 3 coaching contacts (49% and 48%, respectively). One difference in Year 3 coaching from previous years was an increase in providing teachers with non-curricular resources and materials (21% coaching contacts in Year 1 to 34% Year 3). Using video and reviewing data continued to be infrequently used (i.e., in less than 20% of contacts).

Exhibit 30. Coaching Strategies for Individual Coaching Contacts With VPI+ Teachers, Years 1, 2, and 3

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Year 1 (n = 1,250)</th>
<th>Year 2 (n = 1,394)</th>
<th>Year 3 (n = 1,301)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussion</td>
<td>39%</td>
<td>39%</td>
<td>48%</td>
</tr>
<tr>
<td>Observation</td>
<td>46%</td>
<td>46%</td>
<td>48%</td>
</tr>
<tr>
<td>Connection to curriculum resources and materials</td>
<td>21%</td>
<td>21%</td>
<td>28%</td>
</tr>
<tr>
<td>Providing other resources and materials</td>
<td>26%</td>
<td>26%</td>
<td>34%</td>
</tr>
<tr>
<td>Video or Live modeling</td>
<td>26%</td>
<td>21%</td>
<td>19%</td>
</tr>
<tr>
<td>Data review</td>
<td>18%</td>
<td>15%</td>
<td>17%</td>
</tr>
<tr>
<td>Video review</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Other strategy</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Note. A given contact could include multiple strategies.
VPI+ teachers felt positive about the support, resources, and suggestions they received from coaches.

Similar to previous years, in Year 3, most VPI+ teachers reported feeling positive about the support they have received from their VPI+ coaches. The vast majority of VPI+ teachers either strongly or somewhat agreed that they had a positive relationship with their coach (96%), and that their coach was available when they needed help (95%), knowledgeable about priority areas (94%), provided useful resources (93%), and provided practical suggestions for improving teaching (90%). However, more teachers agreed that they changed their practice as a result of coaching in Year 1 (86%) than in Year 3 (75%). This may indicate that coaching was most impactful at changing teacher practices in the initial year.

Summary and Implications of Professional Development and Technical Assistance

The VPI+ grant requires that each VPI+ teacher completes at least 30 hours of professional development focused on early learning environments. In their continuous improvement plans, which divisions revisit and revise each year of the grant, nearly all (10 of 11 school divisions) chose to focus their professional development on the social-emotional domain, and 7 school divisions also focused on improving instruction and learning around early mathematics. (See Virginia Preschool Initiative – Plus CASTL Year 3 Evaluation Report, July 2018.) VDOE, VECF, and CASTL all provided supports that were tailored to areas in need of improvement across the divisions as well as individualized supports to divisions and staff that requested specific types of supports and training.

For example, in response to needs reported in Year 2, Year 3 included two large-scale professional development opportunities, one focused on meeting the needs of children with disabilities by promoting best practices for inclusion and the second focused on grant- and division-level improvements at the Leadership Academy with extensive opportunities to review data and share successes and challenges as divisions work toward their goals. Success stories shared focused on effective leadership, supports for teachers, and supports for families.

When specialized expertise on a topic (e.g., early math or addressing challenging behaviors) was needed, divisions had the option to seek procured vendors to meet the professional development and training needs of their teachers. In Year 3, VPI+ teachers reported receiving professional development on a variety of instructional strategies, with more Year 3 VPI+ teachers receiving professional development around classroom organization and management, supporting the transition to kindergarten, and working with children with special needs than in
previous years. Higher percentages of Year 3 VPI+ teachers also reported receiving professional development in approaches to learning and physical health and motor development than in previous years. The increased professional development around physical activity could account for the finding that Year 3 VPI+ teachers reported that sessions involving physical activity lasted longer than sessions focused on other content areas. (Physical activity was the only content area that more than half of VPI+ teachers reported spending more than 30 minutes on during a given day.)

The grant further stipulates that that each VPI+ teacher receives up to 40 hours of coaching. In Year 3, VPI+ teachers, on average, received a total of 19.6 coaching contacts totaling 31.1 hours. Local VPI+ division coaches provided intensive supports to VPI+ teachers, decreasing the frequency of individualized coaching sessions but increasing the length of those sessions. (Likewise, the frequency of group coaching sessions increased, but these sessions were shorter than in previous years.) It is likely that these changes reflect more tailored and intensive coaching in Year 3 to support teachers as they worked to enhance classroom environments and supports for dual language learners and children with special needs. Coaching continued to predominantly focus on social and emotional development, a major focus of nearly all divisions, and on language/literacy, the content area on which VPI+ teachers spent the most time. In the final comprehensive report, the evaluation will explore how coaching changed over 4 years of the grant and if these changes are associated with any implementation or impact outcomes.

Over time, fewer VPI+ teachers have reported a desire for professional development in most areas, suggesting that they feel generally well-supported. Still nearly half of Year 3 VPI+ teachers (45%) continue to want professional development around supporting children with challenging behavior (down from 61% in Year 2). The program should consider identifying more opportunities to support staff and develop policies and practices to address challenging behavior in the classroom.
5. Child Outcomes

This chapter examines the academic, behavioral, and executive functioning skills of the children who participated in VPI+. We address three primary evaluation questions related to children’s early skills:

1. Do VPI+ Cohort 3 children demonstrate increased school readiness skills during preschool (i.e., from fall to spring)?
   a. Do increases in school readiness skills differ by child or family characteristics?
   b. Are the increased school readiness skills for VPI+ Cohort 3 children comparable to those of VPI+ Cohorts 1 and 2?
2. What percentage of VPI+ Cohort 1 and 2 children are “ready for kindergarten”? Do the percentages of children who are “ready for kindergarten” differ by child or family characteristics?
3. What is the impact of participation in VPI+ on the school readiness skills of Cohort 2 children at kindergarten entry?

Below we describe the methods used to answer each question and our findings.

**Evaluation Question 1: Do VPI+ Cohort 3 children demonstrate increased school readiness skills during preschool (i.e., from fall to spring)?**

**Research Question 1 Sample and Analysis Approach**

To answer the question of whether participating Cohort 3 VPI+ children made gains in four school readiness domains—literacy, general knowledge and cognition (math), approaches to learning and social–emotional development—from fall to spring and to examine differential gains for the subgroups, we conducted a series of three-level hierarchical linear models (HLMs) (Raudenbush & Bryk, 2002). Analyses controlled for shared variance that exists within children and for children within the same classroom, and for child background characteristics including race/ethnicity, gender, health, DLL status, IEP status, and poverty status. We included the

---

27 When reporting about children’s outcomes, we refer to cohorts instead of years. Cohort 1 VPI+ children are children who participated in the VPI+ program during the 2015–2016 school year, Cohort 2 VPI+ children are children who participated in VPI+ during the 2016–2017 school year, and Cohort 3 VPI+ children are children who participated in VPI+ during the 2017–2018 school year.

28 We did not control for maternal education, in part, because we wanted to use the same analysis models for Cohorts 1, 2, and 3, and the Year 1 annual report analyses did not include maternal education due to missing data on that variable for a large percentage of children that year.
1,627 VPI+ children for whom we had assessment data at both fall and spring time points. Depending on the assessment measure and its developer’s guidance, we used different types of scores (e.g., raw scores, standard scores, W scores, percentile rank scores). See Appendix F for a more detailed description of how the analyses were conducted and Appendices G and H for adjusted means and standard errors from the models examining gains.

To examine whether gains during preschool in Year 3 (Cohort 3) are comparable to Year 1 (Cohort 1) and Year 2 (Cohort 2), we included a matched sample of children from Cohorts 1 and 2 in the HLM. We then examined the average gain (estimated slope) from fall to spring, controlling for the child demographic characteristics listed above. Finally, to examine differences in gains by year, we included a cohort year variable in the HLM to see if there was a significant interaction (difference) related to a child’s cohort year.

**Evaluation Question 1 Results**

VPI+ Cohort 3 children experienced notable gains in school readiness skills during the preschool year.

VPI+ Cohort 3 children demonstrated statistically significant gains during the preschool year across all assessed domains—literacy, math, approaches to learning, and social and emotional development. See Appendix G.

**Literacy (PALS-PreK).** VPI+ children in Cohort 3 demonstrated statistically significant gains on all six PALS-PreK literacy skills between fall and spring (Exhibit 31a–f). For example, Exhibit 31b shows that children’s uppercase alphabet recognition increased from 8.2 letters on average to 20.4 in the spring.

---

29 Note that these sample sizes are larger than the sample described in the enrollment chapter because they include children who were age- and income-eligible for VPI+ and were enrolled in one of the 78 new classrooms as well as the 43 existing classrooms in Henrico with blended funding that were brought up to VPI+ standards.
Exhibit 31a–f. Gains in Adjusted Mean Scores on PALS PreK Tasks, Year 3

Note. All fall to spring gains were statistically significant.
**Language (PPVT-4).** VPI+ children in Cohort 3 made statistically significant gains over the course of their preschool year on the PPVT-4 measure of receptive vocabulary. The standard score for similarly aged U.S. children is 100, and VPI+ Cohort 3 children’s mean standard scores increased significantly from 88.4 in the fall to 93.6 in the spring where they were much closer to the assessment mean (Exhibit 32).

**Exhibit 32. Gains in Adjusted Mean Standard Scores on Vocabulary, Cohort 3**

![Graph showing gains in adjusted mean standard scores on vocabulary](image)

*Note.* Fall to spring gain was statistically significant.

**General Knowledge and Cognition (Woodcock-Johnson III Revised Applied Problems).** VPI+ Cohort 3 children experienced small, but statistically significant gains in early math skills between fall and spring, increasing an average of 14.9 W30 units (Exhibit 33).

**Exhibit 33. Gains in Adjusted Mean W Scores on General Knowledge and Cognition: Early Math, Cohort 3**

![Graph showing gains in adjusted mean W scores on general knowledge and cognition](image)

*Note.* Fall to spring gain was statistically significant.

---

30 We report 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 Batería). 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 (see Jaffe, 2009). For the reader’s reference, we also found statistically significant gains on raw and standard scores for Cohort 3 children: raw scores increased from 6.8 to 8.8 and standard scores increased from 98.1 to 99.3, essentially at the assessment mean.
Approaches to Learning (T-CRS 2.1). VPI+ Cohort 3 children demonstrated small 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. On average, Cohort 3 children’s percentile rank scores increased from 55.7 to 62.0 (Exhibit 34).

Exhibit 34. Gains in Adjusted Mean Percentile Rank on Task Orientation, Cohort 3

<table>
<thead>
<tr>
<th>Adjusted mean percentile rank</th>
<th>Fall 2017</th>
<th>Spring 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>55.7</td>
<td>62.0</td>
<td></td>
</tr>
</tbody>
</table>

Note. Fall to spring gain was statistically significant.

Social and Emotional Development (T-CRS 2.1 and HTKS). VPI+ Cohort 3 children demonstrated small but significant increases in their peer social skills from fall to spring, improving from 62.5 to 69.8 average percentile rank scores (Exhibit 35).

Exhibit 35. Gains in Adjusted Mean Percentile Rank on Peer Social Skills, Cohort 3

<table>
<thead>
<tr>
<th>Adjusted mean percentile rank</th>
<th>Fall 2017</th>
<th>Spring 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>62.5</td>
<td>69.8</td>
<td></td>
</tr>
</tbody>
</table>

Note. Fall to spring gain was statistically significant.

31 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.
Similarly, VPI+ Cohort 3 children made small but statistically significant gains in their behavior control skills, from average percentile rank scores of 60.3 to 65.1 (Exhibit 36). These mean percentile rank scores are also within or above the developmental ranges for these scales.

**Exhibit 36. Gains in Adjusted Mean Percentile Rank on Behavior Control, Cohort 3**

```
Adjusted mean percentile rank

75.0
65.0 60.3
55.0
45.0

Fall 2017 Spring 2018
n = 1,611
```

*Note.* Fall to spring gain was statistically significant.

VPI+ Cohort 3 children also made statistically significant improvements in self-regulation scores based on a direct assessment of these skills, the HTKS, increasing from an adjusted mean score of 5.9 in the fall to 12.9 in the spring (Exhibit 37). These scores and gains are similar to other published findings of preschool children's self-regulation as measured by the HTKS (McClelland et al., 2007).

**Exhibit 37. Gains in Adjusted Mean Scores on Self-Regulation, Cohort 3**

```
Adjusted mean score

20.0
15.0
12.9
10.0
5.9
0.0

Fall 2017 Spring 2018
n = 1,541
```

*Note.* Fall to spring gain was statistically significant.
Cohort 3 VPI+ children generally made greater fall to spring skill gains than VPI+ children in Cohorts 1 and 2.

Children in Cohort 3 made statistically greater fall to spring gains than children in Cohort 1 and/or Cohort 2 on the two academic domains, literacy and early math, and on the teacher-report measures of social skills, behavior control, and task orientation (Exhibit 38). In nearly all cases, Cohort 3 children started with lower scores than did Cohort 1 and Cohort 2 children in the fall of the preschool year but nevertheless finished the preschool year with scores that were similar to peers from earlier cohorts. See Appendix G for the adjusted mean scores and gains from fall to spring for Cohorts 1, 2, and 3.

**Exhibit 38. Differences Between Fall to Spring Gains for Children Across Cohorts**

<table>
<thead>
<tr>
<th></th>
<th>Cohort 3 made greater gains than Cohort 1</th>
<th>Cohort 3 made greater gains than Cohort 2</th>
<th>No differences between Cohort 3 and other cohorts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Literacy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name writing</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Upper-case alphabet recognition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beginning sound awareness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Print and word awareness</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Rhyme awareness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursery Rhyme awareness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cognition and general knowledge</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early math</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td><strong>Social and emotional development</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-regulation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer social skills</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Behavior control</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td><strong>Approaches to Learning</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task Orientation</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

Dual language learners experienced particularly strong gains over the course of the preschool year.

We examined differences in fall to spring gains for three subgroups of children: DLLs, children with disabilities (labeled below as “IEP”), and children from families with very low incomes (at or below 100% of the FPL). DLLs consistently experienced greater gains compared with non-DLLs. DLLs, on average, began the preschool year with lower scores than their non-DLL peers and made greater gains. Meanwhile, on most measures, there were no statistically significant differences in gains between children with and without disabilities as well as between children in households at or below 100% of the FPL and children in households 101–200% of the FPL.
(Exhibit 39). See Appendix H for the adjusted mean scores and fall to spring gains for cohort 3 by subgroups.
Exhibit 39. VPI+ Children’s Gains, by Domain and Subgroup, Year 3

<table>
<thead>
<tr>
<th></th>
<th>Literacy</th>
<th>Language</th>
<th>Social and emotional</th>
<th>Approaches to learning</th>
<th>Cognition and general knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Upper-case alphabet</td>
<td>Beginning sounds</td>
<td>Name writing</td>
<td>Print &amp; word</td>
<td>Rhyming</td>
</tr>
<tr>
<td>DLL vs. Non-DLL</td>
<td>DLL &gt; Non DLL ***</td>
<td>DLL &gt; Non DLL ***</td>
<td>DLL &gt; Non DLL ***</td>
<td>DLL &gt; Non DLL ***</td>
<td>No diff</td>
</tr>
<tr>
<td>IEP vs. Non-IEP</td>
<td>Non-IEP &gt; IEP ***</td>
<td>No diff</td>
<td>IEP &gt; Non IEP *</td>
<td>No diff</td>
<td>No diff</td>
</tr>
<tr>
<td>Poor vs. Low-income</td>
<td>No diff</td>
<td>No diff</td>
<td>No diff</td>
<td>No diff</td>
<td>No diff</td>
</tr>
</tbody>
</table>

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

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

* significant at the <.05 level ** significant at the <.01 level *** significant at the < .001 level

Note. For the purposes of this exhibit, we use the term “poor” for children in households at or below 100% of the FPL and “low-income” for children in households between 101% and 200% of the FPL. No diff = no significant difference in gain scores between the two groups.
Evaluation Question 2: What percentage of VPI+ children are “ready for kindergarten” and does readiness differ by child or family characteristics?

Evaluation Question 2: Sample and analysis approach

To assess children’s readiness for kindergarten, the evaluation team worked with VDOE, core VPI+ implementation planning team, and the VPI+ evaluation advisory board (EAB) to establish benchmarks for each school readiness domain and for overall kindergarten readiness. The group decided to use the developmental range expected for each domain and use falling within or above that range as the domain benchmark (which included children scoring one-third of a standard deviation below the mean). 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 group defined children as kindergarten ready if they were within or above the developmental range in both of the academic domains (literacy and math) and at least one of the other domains (social and emotional or approaches to learning).\(^\text{32}\) Appendix I provides detailed information on the benchmarks used to define kindergarten readiness by domain and overall.

Evaluation Question 2: Findings

A large majority of Cohort 1 and Cohort 2 VPI+ children demonstrated kindergarten readiness.

Overall, in fall 2017, 67% of Cohort 2 VPI+ children demonstrated kindergarten readiness, ranging from 60% to 81% of VPI+ children across school divisions. The overall kindergarten readiness rate was not statistically different from that of children in Cohort 1. Exhibit 40 shows the kindergarten readiness rates overall and by domain and cohort.\(^\text{33}\) In terms of readiness by domain, most Cohort 2 VPI+ children (87%) demonstrated readiness in literacy. The majority of Cohort 2 VPI+ children also demonstrated readiness in numeracy and counting (82%) and approaches to learning (81%). About two-thirds of children in Cohort 2 (69%) demonstrated readiness in the social and emotional domain.

---
\(^{32}\) Although motor development is critical for children to be ready for kindergarten, delays in this area are less common and not necessarily the primary focus of the VPI+ program. Therefore, based on consensus from a subcommittee of the EAB, motor development was not included in the criteria for kindergarten readiness. In addition, 99% of children passed the kindergarten motor development screener, suggesting that most children in this sample did not have a motor delay.

\(^{33}\) In Cohort 1, only 10 of the 11 divisions provided data on literacy. Thus, Cohort 1 includes 10 divisions for literacy and overall and Cohort 2 includes data from all 11 divisions.
The percentage of Cohort 2 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. We also discuss whether differences in kindergarten readiness by child 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. See Appendix J for kindergarten readiness model estimates and odds ratio estimates.

- **Gender.** A higher percentage of females (71%) demonstrated overall kindergarten readiness than males (63%). After controlling for other child demographic characteristics, this difference was statistically significant. In addition, females were statistically more likely than males to demonstrate readiness in the domains of literacy and approaches to learning.

- **Race/ethnicity.** A lower percentage of Hispanic children (62%) and Black children (67%) demonstrated overall kindergarten readiness than White children (71%), a statistically significant difference after controlling for other child demographic characteristics. Also, Hispanic children were statistically more likely than White children to demonstrate readiness in approaches to learning but less likely to demonstrate...
readiness in math. Black children were statistically less likely to demonstrate readiness in math than White children.

- **DLL status.** Fewer DLLs demonstrated overall kindergarten readiness than non-DLLs (60% versus 70%). After controlling for other child demographic characteristics, this difference was statistically significant. In addition, non-DLLs were statistically more likely than DLLs to demonstrate readiness in math and literacy.

- **IEP or disability status.** Substantially fewer children receiving special education services through an IEP demonstrated overall kindergarten readiness compared with children who did not have an IEP (40% versus 69%). After controlling for other child demographic characteristics, this difference was statistically significant, and children without an IEP were also statistically more likely to demonstrate readiness in all four domains compared with children having an IEP.

- **Poverty status.** Children from households with incomes at or below 100% of the FPL had lower rates of overall kindergarten readiness compared to children from families with an income of 101% to 200% of the FPL (63% versus 73%). After controlling for other child demographic characteristics, the higher income group was more likely than the lower income group to demonstrate readiness in literacy, math, and approaches to learning as well as overall readiness.

- **Health status.** Fewer children who were rated in fair or poor health demonstrated overall kindergarten readiness than children who were rated in good or excellent health (54% versus 68%). After controlling for other child demographic characteristics, this difference was statistically significant. Furthermore, children in good or excellent health were also statistically more likely than children in fair or poor health to demonstrate readiness in the domains of literacy and approaches to learning.
Evaluation Question 3: What is the impact of participation in VPI+ on children’s school readiness skills of Cohort 2 children at kindergarten entry?

Evaluation Question 3: Sample and analysis approach

We assessed the impact of participation in VPI+ on the kindergarten academic skills of children who attended VPI+ during the 2016–2017 school year (Cohort 2). Because it is not possible to randomly assign children to receive or not receive VPI+, we use a regression discontinuity design (RDD) to address this question. This approach has been used to assess the impact of publicly funded preschool programs in Boston, Massachusetts and Tulsa, Oklahoma (e.g., Gormley Jr, Phillips, Newmark, Welti, & Adelstein, 2011; Weiland & Yoshikawa, 2013).

Exhibit 41. VPI+ Pre-K participation by Cohort and testing procedures

The analysis takes advantage of the program requirements that children be age 4 by September 30 of the preschool year to create comparable groups of children who enrolled in VPI+ in fall 2016 (Cohort 2) and in fall 2017 (Cohort 3). We then compare those children who were just old enough to enroll in cohort 2 to those children who were just too young to enroll in Cohort 2 but subsequently did enroll in Cohort 3. Data on the literacy skills (phonological awareness and letter recognition), language development (vocabulary), early math, and self-regulation of Cohort 2 and Cohort 3 children were collected between September 18, 2017 and November 27, 2017 as Cohort 2 children began kindergarten and Cohort 3 children began VPI+ (See Exhibit 41). Note that these findings are preliminary and final results with additional methodological details will be provided in the final comprehensive report in summer 2019.

34 We do not include T-CRS 2.1 ratings scores because the ratings for Cohort 2 children were conducted by kindergarten teachers while the ratings for Cohort 3 children were conducted by preschool teachers. Prior research using RDD methods to assess the impact of prekindergarten programs indicates that the differences in behavioral expectations by kindergarten and prekindergarten teachers can induce bias into such comparisons.
Following the guidance for conducting RDD studies in the context of preschool provided by Lipsey and colleagues (2015), we conducted a series of data analyses which indicate that (a) these data are appropriate for use in RDD analyses and that (b) the results of the analyses can support causal interpretation, i.e., we can attribute any significant differences to the impact of the VPI+ program.  

**Evaluation Question 3: Findings**

Attending VPI+ had a positive impact on children’s academic and behavioral skills, with the largest impact on literacy skills.

We found strong evidence that enrollment in VPI+ yields positive impacts for participating children across a range of skills critical for school success. Impacts on children’s literacy skills (recognition of lowercase letters and phonological awareness of letter sounds) were large (effect sizes between 1.0 and 1.12). Impacts on the development of children’s early mathematics skills and self-regulation were moderate (effect sizes equal 0.33 and 0.38, respectively) and impacts on vocabulary skills were small (effect sizes equal 0.15) (Exhibit 42).

**Exhibit 42. Effect Sizes from RDD Analyses**

<table>
<thead>
<tr>
<th>Skill Description</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language/Vocabulary (PPVT-4)</td>
<td>0.15**</td>
</tr>
<tr>
<td>Early mathematics (Woodcock Johnson III Revised Applied Problems)</td>
<td>0.33**</td>
</tr>
<tr>
<td>Self-regulation (HTKS)</td>
<td>0.38**</td>
</tr>
<tr>
<td>Literacy skills (phonological awareness) (PALS Letter sounds)</td>
<td>1.12***</td>
</tr>
<tr>
<td>Literacy skills (PALS lowercase letter recognition)</td>
<td>1.10***</td>
</tr>
</tbody>
</table>

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

Note. Effect sizes from RDD analyses use complete cases and multiply imputed data global regression and optimal bandwidth approaches. Significance tests use robust, bias corrected standard errors.

Taken together these analyses provide evidence that participating in VPI+ accelerated children’s development of important school readiness skills. In the year between enrolling in VPI+ and beginning kindergarten, attending VPI+ led children to develop more than 15 months of mathematics skills and more than 20 months of literacy skills (Exhibit 43).  

35 A detailed explanation of the approach to the analyses for the RDD study is available upon request.

are consistent with what has been found in other analyses of high-quality public preschool programs.

**Exhibit 43. Additional Months of Mathematics and Literacy Skills as a Result of Attending VPI+**

![Chart showing additional months of mathematics and literacy skills]

**Summary and Implications of Child Outcomes**

Evidence from across the different types of analyses indicates that attending VPI+ helped children to build the early academic and behavior skills needed for success in kindergarten and beyond. All average scores were in the expected developmental ranges for the child’s age in spring of preschool, and approximately two-thirds of children were identified as ready for kindergarten in both VPI+ cohorts who have reached kindergarten (Cohorts 1 and 2). Most importantly, in the preliminary analyses using the regression discontinuity design, we saw strong impacts on literacy and moderate impacts on mathematics and self-regulation, all from direct assessments of children’s skills and rigorous checks on whether this approach can used to test the impact of VPI+ on children’s skills at kindergarten entry. This pattern of findings is generally similar to those seen in studies of nationally recognized, high-quality preschool programs, such as those in Tulsa, Oklahoma and Boston, Massachusetts (Gormley Jr et al., 2011; Weiland & Yoshikawa, 2013).
The particularly strong impacts on children's literacy skills 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, and much of the VPI+ coaching continues to focus on this area. Evidence from the analyses presented in this report indicate that attending VPI+ helped children to build many of the early academic and behavioral skills needed for success in kindergarten and beyond. Approximately two-thirds of VPI+ children met the kindergarten readiness standards used in this initiative upon entry into kindergarten. Preliminary evidence from the regression discontinuity study indicates that attending VPI+ has a large impact on the development of children's literacy skills and moderately-sized impacts on their mathematics and self-regulation skills. Although the analyses of preschool children’s gains on the vocabulary measure showed significant increases across the preschool year, the more robust regression discontinuity analyses showed no impact on vocabulary at kindergarten entry. This is an important finding since VPI+ children enter preschool, on average, with vocabulary skills that are far below the national average and may additional, more intensive supports to adequately close the achievement gap at kindergarten.

This pattern of findings for VPI+ is also very similar to those seen in studies of nationally recognized, high-quality preschool programs, such as those in Tulsa, Oklahoma and Boston, Massachusetts (Gormley Jr et al., 2011; Weiland & Yoshikawa, 2013) and what has been observed in evaluations of prekindergarten programs in other states (Barnett et al., 2018). As with VPI+, these programs demonstrated stronger positive impacts on children’s literacy, mathematics and self-regulation skills than on the development of their vocabulary skills. Prior research indicates that supporting the vocabulary skills of low-income preschool children may require intervention that is more intensive, explicit, and systematic than typical practice (Foorman, Breier, & Fletcher, 2003; Barnett & Frede, 2010; Moats & Foorman, 2008). The large impacts of attending VPI+ on children’s literacy skills are likely attributable to coach’s efforts to support teacher’s literacy instruction and the substantial amount of instructional time that teachers report spending on literacy activities skills. VDOE might therefore consider engaging in a more targeted approach to helping children grow their vocabulary skills.

Children’s self-regulation skills also improved. In particular, we saw significant increases on the HTKS direct assessment measure during preschool and a moderate impact on these skills in the RDD impact study. Findings ways to support children’s social and emotional and executive function skills is equally or more important as academic skills, and this is reflected both in the
types of supports VPI+ teachers received in Year 3 as well as a need identified by many teachers.

There also were significant subgroup differences where children with certain characteristics or risk factors (most consistently DLLs) showed greater gains than children without those characteristics or risk factors, indicating progress in closing the gaps during the preschool year. 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. In addition, Cohort 3 children made greater gains in mathematics than children in Cohorts 1 and 2, which may reflect the expanded emphasis and supports in this area of many of the divisions.
6. Conclusion

VPI+ state and local partnerships accomplished a great deal during Year 3 of the grant. Enrollment in VPI+ programs continued to increase, including through the participation of two new divisions in Year 3. Across the 13 divisions VPI+ programs served more than 1,400 children of high need, reaching more children who speak a language other than English and children who have an IEP than in the previous grant years. The vast majority of children enrolled in fall 2017 were still enrolled in spring 2018, although rates of regular attendance varied by division, and more than a third of children across divisions were reported to be chronically absent from preschool. VPI+ classrooms continued to be staffed by experienced preschool teachers with educational credentials, who reported having the needed materials and support to serve their students and having confidence in using their curricula and the GOLD™ assessment. VPI+ students received instruction in a wide range of content areas, with increased emphasis on science, dance, and creative dramatics in Year 3. VPI+ teachers also continued to engage their students’ families in a variety of ways and reported that many types of services were available to families in their larger communities. CLASS® domain scores revealed that the quality of emotional, organizational, and instructional supports VPI+ teachers provided in the classroom improved significantly since Year 1, as did aspects of the classroom environment as measured by the ECERS-R. The majority of VPI+ program sites also received a higher Virginia QRIS rating in Year 3 than in Year 1. VPI+ coordinators, coaches, and teachers continued to have access to a wide range of professional development activities and formats to support this continuous improvement.

These VPI+ program features were associated with positive outcomes for Cohort 3 VPI+ children, who demonstrated statistically significant gains during the year across all assessed domains—literacy, math, approaches to learning, and social and emotional development. Moreover, in nearly all evaluation measures, Cohort 3 children started in the fall of the preschool year with lower scores than did children in Cohorts 1 and 2 but nevertheless finished the preschool year with scores that were similar to children in earlier cohorts. In Year 3, dual language learners experienced particularly strong gains over the course of the preschool year. Overall, two-thirds of Cohort 2 VPI+ children in fall 2017 demonstrated kindergarten readiness. Comparing Cohort 3 VPI+ children with a sample of similar children who missed the age cutoff for VPI+ participation, the evaluation found strong evidence that VPI+ enrollment yields positive impacts for children across a range of critical skills that predict school success, particularly
literacy skills, and to a lesser extent early mathematics and self-regulation skills and vocabulary skills.

Below we discuss potential areas that could be strengthened in Year 4, and we present next steps for the evaluation.

**Potential Targets for Program Improvement**

*Enrollment, attrition, and attendance*
The data from Year 3 suggest that many VPI+ students may not be attending preschool regularly enough to get the full benefits of the program. These attendance data may in part reflect challenges programs have in systematically recording student absences. In Year 4, VDOE may want to consider offering supports to help divisions record and analyze absence data and to follow up with families of children who do not attend regularly.

*Program implementation and quality*
Despite the strong improvement in classroom quality on the whole, a substantial number of VPI+ teachers continued to have lower ratings on CLASS® scores in the area of instructional support. VPI+ teachers are not unique in this regard, as research conducted on other publicly funded preschool programs has consistently shown that this is most the challenging aspect of teaching preschool, providing developmentally appropriate supports that scaffold diverse learners across a wide range of developing skills. Yet VPI+ data indicate that teachers can improve their instructional support skills. Approximately 40 percent of teachers who did not meet the threshold for instructional support in Year 1 did meet the threshold in Year 3. VDOE should continue its efforts to support VPI+ teachers in developing these skills with special attention to those teachers who receive low instructional support scores.

*Professional development and technical assistance*
Generally, Year 3 VPI+ teachers reported less need for professional development in most areas compared with teachers in previous grant years. However, some VPI+ teachers reported wanting more professional development on approaches to learning, despite an increase in coaching contacts that addressed this topic in Year 3. VDOE could consider offering additional professional development in this area, as well as continuing to support VPI+ teachers around children with challenging behaviors. Also, although only about a third of VPI+ teachers requested additional professional development on working with DLLs, most of the VPI+ teachers do not serve this population. Given an increase in DLLs enrolling in VPI+ in Year 3,
VDOE could target the specific VPI+ teachers serving large concentrations of these students and ensure that they receive needed professional development around working with DLLs.

**Child outcomes**

Improving children’s vocabulary skills remains a challenge for VPI+ programs, as is true across the country in public preschool settings (Barnett et al., 2018). Children enter VPI+, on average, with very low levels of vocabulary. Prior research indicates that supporting the vocabulary skills of low-income preschool children may require intervention that is more intensive, explicit, and systematic than typical practice (Barnett & Frede, 2010; Foorman, Breier, & Fletcher, 2003; Moats & Foorman, 2008). The large impacts of attending VPI+ on children’s literacy skills are likely attributable to coach’s efforts to support teacher’s literacy instruction and the substantial amount of instructional time that teachers report spending on literacy activities skills. VDOE might therefore consider engaging in a more targeted approach to helping children grow their vocabulary skills.

**Next Steps for the VPI+ Program and Evaluation**

School divisions will launch Year 4, the final year of the VPI+ program. With support from state VPI+ partners (including CASTL, VECF, VDOE, and the evaluation team) the school divisions will continue 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.

The evaluation will continue to collect formative and student assessment data to provide feedback to improve instruction and program implementation through early Spring. Year 4 will also include data collection and analyses of the cost study that will examine per-child costs of VPI+ as well as a cost-effectiveness analysis. Finally, a second regression discontinuity study will be conducted, and initial analyses are planned for the longitudinal study that compares VPI+ children and a matched-comparison group of children on later academic and non-academic outcomes (literacy skills, special education services, grade retention, attendance). We will also examine variation in impacts by different implementation and classroom features.
References


Van Voorhis, F. L., Maier, M. F., Epstein, J. L., & Lloyd, C. M. (2013). *The impact of family involvement on the education of children ages 3 to 8: A focus on literacy and math achievement outcomes and social-emotional skills*: MDRC.


Appendix A. Cost Study

School Readiness Consulting (SRC) and RAND have been gathering data to determine the costs of VPI+ implementation, and eventually, its association to program benefits. Below we describe completed activities for the cost study and the analyses that will be conducted for the interim (October 2018) and final (June 2019) cost study reports.

Cost Study Data Collection Activities

The cost study team collected existing administrative data on costs, including VPI+ grant reimbursements submitted by each division to VDOE, documentation of matching costs maintained by each division, and other types of administrative cost data. The cost study team collected these data from VDOE and each participating division for the 2016–2017 program year. The study team then entered the cost data from all available sources into a cost data capture tool developed for the study, consulting with the divisions during the process to ensure accuracy.

Interim Report

Drawing from administrative cost data collected from VDOE and divisions, the study team will produce an interim cost study that will include a descriptive analysis of VPI+ costs for Year 1 of the cost study (2016–2017). The descriptive analysis will examine the full costs incurred to operate the VPI+ program overall and for each cost category (e.g., salaries and benefits, materials and supplies, food, etc.). The report will also include per-child costs incurred to operate the VPI+ program overall and by division. To calculate a total cost per division, the study team will sum the costs across categories prorating each cost if appropriate. To calculate per-child costs, the study team will divide the total division cost by the number of VPI+ children enrolled in that division. The team will also aggregate the total costs across divisions and calculate an overall cost per child for the VPI+ program. The cost study team will also examine variation among divisions in the 2016–2017 year. The interim report will be delivered to VDOE by October 31, 2018.

Final Report

The final cost study report will include a descriptive analysis of VPI+ costs for the 2016–2017 year as well as costs for the 2017–2018 year for divisions that are able to provide the needed data by December 31, 2018. In addition, the final report will include the results of the benefit-
cost analysis, drawing from child outcomes data collected for the VPI+ impact evaluation (the regression discontinuity study) and administrative cost data collected from VDOE and divisions. The final report will be delivered to VDOE as part of the final comprehensive report by June 30, 2019.
Appendix B. Child Assessment Measures

SRI selected a battery of assessments to measure children’s development in all five Essential Domains of School Readiness based on criteria included in Virginia’s request for proposals for this evaluation. SRI used norm-referenced measures, when available, 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. All selected 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 racial/ethnic groups. Thus, these assessments have been widely used with similar populations of children as those who are participating in the VPI+ program. As described below, assessment data came from direct assessments of children and from teacher reported measures.

Trained SRC assessors (who had a criminal background check and TB clearance) administered direct assessments to all children in VPI+ classrooms in fall and spring of preschool and fall of kindergarten. Children were assessed in English or Spanish based on results of a language screener conducted at the beginning of the assessment (in fall and spring). By parent report, approximately 24–30% of participating VPI+ children were identified as speaking a language other than English at home. Those children who spoke a language other than English at home took an English language screener to see if they could understand and express themselves in English well enough to complete assessments in English. Of those children, 80% passed the language screener in fall 2015, 80% passed the screener in spring 2016, 45% passed the screener in fall 2016, and 45% passed the screener in spring 2017, 55% passed the screener in fall 2017, and 82% passed the screener in spring 2018. The evaluation team revised the screening tool between Year 1 and Year 2 and made additional revisions prior to Year 3. In consultation with two EAB members, the evaluation team revised the screening tool to be more conservative, resulting in fewer children passing (and thus more children taking the assessments in Spanish) in Years 2 and 3. If a child did not pass the English language screener, and the child’s home language was Spanish, then the child was tested in Spanish using the norm-referenced Batería III Woodcock-Muñoz™ (Batería 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

---

37 The Woodcock-Johnson® III Applied Problems subtest and the Teacher-Child Rating Scale are norm-referenced measures.
HTKS. If non-Spanish speaking children did not pass the language screener, the assessor administered the PPVT-4 in English and then terminates the assessment.

Child direct assessment measures:

- **Peabody Picture Vocabulary Test (PPVT-4; Dunn & Dunn, 2007).** Starting in fall 2017, assessors began administering the PPVT-4. The PPVT is a measure of receptive vocabulary in which an assessor shows the child an easel with four black-and-white drawings on each page, and the child is asked to indicate the picture that corresponds to the word spoken by the assessor. The assessment ends when a child answers eight or more questions incorrectly in a set. It takes about 10–15 minutes to administer.

- **Woodcock-Johnson Applied Problems subtest (Woodcock et al., 2001):** The Applied Problems subtest is a widely used, norm-referenced measure of a limited number of early mathematics skills (e.g., counting, number sense) for which the assessor asks a child a series of questions and records the child’s answers until the child answers six consecutive items incorrectly. It takes about 10 to 15 minutes to administer. Spanish-speaking children who did not pass the English screener took the Spanish version of the Applied Problems subtest (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 includes aspects of executive functioning. It takes approximately 10 minutes to administer and requires children to 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.** This brief assessment was designed to measure children’s fine and gross motor skills. Children are asked to copy a
line and circle to demonstrate their fine motor skills; then they are asked to perform a number of gross motor tasks (e.g., jumping, hopping, and balancing on one foot). Assessors score children 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 and can be administered in English and Spanish.

- **Virginia Fine/Gross Motor Screening at Kindergarten.** Starting in fall 2016, division personnel administered the state-mandated Virginia Fine/Gross Motor Screening at Kindergarten and provided the data to SRI. The Virginia Fine/Gross Motor Screening at Kindergarten assesses fine and gross motor skills and is administered by division personnel during the first 60 days of kindergarten. To assess fine motor skills, the assessor asks the child 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). Each child is allowed two attempts to pass each task, and the assessor records whether the child demonstrated or did not demonstrate each skill. No psychometric information is available for these items.

- **Phonological Awareness Literacy Screening (PALS) PreK and K:** PALS is the state-provided screening tool for Virginia’s Early Intervention Reading Initiative for kindergarten through third grade \(^{42}\) and all VPI+ teachers use PALS as part of the VPI+ initiative. 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 the PALS-PreK and PALS-K – lower-case alphabet recognition and letter sounds. Starting in fall 2017, VPI+ preschool teachers were asked to administer lower-case alphabet recognition and letter sounds tasks to all children, including those who did not score above the threshold on certain prerequisite tasks. \(^{43}\) All children are screened on PALS during the fall and spring of kindergarten and spring of first grade. PALS is only administered to children in the fall of first grade and in second grade if the child is new to the division or the child continues to score low or require services on the basis of the assessment/screener. Beginning in the spring of third grade, all students take the Standards of Learning English/reading test (i.e., PALS 1–3 is not

\(^{43}\) On PALS-PreK, if a child correctly identifies 16 or more upper case letters, the 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.
administered). SRI collects student-level results from these assessments through division exports. The evaluation team uses these data to examine the impact of VPI+ on literacy, one of the five Essential Domains of School Readiness.

Teacher-report child measures 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 across 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 are used to assess the social and emotional development domain. It takes teachers about 5 minutes to complete the rating scale for each child.

- **Physical health items:** Teachers are also asked to rate students’ physical health and well-being on a 4-point scale (poor, fair, good, and excellent) as well as their fine and gross motor skills on the online teacher survey.

---

### Exhibit B-1. Measures Used to Assess Child Outcomes

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

---

45 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.

46 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.

47 Preference for assessments administered by trained and reliable assessors.

48 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.

49 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.

50 In Year 1, evaluators used the Dimensional Change Card Sort (DCCS) but starting in Year 2 shortened the battery to only include one executive function task – the Head Toes Knees Shoulders (HTKS).

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

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

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

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

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

56 These skills develop from 3-6 years of age, so there are no national norms for four-year olds in preschool.
Appendix C. CLASS Domains and Dimensions

The CLASS® is based on research that suggests student-teacher interaction is the foundation of student development. Each domain is made up of various dimensions (see Exhibit C-1). The dimensions examined by the CLASS® are derived from constructs used in child care research, effective teaching practice literature, focus groups, and pilot studies. The CLASS® is scored by specifically assessing observed interactions, as opposed to physical environment or adoption of a curriculum.

Exhibit C-1. Domains and Dimensions of the CLASS®

The CLASS® is administered across a typical morning in classrooms where a majority of the children are three to four years old. Teachstone®, the creator of the CLASS®, requires four to six 15- to 20-minute cycles for a complete observation. Each observation cycle is followed by a
5- to 10-minute coding period. This process usually requires an average of 2–3 hours for a complete observation.

For each cycle, each dimension is scored on a range from 1 to 7, with higher scores indicating high-quality implementation of the dimension. Each dimension score is averaged across the four to six cycles to get a classroom average for that dimension. The dimensions that make up a domain are averaged to get a domain average. Negative climate is the exception to rule, with lower scores indicating higher quality or lack of negativity. For the purpose of averaging a domain score, negative Climate scores are reversed (a score of 1.50 in Negative Climate becomes a score of 6.50).

CLASS® scores fall within ranges: Low-range scores fall between 1.00 and 2.99; mid-range scores fall between 3.00 and 5.99; and high-range scores fall between 6.00 and 7.00.

Evaluations of other state preschool programs have found threshold scores that are associated with improved child outcomes. For the purpose of the Virginia QRIS, thresholds have been set at 5 or higher in the Emotional Support/Classroom Organization domains and a 3.25 or higher in the Instructional Support domain. Thresholds have not been established at the dimension level.

Domain 1: Emotional Support
The Emotional Support domain assesses children’s social and emotional functioning in the classroom. Children who are connected to others are more likely to develop positively in both social and academic areas. Teacher support of children’s social and emotional functioning is essential in an effective classroom. Emotional Support contains four dimensions: positive climate, negative climate, teacher sensitivity, and regard for student perspectives. Thresholds have not been established by the publisher at the dimension level.

Positive Climate
Positive Climate focuses on how teachers interact with children to develop warm relationships that promote children’s enjoyment of the classroom. In classrooms scoring in the high range on positive climate, teachers and students interact with warmth and interest, using positive affect during communication. There is praise and verbal affection from the teacher and general respect among teachers and students.

Negative Climate
Negative Climate reflects the amount and intensity of expressed negativity in the classroom. A classroom should be free of disrespect, sarcasm, and negative affect during interactions.
Teachers should not maintain control of the classroom through threats, physical control or harsh punishment. Finally, there should never be instances of severe negativity such as physical punishment, victimization, or bullying. Note: A low score on Negative Climate is desired, as lower scores indicate higher quality, or a lack of negativity.

**Teacher Sensitivity**
Teacher Sensitivity captures the teacher’s awareness and response to the child’s needs, both educational and emotional. In a classroom environment with high teacher sensitivity, children feel comfortable participating in activities and their problems are resolved in an effective manner. Teachers should anticipate student problems and provide acknowledgment and support for problems.

**Regard for Student Perspectives**
Regard for Student Perspectives measures how teacher interaction with students emphasizes students’ interests and points of view. One way to emphasize student interests is by allowing students to choose activities or demonstrate leadership or responsibility. Teachers can be flexible in their plans by following student ideas or creating student-driven activities. Teachers can also encourage students to provide ideas or simply talk about their perspective. Students may have freedom of movement or placement within each activity.

**Domain 2: Classroom Organization**
The Classroom Organization domain reflects the range of classroom processes regarding management of students, including their behavior and interest. Classrooms are able to provide more learning opportunities when students are well-behaved and are engaged in activities. Classroom Organization contains three dimensions: behavior management, productivity, and instructional learning formats. Thresholds have not been established by the publisher at the dimension level.

**Behavior Management**
Behavior Management considers the behavioral expectations provided by the teacher as well as the students’ behavior in response. Teachers should clearly communicate the rules and expectations of behavior and enforce said rules in a consistent manner. A classroom with effective behavior management has adults who are proactive by monitoring student behavior to prevent problems from arising. Teachers should redirect misbehavior through subtle cues and a focus on the positive. In a highly effective classroom, students follow behavioral expectations without reminders.
**Productivity**
Productivity focuses on teacher management of time and student opportunity to engage in learning activities. In a highly productive classroom, teachers consistently provide activities for the students with limited disruptions. When transitions to new activities occur, they remain brief and contain learning opportunities within. Students should know what to do and/or where to be, and the necessary materials should be ready and accessible.

**Instructional Learning Formats**
Instructional Learning Formats assesses how the teacher engages students and impacts their ability to learn during activities. Teachers may effectively facilitate students’ involvement by encouraging participation through questions, co-participation, or play. A highly effective classroom may have students who are consistently interested and involved in activities. Teachers can use a variety of materials, ranging across auditory, visual, and movement activities, to improve student interest. Finally, students should be aware of the purpose of the learning activity.

**Domain 3: Instructional Support**
The Instructional Support domain examines students’ cognitive and language development. Noted is the difference between simply learning facts and learning how facts are connected and organized. The ability of the child to develop an understanding of his or her thinking process is critical in cognitive development. Interactions between teacher and student that develop these skills are examined through three dimensions: concept development, quality of feedback, and language modeling. Thresholds have not been established by the publisher at the dimension level.

**Concept Development**
Concept Development focuses on the teacher’s promotion of higher-order thinking through discussions and activities. A classroom with a high level of concept development encourages analysis and reasoning through prediction, classification, and evaluation. Students may be provided opportunities to create their own ideas or products. Teachers should link concepts to each other and to the students’ personal lives.

**Quality of Feedback**
Quality of Feedback captures the amount and quality of feedback provided by the teacher. Teachers can use student difficulties as opportunities to expand learning and understanding by providing hints at the correct answer or follow-up questions. Asking students to explain their
reasoning and providing more information about the topic are also ways to expand student learning. Finally, teachers can provide encouragement of student efforts that will increase their involvement.

**Language Modeling**

Language Modeling reflects the degree of language stimulation and language facilitation. Classrooms are assessed on the amount of conversations in the classroom, both teacher-student and student-student. Also, teachers may ask open-ended questions as to encourage elaborated responses from students. Teachers should use advanced language and map actions through descriptions.
Appendix D. ECERS-R Measure

The ECERS-R is an observation tool that is designed to measure the process quality of early childhood classrooms serving children ages 2 through 5. Process quality focuses on the interactions that happen in a classroom between children and staff, parents, other children, and the materials and activities in the learning environment. Process quality also looks at features such as space, schedule, and materials that relate to these interactions.

Exhibit D-1 lists the components of the four subscales. Within each subscale, items are given a score from 1–7 or not applicable and then averaged to get the subscale score. To get a total scale score (ECERS-R Average), all items within the four reported subscales are averaged.

Exhibit D-1. ECERS-R Subscale Components

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language-Reasoning</td>
<td>• Books and Pictures&lt;br&gt;• Encouraging Children to Communicate&lt;br&gt;• Using Language to Develop Reasoning Skills&lt;br&gt;• Informal Use of Language</td>
</tr>
<tr>
<td>Activities</td>
<td>• Fine Motor&lt;br&gt;• Art&lt;br&gt;• Music/Movement&lt;br&gt;• Blocks&lt;br&gt;• Sand/Water&lt;br&gt;• Dramatic Play&lt;br&gt;• Nature/Science&lt;br&gt;• Math/Number&lt;br&gt;• Promoting Acceptance of Diversity&lt;br&gt;• Use of TV, Video, and/or Computers</td>
</tr>
<tr>
<td>Interaction</td>
<td>• Supervision of Gross Motor Activities&lt;br&gt;• General Supervision of Children (other than Gross Motor)&lt;br&gt;• Discipline&lt;br&gt;• Staff-Child Interaction&lt;br&gt;• Interactions Among Children</td>
</tr>
<tr>
<td>Program Structure</td>
<td>• Schedule&lt;br&gt;• Free Play&lt;br&gt;• Group Time&lt;br&gt;• Provisions for Children with Disabilities</td>
</tr>
</tbody>
</table>

The ECERS-R developer has assigned the following categories for score ranges: scores that fall between 1.00 and 1.99 are considered “inadequate”; scores that fall between 2.00 and 3.99 are considered “minimal”; scores that fall between 4.00 and 5.99 are considered “good”; and scores that fall between 6.00 and 7.00 are considered “excellent.”
Language-Reasoning
The Language-Reasoning subscale includes the following items: Books and Pictures, Encouraging Children to Communicate, Using Language to Develop Reasoning Skills, and Informal Use of Language. Classrooms that score high on this subscale often include staff that ask children open-ended questions, encourage reasoning from children, link spoken communication to written communication, and rotate books and pictures regularly in the classroom.

Activities
The Activities subscale includes the following items: Fine Motor, Art, Music/Movement, Blocks, Sand/Water, Dramatic Play, Nature/Science, Math/Number, Promoting Acceptance of Diversity, and Use of TV, Video, and/or Computers. Classrooms that score high in this subscale often include diversity as part of a daily routine, intersecting activities with lessons, rotating materials and activities to maintain children’s interest, and teacher facilitation of the activities and materials.

Interaction
The Interaction subscale includes the following items: Supervision of Gross Motor Activities, General Supervision of Children (other than Gross Motor), Discipline, Staff-Child Interaction, and Interactions Among Children. Classrooms that score high on this subscale often include positive peer interactions, staff who enjoy being with children, staff who use activities to help children understand social skills, and staff who interact with children during their play.

Program Structure
The Program Structure subscale includes the following items: Schedule, Free Play, Group Time, and Provisions for Children with Disabilities. Classrooms that score high in this subscale often include integration of children with disabilities into regularly classroom activities, supervision of free play, varied groupings of children, and schedule changes to meet individual student needs.
# Appendix E. Virginia Quality QRIS Ratings

## Exhibit E-1. Requirements and Year 3 Frequencies for Level 3, Level 4, and Level 5 Ratings of Virginia’s QRIS

<table>
<thead>
<tr>
<th>Level 3 Rating</th>
<th>Level 4 Rating</th>
<th>Level 5 Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meets all requirements for Levels 1 and 2</td>
<td>Meets all requirements for Levels 1, 2, and 3</td>
<td>Meets all requirements for Levels 1, 2, and 3</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>AND/OR</td>
<td>AND/OR</td>
<td>AND/OR</td>
</tr>
<tr>
<td>• Achieve an average ECERS-R score below 4.00 across four subscales Language-Reasoning, Activities, Interaction, and Program Structure.</td>
<td>• Achieve an average ECERS-R score of 4.00 or higher across four ECERS-R subscales: Language-Reasoning, Activities, Interaction, and Program Structure.</td>
<td>• Achieve an average ECERS-R score of 5.00 or higher across four ECERS-R subscales: Language-Reasoning, Activities, Interaction, and Program Structure.</td>
</tr>
<tr>
<td>AND</td>
<td>AND</td>
<td>AND</td>
</tr>
<tr>
<td>• Achieve an average CLASS® PreK score below 5.00 in Emotional Support domain and Classroom Organization domain.</td>
<td>• Achieve an average CLASS® PreK score of 5.00 or higher in Emotional Support domain and Classroom Organization domain.</td>
<td>• Achieve an average CLASS® PreK score of 6.00 or higher in Emotional Support domain and Classroom Organization domain.</td>
</tr>
<tr>
<td>AND</td>
<td>AND</td>
<td>AND</td>
</tr>
<tr>
<td>• Achieve an average CLASS® PreK score below 3.25 in the Instructional Support domain.</td>
<td>• Achieve an average CLASS® PreK score of 3.25 or higher in Instructional Support domain.</td>
<td>• Achieve an average CLASS® PreK score of 4.25 or higher in Instructional Support domain.</td>
</tr>
</tbody>
</table>
Appendix F. Approach to Analyses for Assessing Preschool Outcome Gains

To assess fall to spring growth during the VPI+ preschool year, as well as subgroup differences, 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 was 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 estimated 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.

The last set of HLM estimate the difference in cohort in fall and slope of growth from fall to spring. This last set of HLM include two cohort indicator variables (Cohort 1 and Cohort 2 both of which use Cohort 3 as the reference group) at the student level and a cross-level interaction term between time and cohort indicators. The coefficient associated with two cohort indicators tells us the estimated differences in fall score between Cohort 1 and Cohort 3 and between Cohort 2 and Cohort 3. The two interaction terms indicate the differences in slope between Cohort 1 and Cohort 3 and between Cohort 2 and Cohort 3.
## Appendix G. Adjusted Mean Scores and Gains from Fall to Spring for Cohorts 1, 2, and 3

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Fall Adjusted Mean Score (SE)</th>
<th>Spring Adjusted Mean Score (SE)</th>
<th>Gain</th>
<th>Spring Adjusted Mean Score (SE)</th>
<th>Gain</th>
<th>Spring Adjusted Mean Score (SE)</th>
<th>Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.87 (0.06)</td>
<td>6.40 (0.06)</td>
<td>2.54*** (0.05)</td>
<td>158 8</td>
<td>3.64 (0.05)</td>
<td>6.36 (0.05)</td>
<td>2.76*** (0.07)</td>
</tr>
<tr>
<td>2</td>
<td>9.69 (0.25)</td>
<td>20.61 (0.25)</td>
<td>10.92** (0.21)</td>
<td>158 3</td>
<td>9.10 (0.24)</td>
<td>20.32 (0.24)</td>
<td>11.21*** (0.20)</td>
</tr>
<tr>
<td>3</td>
<td>4.32 (0.13)</td>
<td>8.48 (0.13)</td>
<td>4.16*** (0.10)</td>
<td>157 5</td>
<td>4.06 (0.12)</td>
<td>8.37 (0.12)</td>
<td>4.31*** (0.12)</td>
</tr>
<tr>
<td></td>
<td>4.79 (0.09)</td>
<td>8.28 (0.10)</td>
<td>3.49*** (0.07)</td>
<td>158 6</td>
<td>4.42 (0.09)</td>
<td>8.13 (0.09)</td>
<td>3.77*** (0.09)</td>
</tr>
<tr>
<td></td>
<td>4.31 (0.09)</td>
<td>7.74 (0.09)</td>
<td>3.43*** (0.07)</td>
<td>158 1</td>
<td>3.96 (0.09)</td>
<td>7.50 (0.09)</td>
<td>3.78*** (0.10)</td>
</tr>
<tr>
<td></td>
<td>4.40 (0.09)</td>
<td>8.43 (0.09)</td>
<td>4.03*** (0.06)</td>
<td>158 1</td>
<td>4.60 (0.09)</td>
<td>8.46 (0.09)</td>
<td>3.97*** (0.08)</td>
</tr>
<tr>
<td></td>
<td>401.90 (0.58)</td>
<td>410.83 (0.58)</td>
<td>8.92*** (0.58)</td>
<td>153 2</td>
<td>393.41 (0.52)</td>
<td>407.82 (0.52)</td>
<td>14.28*** (0.69)</td>
</tr>
<tr>
<td></td>
<td>57.55 (1.17)</td>
<td>61.13 (1.17)</td>
<td>3.58*** (0.59)</td>
<td>157 4</td>
<td>55.79 (0.88)</td>
<td>59.34 (0.88)</td>
<td>3.90*** (0.76)</td>
</tr>
<tr>
<td></td>
<td>64.55 (1.19)</td>
<td>67.82 (1.19)</td>
<td>3.27*** (0.57)</td>
<td>159 0</td>
<td>62.55 (1.02)</td>
<td>67.67 (1.02)</td>
<td>4.9955*** (0.72)</td>
</tr>
<tr>
<td></td>
<td>60.74 (1.14)</td>
<td>62.76 (1.14)</td>
<td>2.02*** (0.53)</td>
<td>157 8</td>
<td>58.63 (0.93)</td>
<td>61.17 (0.93)</td>
<td>2.06** (0.67)</td>
</tr>
<tr>
<td></td>
<td>10.07 (0.67)</td>
<td>17.62 (0.66)</td>
<td>7.55*** (0.52)</td>
<td>153 0</td>
<td>5.99 (0.40)</td>
<td>12.98 (0.40)</td>
<td>7.62*** (0.53)</td>
</tr>
</tbody>
</table>

† p < .10 * p < .05, **p < .01, ***p < .001
Appendix H. Adjusted Mean Scores and Differences for Cohort 3
Fall to Spring Gains Between Subgroups

<table>
<thead>
<tr>
<th></th>
<th>Upper Case Alphabet Recognition (PALS)</th>
<th>Beginning Sound Awareness (PALS)</th>
<th>Name Writing (PALS)</th>
<th>Print and Word Awareness (PALS)</th>
<th>Rhyme Awareness (PALS)</th>
<th>Nursery Rhyme Awareness (PALS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>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</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DLLs</td>
<td>478 6.32 (0.45) 20.44 (0.45) 2.66*** (0.44)</td>
<td>478 2.55 (0.19) 7.92 (0.19) 1.03*** (-0.19)</td>
<td>478 2.96 (0.10) 6.35 (0.10) 0.61*** (0.11)</td>
<td>478 3.21 (0.14) 7.79 (0.14) 0.92*** (0.13)</td>
<td>476 2.82 (0.16) 6.70 (0.16) -0.01 (0.16)</td>
<td>473 3.07 (0.14) 7.80 (0.14) 0.80 (0.13)</td>
</tr>
<tr>
<td>Non-DLLs</td>
<td>1108 8.94 (0.26) 20.40 (0.26) 478 4.09 (0.14) 8.43 (0.14) 1113 3.56 (0.07) 6.34 (0.07) 1112 4.63 (0.10) 8.28 (0.10) 1113 3.91 (0.11) 7.80 (0.11) 1103 4.79 (0.10) 8.72 (0.10)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students with IEP vs. students with no IEP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IEP</td>
<td>167 8.74 (0.62) 18.93 (0.62) -2.30*** (-0.66)</td>
<td>167 2.76 (0.25) 7.18 (0.25) -0.24 (0.29)</td>
<td>167 2.76 (0.13) 6.04 (0.13) 0.36* (0.16)</td>
<td>167 3.30 (0.17) 7.57 (0.17) 0.38† (0.20)</td>
<td>167 2.71 (0.21) 6.11 (0.21) -0.54* (0.24)</td>
<td>166 3.55 (0.18) 7.78 (0.18) 0.07 (0.20)</td>
</tr>
<tr>
<td>No IEP</td>
<td>1419 8.10 (0.21) 20.59 (0.21) 1422 3.74 (0.12) 8.41 (0.12) 1424 3.46 (0.06) 6.37 (0.06) 1423 4.32 (0.09) 8.20 (0.09) 1422 3.69 (0.10) 7.64 (0.10) 1410 4.37 (0.09) 8.52 (0.09)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students at or below 100% FPL vs. students above 100% FPL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At or Below 100% FPL</td>
<td>862 7.21 (0.27) 19.79 (0.27) 0.72† (0.41)</td>
<td>864 3.57 (0.14) 8.08 (0.14) -0.29 (0.18)</td>
<td>866 3.28 (0.07) 6.29 (0.07) 0.10 (0.10)</td>
<td>865 4.08 (0.10) 8.09 (0.10) 0.19 (0.12)</td>
<td>866 3.51 (0.11) 7.42 (0.11) 0.04 (0.15)</td>
<td>855 4.17 (0.10) 8.38 (0.10) 0.11 (0.12)</td>
</tr>
<tr>
<td>Above 100% FPL</td>
<td>724 9.31 (0.30) 21.16 (0.30) 725 3.72 (0.15) 8.52 (0.15) 725 3.50 (0.07) 6.40 (0.07) 725 4.36 (0.11) 8.18 (0.11) 723 3.68 (0.12) 7.55 (0.12) 721 4.41 (0.11) 8.52 (0.11)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Nested models controlling for the following covariates: race/ethnicity, gender, dual language learner status, IEP status, poverty level, health status, and division.
<table>
<thead>
<tr>
<th></th>
<th>Language (PPVT)</th>
<th>Early math (WJ AP)</th>
<th>Task Orientation (TCRS)</th>
<th>Peer Social Skills (TCRS)</th>
<th>Behavior Control (TCRS)</th>
<th>Self Regulation (HTKS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n Fall Mean Score</td>
<td>Spring Mean Score</td>
<td>Diff. in Gains</td>
<td>n Fall Mean Score</td>
<td>Spring Mean Score</td>
<td>Diff. in Gains</td>
</tr>
<tr>
<td>DLLs 454 75.45 (0.93)</td>
<td>85.12 (0.93)</td>
<td>6.32*** (0.70)</td>
<td>382.33 (1.19)</td>
<td>404.16 (1.19)</td>
<td>9.65*** (1.12)</td>
<td>53.86 (1.66)</td>
</tr>
<tr>
<td>Non- DLLs 1091 93.65 (0.52)</td>
<td>97.00 (0.52)</td>
<td>3.69** (1.20)</td>
<td>398.44 (0.67)</td>
<td>410.62 (0.67)</td>
<td>1135 56.51 (1.16)</td>
<td>61.66 (1.16)</td>
</tr>
<tr>
<td>Students with IEP vs. students with no IEP</td>
<td>IEP 158 81.07 (1.24)</td>
<td>85.83 (1.24)</td>
<td>-0.46 (1.08)</td>
<td>154 383.65 (1.62)</td>
<td>402.48 (1.62)</td>
<td>4.32* (1.72)</td>
</tr>
<tr>
<td></td>
<td>94.45 (0.42)</td>
<td>1383 94.97 (0.54)</td>
<td>409.48 (0.54)</td>
<td>1444 57.10 (1.04)</td>
<td>63.11 (1.04)</td>
<td>2.11 (1.77)</td>
</tr>
<tr>
<td>Students at or below 100% FPL vs. students above 100% RPL</td>
<td>At or Below 100% FPL 841 87.26 (0.54)</td>
<td>92.51 (0.54)</td>
<td>0.16 (0.66)</td>
<td>840 392.36 (0.70)</td>
<td>407.84 (0.70)</td>
<td>1.17 (1.04)</td>
</tr>
<tr>
<td></td>
<td>94.81 (0.59)</td>
<td>697 395.61 (0.77)</td>
<td>409.91 (0.77)</td>
<td>733 57.21 (1.23)</td>
<td>63.85 (1.23)</td>
<td>-0.74 (1.10)</td>
</tr>
</tbody>
</table>

Note. Nested models controlling for the following covariates: race/ethnicity, gender, dual language learner status, IEP status, poverty level, health status, and division.
Appendix I. Methods for Determining Kindergarten Readiness

The Virginia Board of Education has adopted a definition of school readiness, 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 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 child (e.g., T-CRS 2.1, WJIIIR), 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 deviation 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 below. Second, children were considered to demonstrate

---

59 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.
60 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.
overall kindergarten readiness if they were within or above the developmental range\textsuperscript{61} in both of
the academic domains (literacy and math) and at least one of the other domains (social and
emotional or approaches to learning).\textsuperscript{62}

The criteria for each of the 4 domains as shown in Exhibit F-1.

\textbf{Exhibit I-1. Criteria for Demonstrating Kindergarten Readiness in the Four Domains}

<table>
<thead>
<tr>
<th>Domain</th>
<th>Task</th>
<th>Criteria for Scoring Within or Above Developmental Range</th>
<th>Total Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literacy</td>
<td>PALS-K Summed Score</td>
<td>29 or above</td>
<td>0–120</td>
</tr>
<tr>
<td>Cognition and general knowledge</td>
<td>Woodcock Johnson Tests of Achievement</td>
<td>90 or above</td>
<td>0–131</td>
</tr>
<tr>
<td>Social and emotional development\textsuperscript{63}</td>
<td>T-CRS 2.1 Peer social skills subscale</td>
<td>26th percentile or above</td>
<td>0–99</td>
</tr>
<tr>
<td>Social and emotional development</td>
<td>T-CRS 2.1 Behavior control subscale</td>
<td>26th percentile or above</td>
<td>0–99</td>
</tr>
<tr>
<td>Approaches to learning</td>
<td>T-CRS 2.1 Task orientation subscale</td>
<td>26th percentile or above</td>
<td>0–99</td>
</tr>
</tbody>
</table>

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.

We measured kindergarten readiness for VPI+ graduates entering kindergarten in fall 2016 and
fall 2017. To understand whether child characteristics are associated with 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

\textsuperscript{61} 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.

\textsuperscript{62} 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.

\textsuperscript{63} 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 \textit{Foundation Blocks for Early Learning}. 
for other characteristics. Finally, we tested whether rates of kindergarten readiness differed between the two cohorts.

64 Note that Cohort 1 did not include one division that collects data on literacy using a different measure as the data were not available. Cohort 2 did include this division and used the literacy screening tool recently adopted in the division. For Cohort 2’s models, we included maternal education as well as other child and family demographic variables.
# Appendix J. Kindergarten Readiness Model Estimates and Odds Ratio Estimates, Cohort 3

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Literacy</th>
<th>Math</th>
<th>Social and Emotional</th>
<th>Approaches to Learning</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient (s.e.)</td>
<td>Coefficient (s.e.)</td>
<td>Coefficient (s.e.)</td>
<td>Coefficient (s.e.)</td>
<td>Coefficient (s.e.)</td>
</tr>
<tr>
<td>Intercept</td>
<td>2.05*** (0.10)</td>
<td>1.56*** (0.08)</td>
<td>0.82*** (0.07)</td>
<td>1.54*** (0.08)</td>
<td>0.71*** (0.06)</td>
</tr>
<tr>
<td>Non-DLL</td>
<td>0.60* (0.26)</td>
<td>0.60** (0.22)</td>
<td>1.81**</td>
<td>-0.33† (0.20)</td>
<td>0.72†</td>
</tr>
<tr>
<td>No IEP</td>
<td>1.12*** (0.25)</td>
<td>0.97*** (0.23)</td>
<td>2.64***</td>
<td>0.85*** (0.21)</td>
<td>2.33***</td>
</tr>
<tr>
<td>100-200% FPL</td>
<td>0.41* (0.18)</td>
<td>0.30** (0.15)</td>
<td>1.35**</td>
<td>0.20 (0.13)</td>
<td>1.22</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.34 (0.30)</td>
<td>-0.78** (0.27)</td>
<td>0.46**</td>
<td>0.38† (0.21)</td>
<td>1.46†</td>
</tr>
<tr>
<td>Black</td>
<td>-0.43† (0.26)</td>
<td>-0.89*** (0.23)</td>
<td>0.41***</td>
<td>-0.11 (0.16)</td>
<td>0.89</td>
</tr>
<tr>
<td>Female</td>
<td>0.47** (0.17)</td>
<td>0.06 (0.15)</td>
<td>1.06</td>
<td>0.04 (0.12)</td>
<td>1.05</td>
</tr>
<tr>
<td>Good Health</td>
<td>0.71** (0.27)</td>
<td>0.13 (0.28)</td>
<td>0.87</td>
<td>0.32 (0.23)</td>
<td>1.38</td>
</tr>
</tbody>
</table>

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