Appendix 24

Higher Education Readiness Component

CHAPTER 8: HIGHER EDUCATION READINESS COMPONENT

The following evidence of construct and criterion-related validity is provided from studies conducted by the Texas Education Agency and its subcontractor Pearson Educational Measurement to fulfill the requirement of Senate Bill 103 regarding college readiness.

Texas Education Code Section 39.028(c) mandates that TEA implement a "college readiness component" as part of the Texas Assessment of Knowledge and Skills (TAKS). The intent of the legislation is to use performance on the exit level TAKS mathematics and English language arts tests to assess not only a student's level of academic preparation for graduation from a Texas public high school but also the student's readiness to enroll in an institution of higher learning.

Through its work with the Texas Higher Education Coordinating Board (THECB), TEA collected research data showing the link between student performance on the exit level TAKS and readiness to enroll in an institution of higher learning. In addition, this research provides evidence of the link between performance on TAKS and matched student performance on the SAT I, the ACT, and the Texas Academic Skills Program (TASP) assessments. This information was provided and used as part of a standard-setting process conducted by THECB to establish a cut score or "readiness standard" on TAKS. The standard was set at 2200 on the TAKS scaled score system for both exit level mathematics and exit level English language arts. An essay score of at least 3 on the TAKS writing task is also required to meet the Higher Education Readiness Standard for English language arts.

Introduction

The TAKS testing program is required by law to include a higher education readiness component on the exit level assessment. Beginning in spring 2004, performance on the TAKS exit level mathematics and English language arts tests was used to assess not only a student's level of academic preparation for graduation from a Texas public high school but also the student's readiness to enroll in an institution of higher education. A student who met the Higher Education Readiness Component score on the exit level TAKS test in the 2003–2004 school year is exempt from state-mandated testing requirements under the Texas Success Initiative (TSI). The TSI replaces TASP, which was repealed by the legislature in June 2003.

The Higher Education Readiness Component analyses included two major research studies: a contrasting groups study and a performance data correlation study. The contrasting groups study examines the performance of high school juniors on the first administration of the TAKS exit level mathematics and English language arts tests in 2003 as compared to performance on the same TAKS assessments by a sample of second-semester college freshmen who have demonstrated college readiness through successful completion of their first semester courses.

The performance data correlation study examines student performance on TAKS in relation to performance on three college readiness measures that are widely used statewide to make college readiness and placement decisions: TASP, ACT, and SAT I. The TAKS-to-TASP, TAKS-to-ACT, and TAKS-to-SAT I comparisons incorporate data collected from Texas public high school juniors who took the TAKS exit level test and one or more of these other assessments in spring 2003. ACT and SAT I data are also being collected for high school juniors who took the TAKS test in spring 2004.

Contrasting Groups Analyses

During a one-week testing window from April 29 to May 6, 2003, 821 college students were administered the spring 2003 TAKS exit level tests in English language arts and mathematics at eight four-year and 10 two-year Texas public institutions of higher education. Participating colleges were asked to select a random sample of volunteers from students who met all the following recommended parameters: students who had full-time status for both the first and second semesters, students who were in their first year out of high school (any U.S. high school), students who were not registered in any developmental education courses during the second semester, and students who had a 2.0 GPA or above for each of their first-semester courses.

The college students were tested anonymously but were required to complete a one-page questionnaire about their background and academic experience. Student volunteers who completed the test were paid a $20 stipend.

Of the 821 student tests that were submitted by the colleges, 814 were deemed eligible for scoring (428 mathematics tests and 386 ELA tests). The tests were scored by Pearson Educational Measurement using the same scoring process used for the TAKS exit level tests administered at Grade 11.

As an ancillary to the spring contrasting groups study, a study of college students in developmental education courses was conducted in September 2003 at 14 colleges and universities (five four-year colleges and nine two-year colleges, all of which also participated in the spring study). The spring 2003 versions of the TAKS exit level test in ELA and mathematics were administered to students who had not demonstrated college readiness in the subject tested, as defined by their enrollment in developmental education courses in that content area. A total of 468 student answer documents were deemed eligible for scoring, including 275 mathematics tests and 193 ELA tests. The tests were scored by PEM using the same scoring process used for the spring college study.

The contrasting groups research results showed that the mean raw score of successful first-semester college students was higher than that of the high school juniors on both the English language arts and mathematics TAKS tests. The college students receiving developmental instruction were the lowest performing of the three groups, scoring on average lower than both their college-ready counterparts and the high school population. Results from the contrasting groups study are presented in Table 7.

Table 7. Raw Score Summary Comparisons

		High School Population**	College Sample	Remedial College Sample
Mathematics	**N-Count**	198624	428	275
	Mean	32.15	36.57	20.51
	Standard Deviation	12.06	11.22	7.56
	Minimum	0	14	3
	Maximum	60	59	46
	Median	30	36	19
English Language Arts*	**N-Count**	183024	386	193
	Mean	46.37	49.74	29.70
	Standard Deviation	11.94	9.79	10.09
	Minimum	0	10	10
	Maximum	73	67	53
	Median	48	52	29

* Total raw score is a combination of multiple-choice, three open-ended items worth three points each, and one essay worth four points, which is then weighted by a factor of 4. The resulting maximum total raw score is 73.

**Spring 2003 Grade 11 results

Performance Data Correlation Analyses

The performance data correlation analyses examine the relationship between and equivalence of TAKS exit level mathematics and English language arts (ELA) scores and TASP, ACT, and SAT I scores. The first phase of this study was completed in October 2003. ACT, Inc., and the College Board sent TEA the ACT and SAT I test results, respectively, for students in the class of 2004 who tested between January and July 2003. These results were then merged with the spring 2003 TAKS exit level results of these same students. The TAKS/ACT matched student count was approximately 15,000; the TAKS/SAT I matched student count was approximately 36,000. TEA staff performed regression analyses, created TAKS/ACT and TAKS/SAT I expectancy tables, and analyzed scatterplots to study the score relationships and equivalencies. These data are shown in Tables 8 through 11. Simple linear correlations for various comparisons are as follows: ACT mathematics with TAKS mathematics is 0.79; ACT English with TAKS English language arts is 0.58; SAT I mathematics with TAKS mathematics is 0.79; SAT I verbal with TAKS English language arts is 0.57. It is important to note that the TAKS English language arts assessment has open-ended reading tasks and a writing essay as part of its total score, while ACT and SAT I do not.

Table 8. Expectancy Table for Spring 2003
Grade 11 Mathematics TAKS and ACT Mathematics Scale Scores

(A) When the TAKS math score is:*	(B) Then the likelihood of an ACT mathematics scale score of at least									(C) And the predicted ACT math score is:
	16 is:	17 is:	18 is:	19 is:	20 is:	21 is:	22 is:	23 is:	24 is:	
1950	52.6	35.5	21.1	13.6	7.6	5.7	4.2	3.5	3.1	15.9
2000	63.6	45.7	28.3	18.0	11.5	7.7	6.1	3.5	2.4	17.1
2050	93.1	63.0	45.2	29.6	18.3	14.2	10.6	6.6	4.4	18.3
2100	97.6	81.9	66.2	51.0	36.5	28.0	21.4	13.5	9.5	19.5
2150	99.3	91.6	81.1	68.3	53.7	43.7	34.2	24.3	17.3	20.7
2200	99.7	97.6	93.5	85.5	74.6	65.6	58.1	45.3	36.2	21.9
2250	99.8	99.1	98.0	94.3	89.0	82.8	75.6	65.2	55.6	23.1
2300	99.8	99.7	98.8	97.4	94.0	90.6	86.5	78.1	71.2	24.3
2350	99.8	99.7	99.2	98.7	97.1	95.7	93.9	90.7	86.4	25.5
2400	100.0	100.0	100.0	99.0	98.4	97.2	95.3	94.3	91.7	26.7

*Estimates are based on more than 1000 examinees at each TAKS score value for each score.
Each TAKS score point listed is the midpoint of a 50-point range.

Table 9. Expectancy Table for Spring 2003
Grade 11 ELA TAKS and ACT English Scale Scores

(A) When the ELA TAKS score is:*	(B) Then the likelihood of an ACT English scale score of at least									(C) And the predicted ACT English score is:
	16 is:	17 is:	18 is:	19 is:	20 is:	21 is:	22 is:	23 is:	24 is:	
2100	42.3	31.4	23.9	16.4	12.7	7.8	3.9	2.3	1.2	17.7
2150	66.9	55.2	45.8	34.6	27.5	19.3	12.5	8.3	5.0	18.9
2200	82.5	73.6	66.3	55.5	46.8	36.7	26.8	19.9	14.1	20.1
2250	91.4	88.2	83.5	75.9	70.0	60.7	50.2	41.2	33.2	21.3
2300	95.1	93.2	91.0	85.6	81.7	75.8	66.9	59.9	52.5	22.5
2350	98.0	96.3	93.3	89.5	84.9	80.2	73.5	64.9	57.5	23.7
2400	98.3	97.3	96.5	92.8	90.0	86.1	80.8	77.1	71.1	24.9

*Estimates are based on more than 1000 examinees at each TAKS score value for each score.
Each TAKS score point listed is the midpoint of a 50-point range.

Table 10. Expectancy Table for Spring 2003
Grade 11 Mathematics TAKS and SAT I Mathematics Scale Scores

(A) When the TAKS math score is:*	(B) Then the likelihood of a SAT mathematics scale score of at least											(C) And the predicted SAT math score is:
	400 is:	420 is:	440 is:	460 is:	480 is:	500 is:	520 is:	540 is:	560 is:	580 is:	600 is:	
1950	45.2	35.5	27.8	20.4	14.3	10.9	8.1	6.6	5.2	3.8	2.8	399
2000	56.5	43.9	33.3	23.5	16.6	11.2	7.0	4.7	2.8	1.7	1.2	424
2050	71.2	60.0	48.0	37.1	25.7	17.3	10.6	7.3	4.9	3.0	1.8	448
2100	88.5	80.8	69.5	56.6	42.6	29.4	18.4	11.9	7.0	4.1	2.4	472
2150	96.2	92.6	86.0	76.2	61.5	46.3	31.2	21.0	13.2	7.5	4.4	497
2200	98.7	97.0	94.2	89.3	80.1	67.9	52.7	40.0	27.8	16.3	9.1	521
2250	99.8	99.4	98.2	96.5	92.5	85.6	74.0	62.9	48.0	33.0	21.7	545
2300	100.0	99.7	99.5	98.8	97.2	93.6	86.4	78.8	65.3	49.4	36.7	570
2350	100.0	100.0	99.7	99.5	99.0	97.9	94.5	90.4	81.9	70.2	57.8	594
2400	100.0	100.0	100.0	99.8	99.4	98.8	97.3	94.2	89.7	81.8	73.0	618

*Estimates are based on more than 1000 examinees at each TAKS score value for each score.
Each TAKS score point listed is the midpoint of a 50-point range.

Table 11. Expectancy Table for Spring 2003
Grade 11 ELA TAKS and SAT I Verbal Scale Scores

(A) When the ELA TAKS score is:*	(B) Then the likelihood of a SAT verbal scale score of at least											(C) And the predicted SAT verbal score is:
	400 is:	420 is:	440 is:	460 is:	480 is:	500 is:	520 is:	540 is:	560 is:	580 is:	600 is:	
2100	53.6	40.4	29.7	17.9	12.9	8.3	5.7	3.6	2.4	1.5	1.2	461
2150	77.1	65.9	53.4	39.1	30.5	20.7	13.1	8.5	5.5	3.2	1.6	481
2200	90.8	84.6	76.5	65.2	54.6	42.6	32.1	22.6	14.8	9.7	6.1	502
2250	96.7	93.5	89.6	82.6	75.3	65.3	55.5	45.0	35.8	26.9	19.7	522
2300	98.7	97.4	95.1	90.8	86.4	78.8	70.5	61.5	51.5	41.4	33.1	543
2350	99.2	98.5	97.3	94.3	90.9	85.5	78.6	70.3	61.1	51.1	42.0	564
2400	99.6	99.5	98.7	97.8	95.8	91.4	84.5	77.7	68.9	59.3	49.6	584

*Estimates are based on more than 1000 examinees at each TAKS score value for each score.
Each TAKS score point listed is the midpoint of a 50-point range.