



The state of Texas mandates that districts with at least 15 or more eligible 4-year-old students provide a half-day prekindergarten (pre-K) program to prepare students developmentally for the rigors of kindergarten and beyond. In 2010–2011, Austin Independent School District (AISD) provided eligible students with full-day pre-K across 68 elementary campuses and the Lucy Read Prekindergarten Demonstration School. This report evaluates student achievement by vertical team in the AISD pre-K program during the 2010–2011 school year, based on the Peabody Picture Vocabulary Test-IV (PPVT-IV) and Test de Vocabulario en Imagenes Peabody (TVIP).

KEY FINDINGS

The major findings of this report include:

Students' ability in receptive vocabulary entering pre-K significantly differed by vertical team.

- English-speaking pre-K students who enrolled at schools in the Reagan, Johnson, Travis, and Eastside Memorial vertical teams had significantly lower normal curve equivalent (NCE) scores in Fall 2010, on average, than did students from other vertical team campuses.
- Spanish-speaking English language learners (ELLs) who enrolled at schools in the Travis, McCallum, and Bowie vertical teams had significantly lower NCE scores in their native language during Fall 2010 than did Spanish-speaking ELLs from other vertical team campuses.

Although the average gains on the PPVT/TVIP significantly differed by vertical team, these differences were attributed more to the students' school and/or classroom rather than to the vertical team in which a school resides.



PRE-K PROGRAM DESCRIPTION

AISD provides a full-day pre-K program for all children who are 4-years-old on or before September 1st of the current school year and who meet one of the following eligibility criteria:

- Economically disadvantaged (qualify for free or reduced-price lunch program)
- ELL
- Homeless
- Child of an active-duty military member or a military member who was injured or killed in service
- Resides or has ever resided in foster care (Texas Education Code §29.153, [b])

The AISD pre-K program is designed to provide instructional activities to meet the individual needs of young children and stimulate learning in all areas of physical, social, emotional, and cognitive development.

The district pre-K curriculum is closely tied to the guidelines issued by the state of Texas and focuses on the content areas of language and literacy, mathematics (math), social studies, science, technology, health, visual arts, music, and physical education, to prepare students for success in kindergarten.

The program's daily schedule also includes lunch, time for outside play, and time for rest. Students are provided ample opportunities for self-expression and divergent thinking through working individually as well as in large and small groups.

Peabody Picture Vocabulary Test by Vertical Team, 2010 – 2011

PEABODY PICTURE VOCABULARY TEST (PPVT)

The PPVT-IV and the TVIP measure knowledge of receptive vocabulary in English and Spanish, respectively (Dunn & Dunn, 2007). Receptive (i.e., hearing) vocabulary is one domain of language development. Pre- and post-assessments were administered by the Department of Program Evaluation (DPE) to a random sample of pre-K classes in the fall and spring of the 2010–2011 academic year. At least one class was chosen from each of the 69 campuses that offer pre-K; eight classrooms were chosen from Lucy Read. All students in the sample were tested in English (PPVT-IV), and Spanish-speaking English language learners (ELLs) were tested in Spanish (TVIP), as well. A total of 1,004 students were tested in both semesters, representing nearly 18% of all students enrolled in the pre-K program. Of the students tested, 37% were English-speakers ($n = 373$), 54% were Spanish-speaking ELLs ($n = 539$), 9% were other ELLs ($n = 92$), and 10% ($n = 104$) were students at Lucy Read.

Pre-K programs are designed to prepare for kindergarten students who might otherwise not have access to early educational programs. A quality pre-K program contributes to the reduction of the achievement gap in school performance that students face due to socioeconomic and language barriers. The goal of AISD pre-K is to raise students' academic performance to the average range of their peers. The assumption is that students who advance to at least the average range in the test of their language of instruction will be ready for future literacy learning in kindergarten.

PPVT-IV and TVIP scores are best interpreted in a student's native language. For the PPVT, students' scores were compared with those of a national sample of native English speakers. For the TVIP, students' scores were compared with those of a national sample of native Spanish speakers. To make group comparisons and estimates of students' gains and losses, standardized scale scores were converted into NCE scores. NCE scores have a mean of 50 and a standard deviation of 21.06 points (i.e., the national normal distribution of scores). When interpreting NCE average gain (or loss), note that a zero shows that the students' growth did not differ from the national average for expected growth; a zero does not indicate "no growth." Deviations of ± 4 represent a significant growth (or loss), compared with national expected growth, and deviations of ± 11 represent a very high significant gain (or loss).

The averaged NCEs for the PPVT and TVIP, by vertical team, are presented in Table 1 for pre-K students tested in both Fall 2010 and Spring 2011. Students' scores are reported by English language proficiency.



PPVT-IV AND TVIP INTERPRETATION

The standard scores for the PPVT and TVIP are based on age norms from samples of native speakers in English and Spanish, respectively. The tests are best interpreted in the native language of the student.

The mean student standard score is 100, with a standard deviation of 15 points. For the national samples on which the scores are based, the majority of students (68%) scored between 85 and 115. Scores less than 70 are *extremely low*, scores ranging from 70 to 84 are *moderately low*, scores ranging from 85 to 99 are *average low*, scores ranging from 100 to 115 are *average high*, and scores higher than 115 are *above average*.

Because these tests are age normed, a student must have a raw score about 8 to 10 points higher in the spring to receive the same standard score as in the fall. Generally, a gain greater than 4 points indicates a significant improvement in performance.

An age-equivalent score converts a student's raw score according to an age reference group in which that raw score represents the median. The age-equivalent score accounts for the rate of receptive vocabulary growth, providing an expected growth rate with which to compare students' performance.

Table 1. Peabody Picture Vocabulary Test (English, PPVT-IV) and Test de Vocabulario en Imagenes Peabody (Spanish, TVIP) Normal Curve Equivalent (NCE) Results, by English Language Learner (ELL) Status, 2010–2011

	Native English speakers (PPVT-IV)				ELLs (TVIP)			
	Number of students tested	Avg. NCE (Fall)	Avg. NCE (Spring)	Avg. gain	Number of students tested	Avg. NCE (Fall)	Avg. NCE (Spring)	Avg. gain
District-wide vertical team	373	39.0	50.2	11.2	488	34.5	51.1	16.6
Akins	38	37.4	51.3	13.9	64	31.5	51.8	20.3*
Anderson	24	45.8*	54.6*	8.8	α	α	α	α
Austin	28	58.1*	66.6*	8.5	19	50.4*	57.2*	6.7*
Bowie	19	44.9*	55.1*	10.2	6	18.0*	21.7*	3.7*
Crockett	39	38.2	57.4*	19.2*	63	31.0	49.9	18.9*
Eastside Memorial	50	35.2*	44.3*	9.1	33	42.0*	47.8	5.9*
Johnson (LBJ)	43	34.8*	44.3*	9.5	56	40.0*	54.4*	14.4
Lanier	26	44.3*	52.38	8.5	100	36.9	55.1*	18.2*
McCallum	53	38.6	47.7	9.1	19	27.8*	44.6	16.8
Reagan	27	31.9*	42.4*	10.4	67	34.1	48.5	14.4
Travis	26	29.2*	44.9*	15.7*	57	27.8*	51.6	23.8*

Source. AISD student records, Department of Program Evaluation

α indicates fewer than 5 students were tested

* indicates significantly different mean NCE or mean NCE gain compared with other vertical teams; *p* < .05

RECEPTIVE VOCABULARY BY VERTICAL TEAM

Incoming English-speaking pre-K students who enrolled at schools in the Reagan, Johnson, Travis, and Eastside Memorial vertical teams had significantly lower average NCE scores in Fall 2010, on average, than did students from other vertical team campuses. Incoming English-speaking students enrolled at schools in the Anderson, Austin, Bowie, and Lanier vertical teams had significantly higher average NCE scores in Fall 2010, on average, than did students from other vertical team campuses (Table 1). Although the sampled English-speaking pre-K students at schools in the Eastside Memorial, Johnson, and Reagan vertical teams did show significantly greater growth than the national average, the mean NCE was still in the low average range, implying that these students may still start kindergarten a little lower in receptive vocabulary ability, on average, than their cohort from other vertical team schools.

INTERPRETATION OF NORMAL CURVE EQUIVALENT (NCE) SCORES		
Range of performance	NCE scores	National percentile
Very low	1–24	1–11
Low	25–35	12–25
Low average	36–44	26–39
Average	45–55	40–60
High average	56–64	61–74
High	65–75	75–88
Very high	76–99	89–99

Source. Southard, 2006

Spanish-speaking ELLs who enrolled at schools in the Travis, McCallum, and Bowie vertical teams had significantly lower average NCE scores in their native language in Fall 2010 than did ELLs from other vertical

Peabody Picture Vocabulary Test by Vertical Team, 2010–2011

team campuses, while ELLs who enrolled at schools in the Austin, Eastside Memorial, and Johnson vertical teams had significantly higher average NCEs for the TVIP. In particular, the Austin vertical team schools had average NCEs at or above the national average.

Although students' average NCE gains differed by vertical teams, hierarchical linear modeling (HLM) revealed that 5% of the variation in students' gains was attributable to the vertical team. Meanwhile, 14% of the variation in pre-K students' scores was due to between school and between classroom differences. In other words, students' schools and/or classrooms accounted for more differences in PPVT/TVIP gains among students than did the vertical team in which a school belonged. These findings show that although academic need for pre-K varied by vertical team, the effectiveness of the program varied more by the school/and or classroom level than by vertical team.

Thus, these data should not be used to assess effectiveness of pre-K by vertical team. DPE did not collect data that could reliably assess the effectiveness of all school programs due to how the sample was selected (i.e., one classroom for some schools).

POLICY IMPLICATIONS

If funding for full-day pre-K programming at all eligible schools is not available, AISD should try to continue to support funding of a full-day program for students in the highest need schools within the highest need vertical teams (i.e., the highest concentration of students entering the district at least one standard deviation below the national average in receptive vocabulary in their native language) to ensure that students continue to enter kindergarten ready to learn on grade level.

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