FP3 FAIRFAX PREK TO 3RD GRADE

Pathways to early school success

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Summary of Findings from the Fairfax Pre-k to 3rd Grade Study 2016-2021

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EXECUTIVE SUMMARY

The Fairfax PreK-3 project (FP3) is a longitudinal study of Fairfax County students eligible for public pre-kindergarten (pre-k), half of whom enrolled in public pre-k in fall of 2016. This is largely a sample of students from low-income households. The study assessed student outcomes, surveyed teachers, and observed in classrooms from pre-k to third grade. During the COVID years (2020-2021), information was gathered from subsamples of students and teachers on outcomes.

Pre-COVID Findings

Enrollment in an early education program at age 3, 4 (Fairfax County pre-k), or 5 (FCPS K) contributed to academic gains in that year and in the following year relative to students not enrolled. The benefits of pre-k in kindergarten were equal to half the achievement gap between children from low income and middle income families or racially minoritized and majority students. The benefits were most apparent in reading and math, executive function and self-regulation. The benefits were similar across racial or ethnic groups. Pre-k had an even greater benefit for children from families with the lowest incomes and for English Language Learners (ELLs). The relative differences between children enrolled in pre-k and those without pre-k diminished year-to year, so although by first grade there remained relative benefits associated with pre-k, they were much smaller than in kindergarten. A combination of elements were present in effective classrooms: supportive and stimulating teacher-student interactions and relationships and academically-focused activities taught in a responsive manner. When more of these elements were present, children learned more. These benefits can be improved by implementing effective instructional programs (curricula) in reading, mathematics, and social emotional learning. Large-group instruction is a prevalent format, which may contribute to repetition of basic content and reduce individualized instruction, which could impede the progress of students with higher skill levels (such as pre-k enrollees).

The COVID Period

COVID-related impacts on teachers and students were examined for 417 students who were assessed each year in pre-k, K, 1, and 3. Surveys included 139 third grade teachers. This sample and associated analyses combined students with and without pre-k experience. Overall, relative to national norms, after demonstrating above-average levels of performance from kindergarten to grade 1, these FCPS students demonstrated below-average performance in academic skills in grade 3, particularly in literacy, math computation, and math reasoning, and less so for executive function and vocabulary skills. Decreases relative to national norms, across the COVID period, appeared most pronounced for skills that are typically the focus of classroom instruction.

Students with prior experience in a pre-k program demonstrated a similar drop in skills relative to national norms when compared with those who did not enroll in pre-k. ELLs were buffered from this drop relative to monolingual English speakers, at least for vocabulary and math skills. The pattern of below average performance during COVID was similar for children from various income or racial/ethnic groups.

Teachers reported increases in work- and home-related stresses during COVID (particularly related to finding child care for their own children) and concerns over the increased needs of their students, while students reported experiencing their teachers as supportive.

Following the more detailed reporting of these results, we provide suggestions for ways that these findings can inform policy and practice, especially as we move from the period of COVID impact to COVID recovery.

STUDY OVERVIEW

The Fairfax PreK-3 (FP3) project is part of the Early Learning Network, comprised of five research projects funded by the Institute for Education Sciences to investigate the school and classroom factors that contribute to students' success across the early years of schooling. These projects have a particular focus on the effects of experiences in publicly-funded pre-kindergarten (pre-k) programs. The aim of the network is to advance policies and practices that can help close learning gaps and ensure sustained early learning success. FP3 is a longitudinal study of a large and diverse cohort of students, half of which were enrolled in publicly-funded pre-k in Fairfax County. The study collected data on students' academic and social outcomes every year from pre-k to grade 3, gathered surveys of teachers' reports of students and their own attitudes and classroom practices, and conducted observations in students' classrooms from pre-k to second grade (interrupted by COVID). During the COVID disruption in the spring of 2020, the study was able to collect information from teacher surveys regarding the impact of COVID on teachers and students. During the 2020-2021 academic year information was gathered on student academic, social, and motivational outcomes for almost 600 students, as well as on the impacts of COVID on schools' approaches to instruction and student support, and on teachers' practices and well-being.

As noted, the cohort includes a pre-k-enrolled subsample and a matched subsample of non-attenders recruited in Kindergarten. Students and teachers in the pre-k subsample were recruited from all school and community pre-k programs in Fairfax County, VA. Students were eligible if they attended the program, turned 4 by the study's start, and were not receiving special education (except for speech). Overall, 1,498 out of the 1,878 (80%) parents with pre-k-eligible students consented to participate. As the pre-k cohort started kindergarten, a separate non-attender sample was recruited within the same elementary schools; both samples combined to form the longitudinal cohort for all subsequent data collection. In Kindergarten, the total sample size exceeded 2,600 students. In second-grade, this low-income (average income-to-needs of .86) cohort included over 2,100 racially diverse (10% white, 16% black, 61% Latino, 11% Asian) students. Most students had a home language other than English (60% Spanish, 24% other languages). The demographic characteristics of the FP3 sample are somewhat different from those of the school division as a whole, as it does not include students from middle and upper income households. Overall, the project has followed this large and diverse cohort through third grade, retaining the diversity of the sample and a large proportion of the students throughout (see Table 1 on the next page). Participation in the study has been excellent among students, teachers, and administrators, a feature that distinguishes the study from many longitudinal, school-based investigations.

Table 1
Study Sample Descriptions

	PreK	Kindergarten		1st grade		2nd grade		3rd grade subsample	
		PreK attenders	PreK non-attenders	PreK attenders	PreK non-attenders	PreK attenders	PreK non-attenders	PreK attenders	PreK non-attenders
N	1498	1334	1247	1222	1136	1123	1031	298	279
Students									
Race/ Ethnicity									
White	10.7%	10.2%	12.2%	10.1%	12.1%	9.4%	10.7%	7.8%	9.8%
Black/AA	16.4%	15.9%	8.0%	15.7%	7.3%	16.1%	7.1%	15.3%	8.7%
Hispanic	60.8%	61.9%	63.6%	62.1%	64.0%	61.2%	65.6%	64.7%	64.1%
Native American	0%	0.1%	0.5%	0.1%	0.5%	0.2%	0.4%	11.2%	0.7%
Asian	10.1%	9.8%	13.5%	10.0%	13.8%	10.0%	13.9%	0.7%	14.1%
Multiracial	2.0%	2.1%	2.3%	2.0%	2.2%	2.2%	2.3%	0.3%	2.5%
Income-to-needs ratio	0.86	1.07	1.13	1.04	1.12	0.87	1.11	0.87	1.08
Home Language									
English	20.7%	19.9%	14.6%	18.9%	13.5%	19.2%	12.4%	16.3%	13.3%
Spanish	55.0%	56.4%	60.7%	57.4%	61.3%	57.6%	62.9%	60.7%	61.2%
Other	24.3%	23.7%	24.7%	23.7%	25.2%	23.2%	24.7%	23.1%	25.5%

Teachers complete surveys on school leadership and culture, instructional practices, dosage of instruction in math and literacy, students' social and behavioral adjustment, and exposure to special interventions (e.g., tutoring). Students report on the quality of student-teacher interactions and peers' support in math and literacy classrooms, self-regulated learning strategies, motivation, competence beliefs, mental health (mood, anxiety), and peer relationships. Achievement and executive function (EF) are assessed directly. Experienced data collectors trained to work with this sample conduct student assessments and surveys. School division data are provided annually, including student-level free/reduced-price lunch, absences, receipt of special services, and academic test results; school-level data include racial/ethnic composition, family income, and performance on achievement tests.

Overall, 1,498 out of the 1,878 (80%) parents with pre-k-eligible students consented to participate.

Participation in the study has been excellent among students, teachers, and administrators, a feature that distinguishes the study from many longitudinal, school-based investigations.

The project team has completed over 20 published articles (see Appendix) as well as a series of policy briefs and presentations to professional groups. The project has also provided data and reports back to schools summarizing the findings at various points in the past several years, and it has collaborated with FCPS in using the data to address questions of specific interest to the school division (e.g., impacts of summer programming.)

The study has examined the following broad set of questions, which will form the basis of the results summaries to follow:

1. **What is the association between enrollment in public early education programs (at age 3, pre-k, or K) and students' outcomes in subsequent years?**
2. **To what extent do different components of students' classroom experiences and teachers' instruction contribute to students' learning and social gains?**
3. **How do students' experiences in classrooms change from grade to grade, and do those changes have consequences for their learning and social outcomes?**
4. **How did students' educational experiences change as a consequence of COVID, and what is the impact of COVID on teachers and students?**

In analyzing data related to the questions above, it is important to remember that the study is not an experimental test of the impacts of pre-k or any other educational experience. Therefore, we have used a variety of statistical methods to control or adjust for a range of factors that may contribute to the outcome of interest. In all cases, we try to isolate the effects of a set of "inputs," such as pre-k, or time of exposure to reading instruction, from other factors in order to make an informed estimate of the role that these various inputs play in shaping students' learning and development. And, because the FP3 sample is so diverse, we always conduct analyses that examine the extent to which results for any given question are different for children on the basis of their race, ethnicity, or home language. The summaries that follow briefly describe what we have learned from these analyses.

1. *What is the association between enrollment in early education programs (at age 3, pre-k, or K) and students' outcomes in subsequent years?*

Background

Children can be enrolled in any of an assortment of childcare, preschool, pre-k or even kindergarten programs at various times across the birth to age 5 span. In the FP3 cohort, we identified students whose first "early education" experience took place when they enrolled in a center-based child care or preschool program at age 3, public pre-k at age 4, or when they started kindergarten. In a series of papers, we examined whether students who were enrolled in educational programs at each of those ages performed better academically and socially in the subsequent year(s) than students who had not been enrolled in these specific types of early learning programs at ages 3, 4, or 5. Notably, the "not enrolled" groups often had some less-formal experience in an early learning program. In these studies, the predictor of interest is "enrollment" in a program, so the focus is really on whether access to or enrollment in preschool has consequences; we do not focus on the quality of the program or the experiences within the program, which are areas of study in the question that follows this section.

What have we learned about the "school entry boost" from enrollment in early education programs?

In a nutshell, as we look across cohorts of students as they entered (and remained in) early educational programs at ages 3, 4, or 5, the takeaway conclusion is simple – enrollment at any age contributes to significant academic gains in that year and makes a significant, positive difference on students' academic skills in the following year relative to students who were not enrolled in such an experience. Teachers also report that children enrolled in these programs tend to display somewhat greater levels of classroom adjustment problems. At all ages, exposure to early educational programming contributes significantly to students' learning and development in the year in which they enroll, and those students enter the following year performing significantly higher than peers who did not have those prior experiences. We call this effect the "school entry boost."

How big is the school entry boost?

Again, the results are quite consistent whether time of first enrollment was at age 3, 4, or 5. The benefits of enrollment in an early education program are on the order of roughly a quarter to a half a standard deviation. This is equal to almost half of the achievement gap between children from low income and middle income families or almost half the gap between racially minoritized and majority students. The benefits appear to be most clearly apparent for children's early skills in reading and math, as well as in executive function and self-regulation (i.e., working memory and inhibitory control). There are few school entry effects on children's social adjustment – except in the case in which early enrollment was associated with somewhat greater levels of problem behaviors.

The benefits appear to be most clearly apparent for children's early skills in reading and math, as well as in executive function and self regulation (i.e., working memory and inhibitory control).

How long does the boost last?

These benefits can be first detected by looking at the gains children make during the year in which they were first enrolled (not comparing them to non-enrolled students). The benefits are most clear at the start of the following year, when children enrolled in the prior year start well ahead of their peers who

did not have a year of early education experience. For example, pre-k students who had enrolled as 3-year-olds in a preschool or center-based program were notably ahead of their peers at the start of their 4-year-old pre-k year. Similarly, if children were enrolled in pre-k, they started kindergarten with significantly higher skills in reading, math, executive function, and inhibitory control than non-enrolled peers.

Children with pre-k experience do not stop gaining new skills.

Rather, the shrinking difference between the groups is because children who did not have pre-k experience "catch up" to their pre-k peers over the course of the Kindergarten year.

However, we also clearly see a pattern of diminishing differences between children who did and did not have prior early educational experiences. That is, the relative benefits of these prior experiences wane over time. For example, as noted in the case of pre-k, children with pre-k experience start kindergarten significantly ahead of peers who did not have pre-k experience. By the end of kindergarten, the differences between the groups shrunk by half or more, so that children with pre-k still outperform their peers – but not by as much as they did in the beginning of the year. Children with pre-k experience do not lose those benefits or lose skills over the course of the year. Rather, the shrinking difference between the groups is because children who did not have pre-k experience "catch up" to their pre-k peers over the course of the kindergarten year. A similar pattern of "catch up" is evident for children in the pre-k year who were enrolled as 3-year-olds in a center-based preschool.

In effect, we see a pattern of accelerated learning in the first year that a child enters an early education program (hence the term "boost"). This accelerated learning continues to have lasting benefits through the next year or two; although, differences between pre-k and non-pre-k students appear to shrink, in large part because those comparison students (now enrolled in formal programs for the first time) show the boost associated with enrollment.

Finally, by and large, the skills for which we detect the biggest gains (and, by contrast, see the greatest catch up) are in reading and math. The assessments (and instruction) for these skills focused on discrete knowledge or skills (e.g., naming letters, counting, letter sounds, etc.). For skills that are less bound by discrete knowledge or skill (and are also less often the focus of targeted instruction), such as working memory, inhibitory control, and vocabulary, there is a pattern of less shrinkage in the "boost" effect of early education, and differences between attenders and non-attenders last longer.

What about student race, home language, or income?

Overall, we detected few differences in the pattern of results described above for students from different racial or ethnic groups. However, we did find that enrollment in public pre-k had an even greater benefit for students' performance at entry to kindergarten for children from families with the lowest income and for ELLs.

What do these results imply for policy or practice?

The results clearly point out the benefits of early education experiences. Communities that make investments in enrolling children in center-based preschools as early as age 3, or in pre-k at age 4 provide resources that will benefit those children. And, it appears that children from more marginalized groups (low-income families, ELLs) may benefit even more. It is also clear that early education programming is not an answer to the achievement gap, although it significantly reduces that gap. In the main, these results support communities' investments in early education programming and a focus on ensuring that such programs are well-tailored to the developmental needs of children and their linguistic and cultural backgrounds.

The next section of this summary focuses on the experiences of students in classrooms and how those experiences contribute to their learning and developmental gains. This has implications for the question of, "how might programs help sustain the early learning gains associated with the school entry boost?"

2. *To what extent do different components of students' classroom experience and teachers' instruction contribute to students' learning and social gains?*

Background

Our and others' studies demonstrate that enrollment in a preschool program contributes significantly to children's learning and development. Studies also show that non-enrolled children "catch up" to enrolled children in the subsequent year. This has led to tremendous interest in knowing more about the quality of children's early care and education experiences (pre-k, kindergarten, first), and how that quality may contribute, or not, to their continued learning and development. The FP3 project assessed several of these experiential factors, including: the quality of teacher-student interactions (observed), the dosage of instruction a child received in reading and math (observed), the rigor of instruction in reading and math (teacher-reported aligned to State Standards of Learning), as well as an assortment of teacher behaviors. Our observations were limited in the time spent in the classroom (1-2 days per year). And, although there is evidence that such limited windows provide useful and valid data, we know that they are not as robust as they would be if we had observed for longer periods in the classroom. With that limitation in mind, we learned quite a bit about "quality" of the classroom and the ingredients of effective programming that impact student learning.

What makes early education experiences beneficial for children?

The project team has had a very high level of focus on this question and produced a set of papers that draw from observational and teacher-reported measures of classroom processes in pre-k, kindergarten and first grade. In some papers we examined those processes as they predicted student learning gains in that specific year, and in others, we examined classroom processes across years. And, in some, we examined whether these processes might function in ways to sustain the "boost" effects we describe above.

In one study, we used data from the entire set of almost 120 pre-k classrooms to describe "a day in pre-k," including teachers' instructional and behavioral practices, the activities students were exposed to, and students' actual engagement in academic and instructional content. We learned that pre-k students spent the largest share of the day in teacher-directed whole-group instruction and in free play and very little time (only a few minutes per day) in individual and small-group settings. A third of the day was dedicated to academic activities, another third to routines, transitions, and meals, with the remainder allocated to play, recess, or center-time activities; notably there were few opportunities for social emotional learning. No differences were detected across school- and community-based pre-k programs; however, more educated and experienced teachers spent more time teaching and in teacher-directed instruction. Interestingly, the results of this study, when contrasted with a study conducted 20 years ago with the same focus, show a modest increase in the amount of academic activities and instruction offered in pre-k. But, by and large, the results are highly similar in terms of the lack of small group and individual instruction and a large proportion of time in routines.

What about student race, home language, or income?

Largely, we did not see consistent patterns of results related to students' race, home language, or income. That is, it was not the case that different classroom "ingredients" were more or less beneficial

for children from different racial, ethnic, linguistic, or income backgrounds. In this sense, the classroom experiences and opportunities that contributed to children's learning seemed effective for all children and were not notably group-specific. Importantly, we did not focus on the many possible nuanced features of classrooms that might benefit or inhibit the learning and development of children from particular backgrounds, which is a limitation of the project. However, in one set of analyses examining differences across pre-k and K classrooms, we found that preschoolers were more likely to have a teacher who spoke the child's home language or was of the same race/ethnicity, both of which could contribute to the child's sense of familiarity and engagement in the classroom.

There was some evidence which indicated that children's cumulative exposure to close teacher-student relationships and academically-focused classrooms across multiple years had even greater benefits for children who speak Spanish as a home language. For these children, the evidence points to associations between close teacher-student relationships and academically-focused classrooms with children's lower levels of conduct problems and more positive feelings about peers.

What about student gender?

We also examined how classroom experiences intersect with student gender – whether, for example, some kinds of experiences are more important for boys than for girls, or vice versa. Based on studies suggesting higher levels of behavioral challenges for boys as well as the evidence that girls are called on less frequently by teachers and also perform less well (in the later grades) on math, we examined child gender as a factor. For the most part, we find no evidence that the ingredients that make a classroom effective are different for boys and for girls.

We examined gender even more closely in a study of the role of children's executive functioning (EF) skills as a precursor to learning mathematics, a connection that has been identified in several studies. Children's EF skills and their approaches to learning (ATL) are hypothesized to play a key role in supporting their early mathematics achievement; however, the underlying mechanisms are not well understood. We used longitudinal data from the pre-k year to examine: (1) if children's EF and ATL skills in the beginning of the year predict their mathematics achievement at the end of pre-kindergarten (after accounting for achievement in the fall), (2) whether the associations between EF and mathematics achievement is a function of how EF increases children's approaches to learning in the classroom, and (3) if there are gender differences in these associations. We found that children with higher EF exhibit higher levels of task orientation in the classroom and, in turn, higher levels of math performance at the end of the year. But this pattern was not stronger for girls than for boys.

What about teachers' own characteristics?

In all of our analyses, we examine a set of teacher characteristics that could contribute to the nature and quality of their practices in the classroom and, by extension, to children's learning. These include education, experience, and professional development training, as well as attitudes toward children, and their own emotional well-being. For the most part, we see little to no relation between teachers' experience and education and their practices in the classroom (some exceptions are noted in this document).

One area of specific focus was on teachers' own well-being and emotional exhaustion as it related to these classroom processes, given the interest in factors such as burnout. This study was done pre-pandemic. In this set of analyses, teachers' experience of emotional exhaustion was not associated with the dosage and rigor of instruction; however, more emotionally exhausted teachers demonstrated lower quality interactions with children. There was also evidence to suggest that emotional exhaustion reduced the association between teachers' level of education and training on the quality of their classroom interactions. For the most part, more years of education was related to higher quality

interactions. However, when teachers reported higher levels of emotional exhaustion, this was not the case.

What do these results imply for policy or practice?

Overall, the evidence points to the importance of a combination of key elements that make for a successful, effective classroom – qualities of teacher-student interactions and relationships, and children's exposure to academically-focused activities taught in a sensitive and responsive manner. Evidence is very clear that classrooms (and teachers) differ in how well they combine and exhibit these elements, and those differences matter for children. In classrooms in which more of these elements are present, children learn more in that specific year. The findings also suggest that teachers' own emotional well-being matters for how well they can provide these elements in their classrooms.

In classrooms in which more of these elements (that make for a successful, effective classroom) are present, children learn more in that specific year.

Teachers' own emotional well-being matters for how well they can provide these elements in their classrooms.

It is clear that early education classrooms can benefit from more attention to identifying and successfully implementing effective instructional programs (curricula) in reading, mathematics, and social emotional learning. It is also the case that, for students who have higher levels of skills (e.g., kindergarten students who have been enrolled in pre-k and enter kindergarten with the "school entry boost"), large-group instruction in which the pre-k curriculum may be repeated (for those kindergarten students without the boost) might impede the progress of former pre-k enrollees and contribute to the catch-up effect we observed. It is critical that effective curricula be in place, and that teachers receive support through professional development to implement them with fidelity and sensitivity to children's individual needs and styles. A notable finding is the relatively high proportion of whole group instruction, even in pre-k, which suggests the potential importance of working with teachers and aides to create more opportunities for small group or individual instruction. Coaching, which focuses on implementation of a curriculum, may be a particularly useful approach to support teachers – as would resources that focus on their own emotional well-being. Given the challenges of the pandemic, investments that provide direct support for teachers' effective, individualized practices and emotional support will be even more valuable.

Early education classrooms can benefit from more attention to identifying and successfully implementing effective instructional programs in reading, mathematics, and social emotional learning.

3. *How do students' experiences in classrooms change from grade to grade, and do those changes have consequences for their learning and social outcomes?*

Background

In the studies described above, we summarize results largely from analyses that focus on the impacts of classroom experiences within a given year. And, we see that classroom experiences do matter in all of the years we have studied so far, including pre-k, k, and 1st grade. However, we expect education to be cumulative, and a multi-grade perspective is also important (as we have seen) in understanding the effects of programs like pre-k, which are delivered to a group of children in a single year. For these reasons, we undertook a number of analyses to understand the shifts in children's experiences across grades and the extent to which experiences across grades "add up" in their effects on children's longer-term learning and development.

What have we learned?

An area of considerable attention in research, practice, and policy in early learning is the extent to which teachers' classroom practices, curricula, and related classroom experiences for students are consistent, or "aligned," across grades. It has been suggested that the misalignment of instructional experience is one factor contributing to the catch-up effect we saw related to pre-k effects. We examined mis/alignment of classroom processes across pre-k into kindergarten for 295 kindergarten and 117 pre-k feeder classrooms in FCPS. As children moved into kindergarten, they were exposed to fewer ethnically and linguistically diverse teachers, spent more time in teacher-structured activities, and experienced less effective teacher-student interactions. As one might expect, the move to kindergarten was associated with more time spent on academics and progression toward more advanced literacy and math content from pre-k to kindergarten. Teachers across both grades (pre-k and K) reported similarly child-centered ideas about children. Overall, it appeared that the environment across these years became increasingly academic, with teachers somewhat less emotionally supportive and positively engaged with students.

An area of considerable attention in research, practice, and policy in early learning is the extent to which teachers' classroom practices, curricula, and related classroom experiences for students are consistent, or "aligned," across grades.

It has been suggested that the misalignment of instructional experience is one factor contributing to fade-out or catch-up related to pre-k effects.

We also asked parents, teachers, and administrators to characterize children's transition from public pre-k into kindergarten within FCPS. A wide range of transition practices were in use across the district, including practices designed to educate parents, connect pre-k and kindergarten stakeholders, train teachers, and provide transition experiences to children. Transition experiences were not uniform across programs, though. We identified three crosscutting themes related to pre-k transitions: (1) pre-k programs and staff invest significant time and effort in supporting successful transitions; (2) pre-k programs' school readiness efforts often center on the "mechanics" of the transition, like completing paperwork and teaching children basic school behaviors; and (3) there are concerns about a lack of alignment between pre-k and kindergarten in terms of readiness, behavioral expectations, and learning goals. In general, stakeholders reported a considerable effort from FCPS schools to support a successful transition through events, communications, and practices. Although, at the same time, they noted considerable differences across the grade levels in the actual nature of the educational programs – not dissimilar to the results reported above from the project's classroom observations.

Do these differences across grades translate into impacts on children?

Continuity of pre-k and kindergarten classroom experiences is a key area of interest for early childhood researchers interested in supporting public pre-k students' development over time. We examined whether discontinuities in classroom experiences from pre-k to kindergarten are associated with kindergarten social-emotional and self-regulation skills as well as students' academic and executive function skills. As noted earlier, classroom experiences (teacher-child interactions, teacher-child closeness, and the amount of time spent in teacher-structured activities) were assessed using observations and teacher reports in both grade levels. Analyses indicated that decreases in teacher-child closeness and in the quality of teacher-child interactions were associated with students' lower social competence, learning behaviors, and inhibition in the fall of kindergarten, relative to spring of pre-k. Moreover, experiencing a decrease in the quality of teacher-child interactions, or, an increase in time on content or academic rigor, was associated with lower achievement in the fall of kindergarten – but greater gains across the kindergarten year.

What do these results imply for policy or practice?

We are just beginning to learn about the nature and extent of alignment and misalignment across grades, and the FP3 study is among the first to examine this in a large sample of diverse students in a quantitative manner. However, it does appear that policies and practices that focus on consistent exposure to supportive and close teacher-student relationships and interactions may be highly valuable. When teachers across pre-k and elementary grades receive the same forms of support for, and emphasis on, teacher-student relationships, it creates a consistency in students' experiences that appears to benefit not only their social development, but also their engagement in the classroom and their academic progress. Joint professional development, joint curricular planning and implementation support, and teacher-to-teacher conferences across grades about students' needs can be important resources for increasing the forms of alignment that benefit students.

When teachers across pre-k and elementary grades receive the same forms of support for, and emphasis on, teacher-student relationships, it creates a consistency in students' experiences that appears to benefit not only their social development, but also their engagement in the classroom and their academic progress.

4. *How did students' educational experiences change as a consequence of COVID, and what is the impact of COVID on teachers and students?*

Background

As the students in the FP3 cohort entered second grade in the fall of 2019, the study plan for the year reflected the plan the team implemented in first grade and projected for grade 3 – surveys of teacher, classroom, and school characteristics, teachers' reports of students' adjustment, observations of classroom practices and student engagement, and assessments of students' academic and executive function skills. The bulk of these assessments were projected to be collected after January for the approximately 2,000 students who remained enrolled in the study in third grade.

Data collection started as the spring semester began, with classroom observations underway. As concerns about COVID began, the project team and school division were in regular touch, and when the division pivoted to online learning we suspended all second-grade data collection. At the close of the second-grade year, we partnered with the school division to conduct a survey of teachers regarding the impact of COVID on them and the instructional program and to gather their impressions of students' adjustment and engagement. Despite the challenges of COVID and due to the incredible commitment of the division partners and teachers, the team collected 341 classroom observations and 345 teacher surveys for 1,355 students.

For the 2020-2021 school year, which began using a virtual model, the project again adjusted data collection plans. In cooperation with school division partners, in the spring of that year the project team conducted virtual assessments of students' academic skills, attitudes, and motivation, and again gathered survey information from teachers regarding students' adjustment and COVID impacts on the instructional program and their own adjustment. Across the grade 3 year, assessments were conducted on 417 students and 139 teachers completed surveys.

In examining COVID-related impacts on teachers and students, we report below a series of analyses drawing on the subsample of 417 students who participated in the grade 3 assessments and for whom we had obtained assessment data in kindergarten and first grade. We also examined reports from the 139 third grade teachers who participated in surveys.

The analyses examining COVID impacts on student achievement and other outcomes took a longitudinal perspective on student performance and benchmarked student achievement in reading and math against the national norms for the Woodcock-Johnson III Tests of Achievement that we had deployed on each assessment occasion. Thus, these analyses provide a window into the achievement progress over time for this subsample of the cohort relative to the achievement progress of the norming sample for the test. Two important points should be considered when interpreting these results. First, the norms for the test were established almost 10 years ago, so they may be dated in terms of use as benchmarks for present-day students' performance. Second, we present these data without adjusting for other COVID-related factors that could impact students' performance (e.g., illness in the family, etc.) which were unknown to us. Thus, the results are descriptive in nature; they attempt to depict progress for the subsample over time, including the period of COVID disruption.

We present these descriptive results for the entire subsample of 417. Then, separately we examine comparisons for: children who were enrolled/not enrolled in pre-k; children from homes in which parents had greater or less than a high school education; children from families with incomes above/below the federal poverty line; boys/girls; and whether a child's home language was English, Spanish, or another language. Importantly, in preliminary analyses that examined the extent to which this subsample of 417 students were reflective of the characteristics of the entire cohort, results indicated no significant differences in terms of family demographics or other characteristics.

All analyses comparing student achievement or other outcomes across groups that differed by pre-k enrollment, family income, maternal education, gender, or home language included statistical adjustments for those same variables with the exception of the primary variable involved in the comparison. That is, when comparing children with and without pre-k experience on their reading skills, the analysis controlled for family income, maternal education, student gender, and home language.

Finally, we also present descriptive analyses from the teacher surveys conducted in spring of 2021 (grade 3) in which teachers reported on the instructional program as well as their own attitudes and experiences.

What have we learned?

As a reminder, we assessed the students using four subtests from the Woodcock-Johnson Tests of Achievement: Letter-Word Identification (decoding skills); Picture Vocabulary (receptive language); Applied Problems (math computation); and Quantitative Concepts (math reasoning). Because these are nationally normed, and we have longitudinal assessments from multiple prior years, we can gauge the students' progress over time relative to typical students of the same age/grade under non-COVID circumstances.

The scores depicted in the graphs below are standardized to have a mean of 100 and a standard deviation of 15. A score of 100 indicates that the student is at the 50th percentile compared to students in the test developers' norming sample. A score of 115 is just above the 80th percentile. A score of 85 is approximately the 15th percentile.

In general, relative to these national norms, the students' level of performance increased between fall of kindergarten and spring of first grade. For example, in the area of Letter-Word Identification, FCPS students scored at the 34th percentile at the start of kindergarten and at the 60th percentile by spring of first grade, with similar patterns for the math subtests. However, by third grade (a COVID year) their academic performance dropped in terms of percentile rank, particularly in literacy skills and in math computation and reasoning. For example, performance on the Applied Problems math subtest was at the 55th percentile in spring of first grade and the 25th percentile at the end of grade 3. Among the 4 subtests, noticeable drops in percentiles across the COVID period appear most pronounced for skills

(decoding, math computation, and math reasoning) that are typically the focus of classroom instruction, which was disrupted by COVID. The graphs below also clearly depict that the students made significant gains, relative to national percentiles, in these skills from fall of kindergarten through spring of first grade, an indication that pre-COVID classroom instruction was effective in promoting these areas of academic performance. However, by the end of grade 3, students were substantially behind academic expectations based on national norms. In math, students were further behind in grade 3 than they had been upon kindergarten entry.

Figure 1
Letter-Word Identification (decoding skills)

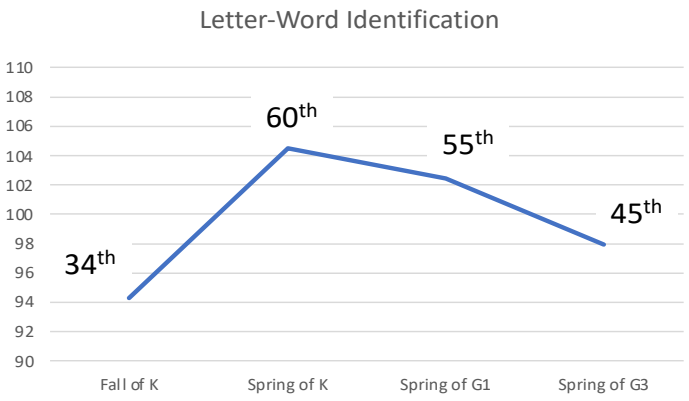
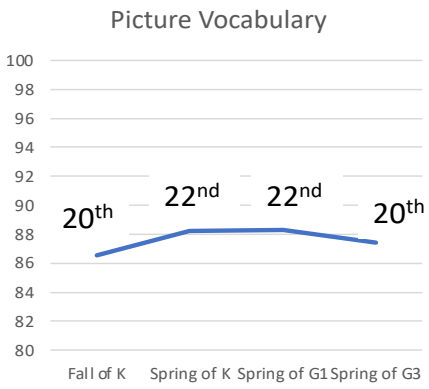


Figure 2
Picture Vocabulary (receptive language)



Data labels (e.g., 34th) are percentiles based on the WJ-III NU standardized scores.

Figure 3
Applied Problems (math computation)

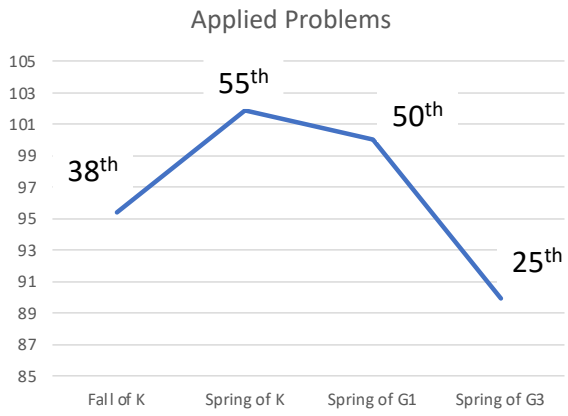
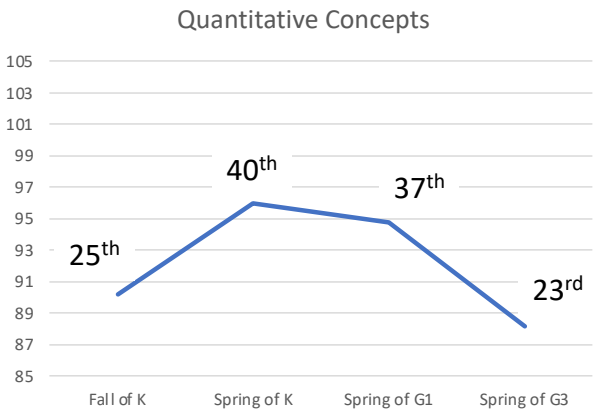


Figure 4
Quantitative Concepts (math reasoning)



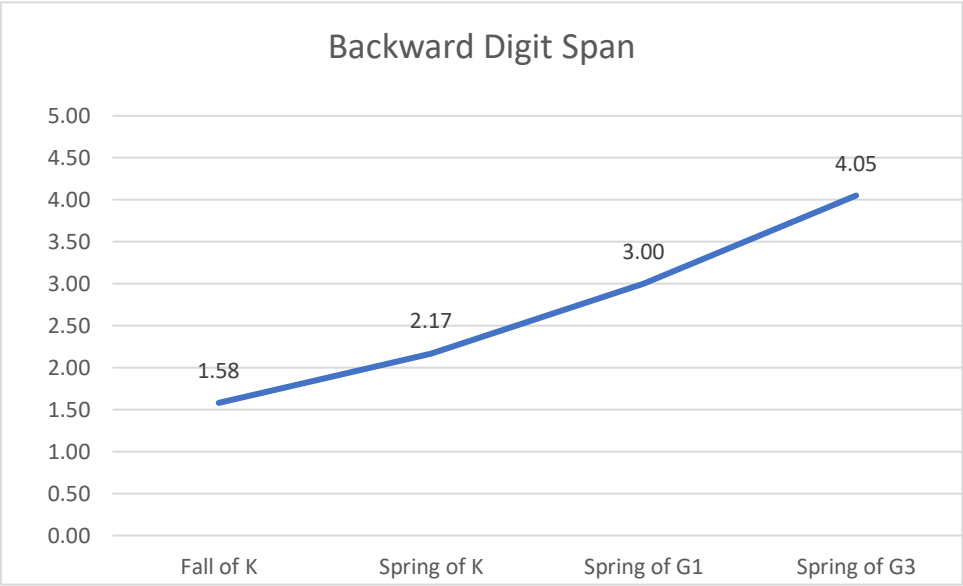
Data labels (e.g., 38th) are percentiles based on the WJ-III NU standardized scores.

It is important to note that students *did* learn during this period. They just did not learn as much (as measured by these assessments) as an average student would be expected to during a typical academic year.

We also assessed the students' Executive Function (EF) skills using a test of working memory, Backward Digit Span. This assessment requires to students to repeat back, in sequence, increasing strings of numbers. This assessment was administered on the same occasions as the achievement tests described above.

Analyses reveal a different pattern than that detected for achievement. Students' executive function skills increased steadily across the pre-k to grade 3 period, with increases between pre-k and grade 1 and between grade 1 and grade 3. Of note is that the increase between pre-k and grade 1 (1.42) is greater than that between grade 1 and grade 3 (1.08 across a two year span), suggesting that students' skills, although increasing, increased at a lower rate during the COVID period.

Figure 5
Backward Digit Span (working memory)



What about student race, home language, or income?

As noted earlier, we examined the extent to which the general trends described above for the entire subsample may have differed as a function of students' background or demographic characteristics. In addition to race, home language, and income we also examined these patterns by whether the student was enrolled in pre-k, student gender, and maternal education. In these analyses, we used the same basic approach of estimating changes in patterns of student performance over time relative to national norms. In these subgroup analyses we conduct those across-time estimations to compare different subgroups while also adjusting for the other demographic variables that are not the primary focus, and then compare the results.

Overall, the general trend of increasing academic skills relative to national norms from fall of kindergarten to spring of first grade, followed by lower levels of performance by spring of third grade, did not differ as a function of student race, or gender home language, family income, maternal education, or whether the student attended pre-k, even after adjusting for a cluster of relevant demographic characteristics. In that sense, the drop in students' academic performance relative to national norms between grades 1 and 3 was quite uniform across these different groups.

However, it also appears that students whose home language is other than English (i.e., Spanish or 'other' languages) were slightly buffered from this drop relative to English speakers, at least for skills assessed by Picture Vocabulary and Applied Problems, and to some extent for Quantitative Concepts (other language speakers). That is, English Language Learners' scores did not drop as much as those of English speakers across the COVID period.

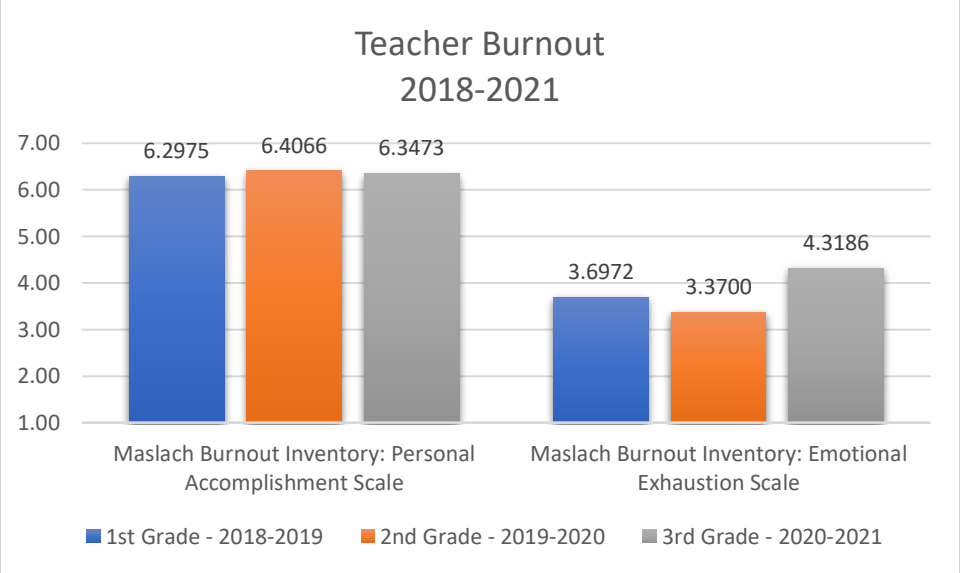
Thus, relative to a cohort of students who did not experience the pandemic (i.e., the national norms), the subsample of FP3 students demonstrated a significant drop in percentile rank for academic skill performance during the pandemic, particularly in literacy skills (Letter-Word Identification) and math. When comparing across FCPS peer groups who did experience the pandemic, this slide was uniform across various groupings of students. The exception is that ELLs experienced less of a decrease relative to national norms.

What do teachers and students describe about their experiences during COVID?

As we noted above, we also surveyed teachers and students about their experiences during the COVID-disrupted months, using items tailored to those circumstances, in an effort to better understand how COVD disrupted the educational environment and affected students and teachers. We summarize some of these findings below.

With regard to teachers' well-being and the impact of COVID, across three consecutive years (first, second, and third grade teachers), we asked teachers about their experiences of burnout. Below you will see that teachers reported high levels of a sense of personal accomplishment across all three years, while in 2020-2021, teachers (third grade) reported on average, a substantial increase in their sense of emotional exhaustion.

Figure 6
Teacher Burnout, 2018-2021



When asked about the pandemic's impact on their home life and emotional health, teachers in second and in third grade noted a number of concerns. Half reported problems with child care, having responsibility for instruction of their own child, or challenges taking care of children while at home (increased in third grade). Ninety percent of teachers noted concerns with the amount of time they

spent on screens, and while 50% of second grade teachers noted an increase in mental health problems in the first year of the pandemic (spring of 2020). By the spring of the following year, 80% of third grade teachers noted this concern, with almost 70% reporting concerns with sleep.

Figure 7
Teacher Home Life Impacts

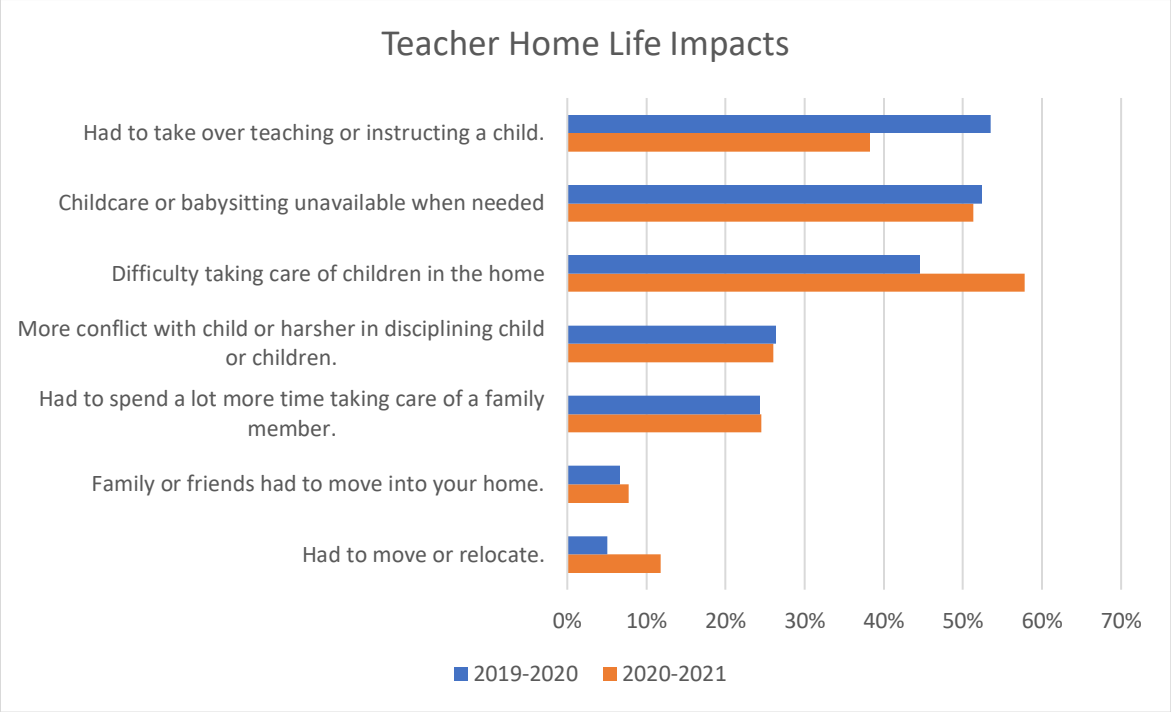
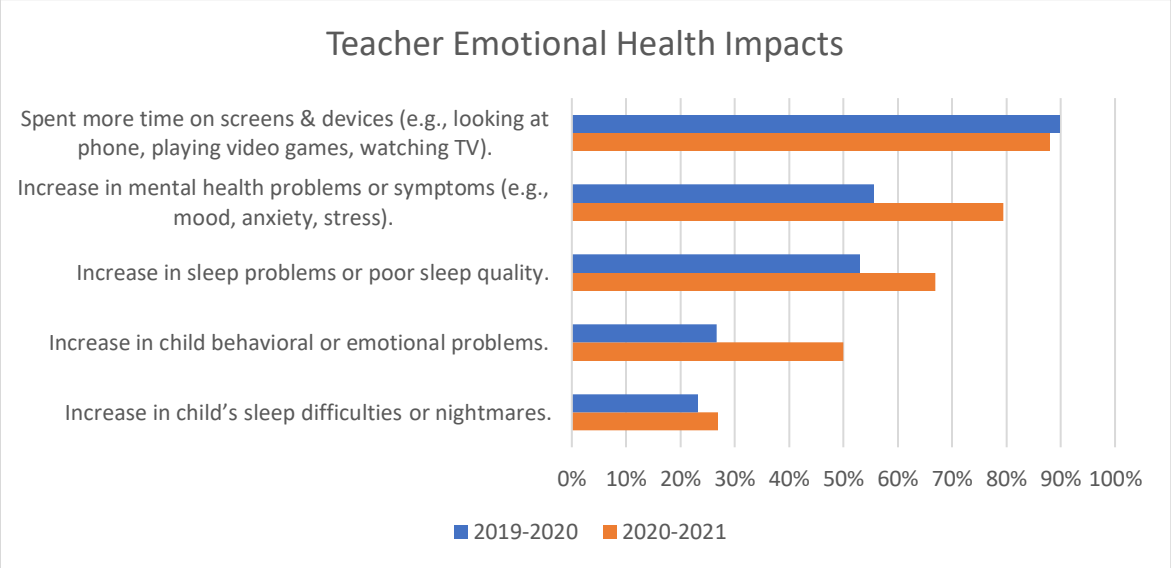


Figure 8
Teacher Emotional Health Impacts



Shifting to teachers' reports of students' performance, the following graphs depict first, second, and third grade teachers' views of how children were progressing in reading and in math. What is notable is

that the percentage of students who had “not yet” begun to develop grade-level skills in third grade, for both reading and math, is higher than in the other grades. And, in third grade, a much lower percentage of students had “reached proficiency” on grade level skills, compared to the other two grades.

Figure 9
Teachers’ Rating of Student Language/Literacy Skills Across Time

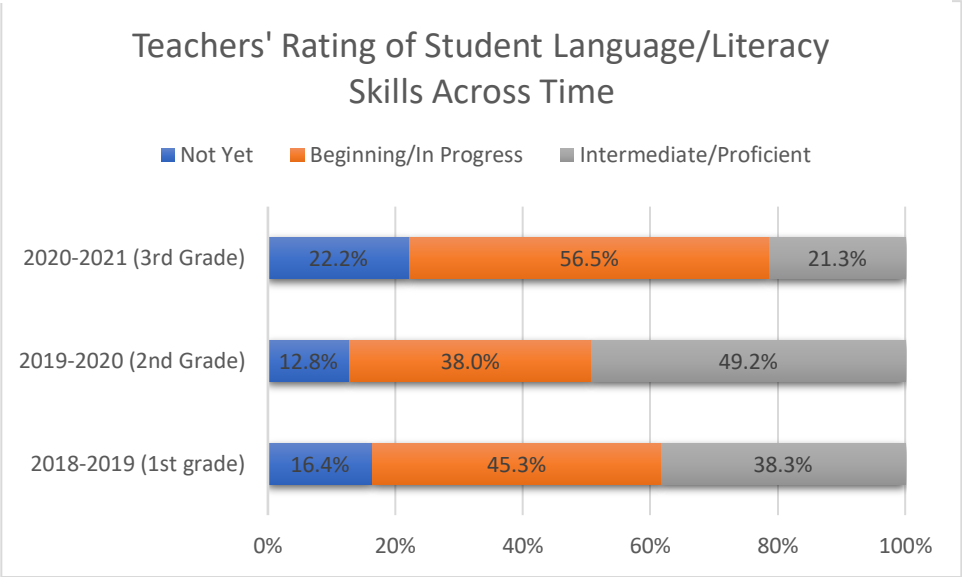
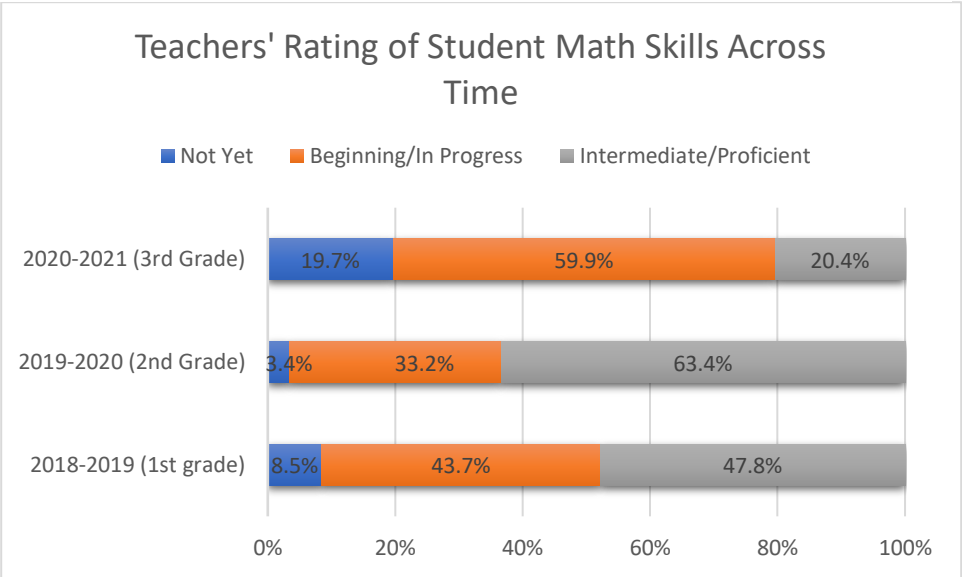
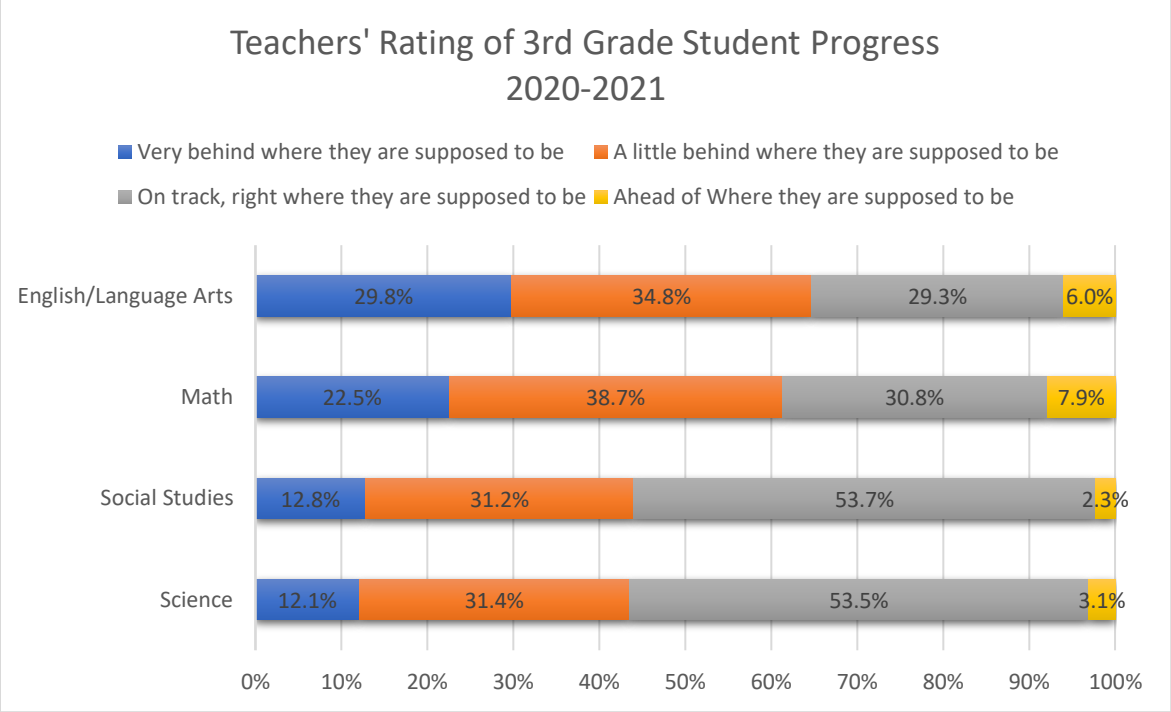


Figure 10
Teachers’ Rating of Student Math Skills Across Time



Further, in the table below, we summarize third grade teachers' responses to a question about students' general academic progress. Results indicate teachers' concerns that roughly 25% of students were "very behind" in reading and math, with another 35% or so described as "a little behind." They also described concerns related to family availability to help with school (45% of third graders), lack of internet access (20% grades 2 and 3), and economic insecurity (15% grades 2 and 3).

Figure 11
Teachers' Rating of 3rd Grade Student Progress, 2020-2021



Finally, we asked third grade students directly about their experiences in school and with COVID. In general, they report teachers provided an educational environment that was supportive emotionally and instructionally and was well organized. However, they also felt a lack of confidence about their learning/academic self-esteem (average of 2.4 on a 5 point scale) and a modest sense of alienation (2.3 on a 5 point scale) while also noting that teachers were generally supportive academically and personally (3.8 on a 4 point scale).

What do these results imply for policy or practice?

The results for students' academic performance are not surprising. Instruction was severely disrupted in terms of modality, curricular opportunities, and forms of engagement. For many students even basic exposure to instruction was disrupted. The longitudinal trend, which showed significant growth relative to national norms prior to COVID, was of declining performance across the COVID period. As the students left third grade, on average, they were performing below national norms in reading and math. These results reflect the larger pattern of missed instructional opportunities that has been reported in nearly every analysis across the U.S. Two points are noteworthy related to these results.

First, there is little to no evidence that these general declines were worse for students as a function of their race, gender, home language, family income or education, or prior exposure to pre-k. In some sense this suggests that student groups that might have been of even more elevated concern were not differentially impacted by COVID. pre-k Second, the skills that appear to have been most impacted by

COVID are those most sensitive to instruction and these students showed significantly greater progress on these skills (relative to national norms) pre-COVID. This suggests that student progress in these skills is sensitive to the school division's instructional program, which may forecast a recovery to typical rates of progress after some period of time.

The findings on students' and teachers' emotional health, not surprisingly, point out their sense of stress and vulnerability. The pandemic shook students' academic confidence and sense of connection with others; while for teachers the demands of parenting and educating at home added to the demands of teaching virtually, leading to a notable sense of emotional exhaustion during the recent academic year.

These results are not prescriptive in the sense that they can directly inform policy or practice. Rather, they strongly suggest that although COVID's disruptions of the instructional and educational program also disrupted student progress, student performance is sensitive to the instructional and educational program and may indeed recover under the right circumstances. Large variations in children's learning experiences during the 2020-2021 school year will yield vastly different skill levels within classrooms next year. As a result, many students will need tailored academic and social emotional support across the school-year to recover from disrupted formal learning and to continue building new skills. Although the results do not specify what those circumstances should be, we present a set of recommendations and guidelines for educational programming post-COVID that are the best practice approaches recommended by professionals.

Large variations in children's learning experiences during the 2020-2021 school year will yield vastly different skill levels within classrooms next year. As a result, many students will need tailored academic and social-emotional support across the school year to recover from disrupted formal learning and to continue building new skills.

Make a Recovery Plan

- This coming school-year, accelerating student progress while attending to students' social-emotional needs will require divisions and schools to be proactive in determining how they can meet each student's needs. Having publicly available and agreed upon shorter (e.g., 3 months) and longer term (e.g., 2021-2022 school year) plans will help to provide a road map and common goals for school administrators and teachers.
- Emerging evidence from research groups that examined student performance across higher and lower risk students indicates that pandemic disruptions to schooling have had disproportionate negative consequences for low-income students, English Language Learners (ELLs), and Black and Brown students. Many children from low-income families did not have access to key supports for distance learning, such as a quiet work space or reliable internet access, making it harder for these children to learn from home (Dorn et al., 2020). Low-income, Black, and immigrant families were hardest hit by COVID in terms of health (morbidity and mortality), income, and housing stability. Recovery plans should include a strong focus on ensuring educational equity and supports for those hardest hit by disparities in supports and educational experiences.

Support teachers' and administrators' emotional health and well-being

- Recovery plans should include plans for not only supporting students, but also supporting teachers and administrators. Data from this project and others suggest that the pandemic increased the complexity and stress of educators' and administrators' jobs in ways that impacted their mental health and well-being. Consider ways to support teachers through professional development opportunities, additional staffing in classrooms (e.g., assistant

teachers, tutors), and by offering teachers and administrators ways to provide feedback and suggestions about how to support them.

Place Extra Weight on Students' Social-Emotional Well-Being and Consider Approaches to Support Mental Health

- The COVID-19 pandemic has had a traumatic impact on many children's lives. Parents and caregivers lost their jobs, students lost connections to their peers, and students lost loved ones. While we recognize that COVID-19 has had a traumatic impact, children are resilient and the resolve of educators to support students' social-emotional skills will help them grow and recover. To support children's socio-emotional development and mental health, educators should be provided with resources such as additional mental health supports, additional school counselors, and training in trauma-informed approaches (Weiland et al., 2021).

Focus on Relationships

- Students' relationships with their teachers are foundational to students' academic and social-emotional adjustment. Students' early relationships with teachers can have long-term developmental impacts on their social-emotional competence. Findings throughout this report highlight the importance that teacher-student relationships can play in supporting students' well-being. Last year, teachers reported that their relationships with students were negatively impacted as a result of the pandemic. Teachers should spend time establishing warm and close relationships with students at the beginning of the school-year.
- Students in virtual settings did not have a chance to establish peer relationships in the same ways that they would in a typical school-year. As students enter the later elementary and middle-school grades, peer relationships serve an even more important role with respect to their influence on students' social-emotional development, learning, and well-being. In the late elementary grades, failure to get along with peers is related to an increasing likelihood of academic failure (Greene et al., 1997; Mikami & Hinshaw, 2006). Teachers should place a special emphasis on supporting peer interactions and relationships and pay close attention to students who seem to be having difficulty with social adjustment.

Use Data to Inform Instructional Decisions

- Divisions, schools, and teachers should use data to help inform instructional decisions. Formative and summative assessment data from the 2020-2021 school-year should be used to plan instruction at the group and individual student levels. Plans should be developed for data sharing across grade levels.
- As new content is introduced throughout the school year, teachers should use formative assessments to identify and diagnose unfinished learning at grade level and/or to assess understanding of prerequisite knowledge that may be needed to access grade level content. Student gaps in knowledge and skills exist for a variety of reasons and formative assessments can be used to help get learning back on track.

Differentiate Instruction to Meet Students' Individual Needs

- Teachers need support to differentiate their instruction in order to support each student's learning. Small group instruction and just-in-time intervention can be used to help accelerate student learning.
- High-quality, evidence-based, curricula can be used to provide guidance around differentiating instruction. Additionally, the Virginia Department of Education has developed resources to support teachers in planning for appropriate learning experiences (https://www.doe.virginia.gov/instruction/c4l/virginia-learns-anywhere.shtml).

Partner with Families to Support Students

- Continuing to facilitate home-school connections is going to be critical to the recovery phase of the pandemic. Data from this project and others suggest that the pandemic may have opened up new opportunities for connecting with families that were less-widely used pre-pandemic (e.g., parent-teacher conferences over Zoom rather than in-person). It will be important for the division to continue to innovate on ways to connect with families, and to collect information about the effectiveness of new approaches.
- For some students and families, virtual learning offered advantages (e.g., fewer microagressions and bullying, fewer distractions, self-paced learning; Fleming, 2020). Administrators and teachers should work to understand what advantages virtual learning offered to students and families and acknowledge that returning to in-person learning might be difficult for some students. Administrators and teachers can also think about how to try to incorporate some aspects of virtual learning (e.g., offering more flexible and independent learning opportunities) into in-person learning experiences.

REFERENCES

Fleming, N. (2020, April 24). *Why are some kids thriving during remote learning?* Edutopia. https://www.edutopia.org/article/why-are-some-kids-thriving-during-remote-learning

Greene, R. W., Biederman, J., Faraone, S. V., Sienna, M., & Garcia-Jetton, J. (1997). Adolescent outcome of boys with attention-deficit/hyperactivity disorder and social disability: Results from a 4-year longitudinal follow-up study. *Journal of Consulting and Clinical Psychology*, *65*, 758–767.

Mikami, A. Y. and Hinshaw, S. P. (2006). Resilient adolescent adjustment among girls: Buffers of childhood peer rejection and attention-deficit/hyperactivity disorder. *Journal of Abnormal Child Psychology*, *34*, 825–839.

Weiland, C., Greenberg, E., Bassok, D., Markowitz, A., Guerrero Rosada, P., Luetmer, G., Abenavoli, R., Gomez, C., Johnson, A., Jones-Harden, B., Maier, M., McCormick, M., Morris, P., Nores, M., Phillips, D., & Snow, C. (2021). *Historic crisis, historic opportunity: Using evidence to mitigate the effects of the COVID-19 crisis on young children and early care and education programs*. https://edpolicy.umich.edu/files/EPI-UI-Covid%20Synthesis%20Brief%20June%202021.pdf

APPENDIX

Summaries and abstracts of published papers from FP3, October 2021
Link to Box folder with all available publications:
https://virginia.box.com/s/pdj36rd5xdvyyh9plyreue9nybosgjzp

Starting Early: The Benefits of Attending Early Childhood Education Programs at Age 3 (Ansari, A., Pianta, R.C., Whittaker, J.V., Vitiello, V. E., & Ruzek, E. A., 2019). This investigation considered the short-term benefits of early education participation at age 3 for 1,213 children enrolled in pre-k. Children participating in formal early childhood programs at the age of 3 entered pre-k demonstrating stronger academic skills and less optimal social behavior than their peers with no earlier educational experience. These academic benefits were short-lived and did not persist through the end of pre-k, in large part because children who did not attend these programs at age 3 caught-up with their classmates who did. Roughly a quarter of this convergence in academics was attributed to children's experiences in pre-k classrooms. *Starting early article link*

Enrollment in Public-prekindergarten and School Readiness Skills at Kindergarten Entry: Differential Associations by Home Language, Income, and Program Characteristics. (Ansari, A., Pianta, R. C., Whittaker, J. E., Vitiello, V., Ruzek, E., & DeCoster, J., 2021). The study examined differences in school readiness skills in the fall of kindergarten between pre-k attendees and non-attenders (*n* = 2,581) among children in a large, diverse county. Also considered was the extent to which skills associated with pre-k enrollment varied as a function of children's background characteristics and features of their pre-k program. Results revealed pre-k attenders demonstrated better academic and executive function skills in the first months of kindergarten than non-attenders; no consistent differences were detected for teachers' reports of children's socioemotional adjustment. Differences in academic skills and self-regulation associated with attendance in pre-k were largest for dual language learners and children from the lowest-income families. Children enrolled in private pre-k programs demonstrated less optimal socioemotional skills at kindergarten entry. *Enrollment in public-prekindergarten article link*

Persistence and convergence: The end of kindergarten outcomes of pre-k graduates and their non-attending peers. (Ansari, A., Pianta, R. C., Whittaker, J. E., Vitiello, V., & Ruzek, E., 2020). The present investigation examined the benefits of pre-k through the end of kindergarten for children from low-income homes who lived in a large and diverse county (*n* = 2,581) as well as factors associated with a reduction in benefits during the kindergarten year. Results revealed that pre-k graduates outperformed non-attenders in the areas of achievement and executive functioning skills at the end of kindergarten, and also that the benefits of pre-k at the start of the year diminished by a little over half. This convergence between groups' performance was largest for more constrained skills, such as letter-word identification, and was attributed to the fact that non-attenders made greater gains in kindergarten as compared with graduates of pre-k. Importantly, convergence in the groups' performance in kindergarten was not attributed to pre-k children's classroom experiences in kindergarten. Convergence was, however, attributable to pre-existing individual differences and there was support for the notion that even though children's skills are susceptible to improvement as a result of pre-k, their longer-term outcomes are likely to be impacted by factors that are outside the scope of early schooling. *Persistence and convergence article link*

Preschool Teachers' Emotional Exhaustion in Relation to Classroom Instruction and Teacher-child Interactions (Ansari, A., Pianta, R. C., Whittaker, J. V., Vitiello, V.E., & Ruzek, E.A., 2020). The present investigation examined the links between preschool teachers' self-reported emotional exhaustion (n = 117) with the quality of their classroom interactions and the dosage and rigor of their instruction. Research Findings: Although teachers' experience of emotional exhaustion was not associated with the

dosage and rigor of instruction, more emotionally exhausted teachers demonstrated lower quality interactions with children in their classroom. Additionally, there was some evidence to suggest that the association between emotional exhaustion and preschool teachers' classroom interactions was dependent on their years of education, such that the relation between teachers' education and their interactions with children was reduced when they described themselves as more emotionally exhausted. Practice or Policy: Taken together, these results suggest that supporting preschool teachers' well-being, and in particular helping minimize emotional exhaustion, may be a beneficial strategy to foster a higher quality classroom environment. *Preschool teachers' emotional exhaustion article link*

Does the Timing of Kindergarten Absences Matter for Children's Early School Success? School Psychology (Ansari, A., Pianta, R. C., Whittaker, J. V., Vitiello, V.E., Ruzek, E.A., & Zhang, J., 2021). Although we know that children who are more frequently absent from school do less well academically, we know little about whether absences matter for other domains of development and whether the timing of their absences matter. In order to address these gaps in knowledge, we examined the experiences of 1,131 kindergartners (64% Latino, 7% Black, 13% Asian/other, 12% White) from a mid-Atlantic state. Covariate-adjusted regression analyses showed that children who missed school more frequently did less well in terms of their academic achievement and executive function skills both in kindergarten and through the end of first grade. Importantly, however, there were no consistent differences in children's outcomes as a function of whether their absences occurred in the fall as compared with spring. *Does the timing of kindergarten article link*

The Classroom Relational Environment and Children's Early Development in Preschool. Social Development (Nguyen, T., Ansari, A., Pianta, R.C., Whittaker, J.V., Vitiello, V.E., & Ruzek, E., 2020). This present study considered the ways in which interactional quality in the classroom and teacher–child relationships independently and synergistically shaped the early academic, social-behavioral, and executive function out- comes of 1,498 preschoolers from low-income families from a large, culturally, and linguistically diverse county. The findings revealed that children who had closer and less conflictual relationships with their teachers demonstrated greater improvements in all domains of school readiness across the preschool year. Moreover, preschool attendees did not reap the maximum academic benefits from high quality classroom environments unless they also had high-quality individual relationships with their teachers. Implications for policy and practice are discussed. *Classroom relational environment article link*

Cumulative experience of educational assets from preschool through first grade and the social-emotional well-being of English and Spanish speaking children. (Nguyen, T., Hofkens, T., Pianta, R.C., Whittaker, J.V., Vitiello, V.E., & Ruzek, E. A., 2020). Children's social and emotional experiences influence brain development and are therefore central to outcomes of behavior, learning, and health. The current study examined associations between children's cumulative educational assets in the early grades and end of first grade social-emotional outcomes for children from English and Spanish speaking families. Data were drawn from a sample of preschool-aged children (N=1,132) from low-income families in a large, culturally, and linguistically diverse sample followed annually from pre-kindergarten through first grade. A multi-method, multi-informant approach was used to assess predictor and outcome variables. Results indicate overall that cumulative experiences of educational assets (teacher-student interaction and relationships, parent-teacher communication) were associated with indicators of children's social-emotional well-being and matter in similar ways for children from English and Spanish speaking families. However, there was some evidence of significant interactions of Spanish as a home language with cumulative educational assets on children's conduct problems and feelings about peers. *Cumulative experience article link*

Classroom Process and Practices in Public Pre-k Programs: Describing and Predicting Educational Opportunities in the Early Learning Sector (Pianta, R. C., Whittaker, J., Vitiello, V., Ansari, A. & Ruzek, E.,

2018). This study used data from the 117 pre-k classrooms to describe teacher practices, student engagement, classroom activity settings and exposure to instructional content. Pre-k students spent the largest share of the day in teacher-directed whole-group instruction and in free play and very little time in individual and small-group settings. A third of the day was dedicated to academic activities, another third to routines, transitions, and meals and there were few opportunities for socioemotional learning. No differences were detected across school- and community-based programs; however, more educated and experienced teachers spent more time teaching and in teacher- directed instruction.

Measuring and improving quality in early care and education. (Pianta, R. C., Hamre, B.K., Nguyen, T., 2020). For decades, research on the quality of early care and education has helped identify features of those settings that play some role in promoting children's learning and development. We offer this brief commentary as a framework for considering not only the topic and papers in this special issue, but more importantly, as a motivating heuristic for next generation of research and development on the assessment and improvement of measuring quality. First, we present some observations on the contemporary debates about quality, including a discussion of effect sizes, causality, conducting, analyses, and bringing measures to scale. We then argue that making progress towards measuring quality requires the field to think carefully about the focus of assessment, tradeoffs between reliability and validity, the diversity of the classroom and teachers, and scientific and technical advances. Absent these considerations, individually and in terms of their integrative links, discussions or presentations of new and improved measures of quality will not help advance the understanding and appropriate use of such instruments. *Measuring and improving quality article link*

Children's school readiness skills across the pre-k year: Associations with teacher-student interactions, teacher practices, and exposure to academic content. (Pianta, R. C. Whittaker, J. E., Vitiello, V., Ruzek, E., Ansari, A., Hofkens, T., & DeCoster, J., 2020). This study reports associations between directly observed classroom processes and school readiness skills across the academic year for 1,498 students enrolled in public pre-k. In models adjusting for student and family covariates, evidence was detected for the separate, and on occasion additive, effect of classroom process features on children's gains—overall quality of teacher-student interaction, teachers' direct involvement in educational activities, the challenge of those activities, and exposure to academic content. Student performance appeared to increase modestly when classrooms were more educationally focused and structured, and teachers were supportive and responsive as they were involved with students. *Children's school readiness article link*

Using self report surveys to measure PreK children's academic orientations: A psychometric evaluation. (Ruzek, E., Jirout, J., Schenke, K., Vitiello, V., Whittaker, J. V., & Pianta, R. C., 2019). Using reports from 1,102 of the pre-k attender sample, this study evaluated the reliability and validity of a new measure of young students' academic orientations, including their feelings about their teacher, school enjoyment, growth mindset, and perceived academic competence. Psychometric properties were evaluated using item factor analysis, invariance testing of the scale across important demographic groups, examination of item thresholds, and correlations of the scales with teacher-reported measures. Measures adhered to the hypothesized factor structure, were invariant across diverse demographic groups, and correlated with teacher-reported outcomes in hypothesized ways. Results from the psychometric analysis are being used to track these student outcomes annually with regular updates of the scale for developmental and educational shifts. *Using self report surveys article link*

Alignment and Misalignment of Classroom Experiences from Pre-k to Kindergarten. (Vitiello, V. E., Pianta, R. C., Whittaker, J. E., & Ruzek, E, 2019). It has been suggested that the misalignment of instructional experience is one factor contributing to the fade-out of pre-k effects. This study examined mis/alignment of classroom processes across pre-k into kindergarten for 295 public kindergarten classrooms and the 117 public pre-k feeder classrooms. Analyses revealed aspects of misalignment into

kindergarten, including fewer ethnically and linguistically diverse teachers, more time in teacher-structured activities, and less effective teacher-student interactions. Potential alignment was indicated in areas such as more time in kindergarten spent on academics; progression toward more advanced literacy and math content from pre-k to kindergarten; and teachers across both grades reported similarly child-centered ideas about children. The present paper is one of the few empirical reports of alignment. Because the field lacks a robust empirical base for defining "good" alignment, these descriptive results have implications for future, predictive research. *Alignment and misalignment article link*

The transition from pre-k to kindergarten: Parent, teacher, and administrator perspectives. (Vitiello, V. E., Basuel, N. K. N., White, E. S., Whittaker, J. E., Ruzek, E., & Pianta, R. C., 2020). The present study aimed to identify commonalities and points of divergence in the ways that parents, teachers, and administrators characterize children's transition from public pre-k into kindergarten within a large, diverse school district. A wide range of transition practices were in use across the district, including practices designed to educate parents, connect pre-k and kindergarten stakeholders, train teachers, and provide transition experiences to children. Transition experiences were not uniform across programs, though. Using a consensual qualitative coding approach, we identified three crosscutting themes related to pre-k transitions: (1) pre-k programs and staff invest significant time and effort in supporting successful transitions; (2) preschool programs' school readiness efforts often center on the "mechanics" of the transition, like completing paperwork and teaching children basic school behaviors; and (3) there are concerns about a lack of alignment between pre-k and kindergarten in terms of readiness, behavioral expectations, and learning goals. *Transition from pre-k article link*