

MANAGEMENT REPORT

Results of the Texas Web Tutor Program, 2005-2006

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Program Description

Texas Web Tutor (TWT) is a Web-based *Texas Assessment of Knowledge and Skills* (TAKS) preparation program for high schools. The program provides targeted instruction and practice for all math expectations covered on the high school TAKS Mathematics test. Interactive lessons and assessments are designed to engage students and provide immediate performance feedback. Students are able to use the program at home, school, or anywhere they have access to the Internet.

Most students begin the program by taking a pre-test that covers all ten TAKS Mathematics objectives. The pre-test, consisting of 30 randomly generated questions, is scored by objective and highlights areas where the student needs additional work. After completing the pre-test, the student works on weak objectives or on objectives prescribed by the teacher.

Each objective has three to eight lessons, and each lesson has a five-question self-assessment. After all lessons and self-assessments have been completed for an objective, the student takes a ten-question objective test to determine mastery of the objective material. The objective tests and self-assessments are generated from different question banks; students are able to view the solutions to the self-assessments, but not for the objective tests. Students are able to re-take objective tests on which they receive an unsatisfactory grade. However, the objective tests are randomly generated from the question bank, preventing the student from seeing the same test twice. The teacher is able to set the maximum number of attempts that students are allowed for the objective tests. After all ten objectives have been completed, the student takes a post-test to determine his or her overall progress.

An important aspect of the program is the ability of teachers to track the progress of their students. The program provides educators with real-time reports that expedite tracking and profiling the progress of their students. All student assessments are recorded and can be accessed by the teacher using a variety of reports. These reports can facilitate data-driven

instruction by helping teachers customize their instruction to meet the needs of their students.

During the 2005-2006 school year, 14 Dallas ISD high schools participated in the Texas Web Tutor program. The 14 schools included eight comprehensive high schools, four magnet high schools, and two high schools that contained both comprehensive and magnet programs. Three of these schools, all magnet programs, received the state's second-highest rating of "Recognized"; nine were rated "Academically Acceptable"; and two were rated "Academically Unacceptable." Four of these schools (Hillcrest, Lincoln, Roosevelt, and Skyline) had used the Texas Web Tutor program in the previous year; the others were new to the program.

Table 1 shows the participating schools by category and state accountability rating for the 2004-2005 school year. It also shows whether the school met federal guidelines for Adequate Yearly Progress (AYP) in mathematics, and if not, whether the school missed performance or participation targets, and which student population subgroups missed targets. Eight schools met AYP targets in math, four missed performance targets, one missed participation targets, and one missed both performance and participation targets.

The methods used by schools and teachers to implement Texas Web Tutor varied. Some teachers used the program primarily during school hours in a lab setting, while others used the program primarily outside the regular school day as a resource for students to use outside school. Some teachers provided motivation for their students to complete work on the program by making the program assignments count as a grade, while others used the program strictly as extra-credit.

Purpose and Scope of the Evaluation

This report provides a detailed account of the use of the Texas Web Tutor program to prepare DISD students for the *TAKS* Mathematics test during the 2005-2006 school year. It compares the 2006 *TAKS* math performance of students who used the program to the performance of non-participating students in the same schools and throughout the district.

Table 1

Schools Using the Texas Web Tutor Program in 2005-2006, 2005 Accountability Rating, and 2005 AYP Status for Mathematics

Type of program/school	State Accountability Rating	AYP Math Status
Comprehensive		
Bryan Adams HS	Academically Acceptable	Performance (aa, h)
Carter HS	Academically Acceptable	Participation (all, ed)
Hillcrest HS	Academically Acceptable	Met AYP
Pinkston HS	Academically Acceptable	Performance (all, aa, h, ed)
Roosevelt HS	Academically Acceptable	Met AYP
Sunset HS	Academically Acceptable	Performance (lep)
North Dallas HS	Academically Unacceptable	Performance (all, h, ed, lep)
South Oak Cliff HS	Academically Unacceptable	Performance (all, aa, h, ed) Participation (all, aa)
Magnet		
Business and Management Magnet Center (BMC)	Recognized	Met AYP
School of Government, Law, and Law Enforcement (Law)	Recognized	Met AYP
High School for the Health Professions (Health)	Recognized	Met AYP
Education and Social Services Magnet (ESSM)	Academically Acceptable	Met AYP
Combined Magnet and Comprehensive		
Lincoln HS	Academically Acceptable	Met AYP
Skyline HS	Academically Acceptable	Met AYP

Note: all=all students aa=African-American, h=Hispanic, w=white, lep=Limited English Proficient, ed=economically disadvantaged, sped=special education

Methodology

To assess the effectiveness of the program, we compared participants and non-participants' 2006 *TAKS* raw scores and passing rates. However, in some schools, participants' 2005 *TAKS* scores differed considerably from those of non-participants. These scores were not uniformly lower or higher for either group. For example, both groups at Bryan Adams at grade 11 had mean 2005 *TAKS* scores of 30.6; at Hillcrest, grade 11 TWT students' mean was 39.1, compared to 34.1 for other students; and at Pinkston, grade 11 TWT students' mean was 25.6, compared to 30.5 for other students. To control for these differences in prior achievement, we used OLS regression to estimate differences in outcomes for the two groups, controlling for pretest scores. Categorical variables for individual schools were included in the regressions, to account for otherwise unmeasured differences in mathematics instruction and program use among the 14 schools.

Results

A total of 13,489 students in grades nine, 10, and 11 from the 14 participating schools were tested on the *TAKS* Mathematics test in 2006. Of these, 11,604 also had *TAKS* Mathematics scores for 2005. About 18% of tested students in all 14 schools had used the Texas Web Tutor program during the school year. By school, tested students' participation in the program ranged from 5% at Skyline to 42% at the Health Professions Magnet.

Figure 1 shows the percent of students in participating schools by grade who met standard on the 2006 *TAKS* Mathematics test. At grade nine, 50% of TWT students passed the test, compared to 31% of other students in the same schools; at Grade 10, 63% of program students passed, compared to 46% of other students; and at grade 11, 79% of program students passed, compared to 74% of other students.

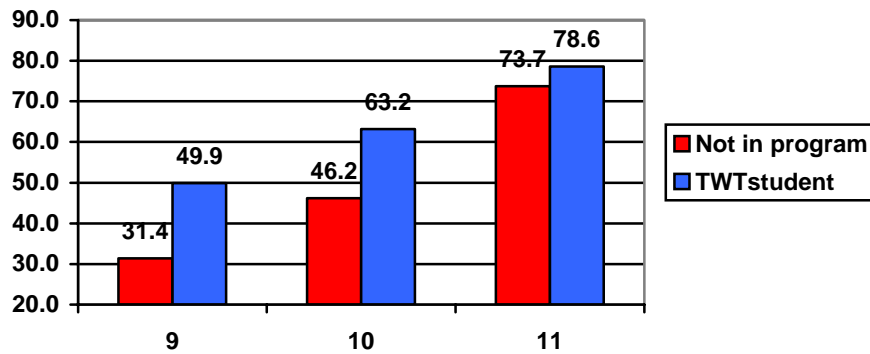


Figure 1. Percent of program participants and non-participants passing the 2006 *TAKS* Mathematics test by grade.

Figure 2 shows raw scores on the 2006 *TAKS* Mathematics test of TWT and other students in participating schools by grade. On average, TWT students scored higher by approximately four points at grade nine, five points at grade 10, and one point at grade 11. These differences were significant at the .001 level for grade nine ($F=162.99$) and grade 10 ($F=144.76$), and at the .01 level for grade 11 ($F=6.32$).

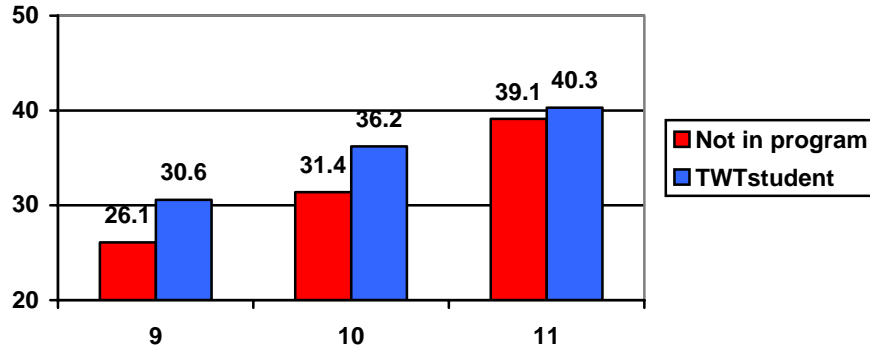


Figure 2. Mean *TAKS* Mathematics raw score by grade for program participants and non-participants.

Table 2 shows passing rates by grade and school for program participants and non-participants. At grade nine, all comparisons favored TWT students. (Skyline and Roosevelt were not included in grade nine results because they did not use the program at that grade level.) At grade 10, 11 of 14 comparisons favored TWT students, and at grade 11, eight of 14 comparisons.

Table 2

TAKS Mathematics Passing Rates of Texas Web Tutor and Other Students

Grade/School	TWT Students		Other Students		Difference
	N Tested	Percent Passing	N Tested	Percent Passing	
Grade 9					
B. Adams	296	34.5	288	24.0	10.5
Carter	10	40.0	462	19.3	20.7
Hillcrest	61	44.3	377	43.0	1.3
Lincoln	86	48.8	219	20.1	28.7
N. Dallas	132	34.8	337	27.3	7.5
Pinkston	65	53.8	293	25.3	28.5
S. Oak Cliff	47	38.3	360	16.4	21.9
Sunset	52	44.2	612	35.1	9.1
BMC	64	89.1	74	78.4	10.7
ESSM	21	81.0	34	76.5	4.5
Health	73	90.4	86	80.2	10.2
Law	<u>44</u>	86.4	<u>69</u>	73.9	12.5
Total	951	49.9	3,211	31.4	18.5
Grade 10					
B. Adams	96	51.0	373	37.8	13.2
Carter	13	76.9	348	36.2	40.7
Hillcrest	80	78.8	193	54.9	23.9
Lincoln	48	64.6	212	21.7	42.9
N. Dallas	39	35.9	281	44.1	-8.2
Pinkston	91	50.5	140	37.1	13.4
Roosevelt	13	53.8	203	14.8	39.0
S. Oak Cliff	148	31.8	135	22.2	9.6
Sunset	75	53.3	406	56.4	-3.1
Skyline	77	94.8	1,003	53.2	41.6
BMC	47	85.1	88	87.5	-2.4
ESSM	20	100.0	32	84.4	15.6
Health	61	93.4	65	87.7	5.7
Law	<u>42</u>	95.2	<u>61</u>	91.8	3.4
Total	850	63.2	3,540	46.2	17.0
Grade 11					
B. Adams	102	67.6	227	53.7	13.9
Carter	43	74.4	243	75.3	-0.9
Hillcrest	53	83.0	151	74.8	8.2
Lincoln	78	71.8	145	64.1	7.7
N. Dallas	15	73.3	191	66.0	7.3
Pinkston	6	33.3	137	56.9	-23.6
Roosevelt	79	60.8	91	42.9	17.9
S. Oak Cliff	36	86.1	156	58.3	27.8
Sunset	18	88.9	305	75.4	13.5
Skyline	85	91.8	821	83.8	8
BMC	33	90.9	82	95.1	-4.2
ESSM	18	94.4	30	96.7	-2.3
Health	36	94.4	81	97.5	-3.1
Law	<u>34</u>	94.1	<u>51</u>	98.0	-3.9
Total	636	78.6	2,711	73.7	4.9

These comparisons, however, do not take into account differences in pretest level for TWT participants and non-participants. Table 3 compares 2005 and 2006 raw scores and passing rates on the TAKS Mathematics test for TWT students and non-participating students in the same group of schools. At all three grades, the change in raw score and percent passing from grade to grade favored TWT students. Results for grade nine were particularly interesting. The raw scores of TWT students were virtually unchanged from grade eight; their mean score was close to the grade nine passing score of 31 (and slightly above the grade 8 passing score of 30). In comparison, non-participants' mean score decrease from 29 in 2005 to 26 in 2006 resulted in a large drop in the passing rate, from 50% to 31%.

Table 3
2005 and 2006 TAKS Mathematics Raw Scores and Passing Rates,
TWT and Other Students

Grade	TWT Students				Other Students			
	N	2005	2006	Change	N	2005	2006	Change
Raw Score								
9	756	30.7	30.6	-0.1	1,828	29.3	26.1	-3.2
10	741	33.0	36.2	3.2	2,860	29.9	31.4	1.5
11	557	33.8	40.3	6.5	2,238	34.2	39.1	4.9
Percent Passing								
9	756	54.0	49.9	-4.1	1,828	50.4	31.4	-19.0
10	741	57.6	63.2	5.6	2,860	45.6	46.2	0.6
11	557	54.6	78.6	24.0	2,238	50.4	73.7	23.3

The previous analyses show results for all participants, regardless of their level of use of the TWT program. Table 4 and Figure 3 show passing rates for tested students at each grade level by number of objectives completed. "Completed" was defined as a score of 60% or more correct on the objective test. At all three grades, the largest numbers of students completed between one and three objectives successfully, although the distribution varied considerably from school to school (data not shown here). Passing rates were generally higher among students with higher completion rates.

Table 4

TAKS Mathematics Passing Rates of TWT Students by Number of Tests Completed

Objective tests completed (N)	Grade					
	9		10		11	
	N tested	% Pass	N tested	% Pass	N tested	% Pass
0	381	24.3	223	26.6	151	32.0
1	244	31.0	177	32.2	143	37.9
2	124	35.7	100	36.5	107	40.1
3	74	36.2	61	40.6	57	42.5
4	41	40.7	39	41.2	33	46.0
5	24	38.3	40	43.6	23	46.0
6	18	38.5	37	44.1	25	48.1
7	21	41.7	38	46.3	19	46.3
8	13	42.8	35	46.2	29	50.4
9	8	44.6	39	45.2	18	50.7
10	8	42.8	62	47.1	32	51.8
Total	956	30.7	851	36.2	637	40.3

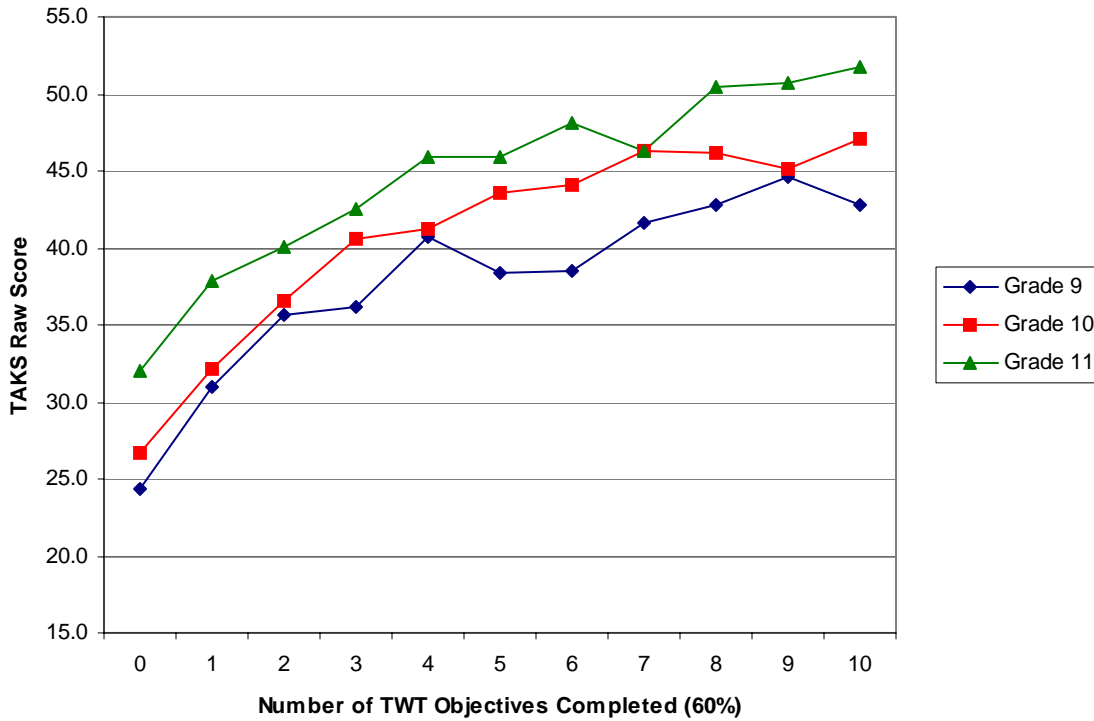


Figure 3. TAKS Mathematics passing rate by number of tests completed, grades 9-11.

Table 5 shows *TAKS* passing rates by grade and amount of time spent on the program. The more hours students used the program, the greater the passing rate, at all three grade levels. Students who completed 20-29 hours of study had *TAKS* passing rates of 76% at grade nine, 85% at grade 10, and 92% at grade 11. Students who completed 30 hours or more had passing rates of 91% at grade nine, 94% at grade 10, and 100% at grade 11.

Table 5

TAKS Mathematics Passing Rates of TWT Students by Number of Hours

Hours	Grade					
	9		10		11	
	N tested	% Pass	N tested	% Pass	N tested	% Pass
1-9	636	45.0	494	55.7	344	74.7
10-19	280	57.5	274	69.7	224	79.9
20-29	25	76.0	65	84.6	48	91.7
30 or more	11	90.9	17	94.1	20	100.0

Table 6 shows results of OLS regression analyses. Two models were used: in the first, 2006 raw scores were regressed on 2005 raw scores and a categorical variable indicating program participation. In the second, categorical variables for the four time categories were substituted for the single participation variable. In both models, categorical variables for each school were included to account for unmeasured instructional and other school effects.

Table 6

Selected OLS Coefficients for the Regression of 2006 TAKS Mathematics Raw Scores
On 2005 Scores and Program Participation Variables

	Model 1		Model 2	
	B	t	B	t
Grade 9				
Constant	8.088		8.079	
2005 raw score	***0.723	60.64	***0.723	60.67
TWT participation	***1.458	5.40		
1-9 hours			***1.247	4.08
10-19 hours			***1.738	4.07
20-29 hours			***3.792	3.19
30 or more hours			1.319	0.65
Adj .R ²	0.65		0.65	
Grade 10				
Constant	9.707		9.902	
2005 raw score	***0.825	64.642	***0.821	64.28
TWT participation	***2.040	7.18		
1-9 hours			**1.115	3.20
10-19 hours			***2.903	6.61
20-29 hours			***4.799	5.80
30 or more hours			2.951	1.91
Adj .R ²	0.62		0.63	
Grade 11				
Constant	15.126		15.910	
2005 raw score	***0.731	57.73	0.704	24.39
TWT participation	***1.228	3.73		
1-9 hours			0.696	1.65
10-19 hours			**1.198	2.38
20-29 hours			***3.767	3.73
30 or more hours			**3.648	2.47
Adj .R ²	0.60		0.64	

Note: *=significant at the .05 level, **=significant at the .01 level, ***=significant at the .001 level

Results for program participation were positive and significant at all three grade levels. When compared to similar students, on average, TWT students answered 1.5 additional questions correctly at grade nine, 2 additional questions at grade 10, and 1.2 additional questions at grade 11, regardless of level of program use. However, results clearly showed the benefits of additional time spent using the program. While students who spent from 1-9 hours using the program gained an additional raw score point over program nonparticipants, students who used the program for 20-29 hours bettered their scores by 4 to 5 points.

Student subgroups. Because NCLB and state accountability systems hold schools accountable for the performance of student subgroups, we examined the outcomes of African

American, Hispanic, Limited English Proficient (LEP), and Economically Disadvantaged students. Table 7 compares outcomes of TWT students with non-participants in the same group of schools by subgroup and grade. It shows the number and percent of students within each subgroup who participated in TWT; the percent of participants who passed the spring 2006 TAKS Mathematics test; and their mean raw score on the test. These outcomes were compared to those of students in the same subgroup and same set of schools. Analyses were limited to students who had TAKS Mathematics scores for both 2005 and 2006, and who were not retained in grade from 2005 to 2006.

Table 7

Subgroup	TWT Students				Other Students			
	Number tested	Percent of group	Percent passing	Mean raw score	Number tested	Percent of group	Percent passing	Mean raw score
Grade 9								
Af. American	267	31.2	49.1	30.1	589	68.8	31.1	26.2
Hispanic	433	28.1	52.9	31.4	1,110	71.9	43.9	29.1
LEP	65	21.8	18.5	24.1	233	78.2	16.7	22.4
Eco. Dis.	541	30.0	52.1	30.8	1,264	70.0	40.2	28.2
Grade 10								
Af. American	278	19.3	59.0	35.4	1,159	80.7	39.2	30.2
Hispanic	401	20.6	71.3	37.9	1,544	79.4	58.6	34.2
LEP	59	22.3	47.5	30.5	205	77.7	27.8	27.0
Eco. Dis.	471	20.0	65.8	36.7	1,884	80.0	51.0	32.6
Grade 11								
Af. American	261	23.8	73.2	37.9	834	76.2	74.5	39.1
Hispanic	227	16.0	89.9	44.3	1,192	84.0	80.2	41.2
LEP	30	16.7	63.3	35.6	150	83.3	58.0	34.4
Eco. Dis.	333	19.6	80.5	41.3	1,695	80.4	78.3	40.7

Note. Af. American = African American; LEP = Limited English Proficient; Eco. Dis. = Economically Disadvantaged.

These results favored TWT students in 11 of 12 subgroup comparisons. However, they do not take into account possible differences in prior achievement levels of TWT and non-participating students. For that reason, we conducted regression analyses by subgroup and grade; results are shown in Table 8. These results showed significantly higher scores for TWT participants in all student subgroups, with the exception of African American and LEP students at grade 11.

Table 8

Selected OLS Coefficients for the Regression of 2006 TAKS Mathematics Raw Scores
On 2005 Scores and Program Participation by Student Subgroup

	Grade 9		Grade 10		Grade 11	
	B	<i>t</i>	B	<i>t</i>	B	<i>t</i>
African American Students						
Constant	6.507		6.188		15.835	
2005 raw score	***0.699	33.83	***0.857	41.77	***0.708	34.03
TWT participation	***2.846	6.59	***2.292	5.22	-0.514	1.08
Adj .R ²	0.59		0.57		0.52	
Hispanic Students						
Constant	7.388		8.446		14.290	
2005 raw score	***0.740	50.27	***0.835	50.60	***0.769	46.03
TWT participation	***1.252	3.77	***1.665	4.52	***2.222	4.72
Adj .R ²	0.63		0.59		0.60	
Limited English Proficient Students						
Constant	8.935		12.596		17.073	
2005 raw score	***0.605	15.00	***0.626	9.93	***0.672	10.17
TWT participation	*1.011	1.19	*2.530	2.20	1.648	1.01
Adj .R ²	0.43		0.29		0.36	
Economically Disadvantaged Students						
Constant	7.050		6.826		15.018	
2005 raw score	***0.730	53.15	***0.870	57.83	***0.749	48.18
TWT participation	***1.764	5.86	***1.534	4.54	*0.842	2.07
Adj .R ²	0.62		0.60		0.58	

Note: *=significant at the .05 level, **=significant at the .01 level, ***=significant at the .001 level

Conclusion

The Texas Web Tutor program was effective at raising students' TAKS Mathematics scores across Dallas ISD high schools with student populations that differed widely in ethnic, socioeconomic, and achievement characteristics. Even low levels of program use (9 hours or less) yielded some improvement in students' scores. However, the greatest improvement in student scores was seen among students who used the program for 20 hours or more. Thus, implementation of the program as designed can lead to substantial gains in TAKS performance for participating students.