AISD REACH Program Update
2009—2010 Texas Assessment of Knowledge and Skills (TAKS) Results and Student Learning Objectives (SLOs)

AUSTIN INDEPENDENT SCHOOL DISTRICT
Department of Program Evaluation

AISD REACH
Supporting & Rewarding Success in the Classroom

What is AISD REACH?

AISD REACH is a strategic compensation program designed to enhance student achievement by rewarding educators and principals for success in the classroom and providing support for their professional growth. To attain one of the program's major elements (i.e., student growth), teachers[1] are trained in the development and implementation of SLOs.

What are SLOs and how do they work?

SLOs are targets for student growth that teachers set at the beginning of the school year and strive to achieve by the end of the semester or school year. They are designed to assist teachers in focusing instruction on a particular area of student need, tying particular instructional practices to that area of need, and monitoring student progress to inform adjustments in practice. SLOs are based on the Texas Essential Knowledge and Skills (TEKS) and are established and implemented through a multi-step process.

First, teachers examine their current students' performance data and identify two areas of greatest need. Next, pre-assessments are administered to students in their selected areas of need. Third, teachers examine assessment results and set rigorous SLO targets for student performance by the end of the school year. Teachers propose two SLOs that must be reviewed and approved by the campus principal and the REACH central office SLO team. Each SLO must indicate performance targets students will meet by the end of the school year and how student performance will be assessed. At least one SLO must target students in an entire course, and the second may target either a specific group of students or all the students in a course[2]. Finally, at the end of the year (or semester, for semester courses), students take a post-assessment to determine if they, and by extension their teachers, met the previously established growth targets.

To help with the SLO process, campuses that had been part of the AISD REACH program since its inception in 2007—2008 used a new support method of campus-based SLO facilitators trained in the SLO process by the REACH SLO team; in contrast, campuses new to the program in 2008—2009 or 2009—2010 received all their SLO support from the REACH central office SLO team.

[1] Other educators (e.g., counselors, assistant principals, librarians, and instructional specialists) also implement SLOs and are eligible for stipends.
[2] In 2010—2011 the SLO process changed to include one individual teacher SLO and one SLO for a team of teachers.

Computing Growth on TAKS

Using a prediction equation, test scores, and the conditional standard error of measurement associated with each TAKS score for 2009, a prediction interval was computed for each 2010 score. Students either scored above (green), within (blue), or below (red) the interval that was predicted based on their prior performance.
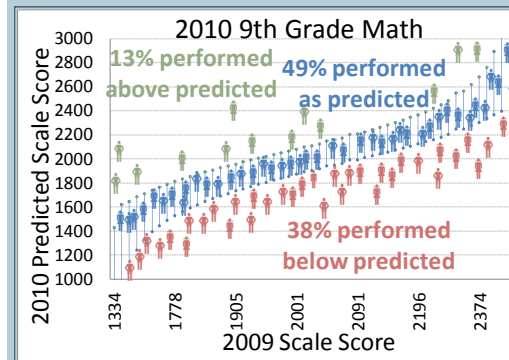
Next, the percentage of each teacher's students who scored above, within, or below predicted was computed.
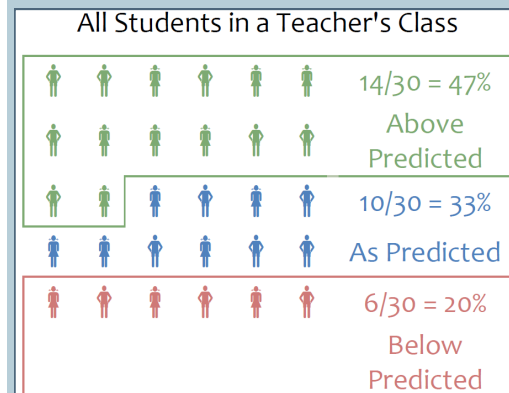
Finally, net growth scores, which were used in evaluating the effects of SLOs, were calculated by subtracting the percentage below predicted from the percentage above predicted.

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Evaluation Methodology

Because SLOs are designed to target TEKS, TAKS data were used to quantify the effects of SLOs in mathematics (math), reading, and science across Reach elementary, middle, and high schools. Each teacher's net growth was measured as the percentage of students in a classroom who performed above predicted on TAKS minus the percentage of students who performed below predicted. We examined TAKS net growth in all three subject areas across all levels for all Reach teachers and all comparison teachers. This same analysis then was performed for novice teachers only. We also compared TAKS net growth in the three subject areas across all levels for four groups:

- Reach teachers who set but did not meet SLOs in the subject,
- Reach teachers who met at least one SLO in the subject,
- Reach teachers who did not set an SLO in that subject, and
- teachers at comparison schools.

This analysis also was performed for novice teachers. Finally, we investigated the correlation between teachers' participation in SLO training and their students' TAKS growth.

Key Findings

Inconsistent results presented in the sections that follow suggest the program has not influenced TAKS performance at a schoolwide level in the intended manner. Although Reach teachers demonstrated greater net growth in some instances (e.g., elementary science), comparison teachers also demonstrated greater net growth in some instances (e.g., high school science). Additionally, when examining the student growth of the "best" Reach teachers against that of all teachers at comparison schools, results were mixed. Reach teachers who met at least one SLO performed similarly to comparison teachers overall, with some favorable results at middle school and some unfavorable results at high school. However, Reach novice teachers who met at least one SLO outperformed their peers at comparison schools in about half of the instances that were examined.

Results were more favorable when examining student growth of teachers within Reach. Comparisons between Reach teachers who met at least one SLO and their peers who did not meet SLOs suggest that those who met SLOs were indeed more likely to demonstrate greater student growth on TAKS than were those who did not. Thus, SLO performance did generally reflect performance on TAKS, particularly in math.

The following sections describe the details of analyses that examined three key questions:

1) Was Reach teachers' net TAKS growth better than that of comparison teachers?
2) Did setting and/or meeting SLOs correspond to better TAKS growth?
3) Did teachers' participation in SLO training relate to their students' TAKS scores?

Fast Facts

Instructional staff at non-highest needs campuses received a stipend of $1,000 per SLO met; principals received $3,000 for facilitating the SLO process.

Instructional staff at highest needs school received $1,500 per SLO met; and principals received $4,500 for facilitating the SLO process.

In 2009-2010, 62% of all Reach participants met both SLOs, and 20% met one SLO.

Reach participants earned $1.8 million dollars in 2009-2010 for SLOs.

Was REACH teachers' net TAKS growth better than that of comparison teachers?

When comparing all REACH school teachers with all comparison school teachers in reading, math, and science at all three levels (Table 1), REACH teachers outperformed comparison school teachers in one area: REACH elementary teachers achieved greater net growth in science than did comparison teachers (*t* = 2.02, *p* < .05). However, comparison elementary teachers achieved greater net growth in math than did REACH teachers (*t* = 2.48, *p* < .05), and high school comparison teachers achieved greater net growth in science, on average, than did their REACH school peers (*t* = 2.64, *p* = .01).

When performing this same analysis with only novice teachers, no statistically significant differences were found in the desired direction. At the elementary school level, novice teachers at comparison schools had a greater net growth in reading than did their REACH school peers (*t* = 2.08, *p* < .05).

Due to the small number of teachers in some groups (see Appendix), effect sizes also were computed. Measures of effect size indicate the magnitude of the relationship between two variables, and in combination with tests of statistical significance can provide additional information about differences between groups. A statistically non-significant result with a large effect size and small cell size suggests a meaningful difference, with an insufficient number of participants to find a statistical difference.

Effect sizes reveal several additional meaningful differences between REACH and comparison teachers, with mixed results in favor of each. For example, middle school novice REACH teachers had greater net growth in reading, math, and science than did their comparison school peers; however, high school novice comparison teachers had greater net growth in math and science than did their REACH peers (Table 1).

Table 1. Net Growth on TAKS for REACH and Comparison Teachers

	Level	Reading REACH	Reading Comparison	Mathematics REACH	Mathematics Comparison	Science REACH	Science Comparison
All teachers	EL	-8.20	-2.77 †	-2.88	6.42 †*	3.76 †*	-3.83
	MS	5.78 ††	-2.11	-1.82	-4.79	-3.87	-3.59
	HS	-16.11	-11.78 †	-11.13	-6.25 †	-11.76	-1.81 ††*
Novice teachers	EL	-21.58	-11.51 †*	1.43	0.52	-5.40	1.12 †
	MS	9.77 ††	-4.36	-0.94 †	-6.74	-0.46 ††	-11.34
	HS	-10.61 †	-17.65	-8.25	-6.02 †	-17.15	-5.47 ††

Note. Symbols are placed beside the highest mean of each pairwise comparison. Net growth represents the percentage of students performing above predicted minus the percentage of students performing below predicted. Negative net scores indicate that more students performed below predicted than above. *p<.05; † indicates an effect size of ≥ .2 and ≤ .49; †† indicates an effect size ≥ .50

Did setting and/or meeting SLOs correspond to better TAKS growth?

For Teachers at REACH Schools

Effect size and significance tests were used to compare the net growth on TAKS for REACH teachers who met at least one SLO with that for REACH teachers who did not meet either SLO (Table 2).[3] Results indicate that within the REACH pilot program, teachers who met at least one SLO generally had greater net growth on TAKS than did their peers who did not meet SLOs.

Among elementary teachers, large effect sizes indicate meaningful differences in net growth for every subject between those who met and did not meet SLOs, though no statistical significance was found.

[3]Comparisons are reported separately in Tables 2 and 3, but were computed simultaneously in ANOVAs examining differences between the following four groups: REACH teachers who set but did not meet SLOs in the subject, REACH teachers who met at least 1 SLO in the subject, REACH teachers who did not set an SLO in that subject, and teachers at comparison schools.

At the middle school level, both large effect sizes and statistical significance ($F = 4.57$, $p < .05$ for all teachers and $F = 5.22$, $p < .05$ for novice teachers) were found between math teachers who met and did not meet SLOs. No differences were found for reading teachers, and only a small effect size was found in science for novice middle school teachers (i.e., those who met at least one SLO achieved slightly greater net growth than did their peers who did not meet SLOs).

Table 2. Net Growth on TAKS for REACH Teachers who Met or Did Not Meet at Least one Student Learning Objective (SLO)

|	Level	Reading		Mathematics		Science	
		Met at least 1 SLO	Did not meet SLOs	Met at least 1 SLO	Did not meet SLOs	Met at least 1 SLO	Did not meet SLOs
All teachers	EL	-1.83 ††	-14.04	2.98 ††	-16.66	3.78 ††	-3.78
	MS	5.21	5.35	5.97 ††*	-19.71	-3.47	-5.05
	HS	-15.72	-11.66 †	-6.83 ††**	-16.25	-8.60 ††	-15.10
Novice teachers	EL	-6.66 ††	-23.78	9.64 ††	-0.83	3.33 ††	-26.6
	MS	14.16	7.57	12.07 ††*	-40.00	1.82 †	-5.05
	HS	-0.90 ††	-22.49	-6.8 †	-11.11	-16.16 †	-18.14

Note. Symbols are placed beside the highest mean of each pair.
*$p<.05$; **$p<.01$; † indicates an effect size of $\geq .2$ and $\leq .49$; †† indicates an effect size $\geq .50$

High school math and science teachers who met at least one SLO demonstrated greater net growth than did their peers who did not meet SLOs, with large effect sizes in both subjects and statistically significant differences in math ($F = 5.35$, $p < .01$) for all teachers. Results also show a large meaningful difference between novice reading/ELA teachers who met and did not meet their SLOs. However, a small effect size indicates that in general, reading/English language arts (ELA) teachers who did not meet SLOs had greater net growth than did those who met at least one SLO.

Considering both significance tests and effect sizes, results suggest that of the comparisons between teachers who met at least one SLO and those who did not meet SLOs, teachers who met at least one SLO outperformed their peers who did not meet SLOs in 67% of cases (6 of 9), and in 11% of cases (1 of 9), teachers who did not meet SLOs outperformed those who did (Figure 1). Among novice teachers, those who met at least one SLO outperformed those who did not meet SLOs in 89% of comparisons (8 of 9).

Figure 1. Comparisons With Meaningful Differences in Favor of Teachers Who Met at Least one Student Learning Objective (SLO), Did Not Meet SLOs, or Neither
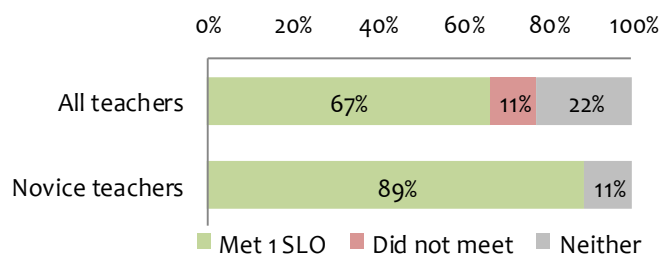
Between REACH and Comparison Teachers

Effect size and significance tests were used to compare the net student growth on TAKS of REACH teachers who met at least one SLO and that of comparison school teachers (Table 3). No statistically significant differences were found between REACH teachers who met at least one SLO and teachers at comparison schools; however, effect sizes suggest some meaningful differences between groups.

At the elementary level, small effect sizes suggest that REACH teachers who met at least one science SLO and novice teachers who met at least one math SLO had slightly greater net growth than did their comparison school peers.

At the middle school level, large effect sizes indicate that REACH reading and math teachers who met at least one SLO achieved greater net growth than did their comparison peers. Differences in reading and math net growth existed overall and for novice teachers; middle school REACH novice science teachers also achieved greater net growth than did their peers.

High school effect sizes were mixed, with some differences favoring each group. Comparison science teachers (both novice and all teachers) achieved greater net growth overall than did their Reach peers. Additionally, comparison reading/ELA teachers achieved slightly greater net growth overall than did their Reach peers. However, the difference was large and in the opposite direction for Reach high school novice reading/ELA teachers, who achieved greater net growth than did their comparison peers.

Although results must be interpreted with caution due to small cell sizes (see Appendix), findings suggest that Reach middle school teachers who met at least one SLO achieved meaningfully greater net growth than did their peers at comparison schools, and that Reach elementary teachers achieved comparable or slightly greater growth than did their comparison school peers. However, high school comparison teachers outperformed Reach teachers in some instances.

Table 3. Net Growth on TAKS for Reach Teachers Who Met at Least One Student Learning Objective (SLO) and Comparison School Teachers

		Reading		Mathematics		Science	
	Level	Met at least 1 SLO	Comparison	Met at least 1 SLO	Comparison	Met at least 1 SLO	Comparison
All teachers	EL	-1.83	-2.77	2.98	6.42	3.78 †	-3.83
	MS	5.21 ††	-2.11	5.97 ††	-4.79	-3.47	-3.59
	HS	-15.72	-11.78 †	-6.83	-6.25	-8.60	-1.81 †
Novice teachers	EL	-6.66	-9.96	9.64 †	2.01	3.33	1.12
	MS	14.16 ††	-4.36	12.07 ††	-6.74	1.82 ††	-11.34
	HS	-0.90 ††	-17.65	-6.80	-6.02	-16.16	-5.47 ††

Note. Symbols are placed beside the highest mean of each pair.
*$p<.05$; † indicates an effect size of ≥ .2 and ≤ .49; †† indicates an effect size ≥ .50

or slightly greater growth than did their comparison school peers. However, high school comparison teachers outperformed Reach teachers in some instances.

Out of the nine comparisons between Reach teachers who met at least one SLO and comparison school teachers, Reach teachers who met at least one SLO outperformed comparison school teachers in 33% of cases (3 of 9), based on the magnitude of effect sizes. Comparison school teachers outperformed Reach teachers in 22% of cases (2 of 9). Among novice teachers, Reach teachers who met at least one SLO outperformed comparison school teachers in 56% of cases (5 of 9), and comparison school teachers outperformed Reach teachers in 11% of comparisons (1 of 9).

Figure 2. Comparisons with Meaningful Differences in Favor of Reach Teachers Who Met at Least one Student Learning Objective (SLO), Teachers at Comparison Schools, or Neither
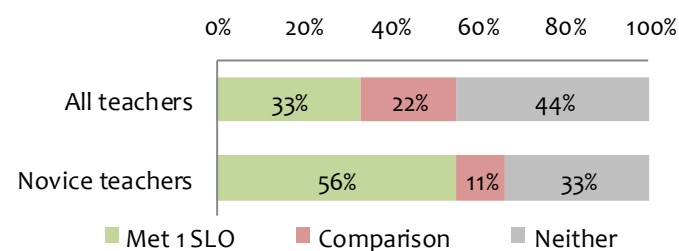
Did teachers' participation in SLO training relate to their students' TAKS scores?

The percentage of training sessions that Reach elementary teachers attended was positively correlated with their students' net growth on TAKS reading ($r = 0.29$, $p < .01$). The more SLO training sessions teachers attended, the more their students performed above predicted on TAKS and the less their students performed below predicted on TAKS. However, no significant correlations were found between the percentage of SLO training sessions attended and students' net growth on TAKS math, reading, or science at middle and high school, or on TAKS math and science at the elementary school level.

Program Implications

Program changes in 2010—2011 may provide a greater opportunity for SLOs to support student growth. Specifically, the new common team SLOs may establish a collective instructional momentum that was not present when the program included only individual teachers' SLOs. In addition, the expansion of Professional Development Units (PDUs) may provide additional support to teachers who traditionally did not receive significant support from the REACH program. Although REACH was established with a goal of supporting all participating teachers through professional development opportunities, this study's results do not indicate a clear relationship between SLO training and achievement. Results indicate that although elementary teachers who attended more SLO training sessions had greater student growth on TAKS reading than did elementary teachers who attended less training, attending SLO training was not related to TAKS growth in math at the elementary level, or to TAKS growth in any subject at the secondary level. The lack of a clear relationship between SLO training and student achievement might be attributed in part to the content of SLO training.

REACH SLO training has focused primarily on the mechanics of the SLO submission process, with limited attention to instructional topics. With limited time devoted to instructional improvement strategies, participating teachers may not perceive the connection between SLOs and their daily work. On the 2009—2010 Employee Coordinated Survey, some teachers commented on this disconnect:

> *"I believe many teachers are working themselves to death trying to submit these SLOs that have very little to do with our actual teaching in the hopes of receiving compensation."*

> *"During the 1st year of the SLO I felt that it supported my curriculum. This year, with higher performance standards required, I had to spend too much time on a limited part of the curriculum to meet my objective."*

As the program expands to include additional campuses, the quantity of training opportunities will become increasingly limited; thus, the quality of training will be even more important. To ensure that the program has maximum impact on student learning, program support should include both process and content training.

Appendix

Appendix A. N Counts for Table 1: Net Growth on TAKS for REACH and Comparison Teachers

	Level	Reading		Mathematics		Science	
		REACH n	Comparison n	REACH n	Comparison n	REACH n	Comparison n
All teachers	EL	84	137	54	102	31	53
	MS	16	35	15	44	4	13
	HS	32	25	37	30	24	21
Novice teachers	EL	26	32	14	21	10	8
	MS	6	9	4	19	3	2
	HS	9	4	14	8	10	10

Appendix B. N Counts for Table 2: Net Growth on TAKS for REACH Teachers Who Met at Least One SLO and Did Not Meet SLOs

	Level	Reading		Mathematics		Science	
		Met at least 1 n	Did not meet n	Met at least 1 n	Did not meet n	Met at least 1 n	Did not meet n
All teachers	EL	15	5	25	9	15	4
	MS	9	6	10	4	3	1
	HS	16	9	19	17	10	13
Novice teachers	EL	1	2	6	2	5	1
	MS	2	4	3	1	2	1
	HS	3	3	8	5	5	5

Appendix C. N Counts for Table 3: Net Growth on TAKS for REACH Teachers Who Met at Least One SLO and Comparison Teachers

	Level	Reading		Mathematics		Science	
		Met at least 1 n	Comparison n	Met at least 1 n	Comparison n	Met at least 1 n	Comparison n
All teachers	EL	15	137	25	102	15	53
	MS	9	35	10	44	3	13
	HS	16	25	19	30	10	21
Novice teachers	EL	2	34	6	23	5	8
	MS	2	9	3	19	2	2
	HS	3	3	8	8	5	5