Department of Research and Evaluation
AUSTIN INDEPENDENT SCHOOL DISTRICT

PREDICTORS OF ENGLISH LANGUAGE LEARNER PROGRAM EXITS, 2006–2007 FIRST-GRADE COHORT

RESEARCH BRIEF

Background. Department of Research and Evaluation (DRE) staff recommended further research to determine factors that explain why some English language leaners (ELLs) exit the language program within 5 to 7 years and others do not (Brunner, 2012). The purpose of this report is to examine possible indicators of a successful ELL program exit for ELLs who were enrolled in Austin Independent School District [AISD] in 1st grade. In a previous AISD study, 84% of ELLs who were in the United States for 5 or more years (as of grade 6 through 11) enrolled in AISD in early education through 2nd grade (Brunner, 2011). By focusing analysis on the 1st-grade cohort, the results might be generalizable to a majority of potential long-term ELLs.

This report provides (a) characteristics of ELLs who were more likely to exit the language program within 5 years of 1st-grade enrollment,[1] (b) characteristics of ELLs who were more likely to be "long-term ELLs," (c) performance ranges on the Texas English Language Proficiency Assessment Scales (TELPAS) and Developmental Reading Assessment (DRA) that may be associated with a successful exit or "long-term ELL" status, and (d) performance percentile[2] ranges on the Texas Assessment of Knowledge and Skills (TAKS) mathametics (math) and reading that may be associated with a successful exit or "long-term ELL" status. The performance ranges may be used by administrators to determine cut scores for differentiated instruction or for intervention for ELLs.

Methodology. A successful ELL program exit was defined as a student exiting the program within 5 years of 1st-grade enrollment (i.e., by the 6th grade if enrolled in AISD in the 1st grade) and passing the TAKS standard[3] on the

Key Findings

Two out of five (39%) 2006–2007 1st-grade ELLs successfully exited the AISD ELL programs within 5 years.

One in four (27%) 2006–2007 1st-grade ELLs was likely to be a long-term ELL.

Characteristics associated with a greater probability of successful ELL program exit were:

- Participated in gifted and talented program
- Was not retained a grade level
- Did not participate in special education services
- Was not economically disadvantaged
- Was non-Spanish-speaking
- Was female

Characteristics associated with a greater probability of being a long term ELL were:

- Was economically disadvantaged
- Was Spanish-speaking
- Was retained a grade level
- Had low attendance in 3rd grade

[1] Years in U.S. schools is defined by the Texas Education Agency (TEA) as years starting with 1st through 12th grade (TEA, 2012).
[2] TAKS percentile ranges may be used to estimate equivalent performance scores on STAAR.
[3] At the time of the analysis, STAAR Level II standards for 3rd through8th grade were not provided to the district. TAKS is the former assessment system for the state of Texas (i.e., prior to 2011–2012).

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State of Texas Assessments of Academic Readiness (STAAR) in reading and math in Spring 2012.[4] Using logistic regression, DRE staff modeled the probability of exiting the ELL program by the sixth enrolled year for the 2006–2007 1st-grade cohort. In Fall 2006, 2,758 ELLs were enrolled in 1st grade in the district. Of those ELLs, 1,590 (58%) were enrolled in 1st grade for the first time in 2006, were in the district in Fall 2011 (in any grade level), and had STAAR data. A description of the sample is provided in Table 1.

Table 1. Characteristics of Study Sample, Fall 2011

Characteristics	N	%
English language learner (ELL)	876	55
Previous ELL	179	11
First year monitored	185	12
Second year monitored	350	22
Total sample	**1,590**	**100**
Male	778	49
Economically disadvantaged	1,475	93
Retained a grade level	207	13
Spanish home language	1,503	92
Gifted and talented program	132	8
Special education program	177	11
AISD kindergarten program	1,465	92
AISD prekindergarten program	1,263	79

Source. AISD student records, 2004–2012

Assessment scores were better indicators of ELLs exiting the language programs than were student characteristics.

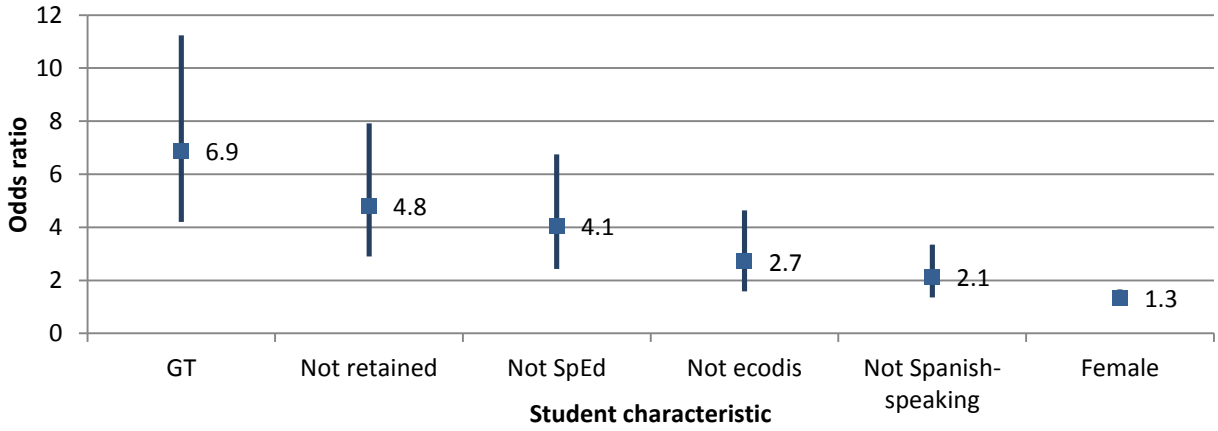
Student characteristics of successful exiters and potential long-term ELLs. Approximately 39% (*n* = 613) of the sample successfully exited the language program by Fall 2011. Six percent (*n* = 101) exited but did not pass the TAKS equivalency on reading and math STAAR, 28% (*n* = 445) did not exit the language program but did pass the TAKS equivalency on both reading and math STAAR, and 27% (*n* = 431) did not exit the language program and did not pass the TAKS equivalency on both reading and math STAAR. The last group of ELLs were categorized by DRE staff as potential long-term ELLs. DRE analysis focused on contrasting students who successfully exited the language program with those who were potential long-term ELLs.[5]

Successful exits. As shown in Figure 1, the student characteristics that were related to higher probabilities of successful ELL program exit were (a) participated in a gifted and talented (GT) program at any time within the past 5 years; (b) was not retained for at least one grade level; (c) did not participate in special education (SpEd) services within the past 5 years; (d) was not economically disadvantaged in Fall 2010 (i.e., year prior to analysis year)[6]; (e) had a home language other than

[4] The sixth year in U.S. schools for the 2006–2007 1st-grade cohort.
[5] Based on preliminary analysis of variance on assessment data, DRE staff categorized students who may have exited the language program prematurely and those who were in the language program and passed the TAKS equivalency as ELLs, who may require additional time in the ELL program, but may successfully exit within 7 years. ELLs who did not exit and did not pass the TAKS equivalency on both reading and math STAAR were assumed to require the ELL program for more than 7 years.
[6] The year is most likely a proxy for students who have been economically disadvantaged for multiple years.

Spanish; and (f) was female.[7] These characteristics were most likely to be associated with students' academic performance in general.

Figure 1. First-Grade Cohort's Likelihood of Successfully Exiting Language Program Within Five Years, by Student Characteristic, 2006–2007



Source. AISD student records, 2004–2012

Note. GT is gifted and talented program. SpEd is special education services. Ecodis is economically disadvantaged and refers to students who qualify for free or reduced-priced lunch. The lines represent the 95% confidence interval.

Note on logistic regression. Logistic regression is used to predict the probability of the occurrence of an event (i.e., in the above case, successful ELL program exit). The odds ratios and predicted probabilities were based on data from the 2006–2007 1st-grade cohort.

An *odds ratio* is the probability of an event occurring over it not occurring. It can be interpreted using a comparison group to differentiate the odds of an event occurring. For example, ELLs who were in the GT program were 6.9 times more likely to successfully exit the ELL program within 5 years of 1st grade than were those not in the GT program (see Figure 1).

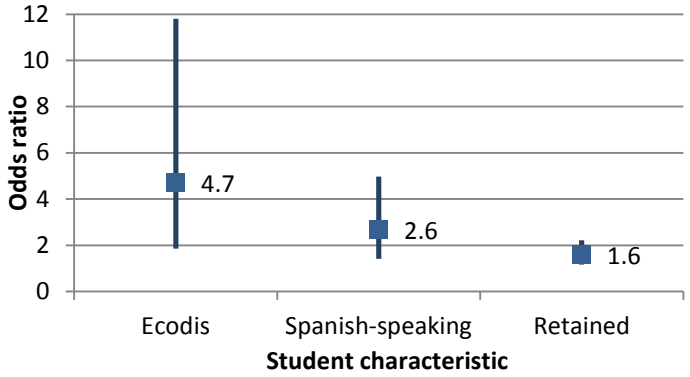
Predicted probability is the probability an event will occur, ranging from 0 (i.e., will not occur) to 1 (will occur). For example, an economically disadvantaged, Spanish-speaking ELL with a 90% attendance rate (in 2008–2009) had a 42% chance of being a long-term ELL (27% of the sample were long-term ELLs; see Figure 2).

Long-term ELLs. The student characteristics that were related to a higher probability of being a long-term ELL were (a) economically disadvantaged Fall 2010 (i.e., year prior to analysis year); (b) Spanish-

[7] DRE staff examined the following student-level characteristics in a logistic regression analysis using forward stepwise selection and backward elimination to determine the probability of a successful ELL program exit and potential long-term ELL status: gender; home language; economic disadvantage (i.e., qualified for free or reduced-priced lunch at any time in 2006–2010); attendance rates (in 2006–2007, 2007–2008, 2008–2009, 2009–2010, 2010–2011); SpEd program participation (at any time in 2006–2011); GT program participation (at any time in 2006–2011); AISD prekindergarten participation; AISD kindergarten participation; grade retention (at any time in 2004–2011); and year-to-year school mobility (among elementary schools, based on fall enrollments during the snapshot date).

speaking; (c) retained for at least one grade level (Figure 2); and (d) had lower attendance in 2008–2009 (i.e., the majority of the sample was in 3rd grade; Figure 3).[8]

Figure 2. First-Grade Cohort's Likelihood of Staying in the English Language Learner Program for More Than Five to Seven Years, by Student Characteristic, 2006–2007

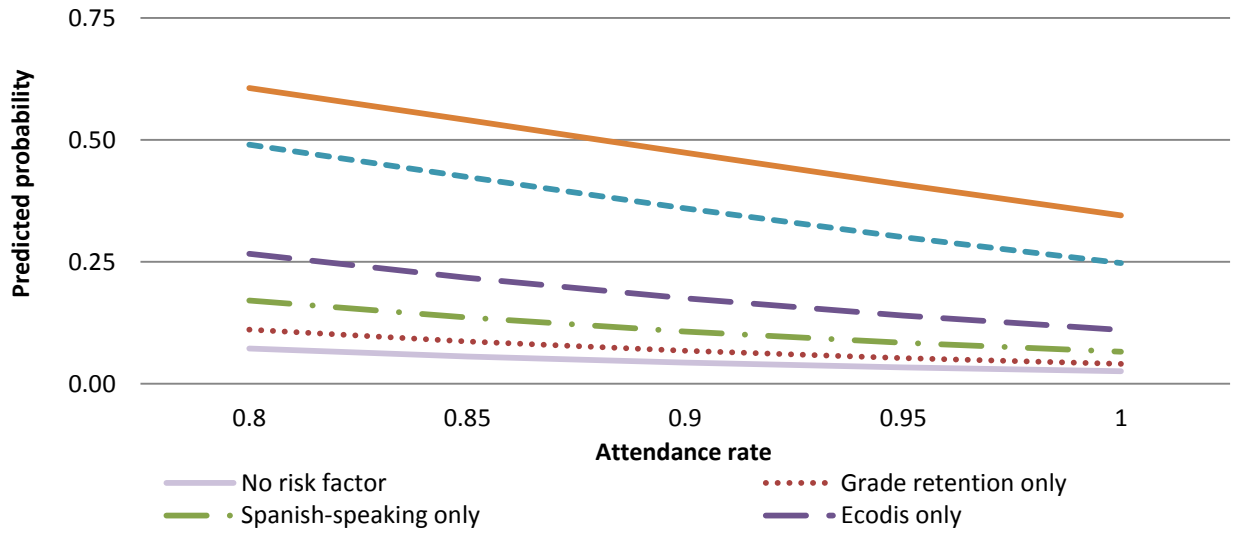


Source. AISD student records, 2004–2012
Note. Ecodis is economically disadvantaged. The lines represent the 95% confidence interval.

Interpreting the graphs. For indicators that represent categories (e.g., gender, language), the square represents the estimated odds ratio and the line represents the 95% confidence interval (CI) range for the estimate.

For indicators that represent continuous values (e.g., attendance rates, TELPAS scores), the lines represent the change in predicted probability based on the values, keeping constant students' characteristics. The slope (i.e., angle) of the lines represents the difference in the effect. The greater the slope, the greater the effect.

Figure 3. First-Grade Cohort's Predicted Probabilities for Long-term English Language Learner Status, Based on 2008–2009 Attendance Rates, by Student Characteristics, 2006–2007



Source. AISD student records, 2004–2012
Note. Ecodis is economically disadvantaged and refers to students who qualify for free or reduced-priced lunch. Risk factors are ecodis, retained a grade, and Spanish-speaking.

[8] GT was intentionally left out of the model; however, students who were not in the GT program were more likely than were students not in the program to be long-term ELLs.

According to the model, 3rd-grade (and possibly 2nd-grade[9]) attendance rates were related to the probability of students not exiting the ELL program and not meeting the TAKS equivalency on STAAR reading and math in Spring 2012.[10] Attendance in 2008–2009 (i.e., 3rd-grade year for the majority of the sample) was slightly more crucial for students who had multiple risk factors (i.e., Spanish-speaking, retained a grade level, or economically disadvantaged) than for those who did not. However, in general, ELLs had high attendance rates (i.e., the sample's average attendance rate for 2008–2009 was 97.7%). In Figure 3, the slope of the lines represents the difference in effect for attendance. The gaps between the lines (i.e., the intercept difference) represent the difference in probabilities based on student characteristics, which have a greater effect on exit rates than attendance.

Assessment indicators. Because academic performance is a criterion for exiting ELL programs, academic performance indicators directly contribute to students' ELL status continuation. Using analysis of variance (ANOVA), DRE staff found differences between the average assessment scores (i.e., TELPAS and DRA)[11] of students who successfully exited the ELL programs within 5 years and the average assessment scores of those who were potentially long-term ELLs, as shown in Table 2.

Table 2. Students who successfully exited the English language learner (ELL) programs within 5 years of 1st grade had signficantly higher assessment scores than did those who were potential long-term ELLs.

	Successfully exited within 5 years				Potential long-term ELLs			
Assessment	*N*	Mean	95% CI	SD	*N*	Mean	95% CI	SD
TELPAS								
Year 1 (2006–2007)	604	2.1	2.0–2.2	1.1	425	1.3	1.4	0.6
Year 2 (2007–2008)	597	3.1	3.0–3.1	0.8	407	1.6	1.8–1.9	0.6
Year 3 (2008–2009)	591	3.5	3.4–3.5	0.6	411	1.9	2.2–2.3	0.7
Year 4 (2009–2010)	434	3.8	3.7–3.8	0.4	408	2.4	2.6–2.8	0.8
Year 5 (2010–2011)	162	3.9	3.9–4.0	0.3	410	3.2	3.2–3.3	0.8
End-of-year DRA								
Grade 1 – Spanish	434	22.4	22–23	7.7	401	14.1	13–15	6.4
English	162	20.9	20–22	9.1	21	13.5	10–17	8.1
Grade 2 – Spanish	397	30.9	30–32	6.3	381	23.1	22–24	6.8
English	198	31.2	30–32	7.2	25	19.4	15–23	9.8

Source. AISD student assessment records, 2006–2011

Note. TELPAS is Texas English Language Proficiency Assessment Scales. DRA is Developmental Reading Assessment. CI is confidence interval at the 95% confidence level. SD is standard deviation. If a student had multiple DRA scores, the score used in the analysis was based on the first year the student took the assessment, the best score within the assessment year (if taken in multiple languages), or both.

[9] Attendance rates for the 2008–2009 school year were moderately correlated with attendance rates for the 2007–2008 school year ($r = .6$, $p < .0001$).

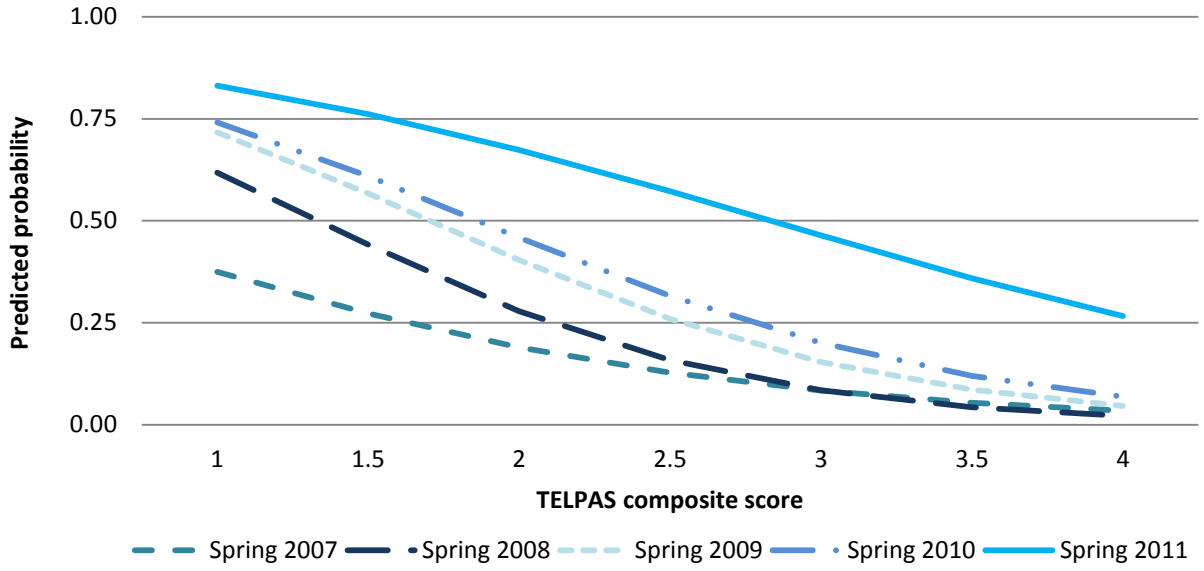
[10] The 2008–2009 attendance rate dropped out of the model for successful ELL program exit when grade retention was added to the model, implying that most of the students who had low attendance were retained at least one grade level. For the long-term ELL model, students' 2008–2009 attendance rate was significant even with the grade retention indicator.

[11] DRE staff could not use the Texas Primary Reading Inventory (TPRI) due to lack of documentation regarding fields in the electronic file.

District administrators may consider using a cut score within the range of the 95% confidence intervals to provide additional support, intervention, or differentiated instruction to ELLs. For example, the district might advise one type of intervention for students who scored between 20 and 30[12] on the 2nd-grade end-of-year (EOY) DRA and additional support to those who scored below 20. DRE staff recommend using multiple measures to determine particular student needs because one measure might be unreliable.

TELPAS composite scores from students' 2nd and 3rd year (i.e., Spring 2008 and Spring 2009) since their first-time 1st-grade enrollment were slightly better than were other assessment measures at predicting long-term ELL status, although all assessment measures were moderate predictors (Figure 4).[13] Probabilities for being a long-term ELL dramatically increased in the 5th year (i.e., Spring 2011), most likely due to many students exiting in 4th grade (i.e., if a student did not exit by 4th grade, the probability of being a long-term ELL increased for all levels of TELPAS performance).

Figure 4. First-Grade Cohort's Predicted Probabilities for Long-term English Language Learner Status, Based on Texas English Language Proficiency Assessment Scales (TELPAS), by Year, 2006–2007



Source. AISD student records, 2006–2012

Note. TELPAS composite scores range from 1 = *beginning* to 4 = *advanced high* and are represented on the horizontal axis. Each line in the graph represents the range of TELPAS composite scores for a given test administration (e.g., Spring 2007).

DRE staff conducted additional analyses using TAKS math and reading performance. In 2011–2012, Texas transitioned to STAAR. To provide an estimate for STAAR cut scores in determining students' likelihood to successfully exit the ELL programs or be a long-term ELL, DRE staff converted average TAKS scale scores to approximate percentile ranks, based on scale score distributions for a particular administration year, language, and grade level (TEA, 2009, 2010, and 2011; Table 3). Students who were

[12] The low score is based on the score range for potential long-term ELLs, and the high score is based on the range for successful exits.

[13] C-statistic (*c*) ranged from .7 to .88. Somer's D ranged from .44 to .77.

likely to exit the ELL program generally scored in the top 40th percentile in reading and math, while students who were potential long-term ELLs generally scored in the bottom quartile. Students who took the Spanish exam had higher percentile ranks than did students who took the English exam, due to a different means of comparison for performance (i.e., ELLs who took the English version also were compared with non-ELLs).

Table 3. Texas Assessment of Knowledge and Skills Percentile Rank Scores for Students who Successfully Exited the English Language Learner (ELL) Programs Within Five Years of First Grade and Potential Long-term ELLs

	Successfully exited within 5 years			Potential long-term ELLs		
	Percentile rank score			Percentile rank score		
		95% CI			95% CI	
Assessment	Average	Low	High	Average	Low	High
TAKS reading						
Grade 3 - Spanish	71	71	71	38	35	41
English	65	54	65	19	12	27
Grade 4 – Spanish	69	54	85	31	27	36
English	63	55	93	9	6	9
Grade 5 – English	63	63	63	16	16	19
TAKS math						
Grade 3 – Spanish	76	69	76	30	26	34
English	72	63	72	16	10	18
Grade 4 – Spanish	90	77	96	36	28	40
English	72	72	72	21	18	43
Grade 5 – English	74	66	74	24	21	27

Source. AISD student assessment records, 2009–2011, and TEA, 2009, 2010, and 2011

Note. TAKS scores did not include modified or alternate versions of the assessments due to low counts. Students retained after grade 1 might not be included. CI is confidence interval at the 95% confidence level. For rows in which the average and high estimate match, scale scores corresponded to similar approximate percentile ranks. Approximate percentile rank was based on the closest scale score's cumululative frequency. See Table A-1 in the Appendix for estimated scale scores.

Vertical team effect. At best, the indicators in this report were moderate predictors of students successfully exiting the ELL programs or becoming a long-term ELL. This may be partially due to the interventions that may have occurred or the ELL programs' effectiveness at particular schools. DRE staff used multilevel logistic regression to estimate vertical team effects, controlling for students' individual probabilities for successful exit and long-term ELL status. DRE staff modeled multiple years to account for student mobility and not to infer that any particular year was critical. Students were linked to schools in which they were enrolled on the fall snapshot date for 2006, 2007, 2008, 2009, and 2010.[14] Caution should be used when interpreting results because factors may have changed (e.g., ELL programs provided, staffing). Also, because ELLs' exits may have occurred at any time within a 5-year span, the school's characteristics may have varied over that time period and may no longer apply. Table 4

[14] Although Fall 2006 represents students' 1st-grade year, the years do not necessarily correspond to a grade level.

provides the average percentages of successful ELL exits and potential long-term ELLs for each vertical team.

Table 4. Successful English Language Learner (ELL) Program Exit and Potential Long-term ELLs, by Vertical Team, 2006–2011

School	Avg. total in district for 5+ years	Average successful exits		Average long-term ELL	
		n	%	*n*	%
District	1,590	613	39%	431	27%
Akins	155	82	53% ↑	33	21%
Anderson	40	23	58%	*	*
Austin	35	27	77%	*	*
Bowie	34	26	76%	*	*
Crockett	175	82	47%	40	23%
Eastside	136	45	33%	32	23%
Johnson	194	47	24%	67	34%
Lanier	184	44	24%	64	35%
McCallum	80	25	32%	22	28%
Reagan	284	134	47% ↑	70	25%
Travis	230	73	32%	80	35% ↑

Source. AISD student records, 2004–2012

Note. "Avg. total in district for 5+ years" is the average total number of students who were ever in the ELL program enrolled at the school across Fall 2006, 2007, 2008, 2009, and 2010. "Average successful exits" is the average number of students who successfully exited the ELL program within 5 years of their first-time enrollment in 1st grade, regardless of the year they exited. "Average long-term ELL" is the average number of students who were ELLs in Fall 2011 and did not pass the State of Texas Assessments of Academic Readiness (STAAR) in reading and math in Fall 2012. Thirty-seven percent of ELLs exited the ELL programs district wide, and 27% did not exit the language and did not pass the TAKS equivalency on both reading and math STAAR.

* represents redacted data due to small cell count.

↑ represents significant increased probability ($p < .05$) of event (i.e., successful exit or longterm ELL) controlling for students' individual risk factors.

Akins and Reagan vertical team schools, on average, had a successful exit rate significantly higher than the district's average predicted exit rate, taking into account the characteristics[15] of their enrolled ELLs (Table 4). In other words, given the characteristics of their students, students enrolled at Akins and Reagan vertical team schools had a higher probability of successfully exiting the language programs than did students enrolled at other vertical teams. Although Anderson, Austin, and Bowie vertical teams had

[15] The characteristics were related to higher probabilities of successful exit: gender, GT program placement, SpEd program placement, grade retention, economic disadvantage in 2010, Spanish-speaking, and attendance rate in 2008–2009. DRE staff used the estimated predicted probability of each student, based on the logistic regression model for successful ELL program exit, as the control variable.

successful exit rates higher than the district's average of 37%, their exit rates were expected (i.e., within the predicted confidence interval of the model), given the characteristics of their students. Travis vertical team had a significantly greater percentage of potential long-term ELLs than the district's average predicted rate, taking into account the characteristics[16] of its enrolled ELLs.

Conclusion. ELLs' preliteracy and reading skills performance are the best predictor of whether a student will successfully exit the ELL programs within 5 years of 1st grade or be a potential long-term ELL, mainly because this is a requirement for exit. By looking at multiple performance measures (i.e., TELPAS, STAAR reading, DRA), administrators can determine appropriate instruction and interventions for ELLs. This report can be used to guide decisions about appropriate cut points for the assessments analyzed.

The analysis for the 2006–2007 1st-grade cohort suggests the need for additional support in literacy for ELLs in the Travis vertical team. The Texas Literacy Initiative (TLI) grant received by AISD in 2012–2013 supports literacy for all schools within the Travis and Lanier vertical teams. Although schools in the Lanier and Johnson vertical teams were as effective with respect to ELLs' exits and the potential for long-term ELLs as was the district average, they have schools with a greater proportion of ELLs at risk for staying in the ELL programs for more than 5 to 7 years. If the literacy grant can be expanded to other teams, DRE staff recommend the district consider the inclusion of the Johnson vertical team. In addition, DRE staff recommend further research to determine if these findings are similar for additional cohorts of ELLs.

References

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[16] The characteristics were related to higher probabilities of long-term ELL status: grade retention, economic disadvantage in 2010, and Spanish-speaking. DRE staff used the estimated predicted probability of each student, based on the logistic regression model for long-term ELL status, as the control variable.

APPENDIX

Table A-1. Average Texas Assessment of Knowledge and Skills Scores, by Students who Successfully Exited the English Language Learner (ELL) Programs Within 5 years of 1st Grade and Potential Long-term ELLs

	Successfully exited in 5 years				Potential longterm ELLs			
Assessment	*N*	Mean	95% CI	SD	*N*	Mean	95% CI	SD
Standard TAKS reading								
Grade 3 – Spanish	207	2330	2310–2348	141	314	2184	2170–2197	125
English	373	2356	2341–2371	147	40	2145	2092–2197	166
Grade 4 – Spanish	17	672	629–714	84	183	585	574–595	71
English	563	661	654–668	83	145	510	501–516	46
Grade 5 – English	581	725	720–730	66	317	620	614–626	57
Standard TAKS math								
Grade 3 – Spanish	178	2337	2311–2363	178	671	2120	2100–2140	176
English	400	2372	2354–2389	182	55	2064	2023–2104	150
Grade 4 – Spanish	15	734	679–788	98	159	561	549–574	82
English	565	701	694–707	79	169	577	566–589	76
Grade 5 – English	595	743	737–750	82	326	620	613–627	66

Source. AISD student assessment records, 2006–2011

Note. TAKS scores did not include modified or alternate versions of the assessments due to low counts. CI is confidence interval at the 95% confidence level. SD is standard deviation.