Georgia's Pre-K Evaluation

Study of Language Development in Pre-K

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The University of North Carolina at Chapel Hill

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Executive Summary

This study builds on previous evaluations of the efficacy of Georgia's Pre-K program by taking at deeper look at language and literacy development in during the 2022-23 school year. Unlike earlier studies that included broader developmental domains (e.g., math and social-emotional skills), this study focused specifically on language and literacy, using more targeted measures to understand what aspects of the program promote growth in these areas. We also used the Classroom Assessment Scoring System (CLASS) 2nd Edition to measure the quality of teacher-child interactions, and measured classroom language and literacy practices using the Early Language and Literacy Classroom Observation (ELLCO). A statewide random sample of 146 Georgia's Pre-K classrooms was observed and 812 randomly selected children within those classrooms were assessed using validated assessments of language and early literacy.

Key Findings

Classroom Quality

- Like previous research, Georgia's Pre-K CLASS 2nd Edition Emotional Support and Classroom Organization scores were high and consistent with other studies of state pre-K. Instructional Support scores were low-moderate.
- Teachers with more years of teaching experience (birth-five years) engaged in higher quality teacher-child interactions.
- Classrooms housed in public schools spent more time on literacy activities compared to those located in private center-based settings.
- Sites with a higher proportion of children with individualized education plans (IEPs) demonstrated significantly higher CLASS Instructional Support scores, indicating that inclusive classroom contexts may be associated with more frequent and higher-quality instructional interactions.

Child Outcomes

- Children in Georgia's Pre-K classrooms demonstrated age-appropriate growth in language skills over the course of the pre-K year and fall and spring scores in the typical range, but lower than observed in previous studies.
- Children in classrooms with higher-quality language and literacy practices exhibited greater-than-expected gains in vocabulary and phonological awareness, averaging nearly 2 points.

- Children enrolled in Georgia's Pre-K classrooms located in public schools showed slightly greater growth in vocabulary knowledge compared to those in other settings.
- While language growth remained age-appropriate, it was comparatively smaller for dual language learners than for monolingual peers, for African American/Black children than for White children, for female children than for male children, and for children whose caregivers had lower education levels compared to those with higher education levels.

Summary

Georgia's Pre-K Program continues to support age-appropriate language development, particularly in vocabulary and phonological awareness. This study adds nuance to previous findings by:

- Using more specific language and literacy measures.
- Highlighting moderators such as teacher experience, setting (public vs. private), and child characteristics (DLL status, race/ethnicity, caregiver education).
- Contextualizing results in light of post-pandemic recovery, with lower entry scores but continued growth.

Importantly, better ELLCO scale scores were associated with meaningful gains in children's vocabulary knowledge and phonological awareness. Teachers requested professional development and materials to improve their language and literacy practices and environment and to better support dual language learners, children with disabilities, and children from families with lower education attainment.

Introduction

The development of oral language skills during preschool (pre-K) sets the stage for children to achieve reading proficiency in elementary school (Language & Reading Research Consortium & Chiu, 2018). Improving children's language development is a focus of early childhood education programs, including Georgia's Pre-K Program, as part of the larger goal of supporting young children's skills prior to Kindergarten entry. Previous research studies of Georgia's Pre-K Program have found that children demonstrated substantial gains in oral language skills while participating in the program (Peisner-Feinberg et al., 2015). Another study that compared Georgia's Pre-K participants to children who did not attend the program found that participants demonstrated larger improvements in language skills related to phonological awareness and phonemic awareness (Peisner-Feinberg et al., 2014). The current study sought to explore whether there are specific features of Georgia's Pre-K program that uniquely promote children's development of language skills.

Language development is nurtured in pre-K classrooms where children experience elements of complex language use. Complex language includes varied vocabulary use, responsive feedback, and engagement in conversations that require back and forth communication between children, their teachers, and their peers. The use of complex language strategies is most effective when they are embedded within high-quality interactions with teachers and where enriched resources for learning are available (Burchinal, Magnuson, Powell, & Soliday Hong, 2015). High-quality interactions between pre-K teachers and children are characterized by warmth and sensitivity within organized and efficiently organized classroom activities, environments, and routines (Burchinal et al., 2000; Burchinal et al., 2008; Howes et al., 2008; Mashburn et al., 2008; Penno et al., 2002).

A study of Georgia's Pre-K during the 2013-14 school year examined the quality of teacher-child interactions, global classroom quality, and the quality of the language and literacy environment in Georgia's Pre-K classrooms (Peisner-Feinberg et al., 2015). This study found that these classroom features were related to aspects of literacy, math, and social-emotional development, but none of those features were related to differences in children's development of oral language skills among children enrolled in Georgia's Pre-K. These findings prompted a deeper dive into the study of classroom features and teacher engagement that support the language development of children participating in Georgia's Pre-K Program.

Study Goals and Research Questions

This study aims to address the following questions:

What pre-K practices and contextual factors support children's language development in Georgia's Pre-K classrooms?

Research suggests that the quality of teacher-child interactions may be associated with slight differences in children's oral language outcomes (Soliday Hong et al., 2019). The degree to which teachers speak to children overall and support and sustain multi-turn conversations are important aspects of teacher-child interactions that support the pragmatic use of language and, to a smaller degree, vocabulary knowledge (Adamson et al., 2004; Cabell et al., 2015; Justice at al., 2020). The modest effects observed in language development may be explained by limited attention to less frequent but impactful instructional supports. These include explicit instruction about the meaning of words during whole- and small-group activities (Dwyer & Harbraugh, 2020; Howes et al., 2008), as well as the use of materials that extend learning, such as elaborating on content found in books (Barnes & Dickinson, 2016). Finally, within high-quality pre-K programs like Georgia's Pre-K, many teachers are rated in the high range of these measures and there are few differences in the language interactions that children experience from one classroom to the next. This may suggest that measurement of additional classroom practices and features supportive of language development may be warranted.

In this study, in addition to measuring general teacher-child interactions using the Classroom Assessment Scoring System (CLASS), we used the Early Language and Literacy Classroom Observation (ELLCO) tool to measure classroom language and literacy practices and supports with five subscales: Classroom Structure, Curriculum, Language Environment, Books and Book Reading, and Print and Early Writing. We also asked teachers to respond to the open-ended question, "What is working well with supporting children's language development in your classroom? What other language development support or resources do you wish that you had?"

Are teacher, classroom, and child and family characteristics associated with differences in classroom teacher-child interactions as well as language and literacy practices and supports?

Pre-K classroom quality is often characterized by high-quality interactions between teachers and children, and there are characteristics of teachers that often influence the interactions they have with children. For example, teacher education levels and individual teacher beliefs about literacy instruction have been found to be related to gains in children's learning (Soliday Hong et al., 2019; Lynch & Owston, 2015). In this study, the teacher characteristics we examined in relation to classroom quality were teacher education levels and years of experience.

In addition to teacher characteristics, we also examined variation in classroom quality related to program characteristics, such as whether the Georgia's Pre-K classroom was in a public school or private center-based setting. In previous studies of Georgia's Pre-K program, children who attended pre-K in a public-school setting were more likely to score lower on language and literacy measures at entry to Pre-K but made greater gains during the pre-K year compared to children who attended in a private program (Peisner-Feinberg et al., 2014). The same study also compared classroom quality in public settings and private settings, finding that classrooms in private settings scored higher in general classroom quality.

The characteristics of the children and families within a classroom can also influence classroom practices that promote language development (Justice et al., 2014; Jiang et al., 2023). In Georgia's Pre-K, children in classrooms with a higher proportion of Dual-Language Learners made greater expressive vocabulary gains, suggesting that a more explicit focus on vocabulary instruction may have benefitted all children's oral language skills (Peisner-Feinberg et al., 2015). Another study indicates that children made larger gains in language development in classrooms where there were higher levels of socioeconomic status among the families in a classroom, regardless of individual socioeconomic status of the child's family (Reid & Ready, 2013). In this study, we examined child characteristics like dual language learner status, child gender, race/ethnicity, and family socioeconomic status.

Is there variability across rural versus urban counties in classroom teacher-child interactions as well as language and literacy practices and supports?

Research suggests that programs in rural and urban communities have different effects on children's language development. For example, Head Start programs

located in urban areas are associated with increased receptive vocabulary scores whereas Head Start in rural areas are associated with increased oral comprehension (McCoy et al., 2016). We sought to understand whether teachers' practices differed in rural and urban classrooms in Georgia's Pre-K which may account for differences in children's language outcomes.

Summary of Methods

In the following sections, we outline the design of the study, the measures used, and the results. Please note that the figures are in the body of this report and the more detailed tables are in the Appendix.

The study research team selected 150 Georgia's Pre-K classrooms at random to participate in the study. Factors such as geographic regions were taken into consideration to ensure that the sample was representative of Georgia's Pre-K classrooms statewide. The final sample was 146 classrooms, accounting for classrooms where the teacher was unable or declined to participate in the study. We obtained permissions and local IRB approvals from the school district oversight offices as needed and obtained agreement to participate in the study from the site director or principal and participating teachers. Schools were located throughout the state of Georgia and included both rural and urban areas.

Bright from the Start: Georgia Department of Early Care and Learning (DECAL) contacted all Georgia superintendents and Georgia's Pre-K program directors to introduce the UNC research team and this study; however, DECAL was not informed on which classrooms were selected for the study.

Teachers distributed child assessment permission forms to all parents/guardians in their pre-K classrooms. From all returned permission forms, four to six children per classroom were randomly selected for inclusion in the study (six children was the goal, but in some classrooms fewer than six parent/guardian permission forms were returned). 58% of assessed children's parents/guardians completed a family survey (472/812) and 90.41% of teachers completed a teacher survey (132/146). Two classrooms had teachers that changed mid-year.

Classroom observations were conducted mid-year (January-March of 2023) by a professional data collection team who were trained to maintain reliability standards throughout data collection. Reliability scores exceeded published minimum standards for each study measure. All data collectors also met the inter-rater reliability criteria recommended by the CLASS measure developers (i.e., within-one-

point agreement on > 80% of dimension scores). All data collectors also met the inter-rater reliability criteria recommended by the ELLCO measure developers prior to gathering data in classrooms (i.e., Cohen's Kappa > 0.70).

The data collection team conducted ELLCO and CLASS observations of 145 of the 146 Pre-K classrooms (one classroom was not observed due to teacher refusal). Additionally, 146 classrooms and 812 children were visited by the data collection team who conducted individual child assessments in the fall (late October-mid-January) and spring (late March-mid-May) during 2022-2023. The assessments covered child language and literacy proficiency. In addition, center/school-level administrative pre-K data were utilized.

Measures

Classroom Observations

Two measures of classroom quality and language and literacy supports were collected through classroom observations in the winter of the pre-K year, the Classroom Assessment Scoring System (CLASS, 2nd Edition), and the Early Language and Literacy Classroom Observation Pre-K. A description of these measures is included below.

Classroom Assessment Scoring System. Preschool classroom teachers were observed to examine the degree to which teacher-child interactions were positive, language rich, and the classrooms were well-organized using the Classroom Assessment Scoring System (CLASS, 2023, 2nd Edition: Pre-K–3rd). Three domains of the CLASS were used in this study including: Emotional Support, Classroom Organization, and Instructional Support. Domain scores range from 1-7 (a higher score reflecting higher-quality practices). Each CLASS domain score was calculated as an average of dimension scores collected during each of five 30-minute blocks of observation and then averaged across cycles. Each cycle included 20 minutes of observation and 10 minutes of coding. We also documented cycles in which meaningful literacy activities occurred and calculated the percentage of observation cycles that included literacy activities.

Early Language and Literacy Classroom Observation Pre-K. A measure of classroom language and literacy, the Early Language and Literacy Classroom Observation Pre-K (ELLCO-PreK; Smith et al., 2008) tool was used in preschool classrooms. The ELLCO measures aspects of classroom language and literacy environments that are

supportive of language and literacy instructional skill development. The tool has five subscales: Classroom Structure, Curriculum, Language Environment, Books and Book Reading, and Print and Early Writing in addition to a total score that are scored on a scale from low (1) to high (5). There are also two composite scores: General Classroom Environment and Language and Literacy. The ELLCO is scored across the duration of a 2–3-hour observation.

Child Assessments

The child assessment battery was administered to individual children in the fall and spring of pre-K. The battery consisted of four assessments of oral language skills in English that are appropriate for use with children of pre-K age. Standard scores were used with norm-referenced assessments that take into account children's age, so that the mean score of 100 represents expected performance for an average child of a specific age. The first assessment, the *Peabody Picture Vocabulary Test* (PPVT-5; Dunn, 2019), measures receptive language/word knowledge. The remaining three assessments were given from the *Woodcock-Johnson IV Tests of Oral Language* (Schrank et al., 2014). The Picture Vocabulary subtest measures vocabulary skills, including aspects of both receptive and expressive word knowledge. The Sound Awareness subtest measures phonological awareness skills, including rhyming and deletion. The Understanding Directions subtest measures children's ability to listen to and follow Instructions.

Surveys and Administrative Data

Surveys were collected from teachers and families in the fall of the pre-K year. Teacher surveys included questions about their use of language & literacy curriculum(a), teacher training and professional development experiences related to children's language development, years of teaching experience, teaching certification(s), and their comfort level with supporting children's language development. Family surveys included demographic information, such as the child's age as of August 31, 2022, child sex (male, female, other), whether the child had an individualized education plan (IEP), the child's race/ethnicity, the child's first language, whether the child spoke another language at home (dual language learner status), and whether the child had a family history of reading difficulties, spelling difficulties, or both.

Administrative data was shared by DECAL that contained aggregate information about the characteristics of Georgia's Pre-K classrooms, programs, and enrolled children. These existing data included: the proportion of children who were dual

language learners within classrooms and programs, the proportion of children whose family income was at or below the poverty threshold and two-times the poverty threshold for that school year. Program level information included whether the program was located in a rural or urban county, and whether it operated in a public school or private center-based setting.

Sample

Classroom Characteristics

Of the 146 classrooms that participated in the study, 53% were rural classrooms/sites. Classrooms were located throughout Georgia (distribution by administrative region[1] is presented in Table 1 as one indicator of statewide representation). Among the participating classrooms, 45% were located at public school sites (*N* = 65) and 55% were located at private sites (*N* = 81). Classrooms were comprised of approximately 5% dual language learners, 3% children with Individualized Educational Plans (IEP), and 47% of families that were income-eligible for state and federal programs (see Appendix Table 2).

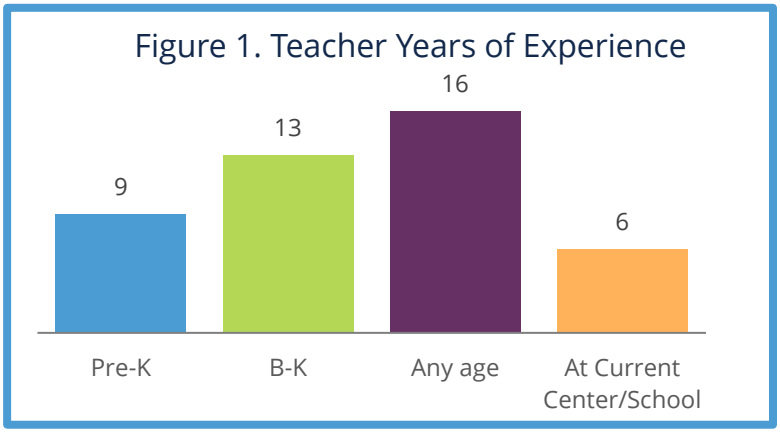
Teacher Characteristics

Table 1. Number of Classrooms and Centers/Schools by Administrative Region

Region	Count
Northeast	24
Northwest	23
Central East	26
Central West	25
Southeast	23
Southwest	25
Total	**146**

[1] Administrative regions are child care resource and referral (CCR&R) regions. A map of the CCR&R regions in Georgia is available here: https://www.decal.ga.gov/ccs/ccrrsystem.aspx.

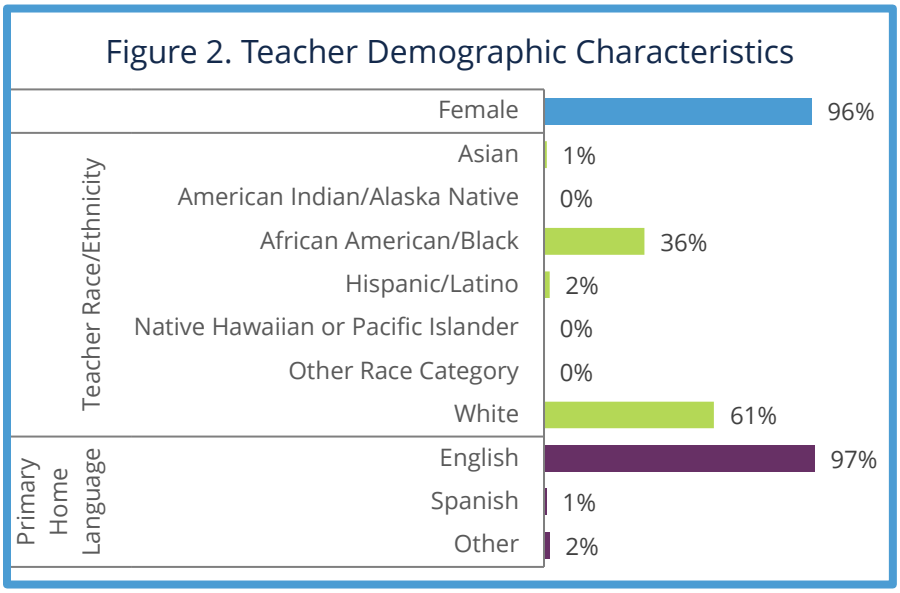
Lead teachers were asked to complete a survey about themselves and their teaching qualifications. Teachers from 132 out of 146 classrooms completed the survey, a response rate of 90.41%. On average, teachers had nine years of experience teaching pre-K children, 13 years of experience teaching children from birth to kindergarten, 16 years of experience teaching children of any age, and six years of experience teaching at their current pre-K center or school (see Figure 1 and Table 3 in the Appendix).



Note. Teacher years of experience by age group (pre-K, birth-kindergarten, any age) and at current center/school.

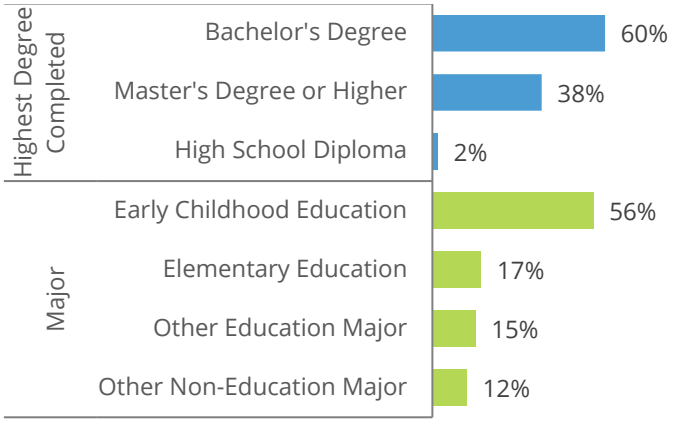
Most teachers identified as female (96%; see Figure 2 and Table 3 in the Appendix). Teachers identified as either African American/Black (36%) or White (61%), with 2% of teachers identifying as Hispanic/Latine, and less than 1% as Asian/Asian American. Most teachers spoke English as their primary home language (97%).

A bachelor's degree or higher in early care and education (ECE) or a related field is required for all lead teachers in Georgia's Pre-Kindergarten Program, with the exception of a small number of teachers grandfathered under earlier rules or those serving under an approved waiver. Teachers without a bachelor's degree in a related field must hold an approved ECE credential. Almost all teachers in this study held a bachelor's degree or higher (98%; Figure 3 and Appendix Table 4). Of those teachers, 60% had a bachelor's degree as their highest degree and 38% had a master's degree or higher as their highest level of education. Most teachers majored in early childhood education



(56%), followed by elementary education (17%), some other type of education major (15%), or a non-education major (12%).

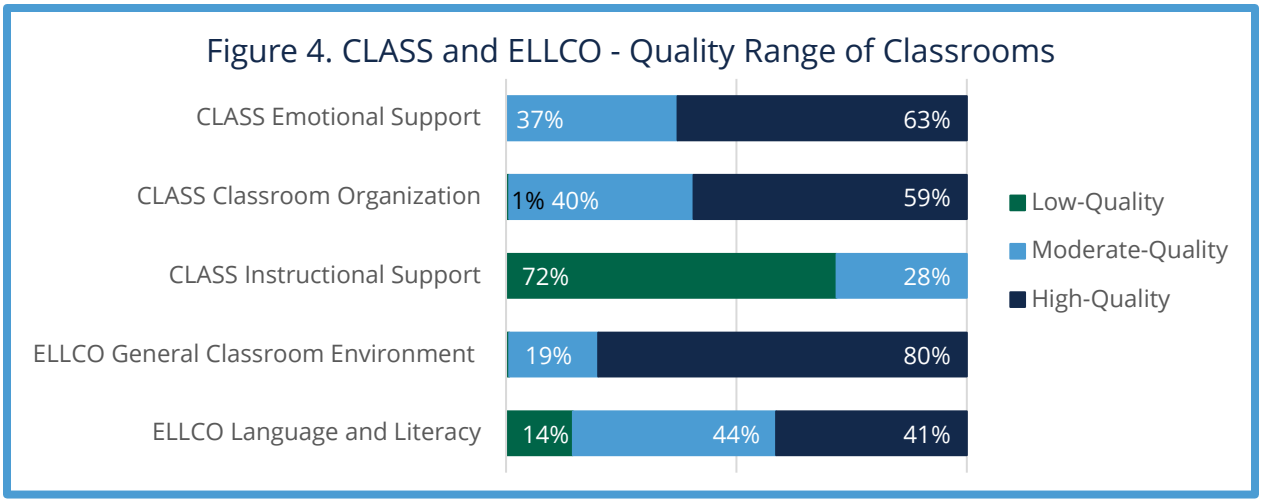
Figure 3. Teacher Qualifications: Education Levels



Classroom Quality

Teacher-child interactions were in the moderate-high-quality range in Georgia's Pre-K classrooms. All classrooms scored in the moderate quality range or above for the domains of CLASS Emotional Support and Classroom Organization, which is a score of 5 or above on a scale of 1 to 7. For teacher-child interactions in the domain of CLASS Instructional Support, Georgia's Pre-K classrooms scored in the low-moderate quality range (mean = 2.58; see Figure 4 and Table 5 in the Appendix), which is defined as a score of 3 on a scale of 1 to 7.

The quality of classroom language and literacy practices and supports were in the high-quality range in Georgia's Pre-K classrooms. 80% of classrooms were rated as being in the high-quality range for the domain of ELLCO General Classroom Environment scores and 85% were in the moderate to high-quality range for the domain of ELLCO Language and Literacy. There was also a high degree of engagement in literacy activities across cycles throughout the morning when classrooms observations were conducted with the CLASS. On average, almost half of the children were observed actively engaged in literacy activities for at least half of each CLASS cycle.



Note. Quality ranges established by the measure developers as 1-2.99 (low), 3-5.99 (moderate), 6-7 (high) for the CLASS, and 1-2.5 (low), 2.51-3.5 (moderate), 3.51-5 (high) for the ELLCO.

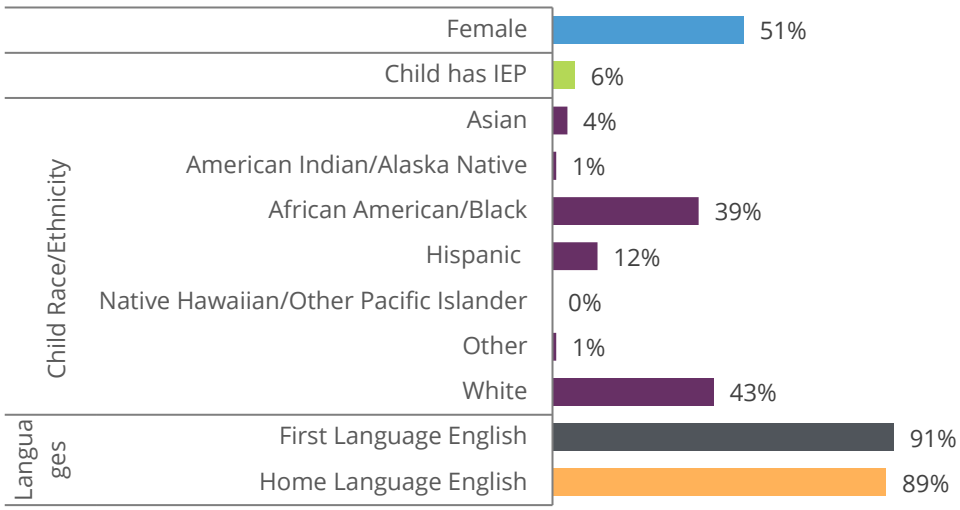
Child and Family Characteristics

812 children received an assessment in the fall and/or spring of their pre-K year (609 were assessed at both time-points, 112 only in the fall, and 91 only in the spring). Six children were randomly selected per classroom from children whose parents/guardians' provided permission for them to participate in the study (all children were selected if six or fewer children had permission to participate by their parent/guardian). If children left the classroom, they were replaced with the next child with consent in random order. On average, children were 4.53 years old in the fall of 2022 and 51% were female (see Figure 5 and Table 6 in the Appendix). These data were collected in response to the family information survey. Below we report summaries of the responses provided by families.

Approximately 6% of students were reported as having an IEP by their parent/guardian, 7% spoke a language other than English as their first language (5% Spanish, 2% other languages) and 9% speak a language other than English in their home, a combined total of 11% dual language learners.

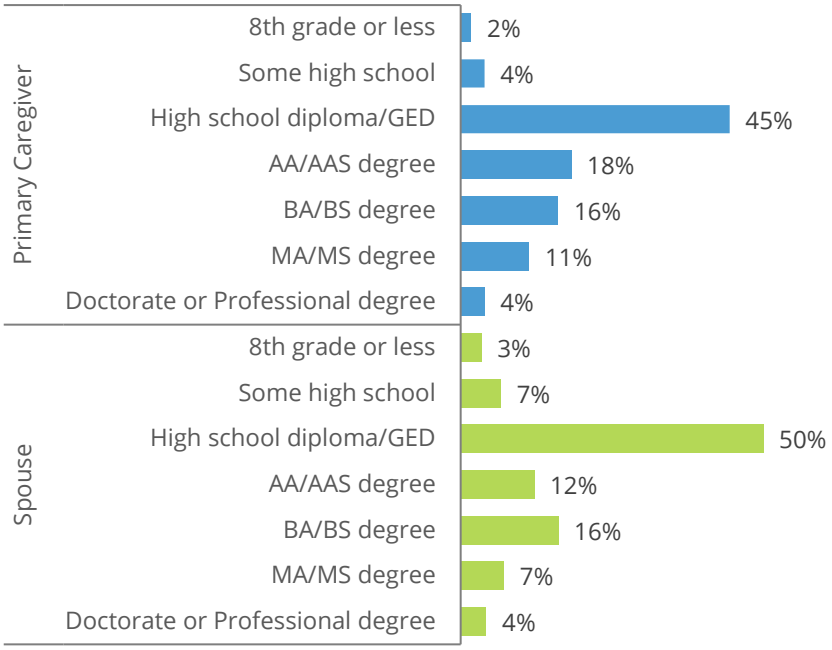
Children's race/ethnicity, as reported by their parent or guardian on a demographic survey, was African American/Black (39%), White (43%), 12% Hispanic/Latine, 4% Asian/Asian American, and less than 1% were multiracial or another race/ethnicity.

Figure 5. Child Demographic Characteristics



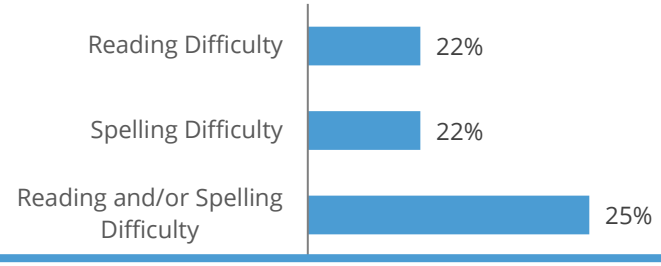
Most parents/guardians had a high-school degree, some college, or AA/AS degree as their highest level of education (see Figure 6 and Table 7 in the Appendix).

Figure 6. Family Demographic Characteristics - Highest Level of Education



One-quarter of children have a family history of reading difficulties, spelling difficulties, or both (see Figure 7 and Table 7). Specifically, families were asked to indicate if the child's biological siblings, parents, or grandparents had a history of trouble with reading and/or spelling (if known). These data reflect a history of difficulty experienced by the child's siblings, parents, and/or grandparents.

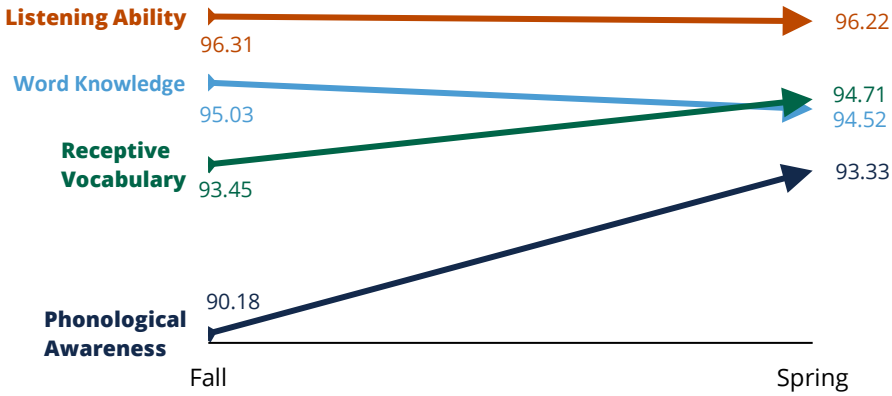
Figure 7. Family History of Reading and/or Spelling Difficulty



Children's Oral Language Skills

Students in Georgia's Pre-K Program scored near the national average on measures of oral language skills across the pre-K year (see Figure 8 and Table 8 in the Appendix). This means that students scored within 15 points of the national average score of 100 for children of the same age.

Figure 8. Fall and Spring Outcomes



Note. Standard scores are displayed with a national average of 100 and standard deviation of 15.

Students demonstrated the largest gains in phonological awareness and receptive vocabulary skills between the fall and spring of the pre-K year. Phonological awareness skills (WJ-4 Sound Awareness) increased by 3 standard score points, on average. Receptive vocabulary skills (PPVT-5) scores increased by slightly more than 1 standard score point, on average.

Students also demonstrated gains in expressive vocabulary/word knowledge skills and working memory for language. The stability of scores between the fall and spring of the pre-K year reflects a rate of growth that was similar to the national average for expressive vocabulary/word knowledge skills (WJ-4 Picture Vocabulary) and listening ability for language (WJ-4 Understanding Directions).

Analytic Results

To help explain our findings, we have included effect sizes (*ES*) to show the strength or size of the results. An effect size of 0 means there was no difference, while an effect size of 1 means the difference was equal to of one standard deviation. In social science research, an effect size is considered small if it falls between 0.10 and 0.30, moderate if it is between 0.30 and 0.50, and large if it is greater than 0.50 (Cohen, 1988, 1992). In the section below, we highlight results that were statistically significant ($p < .05$) meaning the findings were unlikely to be due to chance.

Pre-K Practices and Children's Language Skills

Research Question 1: What Pre-K practices and contextual factors support increases in children's language skills in Georgia's Pre-K classrooms?

Pre-K Practices and Increases in Children's Language Skills

To answer this question, we looked at whether classroom quality was linked to growth in children's oral language skills over the pre-K year. We focused on two measures of classroom quality:

- **ELLCO Language and Literacy** which looks at the classroom's language and literacy environment, and
- **CLASS Instructional Support** which measures the quality of teacher-child interactions that support thinking, language development, and learning.

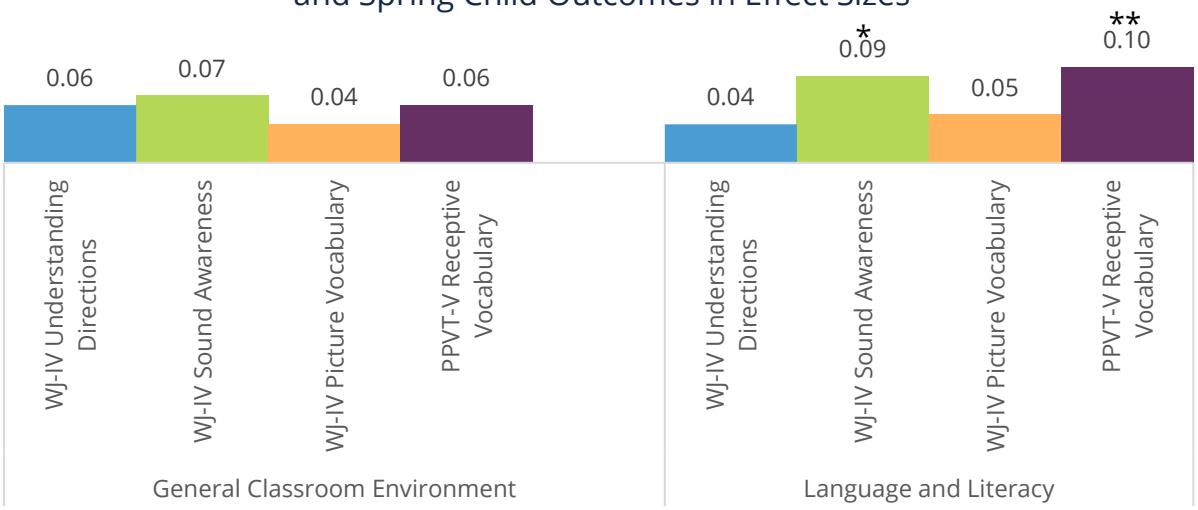
Our analyses controlled for children's fall scores, child and family characteristics, and classroom and site characteristics.

We found that higher scores on the ELLCO Language and Literacy subscale were associated with small increases in children's language skills by the spring of the pre-K year (see Figures 9 & 10 and Table 9 in the Appendix). Specifically:

- For every one-point increase in ELLCO scores, children's receptive vocabulary scores were 1.95 points higher (PPVT), and phonological awareness scores were 1.76 points higher (WJ-Sound Awareness).
- These results were statistically significant (p = .004 and .03 respectively), and the effect sizes were in the small range (ES = 0.10 and 0.09).

To better understand what aspects of the ELLCO were driving these gains, we looked at individual items within the Language and Literacy subscale. The item most strongly linked to child outcomes was "efforts to build vocabulary" (r = 0.18, ES = 0.08; see Table 17 in the Appendix).

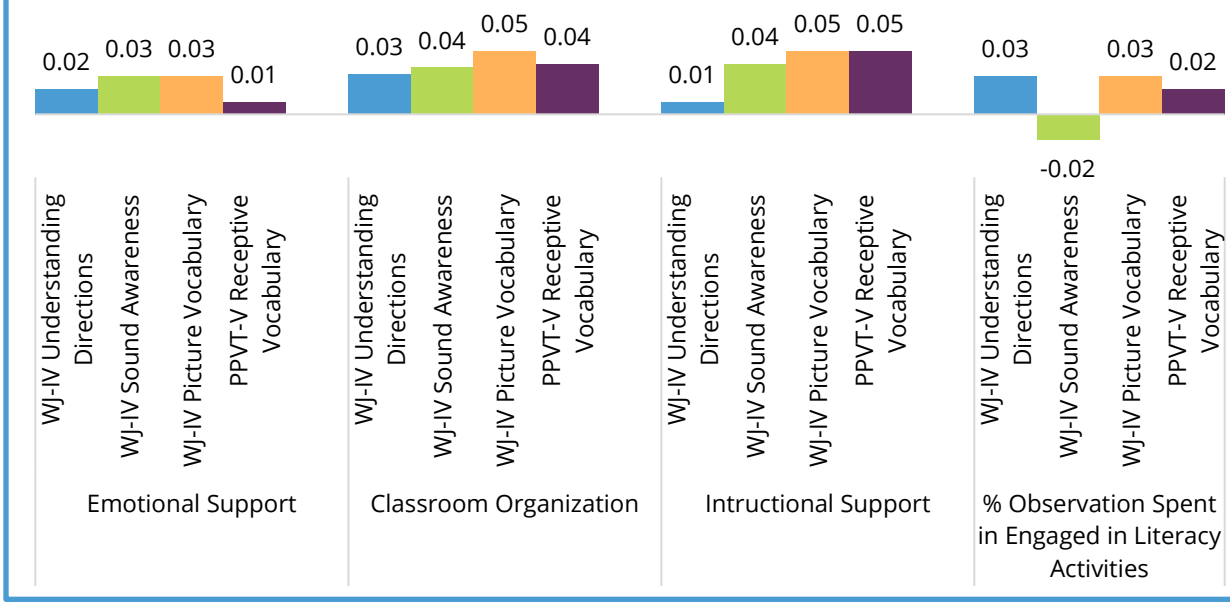
Figure 9. Estimated Adjusted Associations between ELLCO scores and Spring Child Outcomes in Effect Sizes



Note. * p < 0.05, ** p < 0.01, *** p < 0.001. The estimated values were based on analyses with 20 imputed datasets and 812 children. Analyses were weighted using survey sampling weights.

Although ELLCO Language and Literacy and CLASS Instructional Support were associated with small gains, we did not find evidence that broader measures—such as overall teacher-child interaction quality (CLASS) or general classroom environment quality (ELLCO)—were linked to greater-than-expected growth in children's oral language skills.

Figure 10. Estimated Adjusted Associations Between CLASS Scores and Spring Child Outcomes in Effect Sizes



Note. Results are based on analyses using 20 imputed datasets and 812 children. All analyses were weighted using survey sampling weights.

Pre-K Contextual Factors and Increases in Children's Language Skills

We then examined each of the following child and family characteristics to explore whether children with these characteristics might have different patterns of change in their language skills from the fall to the spring of the pre-K year. The results of these analyses are in Table 10 of the Appendix, and spring scores related to characteristics that were statistically significant are presented in Table 11 of the Appendix.

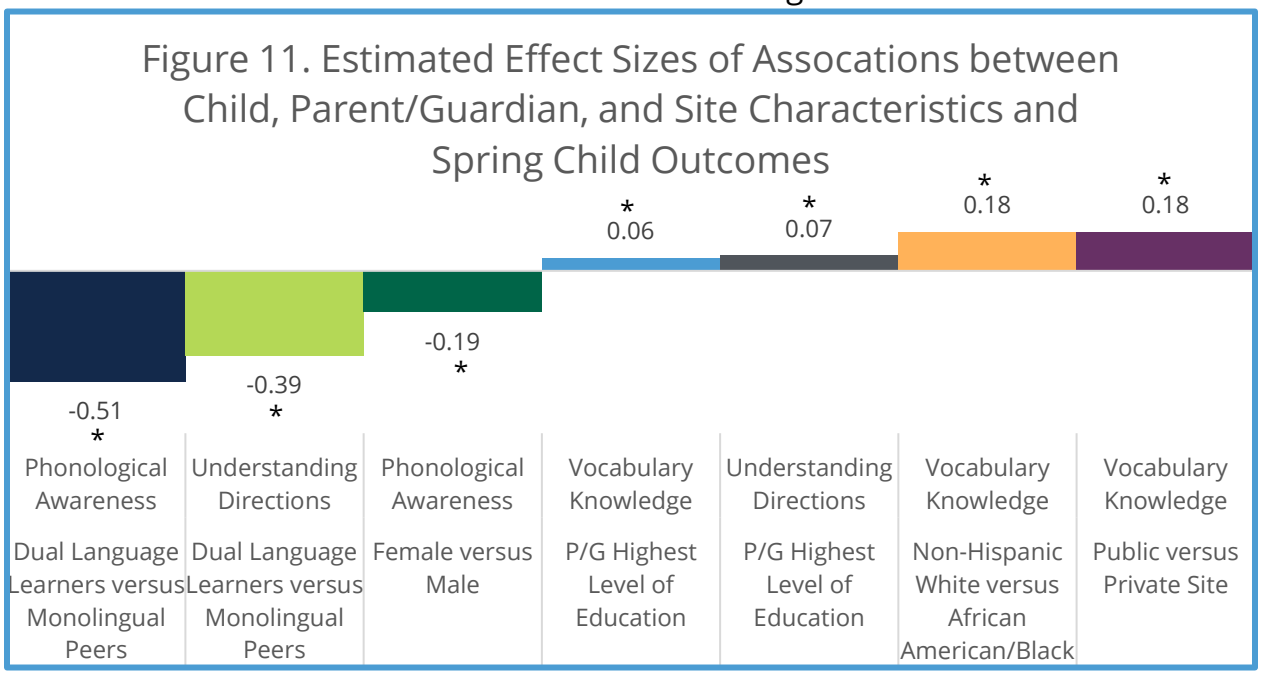
The following characteristics were found to be predictive of differences in language outcomes:

1. Female Gender
2. Child's Race and Ethnicity
3. Dual Language Learner Status
4. Parent/Guardian's Highest Level of Education

The following characteristics were not found to be associated with differences in language outcomes:

1. Child Age in the Fall of Pre-K
2. Family Income-to-Needs Ratio[2] *(family income relative to the federal poverty level for their household size)*
3. Average class size at the site during the school year before the child started Pre-K.
4. The number of children at the site who were Dual Language Learners the year before the child joined Pre-K.
5. Lead Teacher with an Early Childhood Credential versus All Other Credential Types
6. Urban School Location versus Location in Rural County

Details about these differences are summarized in Figure 10 below.

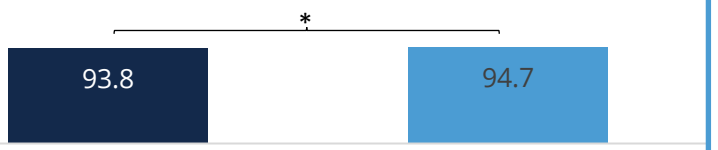


Notes. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The estimated values were based on analyses with 20 imputed datasets and 812 children. Analyses were weighted using survey sampling weights.

[2] "Family Income-to-Needs Ratio" compares a family's income to the federal poverty level for their household size. A ratio of 1.0 means the family is right at the poverty line, while a ratio above 1.0 means they earn more than the poverty line.

Female children had smaller phonological awareness improvements than males resulting in similar spring scores: Female children's phonological awareness skills improved somewhat less than male children's skills (*ES* = –0.19 see Figure 12 and Appendix Tables 10 and 11), suggesting convergence in scores. Female children started the year with higher phonological awareness skills than male children, so the skill difference between females and males reduced by the spring of pre-K. Spring phonological awareness scores for female children (93.77) were less than one-point lower than male children (94.67).

Figure 12. Spring Pre-K Phonological Awareness Scores Were Higher for Male than Female Children

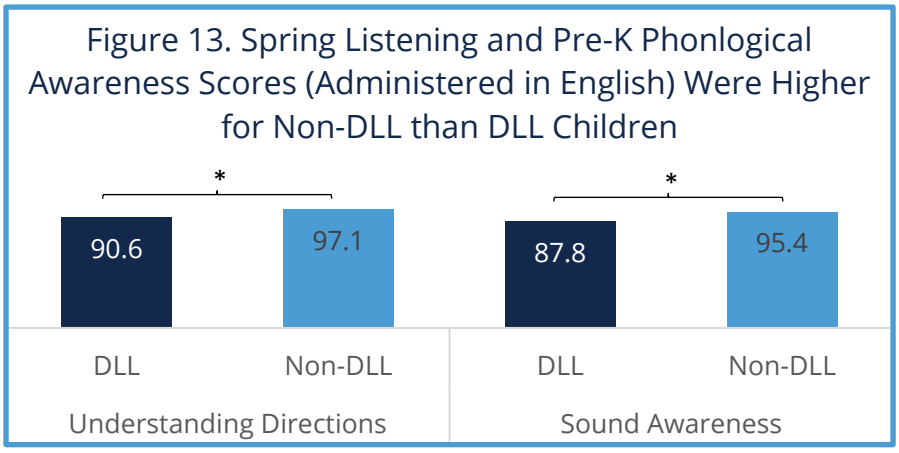


Notes. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The estimated values were based on analyses with 20 imputed datasets and 812 children. Analyses were weighted using survey sampling weights.

Dual language learners had less improvement in phonological awareness skills and listening to and following instructions than monolingual English-speaking peers: Dual language learners demonstrated moderately less improvement in their phonological awareness skills (*ES* = -0.51) and their listening ability (listen to and follow Instructions; *ES* = –0.39; see Figure 13 and Appendix Tables 10 and 11) than their monolingual peers on tests that were administered in English. This suggests a widening of skills between the two groups across the school year. Spring phonological awareness scores for dual language learners (87.77) were also lower than monolingual peer scores (95.37). Similar spring differences were observed related to listening ability with lower scores for dual language learners (91.33) compared to their monolingual peers (97.11).

Notes. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The estimated values were based on analyses with 20 imputed datasets and 812 children. Analyses were weighted using survey sampling weights.

Figure 13. Spring Listening and Pre-K Phonlogical Awareness Scores (Administered in English) Were Higher for Non-DLL than DLL Children



Non-Hispanic White students increased more in their vocabulary knowledge than African American/Black children: Differences in growth in vocabulary knowledge for children from different racial/ethnic backgrounds were observed related to receptive vocabulary knowledge. Non-Hispanic White children improved more in their vocabulary knowledge than non-Hispanic African American/Black children (*ES* = 0.18; see Figure 14 and Appendix Tables 10 and 11). Spring scores were also higher for non-Hispanic White children (95.62) than African American/Black children (92.98) at the spring of pre-K.

Figure 14. Spring Pre-K Receptive Vocabulary Scores Were Higher for White Children than African American/Black Children

Notes. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The estimated values were based on analyses with 20 imputed datasets and 812 children. Analyses were weighted using survey sampling weights.

Children whose parent/guardian had higher education levels demonstrated more improvement in their listening and following directions skills and vocabulary knowledge than children whose parents/guardians had lower levels of education: Parent/guardian education was reported in the following categories: 8th grade or less, some high school, high school diploma/GED, AA/AAS degree, BA/BS degree, MA/MS degree, and doctorate or professional degree). Each education level increase was associated with more improvements in children's listening to and following directions skills (*ES* = 0.07) and vocabulary knowledge skills (*ES* = 0.06; see Appendix Tables 10 and 11). Effect sizes associated with one-level differences in education levels are small but meaningfully different when comparing two-three level education differences (e.g., BA/BS versus high school diploma).

None of the other child and family characteristics tested and no teacher, classroom, or site-level characteristics were associated with differences in children's language skill development.

Teacher Survey

We surveyed participating Georgia's Pre-K teachers to better understand how they support children's language skills. 122 teachers (84%) responded to this open-ended survey question and our study team coded the responses. Out of the responding teachers, 27% reported that they encourage children to speak or engage children in conversations with the goal of supporting their oral language development; for example, "I feel that I allow my students to lead in conversations. I allow them to bring in personal interest to provide them with opportunities to be engaged in conversation."

Teachers also reported reading books with students and discussing unfamiliar vocabulary, inviting children to retell the story, or act out/use puppets to retell the story (27%). One teacher said, "Time built in for reading several stories and acting out stories help promote language development in my classroom."

Other strategies mentioned included: engaging in phonological awareness activities, letter-recognition, letter-sound correspondence, singing, finger plays, and/or sight words (15%); direct vocabulary instruction and/or using word walls to display new words (11%); displaying environmental print in the classroom (8%); and modeling proper language use and pronunciation (7%).

> "What is working well [to support children's language development] is to be engaged with my students through reading aloud and encouraging open-ended discussions, providing language rich environment with various books, word wall, fingerplays, music, and story re-enactments."
> – Georgia's Pre-K Teacher

Another topic raised by teachers when responding about what was working well was their participation in professional development activities and the use of formal materials for language support. Some teachers (7%) mentioned the use of a curriculum and teaching approaches with supportive elements for language

development, including, “Cox Campus Strategies”, “Creative Curriculum and/or Teaching Strategies Gold”, “Heggerty Phonics”, “Investigator Club”, “LiPS Speech Program”, and “Read Right from the Start”. One teacher summarized their use of these resources this way “I have seen a tremendous growth in my student’s language development and literacy skills, over the years, while utilizing “Read Right from The Start” Cox Campus strategies, Teaching Strategies Curriculum, and Bright from the Start GELDS.”

Four teachers mentioned using strategies acquired during trainings from Bright from the Start: Georgia Department of Early Care and Learning (DECAL), commenting “I enjoy the resources from Bright From the Start, such as the phonological awareness ideas from the website,” and “I use the Bright from the Start GELDS and continuum to plan my lessons and small groups.” Other professional development activities mentioned included: Cox Campus classes, yearly pre-K training provided by the school system, Making the Most of Children’s Interactions (MMCI), and Blueprint for Success.

Fifteen teachers (12%) mentioned something about the language development of children learning more than one language in their classroom or about children with development and/or language delays. They mentioned two different sets of approaches: (1) English-only to be used in classrooms to support children’s English language knowledge at school-entry, or (2) encouraging native Spanish speakers to express themselves in English, using pictures to support comprehension and language acquisition in English, and having ESOL support services. One teacher summarized their concerns about children learning English in pre-K this way, stating, “Immersing the students with English is extremely important, but some teachers only spoke in Spanish. This is a problem because the students don’t transition well in kindergarten if the school doesn’t provide bilingual services.” Conversely, five teachers mentioned the desire to incorporate Spanish words and phrases in their instruction or to increase their knowledge of Spanish overall. One teacher said, “We have 2 ELL students in our class this year, so I am incorporating some Spanish as well.“ The use of technology for the purposes of translation was also mentioned as both something that was working well and something that teachers would like to have more access to utilize.

> “I’m not prepared to help students who speak another language.” – *Georgia’s Pre-K Teacher*

Regarding what is not working well, or other language development supports or services that teachers wish that they had, 39% of responding teachers reported having a need. Of those teachers, 29% reported needing more training, teaching strategies, and access to activities that support children's language development. For example, "More explicit training in implementing strategies for DLL learners and students with significant delays," "skills and strategies for children who are low to nonverbal," and "LETRS training." One teacher also mentioned the need for more training for staff as well as teachers (e.g., assistant teachers and other staff who provide educational support for students).

Teachers reported having a desire for more books (e.g., age-appropriate, rhyming, culturally diversity focused, linguistically diverse, and non-fiction books) and other materials (e.g., flannel board stories, puppets, stories on tape/CD) to use in their classrooms. Five or fewer teachers also mentioned these resources they would like to have: translation support/ability to speak children's home language, access to technology (e.g., SmartBoards), smaller class sizes to better facilitate small group activities, access to language-focused curriculum with specific activities outlined, additional preparation and planning time to focus on supporting language development, access to support services and consultation (e.g., speech language pathologists and ESOL services), supports for speaking with families in their home language, and supports for better understanding and supporting the needs of children with language delays and/or disabilities.

> "I have many resources to use but I have 22 students in my class. A smaller class size would help me the most to support my students."
> – Georgia's Pre-K Teacher[3]

Finally, some teachers mentioned that they would like more training to support the needs of students with language delays and children learning more than one language. For example, "more explicit training in implementing strategies for DLL learners and students with significant delays." One teacher gave this specific example of support she desires for a child who is not yet using expressive language

[3] Note: Class Sizes were reduced to 20 students per classroom in the 2024-25 school year.

in the classroom: “I have one little girl in our class that refuses to speak out to be heard…I wish I had someone or some ideas to assist me in helping this little girl.” Technology resources requested included: “Learning software to be used on I-pads,” “translating technology,” “I-pads,” “Interactive technology,” and “Having a smart board would help that way the children can watch and then be able to go up to the board and interact with it.”

Teacher, Classroom, and Child & Family Characteristics and Classroom Quality

Research Question 2: Are teacher, classroom, and child and family characteristics associated with differences in classroom teacher-child interactions as well as language and literacy practices and supports?

In this section, we explore classroom characteristics that may be linked to higher levels of classroom quality. We then examine patterns of children’s language outcomes that are influenced by child and family characteristics, beyond the effects of classroom quality. Understanding these additional environmental and individual factors can help identify opportunities to enhance classroom quality and target support for children who may need extra help with language development.

To investigate this, we analyzed classroom and teacher characteristics as potential predictors of classroom quality (see Tables 13 and 14 in the Appendix for statistical results). Specifically, we looked at features of teachers, classrooms, and program sites. Since Georgia’s Pre-K classrooms generally scored as high-quality, our focus is on identifying subtle differences in quality across classrooms.

The following characteristics were found to be predictive of differences in classroom quality:

- Number of children present on the day of the observation.
- Teacher years of teaching experience *(specifically with children from birth to kindergarten age).*
- Percent of students with IEPs at site in the previous school year.

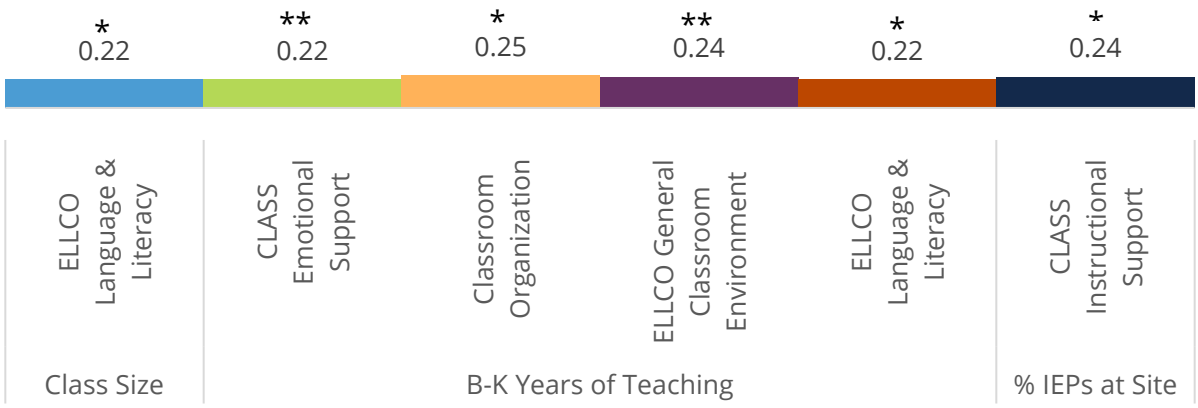
The following characteristics were not found to be associated with differences in classroom quality:

- Teacher holds a master’s degree or higher.

- Teacher has an Early Childhood Credential *(compared to all other credential types).*
- Teacher felt prepared to support children's language development.
- Site-level characteristics from the previous school year *(proportion of classrooms at the site that were inclusive classrooms, percent of DLL identified students, percent of families that qualified for financial assistance programs, and percent of Head Start blended Georgia's Pre-K classrooms).*
- Quality Rated levels *(private sites only).*

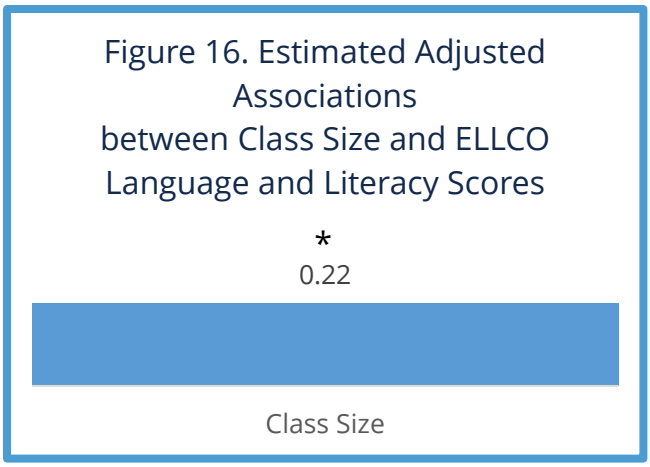
Summaries of teacher, class, and site-level characteristics that are predictive of differences in classroom quality are shown in Figure 15 and summarized below.

Figure 15. Estimated Adjusted Associations between Classroom, Teacher, & Site Characteristics and Classroom Quality Scores



Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The estimated values were based on analyses with 20 imputed datasets and 146 classrooms. Analyses were weighted using survey sampling weights.

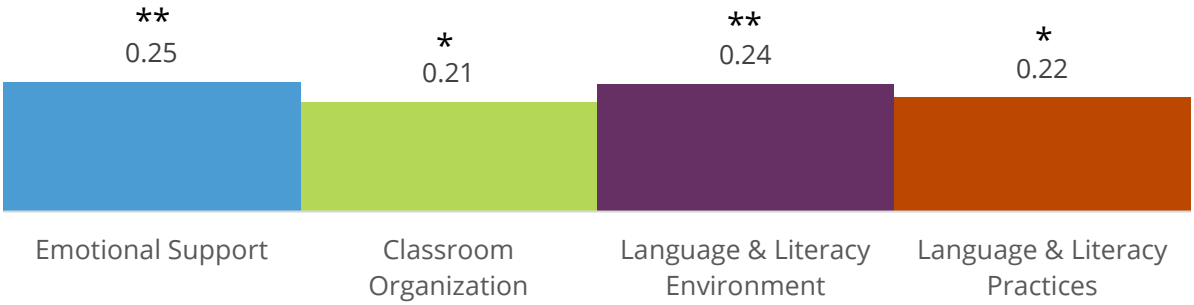
More children present during the observation were associated with higher language and literacy practices. Class size was defined as the total number of children present on the day of the classroom observation. More children present on the day of the classroom observation was associated with their classroom being rated slightly higher on ELLCO Language and Literacy. The average number of students present was 19.19 and when an additional 3 students were present (22 maximum during the 2022-23 school year), classrooms were estimated to have a score of 3.6 (slightly higher than the average score of 3.4 observed in this study; *ES* =0.22; see Figure 16 and Appendix Tables 10 and 11).



Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The estimated values were based on analyses with 20 imputed datasets and 146 classrooms. Analyses were weighted using survey sampling weights.

Teaching experience was associated with more highly rated classrooms related to emotional support, classroom organization, classroom environment, and language and literacy practices. Teachers were asked about the number of years that they have been teaching children younger than school-age (birth through five years) and we examined the association between years of experience with teaching this age group and their classroom quality scores. Having more years of experience teaching young children was associated with higher classroom quality scores. Specifically, years of experience teaching young children were associated with higher scores on the Emotional Support (*ES* = 0.25; see Figure 17 and Appendix Tables 13 and 14) and Classroom Organization (*ES* = 0.21) domains of the CLASS. There was also an association between years of experience teaching young children and with both ELLCO summary scores (ELLCO General Classroom Environment (*ES* = 0.24) and ELLCO Language and Literacy scores (*ES* = 0.22; see Figure 13). For example, for each additional year of teaching experience with children younger than age five, teachers had a 0.02 increase in their ELLCO language and literacy score.

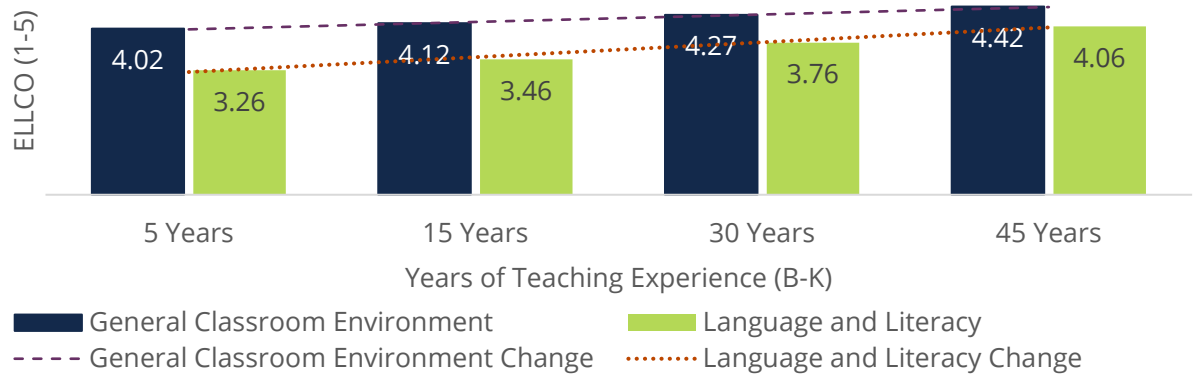
Figure 17. Estimated Adjusted Associations between Time Teaching B-K and CLASS and ELLCO Scores



Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The estimated values were based on analyses with 20 imputed datasets and 146 classrooms. Analyses were weighted using survey sampling weights.

Figure 18 illustrates the positive relationship between teachers' years of experience and classroom quality scores on the ELLCO measure. These associations represent meaningful effect sizes in the small-to-medium range. For instance, each additional year of teaching experience was associated with a 0.02-point increase in ELLCO Language and Literacy scores, corresponding to an effect size of 0.22. A similar pattern was observed for the CLASS Emotional Support and Classroom Organization domains.

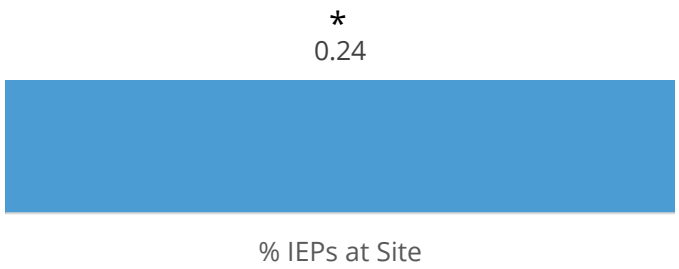
Figure 18. More Years of Teaching Experience Associated with Better Classroom and Language & Literacy Practices



Note. The estimated values were based on analyses with 20 imputed datasets and 146 classrooms. Analyses were weighted using survey sampling weights.

A higher proportion of children with IEPs were associated with higher Instructional Support scores. On average 3.0% of children within participating sites had an IEP during the year before this study was conducted. Having a higher proportion of students with an IEP at the program where the classroom was located was associated with a slight increase in CLASS Instructional Support scores (*ES* = 0.24; see Figure 19 and Appendix Tables 13 and 14). For classrooms with the average proportion of students with IEPs (3% students with IEPs), the estimated Instructional Support score was 2.58. For classrooms located in sites with a higher proportion of students, every 1% increase in the proportion of students with an IEP was associated with an increase of 0.04 points. For example, for a site with 10% of students with IEPs, the estimated Instructional Support score would increase by 0.28 points above the average (Instructional Support score = 2.86).

Figure 19. Estimated Adjusted Associations between % Children with IEPs at the School/Center and CLASS Instructional Scores



Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The estimated values were based on analyses with 20 imputed datasets and 146 classrooms. Analyses were weighted using survey sampling weights.

Quality Rated Levels. Although the results were not statistically significant, we also examined whether the site's Quality Rated level, from Georgia's Quality Rating and Improvement System, was associated with their observed classroom quality. Georgia's Pre-K classrooms located in public schools do not receive ratings through Quality Rated, so we limited the sample to classrooms located in private center-based sites for this analysis (see results in Tables 15 and 16 of the Appendix). For this subsample of classrooms located in private sites, there was representation from sites with Quality Rated scores at all levels. The results suggest that higher star ratings were not associated with observed classroom-level quality scores.

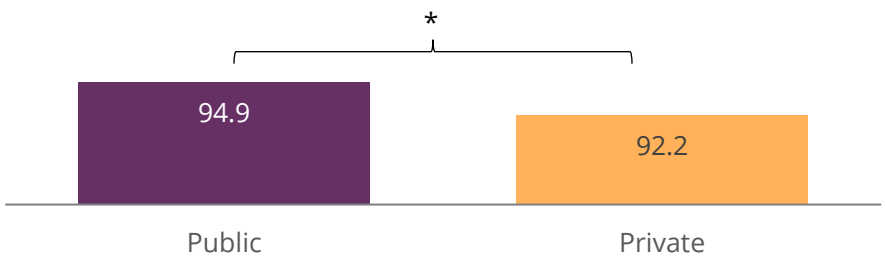
Examining Variability in Classroom Quality Across Georgia

Research Question 3: Is there variation in classroom quality experiences for classrooms located in public schools and private center-based settings and across rural versus urban counties?

Public School versus Private Center Location of Classrooms

Average vocabulary knowledge scores increased more for students enrolled in classrooms located in public schools than children enrolled in classrooms located in centers: Enrollment in a Georgia's Pre-K classroom located in a public school was associated with slightly higher than expected growth in vocabulary knowledge as measured by the PPVT-5 relative to growth in skills for children enrolled in programs located in private sites (*ES* = 0.17; See Figure 20 and Appendix Table 10). Children enrolled in classrooms located in public schools also had higher average receptive vocabulary scores (94.90) in the spring than children enrolled in classrooms located in private center-based settings (92.23).

Figure 20. Children's Receptive Vocabulary Skills by Public and Private Settings

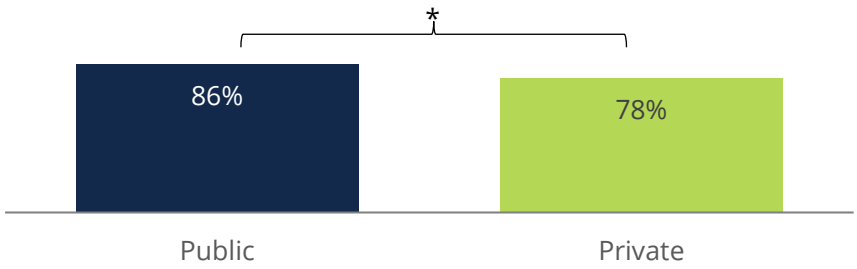


Notes. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The estimated values were based on analyses with 20 imputed datasets and 812 children. Analyses were weighted using survey sampling weights.

Public school located Georgia's Pre-K classroom was associated with more time spent engaged in language and literacy activities. Engagement of children in literacy focused activities was frequent, but children in Georgia's Pre-K classrooms located in public schools were observed being engaged in literacy-focused activities for a higher proportion of the classroom observation (86% of the

observation) than programs located in private settings (78% of the observation; *ES* = 0.08; See Figure 21 and Appendix Table 13).

Figure 21. Proportion of Observation Literacy Activities Observed by Public and Private Settings

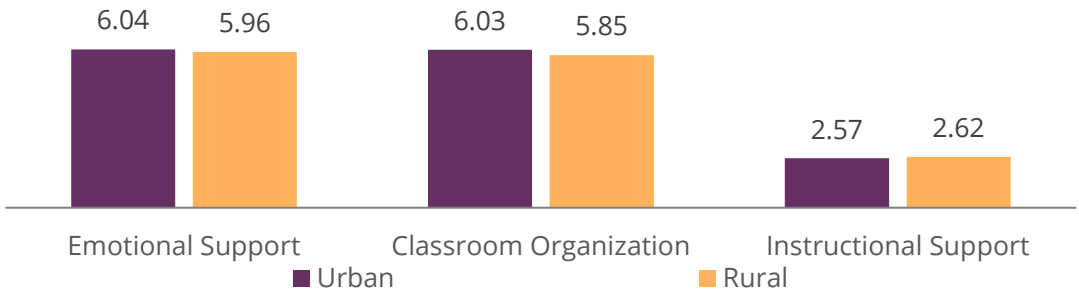


Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The estimated values were based on analyses with 20 imputed datasets and 146 classrooms. Analyses were weighted using survey sampling weights.

Rural versus Urban Location of Classrooms

We examined potential differences in classroom quality between Georgia's Pre-K classrooms located in rural and urban counties. We conducted two sample *t*-tests with resulting averages for rural and urban counties in Figures 22 & 23 and Table 13 in the Appendix.

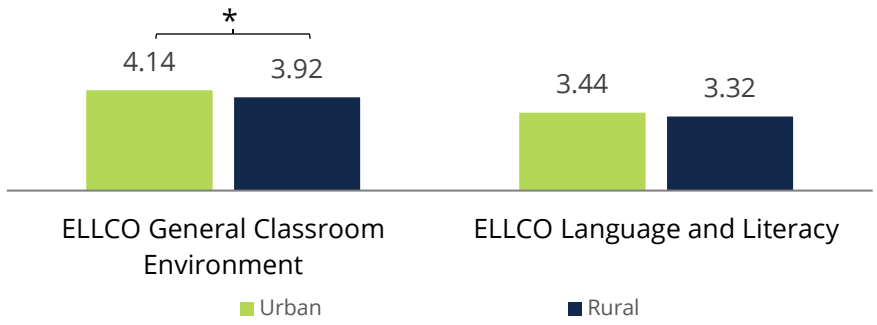
Figure 22. Average Teacher-Child Interaction Scores by Urban and Rural Counties



Notes. The CLASS scale ranges from 1 to 7. Quality ranges for the CLASS established by the measure developers as 1-2.99 (low), 3-5.99 (moderate), and 6-7 (high). The estimated values were based on analyses with 20 imputed datasets and 146 classrooms. Analyses were weighted using survey sampling weights.

The quality of teacher-child interactions (as measured by the CLASS) were similar in rural and urban counties (see Figure 23). Georgia's Pre-K classrooms in rural and urban counties were also similar in terms of classroom language and literacy practices and supports (as measured by ELLCO Language and Literacy scores). However, ELLCO General Classroom Environment scores were slightly higher in urban counties than in rural counties (see Figure 24). The difference between urban and rural counties was 0.22 on the ELLCO 5-point scale.

Figure 23. Average Language and Literacy Scores by Urban and Rural Counties



Notes. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The ELLCO scale ranges from 1 to 5. Quality ranges for the ELLCO were established by the measure developers as 1-2.5 (low), 2.51-3.5 (moderate), and 3.51-5 (high) for the ELLCO. The estimated values were based on analyses with 20 imputed datasets and 146 classrooms. Analyses were weighted using survey sampling weights.

Comparison of Past Studies of Georgia's Pre-K with the Current Study

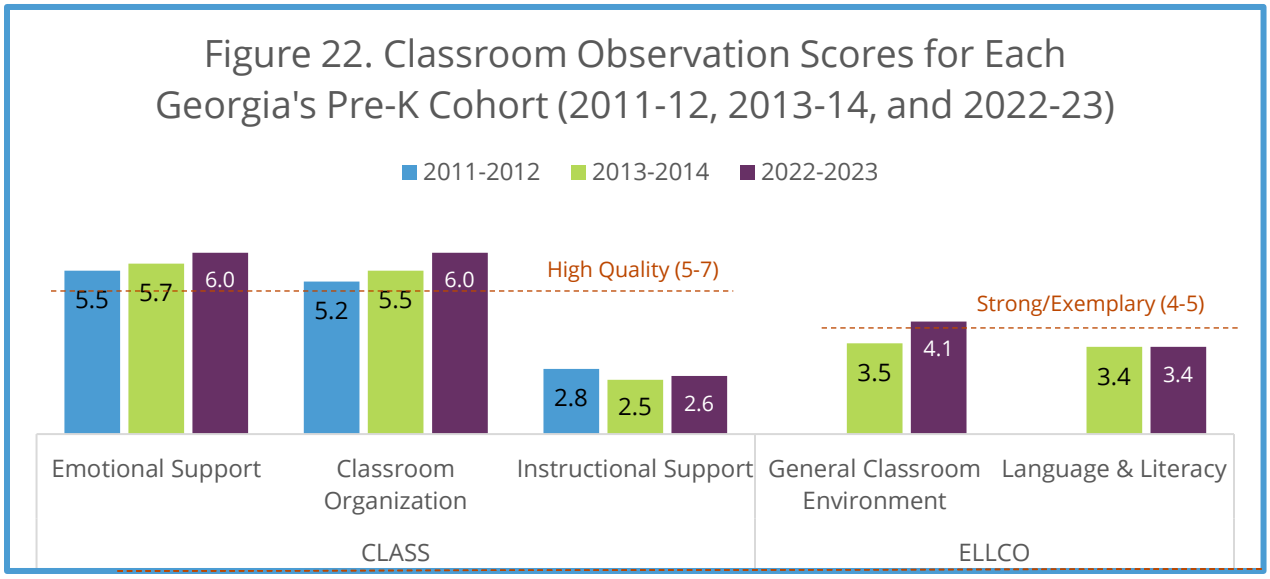
This section compares findings from the current study (conducted during the 2022–2023 school year) with two previous evaluation studies of Georgia's Pre-K conducted during the 2011–2012 (Peisner-Feinberg et al., 2014) and 2013–2014 school years (Peisner-Feinberg et al., 2015). Unlike previous Georgia Pre-K studies that examined a broad range of developmental domains, the 2022–23 study focused more deeply on language and literacy development and explored program features that promote growth in these skills. Only measures used in all three studies are reviewed. In interpreting these results we note that many changes have occurred in strengthening and expanding Georgia's Pre-K program over the past decade. Also, the current cohort of Georgia's Pre-K attendees reflect children's experiences during and after the COVID-19 pandemic, when these children were

two- and three-years-old, prior to their experience in Georgia's Pre-K during the 2022-23 school year.

Key Findings:

- Classroom quality in Georgia's Pre-K Program has generally improved over time, particularly in the Emotional Support and Classroom Organization domains of the CLASS (see Figure 25; Appendix Table 18).
- However, children's standardized language and literacy scores appear lower in 2022–2023 compared to earlier cohorts (see Appendix Table 29).

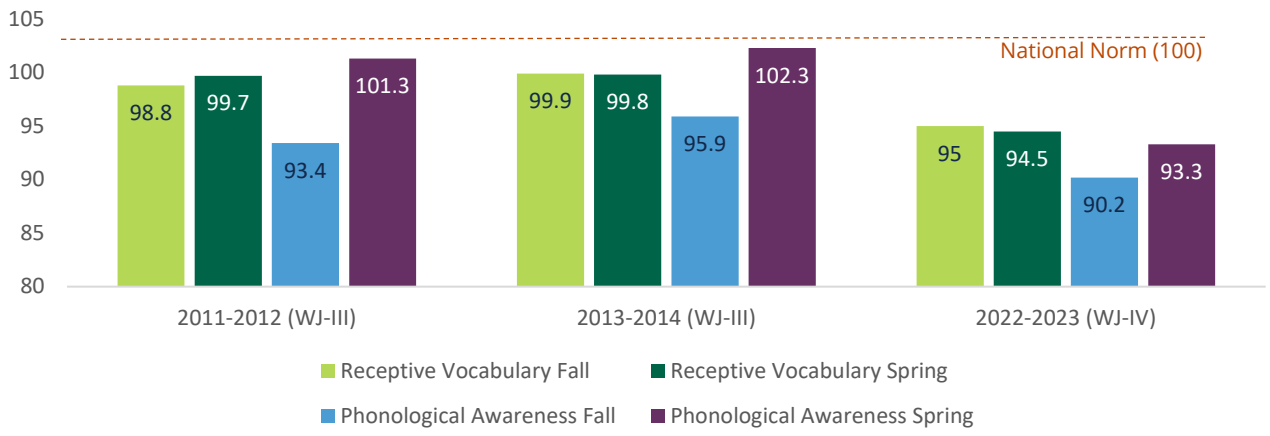
These differences should be interpreted with care because the versions of the assessment tools changed. Specifically, CLASS 2nd Edition (CLASS, 2023, 2nd Edition: Pre-K–3rd) was used in this study (2022-23) and the original CLASS Pre-K (Pianta et al., 2008) was used in the previous two studies. Classrooms observed using the CLASS 2nd Edition were expected to have slightly lower scores due to a slightly revised focus on the measure. Despite these changes, two domains of the CLASS and the General Classroom Environment scores in 2022-23 were higher than in the previous two cohorts (Figure 22; Appendix Table 19). This observed increase is a reassuring sign that the observed improvements would be detected using either version of the CLASS and that the classrooms observed in 2022-23 might have been scored slightly higher using the previous version of the CLASS Pre-K.



Likewise, the WJ-IV child assessment battery (Schrank et al., 2014) replaced the WJ-III (Woodcock et al., 2001) and was revised and renormed. Lower age-adjusted receptive vocabulary standard scores were observed at pre-K entry during the fall of 2022 by 3.8 points relative to the 2011-12 cohort and almost 4.9 points lower

than the 2013-14 cohort (see Figure 24; Appendix Table 19). Similar differences were observed on the fall phonological awareness assessments. Across all three cohorts age-appropriate growth in vocabulary skills were observed for children's vocabulary knowledge, but gains in phonological awareness were greater than expected for all three cohorts of Georgia's Pre-K attendees. Growth during the school year as measured by fall-spring change was biggest for both outcomes during for the 2011-12 cohort. Lower average scores in the 2022–23 cohort may reflect changes in assessment tools rather than true declines in language and literacy. However, testing occurred after the COVID-19 pandemic, which could indicate shifts in language environments and development during the prior two years. Further analysis is needed to separate measurement effects from real trends, but the magnitude of differences suggests at least some influence of pandemic-related impacts on early language and literacy skills.

Figure 23. Fall to Spring Change in Language and Literacy Skills by Georgia's Pre-K Cohort (2011-12, 2013-14, and 2022-23)



Like previous Georgia's Pre-K studies (Peisner-Feinberg et al., 2014, 2015), dual language learners (DLLs) in 2022–23 improved in vocabulary and phonological awareness over the school year (see Figure 23 and Appendix Table 19). However, unlike earlier findings, DLLs did not show greater gains than monolingual peers on these measures. This difference reflects variations in assessment tools and available data rather than true changes in outcomes, as prior studies included English proficiency and Spanish-language measures, which were not part of the 2022–23 study. Notably, DLLs in earlier cohorts showed stronger growth in English than Spanish, while Spanish outcomes were not assessed in 2022–23. A new finding in 2022–23 was that DLLs made smaller gains in listening skills compared to monolingual peers, related to a skill not measured previously. Likewise, findings

related to gender and racial/ethnic differences were not examined in previous studies. One finding is consistent with both previous studies, that higher parental education levels were associated with greater growth in vocabulary skills than children whose parents or guardians with lower educational levels.

Summary and Implications

This study examined language development among children in Georgia's Pre-K Program. We found that children's language development increased during the pre-K year. Although within the age-typical range, the statewide average fell below national norms. Because the study focused on growth during the pre-K year, we cannot identify the factors contributing to this difference in a cohort whose toddler years coincided with pandemic-related social disruptions. Children made the most growth in phonological awareness skills. We also found that increases in children's receptive vocabulary skills were higher in classrooms with higher-quality classroom language and literacy practices.

Classroom Practices and Children's Vocabulary Skills

We examined if pre-K classroom practices support children's language skills in Georgia's Pre-K classrooms. We found evidence that Language and Literacy quality is related to higher vocabulary knowledge and phonological awareness skills. This finding was evident after accounting for children's fall vocabulary skills, child, and family demographic characteristics, as well as teacher characteristics and classroom quality.

The current evaluation study did not find evidence of reliable associations between children's language outcomes and classroom quality as measured by the CLASS, consistent with the previous evaluation study in Georgia (Peisner-Feinberg et al., 2015) and recent studies documenting null associations between CLASS quality and child language outcomes in other high-quality pre-K settings in Boston (Guerrero-Rosada et al., 2021) and Virginia (Pianta et al., 2020). It is possible that the broad dimensions of classroom quality measured by the CLASS are not specific enough to distinguish between the classrooms' instructional practices that are most effective in promoting children's language development. Additionally, widespread professional development efforts that are aligned with the CLASS measure have

been successful in Georgia (Early et al., 2017). These efforts may have resulted in reduced variability in CLASS scores needed to detect associations with child outcomes in analyses.

Evidence of a positive association between higher quality language and literacy practices and children's receptive vocabulary skills is encouraging. Prior research has found that children who enter kindergarten with higher levels of language skills demonstrate larger gains and better outcomes in reading during elementary school (e.g., Pace et al., 2018). This finding informs future quality improvement efforts that target practices that are aligned with vocabulary development. For example, the ELLCO dimension that had the strongest association with language skill growth was "Efforts to Build Vocabulary." The teacher survey responses also indicated that some of Georgia's Pre-K teachers are already implementing effective strategies for improving children's vocabulary skills. Some of the strategies mentioned by these teachers were encouraging children to speak and engage in conversations and introducing and discussing new vocabulary during book reading. Georgia's Pre-K Program should continue to prioritize such practices such that promote vocabulary development.

The study's findings suggest that additional professional development and support focused on promoting language and literacy practices may be beneficial, particularly for children whose language and literacy development may have been affected by the COVID-19 pandemic closures. The quality of other aspects of the environment and teacher-child interactions were not associated with other aspects of children's language development. Teacher surveys also indicated that there is a desire for such training in language and literacy practices, particularly requesting training from speech language pathologists to support disabled children's language development. 29% of teachers reported they wanted more training, access to teaching strategies, and activities specific to language development that they can utilize in their pre-K classrooms. Several teachers mentioned that language development strategies are embedded within trainings and courses focused on early literacy development. While this adequately prepared them to understand typical development, they expressed a desire for more specificity and depth. Teachers also reported the desire to have access to books and materials that they feel would help them to better facilitate language development (e.g., fiction and non-fiction books with varied vocabulary, big books and books that are age-appropriate, rhyming, and culturally and linguistically diverse; materials like

puppets and flannel board sets to facilitate story retelling). Finally, a few teachers mentioned a desire to have access to various kinds of technology and/or devices. Teachers also mentioned a desire for smaller class sizes; notably, class sizes were reduced from 22 to 20 students per classroom during the 2024-25 school year.

Contextual Factors and Children's Vocabulary Skills

We examined if contextual factors support children's language skills in Georgia's Pre-K classrooms. Dual language learners (DLLs) showed smaller gains in their receptive language skills than their monolingual peers, particularly on measures requiring understanding of spoken language. These results overall were similar to previous studies of Georgia's Pre-K, but previous studies also included information about children's level of English language proficiency which was not available in this study. Some teachers reported engaging in strategies to support the language development of bilingual and multilingual learners, but the empirical findings suggest the need for greater support in this area. Teachers are engaging with resources to support vocabulary and supporting connections between the English and home language, but teachers expressed a desire for additional training and resources to support the specific needs of dual language learners. Teachers are also grappling with how to best communicate with families whose home language is a language other than English.

We also saw other individual differences in language development that could inform targeted approaches for professional development and support. Female children had smaller increases in their phonological awareness skills than male children (*ES* = –0.19). Female children started the year with higher phonological awareness skills than male children, so the skill difference between females and males reduced by the spring of pre-K. Non-Hispanic White children demonstrated slightly larger increases in Receptive Vocabulary skills (*ES* = –0.19) than non-Hispanic African American/Black children, warranting a need to ensure that classroom practices are equitable and culturally appropriate for African American/Black students across Georgia. We also found that children whose parent/guardian had a higher level of education showed larger gains in understanding directions (*ES* = 0.10) and vocabulary knowledge (*ES* = 0.08), which may indicate that children whose parent/guardian has a lower level of education may need additional support for language development in the classroom. Finally, children enrolled in classrooms located in public schools also showed greater increases in vocabulary knowledge

(*ES* = 0.17). Classrooms in private sites may need additional support, particularly around promoting vocabulary development amongst their students.

Predictors of Classroom Quality

We found that there were classroom and school characteristics that explained differences in classroom quality among this sample indicating factors that could be considered when prioritizing quality improvement efforts for Georgia's Pre-K programs. Classroom quality scores were overall in the moderate to high-quality range. Classrooms with more students present on the day of the observation had higher ELLCO Language and Literacy scores. Teachers with more years of experience teaching children in the birth-five-year-old age range had higher scores across measures (i.e., CLASS Emotional Support and Classroom Organization domains, and ELLCO General Environment and Language and Literacy scores). Classrooms located in public school settings had slightly higher CLASS Instructional Support scores and a greater amount of time spent on literacy activities than classrooms located in private center-based settings. Lastly, classrooms located within sites that had a higher proportion of children with individualized education plans had higher CLASS Instructional Support scores. Professional development efforts could prioritize teachers who scored lower on measures of classroom quality, especially teachers who have fewer years of experience teaching the birth-to-five range as they scored lower on all measures of classroom quality.

Variability in Classroom Quality Across Georgia

Finally, differences in classroom quality between classrooms located in rural and urban counties and public and private settings were examined. ELLCO General Classroom Environment scores were slightly higher in urban counties by 0.22 points, but there were not significant differences in language and literacy practices between classrooms in urban and rural counties. Also, teachers in classrooms located in public school classrooms spent more time on literacy than teachers in classrooms in private center-based settings. Classroom quality varied slightly by location and setting, but these differences do not justify targeting specific regions for language-focused professional development, as classroom quality or time spent on literacy alone do not ensure higher quality.

Conclusion

Georgia's Pre-K classrooms are providing interactions with children that are warm, responsive, and language rich within enriched learning environments. Children attending the Georgia's Pre-K program continue to demonstrate patterns of growth in their language development that are similar to or exceed skill growth of other children of the same age within a national sample. Classrooms that were observed using intentional strategies to support vocabulary knowledge during designated times in their schedule and where children were highly engaged in language activities facilitated slightly greater than expected growth in vocabulary knowledge relative to same-age peers. Teachers with more experience demonstrated high-quality language and literacy practices and it may be beneficial to continue to engage in efforts to retain teachers with greater years of experience.[4] The reasons for additional benefits of enrollment in Georgia's Pre-K classrooms in public school settings for vocabulary knowledge acquisition should be explored. Additionally, opportunities for support for specific language skills with specific populations of children were identified, including dual language learners, African American/Black children, and children whose parent/guardian had lower levels of education. Georgia's Pre-K teachers also provided rich information about the kinds of language development strategies that they currently utilize and additional needs that may be targeted to further support teacher's skills, strategies, and access to materials to optimally support children's language development.

[4] Note: We recommend continuing these efforts because, following the conclusion of the study, Georgia updated its Pre-K teacher salary scale during the 2024–2025 school year to align with the K–12 teacher salary scale. This update included supplemental pay based on years of experience, aimed at improving teacher retention.

Appendix

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Tables

Table 1. Number of Classrooms and Centers/ Schools by Region

Region	Count
Northeast	24
Northwest	23
Central East	26
Central West	25
Southeast	23
Southwest	25
Total	146

Table 2. Locations and Descriptions of Classrooms and Sites

	N	***M/%***	**(*SD*)**	**Range**
Classroom Location				
Classrooms in Public School Site	146	45%		
Children in Public School Site	812	43%		
Classrooms in Urban County	146	80%		
Children in Urban County	812	80%		
Percent of children with IEPs at site	115	3%		
Percent of DLL children at site	115	5%		
Percent of Category One families at site	115	47%		
Percent of Inclusive Pre-K classrooms at site	115	2%		
Percent of Head Start Blended Pre-K at site	115	6%		
Quality Rating at site*	64	1.88	(0.85)	0-3
Inclusive Classrooms	118	3%		
Classroom Size (recorded during classroom observation visit)	145	19.20	(3.02)	11-22

*Note: Quality rating data are only available for private center-based settings. Category One represents low-income families, as measured by participation in one or more of the following programs: Supplemental Nutrition Assistance Program (SNAP), Temporary Assistance for Needy Families (TANF), Supplemental Security Income (SSI), Georgia's Childcare and Parent Services (CAPS), Medicaid, or in public schools, free or reduced-price meals.

Table 3. Teacher Characteristics

	N	*M/%*	(*SD*)	Range
Years of Experience by Age Group				
Pre-K	132	8.61	(7.84)	0.17-45
Birth-Kindergarten	132	12.89	(9.96)	0.25-45
Any age	132	16.05	(9.64)	0.33-45
Years at Current Center/School	132	6.08	(6.05)	0.25-25
Teacher Female	132	96%		
Teacher Race/Ethnicity				
Asian/Asian American	131	< 1%		
American Indian/Alaska Native	131	0%		
African American/Black	131	36%		
Hispanic/Latino	131	2%		
Native Hawaiian or Pacific Islander	131	0%		
Other Race Category	131	0%		
White	131	61%		
Primary Home Language				
English	132	97%		
Spanish	132	1%		
Other	132	2%		
Teacher prepared to support Language development (5 = very prepared)	132	4.53	(0.77)	1-5

Table 4. Teacher Qualifications: Education Levels

	N	*%*
Highest Degree Completed		
High School Diploma	132	2%
Bachelor's Degree	132	60%
Master's Degree or Higher	132	38%
Major		
Early Childhood Education	132	56%
Elementary Education	132	17%
Other Education Major	132	15%
Other Non-Education Major	132	12%

Table 5. Classroom Quality Scores

	N	*M*	(*SD*)	Range
Teacher-Child Interactions				
CLASS Emotional Support	145	6.03	(0.55)	3.35-6.95
CLASS Classroom Organization	145	5.99	(0.81)	2.93-7.00
CLASS Instructional Support	145	2.58	(0.70)	1.00-4.40
Child Engagement in Literacy				
Time Engaged in Literacy Activities (3 = >50% of time)	145	2.25	(0.38)	1.20-3.00
Degree of Engagement (3= frequently actively engaged)	145	2.87	(0.25)	2.00-3.00
Number of Children Engaged (3 = >50% of children)	145	2.63	(0.28)	1.67-3.00
Language and Literacy Quality				
ELLCO General Classroom Environment	145	4.10	(0.61)	1.57-5.00
ELLCO Language and Literacy	145	3.42	(0.81)	1.08-5.00

Note. CLASS domain scores have a possible range from 1 to 7, CLASS activity setting scores have a possible range from 1 to 3, and ELLCO scores have a possible range from 1 to 5.

Table 6. Child Demographic Characteristics

	N	*M/%*	(*SD*)	Range
Child age as of August 31, 2022	812	4.53	(0.30)	3.86-5.61
Female	467	51%		
Child has IEP	467	6%		
Child Race/Ethnicity				
Asian/Asian American	467	4%		
American Indian/Alaska Native	467	< 1%		
African American/Black	467	39%		
Hispanic	467	12%		
Native Hawaiian/Other Pacific Islander	467	0%		
Other	467	< 1%		
White	467	43%		
Child First Language				
English	463	91%		
Spanish	463	5%		
Both	463	2%		
Other	463	2%		
Language(s) Spoken by Child at Home				
English	467	89%		
Spanish	467	2%		
Both	467	6%		
Other	467	2%		
Dual Language Learner (Spanish, English and Spanish, Other language spoken at home by child)	467	11%		

Table 7. Family Demographic Characteristics

	N	*M/%*	(*SD*)	Range
Respondent is parent/guardian of child (1=yes)	464	99%		
Relation to Child				
Mother	465	88%		
Father	465	7%		
Other	465	5%		
Parent/Guardian Highest Level of Education (3=High school diploma/GED)	458	3.93	(1.31)	1-7
Spouse Highest Level of Education (3=High school diploma/GED)	377	3.69	(1.35)	1-7
Frequency of English is Spoken in the Home (4=Always)	463	3.79	(0.67)	0-4
People in Household Respondent Supports Financially	461	4	(1.37)	1-12
Adults in Home	460	2	(0.69)	1-5
Children in Home	460	2	(1.11)	1-8
Family's Annual Gross Income Last Year (7=$48,721 - $61,260)	447	7	(3.94)	1-15
Family Income-to-Needs Ratio Last Year (1=100%)	445	2.25	(1.54)	0.10-8.48
Family History of Reading Difficulty	451	22%		
Family History of Spelling Difficulty	448	22%		
Family History of Reading and/or Spelling Difficulty	451	25%		

Table 8. Child Outcome Scores (Fall/Spring)

	N	*M*	(*SD*)	Range
WJ-4 Understanding Directions				
Fall	719	96.31	(13.74)	47-138
Spring	698	96.22	(13.25)	40-147
WJ-4 Sound Awareness				
Fall	721	90.18	(15.23)	64-139
Spring	699	93.33	(16.30)	65-152
WJ-4 Picture Vocabulary				
Fall	718	95.03	(13.75)	40-136
Spring	695	94.52	(13.06)	40-137
PPVT-5 Receptive Vocabulary				
Fall	720	93.45	(15.00)	40-160
Spring	695	94.71	(15.07)	55-160

Note. Standard scores are displayed with a national average of 100 and standard deviation of 15.

Table 9. Results from Regression Models for each CLASS and ELLCO Domain Score Predicting Spring Child Outcome Scores (including fall score, child & family, and classroom & site characteristics as covariates not shown)

	WJ-IV Understanding Directions			WJ-IV Sound Awareness			WJ-IV Picture Vocabulary			PPVT-V Receptive Vocabulary		
	b	**(*SE*)**	***p***	***b***	**(*SE*)**	***p***	***b***	**(*SE*)**	***p***	***b***	**(*SE*)**	***p***
CLASS Emotional Support	0.36	(1.01)		0.77	(1.23)		0.67	(0.84)		0.17	(1.04)	
CLASS Classroom Organization	0.48	(0.70)		0.76	(0.84)		0.87	(0.57)		0.81	(0.70)	
CLASS Instructional Support	0.18	(0.80)		0.84	(0.98)		0.91	(0.67)		1.07	(0.84)	
CLASS Relative Time Spent in Literacy	1.11	(1.50)		-0.83	(1.87)		0.91	(1.26)		0.75	(1.66)	
ELLCO General Classroom Environment	1.28	(0.92)		1.82	(1.12)		0.91	(0.78)		1.46	(0.92)	
ELLCO Language and Literacy	0.74	(0.69)		1.76	(0.82)	*	0.81	(0.56)		1.95	(0.67)	**
ELLCO Efforts to Build Vocabulary	0.45	(0.46)		0.63	(0.54)		0.20	(0.37)		1.03	(0.48)	*

Notes. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Separate models were used to estimate associations for each CLASS and ELLCO score. Covariates for fall score, child & family, and classroom & site characteristics were included in all models, but their parameter estimates are not shown. Analyses were based on 20 imputed datasets with 812 children. Analyses were weighted using survey sampling weights.

Table 10. Results from Regression Models Predicting Spring Child Outcome Scores with ELLCO Language and Literacy (including fall score, child & family, and classroom & site characteristics as covariates)

	WJ-IV Understanding Directions			WJ-IV Sound Awareness			WJ-IV Picture Vocabulary			PPVT-V Receptive Vocabulary		
	b	***(SE)***	***p***	***b***	***(SE)***	***p***	***b***	***(SE)***	***p***	***b***	***(SE)***	***p***
Intercept	97.25	(1.93)	***	95.33	(2.34)	***	93.87	(1.65)	***	94.37	(1.86)	***
ELLCO Language and Literacy	0.74	(0.69)		1.76	(0.82)	*	0.81	(0.56)		1.95	(0.67)	**
Fall score	0.61	(0.04)	***	0.68	(0.04)	***	0.76	(0.04)	***	0.67	(0.04)	***
Child age as of August 31, 2022	0.93	(1.61)		-1.05	(2.03)		0.76	(1.38)		1.69	(1.64)	
Female	-0.90	(0.92)		-2.78	(1.21)	*	-0.52	(0.81)		-0.96	(1.01)	
African American/Black	--	--		--	--		--	--		--	--	
Hispanic/Latino	1.64	(2.28)		2.24	(2.86)		-0.95	(1.91)		0.48	(2.21)	
Other	0.11	(2.10)		-0.30	(2.61)		-0.84	(1.81)		-0.76	(2.21)	
White	1.77	(1.26)		0.66	(1.52)		0.16	(1.05)		2.64	(1.23)	*
DLL	-5.78	(2.48)	*	-7.60	(3.05)	*	-3.05	(1.94)		-4.19	(2.51)	
Family INR Last Year	-0.16	(0.42)		0.58	(0.47)		0.50	(0.34)		-0.34	(0.42)	
PC Highest Level of Education	1.03	(0.47)	*	0.25	(0.60)		0.25	(0.38)		0.90	(0.46)	*
Public	-1.59	(1.33)		1.46	(1.60)		1.30	(1.13)		2.67	(1.32)	*
Urban	1.10	(1.52)		1.29	(1.84)		1.42	(1.26)		0.43	(1.48)	
Class Size	0.28	(0.21)		-0.22	(0.25)		0.003	(0.17)		-0.05	(0.20)	
2021-22 Percent of DLL children at site	-0.01	(0.07)		0.12	(0.09)		0.06	(0.06)		0.08	(0.07)	
Teacher has Early Childhood Credential	-1.39	(1.34)		-2.38	(1.71)		-0.61	(1.25)		-1.98	(1.43)	

Notes. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The African American/Black race category is used as the reference group for child race. Analyses were based on 20 imputed datasets with 812 children. Analyses were weighted using survey sampling weights.

Table 11. Spring Child Outcome Scores by Select Child and Family Characteristics

	WJ-IV Understanding Directions				WJ-IV Sound Awareness				WJ-IV Picture Vocabulary				PPVT-V Receptive Vocabulary			
	M	**(*SE*)**	***p***	***ES***	***M***	**(*SE*)**	***p***	***ES***	***M***	**(*SE*)**	***p***	***ES***	***M***	**(*SE*)**	***p***	***ES***
Female	93.77	(1.16)			90.18	(1.46)	*	-0.17	93.60	(0.99)			93.09	(1.21)		
Male	94.67	(1.19)			92.96	(1.41)			94.12	(0.99)			94.05	(1.19)		
African American/ Black	93.34	(1.54)			90.92	(1.85)			94.26	(1.24)			92.98	(1.51)	*	-0.17
White	94.98	(1.56)			93.16	(1.97)			93.31	(1.41)			95.62	(1.62)		
DLL	91.33	(2.08)	*	-0.43	87.77	(2.55)	*	-0.46	92.33	(1.68)			91.47	(2.11)		
Non-DLL	97.11	(1.04)			95.37	(1.24)			95.38	(0.84)			95.66	(1.05)		
Public	94.90	(1.18)			92.30	(1.39)			94.50	(1.00)			94.90	(1.18)	*	0.17
Private	92.23	(1.36)			90.84	(1.65)			93.21	(1.13)			92.23	(1.36)		

*Note: Means are estimated from the regression model with results presented in Table 12. Marginal means control for family, child, teacher, classroom, and site characteristics.

Table 12. Classroom Quality Scores by Urban and Rural Counties

		CLASS Emotional Support		CLASS Classroom Organization		CLASS Instructional Support		ELLCO General Classroom Environment		ELLCO Language and Literacy	
	N	***M***	**(*SD*)**	***M***	**(*SD*)**	***M***	**(*SD*)**	***M***	**(*SD*)**	***M***	**(*SD*)**
Urban	116	6.04	(0.55)	6.03	(0.81)	2.57	(0.69)	4.14	(0.59)	3.44	(0.84)
Rural	29	5.96	(0.56)	5.85	(0.80)	2.62	(0.74)	3.92	(0.66)	3.32	(0.73)
Difference											
Means		*NS*		*NS*		*NS*		*		*NS*	
Variances		*NS*		*NS*		*NS*		*NS*		*NS*	

Notes. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, *NS* = not statistically significant. Two-sample *t*-tests and folded *F*-tests were used to assess differences in means and variances, respectively.

Table 13. Results from Regression Models Predicting CLASS scores (All Sites)

	CLASS Emotional Support			CLASS Classroom Organization			CLASS Instructional Support			CLASS Relative Time Spent in Literacy		
	b	***(SE)***	***p***	***b***	***(SE)***	***p***	***b***	***(SE)***	***p***	***b***	***(SE)***	***p***
Intercept	6.04	(0.04)	***	6.02	(0.06)	***	2.58	(0.06)	***	0.82	(0.03)	***
Number of children present	0.02	(0.02)		0.00	(0.03)		0.03	(0.02)		0.00	(0.01)	
Teacher length of time teaching B-K	0.01	(0.00)	**	0.02	(0.01)	*	0.00	(0.01)		0.00	(0.00)	
Teacher Master's degree or higher (1=yes)	-0.04	(0.10)		0.05	(0.15)		0.05	(0.13)		-0.01	(0.08)	
Teacher has Early Childhood Credential (1=yes)	-0.08	(0.12)		-0.05	(0.18)		-0.06	(0.16)		-0.03	(0.09)	
Teacher prep to support child lang development	0.02	(0.06)		0.14	(0.11)		-0.03	(0.09)		0.00	(0.05)	
Public School (1=yes)	0.13	(0.11)		0.12	(0.17)		-0.07	(0.15)		0.17	(0.08)	*
Urban County (1=yes)	0.12	(0.11)		0.18	(0.17)		-0.06	(0.18)		0.05	(0.09)	
Percent of children with IEPs at site	0.01	(0.01)		0.01	(0.02)		0.04	(0.01)	*	-0.01	(0.01)	
Percent of DLL children at site	0.00	(0.01)		0.00	(0.01)		0.01	(0.01)		0.01	(0.00)	
Percent of Category 1 children at site	0.00	(0.00)		0.00	(0.00)		0.00	(0.00)		0.00	(0.00)	
Percent of inclusive Pre-K classrooms at site	-0.01	(0.01)		0.00	(0.01)		-0.01	(0.01)		0.00	(0.01)	
Percent of HS blended Pre-K classrooms at site	0.00	(0.00)		0.00	(0.00)		0.00	(0.00)		0.00	(0.00)	
Inclusive classroom (1=yes)	0.13	(0.42)		-0.12	(0.68)		-0.02	(0.39)		-0.25	(0.31)	
Quality rating												

Notes. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The quality rating score is only applicable to private sites. Analyses were based on 20 imputed datasets with 146 classrooms. Analyses were weighted using survey sampling weights.

Table 14. Results from Regression Models Predicting ELLCO scores (All Sites)

	ELLCO General Classroom Environment			ELLCO Language and Literacy		
	b	***(SE)***	***p***	***b***	***(SE)***	***p***
Intercept	4.10	(0.05)	***	3.42	(0.07)	***
Number of children present	0.03	(0.02)		0.06	(0.02)	*
Teacher length of time teaching B-K	0.01	(0.00)	**	0.02	(0.01)	*
Teacher Master's degree or higher (1=yes)	-0.16	(0.11)		0.05	(0.15)	
Teacher has Early Childhood Credential (1=yes)	0.01	(0.14)		-0.10	(0.18)	
Teacher prep to support child lang development	0.04	(0.08)		-0.10	(0.10)	
Public School (1=yes)	0.03	(0.12)		-0.04	(0.18)	
Urban County (1=yes)	0.21	(0.13)		0.10	(0.19)	
Percent of children with IEPs at site	0.02	(0.01)		0.03	(0.02)	
Percent of DLL children at site	0.01	(0.01)		0.01	(0.01)	
Percent of Category 1 children at site	0.00	(0.00)		0.00	(0.00)	
Percent of inclusive Pre-K classrooms at site	-0.01	(0.01)		-0.01	(0.01)	
Percent of HS blended Pre-K classrooms at site	0.00	(0.00)		0.00	(0.00)	
Inclusive classroom (1=yes)	0.01	(0.39)		-0.11	(0.43)	
Quality rating						

Notes. * p < 0.05, ** p < 0.01, *** p < 0.001. The quality rating score is only applicable to private sites. Analyses were based on 20 imputed datasets with 146 classrooms. Analyses were weighted using survey sampling weights.

Table 15. Classroom Quality Scores by Quality Rated Levels (Private Sites Only)

Quality Rated Level	CLASS Emotional Support					CLASS Classroom Organization				CLASS Instructional Support				CLASS Relative Time Spent in Literacy		
	N	*M*	(SD)	*F-Value (DF)*	*p*	*M*	(*SD*)	*F-Value (DF)*	*p*	*M*	(*SD*)	*F-Value (DF)*	*p*	%	*F-Value (DF)*	*p*
1	21	5.96	(0.49)	0.71 (2)	0.50	5.97	(0.78)	3.45 (2)	*	2.33	(0.71)	0.54 (2)		80.95%	0.86 (2)	
2	24	6.02	(0.54)			6.10	(0.85)			2.53	(0.67)			75.00%		
3	16	5.78	(0.91)			5.37	(1.10)			2.56	(0.96)			81.25%		
Pair-wise Comparisons						2 > 3										

Notes. * p < 0.05, ** p < 0.01, *** p < 0.001. The public-school indicator is not applicable to private sites.

Table 16. Classroom Quality Scores by Quality Rated Levels (Private Sites Only)

Quality Rated Level	ELLCO General Classroom Environment					ELLCO Language and Literacy			
	N	*M*	(SD)	*F-Value (DF)*	*p*	*M*	(*SD*)	*F-Value (DF)*	*p*
1	21	3.90	(0.63)	0.85 (2)		3.33	(0.76)		
2	24	4.17	(0.55)			3.42	(0.82)		
3	16	3.96	(1.01)			3.28	(1.10)		
Pair-wise Comparisons									

Notes. * p < 0.05, ** p < 0.01, *** p < 0.001. The public-school indicator is not applicable to private sites.

Table 17. Correlations between ELLCO Language and Literacy Item Scores and Spring Child Outcome Scores

ELLCO Language & Literacy				Correlations with Spring Child Outcomes			
				WJ-IV Understanding Directions	WJ-IV Sound Awareness	WJ-IV Picture Vocabulary	PPVT-V Receptive Vocabulary
		N = 145		*N* = 696	*N* = 697	*N* = 693	*N* = 693
	Language and Literacy ELLCO Items	*M*	(*SD*)	*r*	*r*	*r*	*r*
8.	Discourse Climate	3.98	0.95	-0.04	0.01	-0.02	0.00
9.	Opp for Extended Conversations	3.41	1.08	0.06	0.09*	0.08*	0.10**
10.	Efforts to Build Vocabulary	2.92	1.25	0.15***	0.13***	0.14***	0.18***
11.	Phonological Awareness	3.01	1.35	0.01	0.03	0.03	0.04
12.	Organization of Book Area	3.68	1.04	0.14***	0.14***	0.16***	0.17***
13.	Characteristics of Books	3.60	1.23	0.06	0.07	0.11**	0.11**
14.	Books for Learning	3.09	1.25	0.11**	0.14***	0.11**	0.13***
15.	Approaches to Book Reading	3.59	1.18	0.11**	0.08*	0.06	0.11**
16.	Quality of Book Reading	3.91	1.27	0.10**	0.06	0.04	0.13***
17.	Early Writing Environment	3.39	1.12	0.07	0.14***	0.07	0.13***
18.	Support for Children's Writing	2.97	1.28	0.08*	0.16***	0.07	0.13***
19.	Environmental Print	3.43	1.09	0.10**	0.09*	0.08**	0.15***

Notes. * p < 0.05, ** p < 0.01, *** p < 0.001. Means and standard deviations based 145 classroom-level observations. Correlations based on child-level analyses.

Table 18. Mean Classroom Quality Scores for Three Cohorts of Georgia's Pre-K Attendees

	2011-2012 n=100 CLASS Pre-K	2013-2014 n=198 CLASS Pre-K	2022-2023 n=145 CLASS v2
CLASS			
Emotional Support	5.5	5.7	6.0
Classroom Organization	5.2	5.5	6.0
Instructional Support	2.8	2.5	2.6
ELLCO			
General Classroom Environment		3.5	4.1
Language & Literacy		3.4	3.4

Table 19. Mean Child Outcome Scores (Fall/Spring) for Three Cohorts of Georgia's Pre-K Attendees

	2011-2012 n=509 WJ-III	2013-2014 n=1,181 WJ-III	2022-2023 n=812 WJ-IV
WJ Picture Vocabulary			
Fall	98.8	99.9	95.0
Spring	99.7	99.8	94.5
WJ Sound Awareness			
Fall	93.4	95.9	90.2
Spring	101.3	102.3	93.3