

**TAKS Exit Level Online**  
**October 2006 Comparability Study Analyses**

## TAKS Exit Level Online October 2006 Comparability Study Analyses

Online comparability studies were first implemented in Texas in 2005 covering the Texas Assessment of Knowledge and Skills (TAKS) in grade 8 reading, mathematics and social studies as well as exit level (Grade 11) retests of TAKS in English language arts, mathematics, social studies, and science. The plan for 2006 continued comparability studies at TAKS grade 8 reading, mathematics, and social studies and all exit level TAKS July retests. In addition, comparability studies were expanded to include TAKS grade 8 science, TAKS grade 9 reading and mathematics, and all exit level TAKS October retests.

### *October Exit Level Retests*

The online versions of the exit level ELA, mathematics, science, and social studies tests were administered on October 17, 18, 19, and 20, respectively. Each examination was administered on the same day as the statewide administration of the paper tests.

- This report describes the results of the comparability studies for October TAKS exit level retests. This report will describe the comparability analyses at the test level for the entire group and for subgroups as well as item level comparability analyses.

### **Test Level Comparability Analyses**

#### *Y-hat Matching Method*

In 2005, TEA and PEM devised a matched samples comparability analysis plan using a bootstrap sampling approach in which students in the online group would be matched to students from the paper group on their previous TAKS test scores. Based on recommendations from the Texas Technical Advisory Committee (TTAC), additional demographic variables were considered as matching variables in 2006. The decision was made to include previous TAKS scores, ethnicity, and gender as matching variables in the 2006 matched comparability analyses. Starting with the 2006 July exit level comparability studies, a composite of the previous scores in English language arts (ELA), mathematics, science, and social studies was created. This composite was then used in the matching of samples. A description of this process is included below.

- 1) Using the students who tested in paper, their October 2006 raw score was regressed on their April 2006 ELA, mathematics, science, and social studies scale scores.

$$\hat{Y}_{predicted\_Oct\_rawscore} = \beta_0 + \beta_1 X_{1(April\_ELA)} + \beta_2 X_{2(April\_Math)} + \beta_3 X_{3(April\_Science)} + \beta_4 X_{4(April\_SocialSt.)}$$

- 2) The resulting regression weights were applied to all students (paper and online) to obtain an estimated raw score (y-hat) for each of the students.
- 3) Students were then broken into 20 groups based on the estimated raw score.
- 4) This resulted in a 20 (previous score groups) by 4 (ethnicity groups) by 2 (gender groups) grid that was used to match the samples of students receiving paper and online tests.
- 5) To improve optimal matching, students with missing values on any of the matching variables were dropped from the study.

*Participants*

Table 1 shows the descriptive statistics for students in the online and paper samples with complete data on the matching variables used for the exit level comparability studies. Table 1 shows the demographic information about the online and paper samples. Although special education status is included in the demographic information, this variable was not used for matching.

**Table 1. Descriptive Statistics of October Exit Level Online and Paper Samples**

Mode	Subject	Number of Campuses	Number of Students	Mean Raw Score	Mean Estimated Raw Score (y-hat)
Online	ELA	127	1687	47.81	48.71
	Mathematics	156	3379	28.73	29.66
	Science	164	3705	26.46	27.14
	Social Studies	137	1434	34.41	33.98
Paper	ELA	1192	22765	47.28	47.28
	Mathematics	1435	43066	29.26	29.26
	Science	1434	46821	26.64	26.64
	Social Studies	1176	16264	32.60	32.60

**Table 2. Demographic Information of October Exit Level Online and Paper Samples**

Mode	Subject	Male	White	Hispanic	African American	Other Ethnicity	Special Education
Online	ELA	57.85%	26.44%	57.14%	14.34%	2.07%	5.64%
	Mathematics	42.05%	25.78%	54.22%	18.59%	1.42%	5.60%
	Science	38.30%	22.59%	57.52%	18.03%	1.86%	4.70%
	Social Studies	43.72%	23.85%	58.65%	14.71%	2.29%	4.33%
Paper	ELA	55.09%	22.18%	58.16%	16.66%	3.00%	6.26%
	Mathematics	43.44%	23.96%	51.77%	22.19%	2.08%	5.56%
	Science	40.39%	20.50%	56.47%	20.63%	2.39%	4.90%
	Social Studies	42.12%	20.90%	59.28%	16.93%	2.89%	5.00%

*Matched Samples Comparability Analysis*

The matched samples comparability analysis plan is described in the steps below.

1. All students eligible for matching were placed into 20 groups based on the regression of October 2006 raw score on the April 2006 ELA, mathematics, science, and social studies scale scores. Each student testing online with complete data was matched to a student from the available October 2006 paper TAKS data with an identical profile on the matching variables.
2. Online versus paper comparability analyses were performed using matched groups of students. The following steps were repeated a pre-specified number of times, as described in the next paragraph:
  - a. A bootstrap sample of students was drawn from the online participants.
  - b. A matched sample was drawn at random from the available October 2006 paper TAKS data.

- c. A raw score-to-raw score equating was carried out with the bootstrap samples.
  - d. The raw score equivalents were transformed to scale scores using the operational 2006 score conversion tables and linear interpolation.
3. Online scale score conversions for each raw score were based on the average of the conversions calculated over each of the replications. These average scale score values comprised the alternate online conversion table.
  4. The standard deviation of online scale score conversions at each raw score represented the conditional bootstrap standard errors of the linking.
  5. To evaluate comparability, raw score points for which the difference between the online and paper scale score conversions exceeded two standard errors of the linking were noted.

The bootstrap replications were repeated 100 times for the multiple choice tests (mathematics, science, and social studies). Based on an empirical evaluation of previous results, 100 replications were determined to be sufficient to ensure stable results. For ELA, however, the procedure was replicated 500 times. The additional replications are conducted for ELA because weighting the essay component tends to exacerbate the differences between the groups and leads to more variability at the upper end of the raw score distribution.

Tables 3-7 summarize the comparability analysis results for ELA, mathematics, science, and social studies respectively. The columns of the tables 3, 5, 6, and 7 are as follows:

RS – Paper test raw score

CBT\_RS – Equivalent raw scores on the online test based on the comparability linking. Equivalent raw scores that are higher for the online test than for the paper test indicate that the online version of the test was more difficult.

RS\_SD – Standard deviation of the equivalent raw scores over the replications.

PAP\_SS – Paper test scale score conversions, based on the 2006 TAKS pre-equated scales

CBT\_SS – Equivalent scale scores on the online test based on the comparability linking. Again, equivalent scale score that are higher for the online test than for the paper test indicate that the online version of the test was more difficult.

SS\_SD – Standard deviation of the equivalent scale scores over the replications.

RS\_DIF – Difference between online raw score equivalent and paper raw score.

SS\_DIF – Difference between online scale score equivalent and paper scale score.

SIG? – Raw score points where scale score differences exceed two standard errors of the linking and where the difference in raw scores is greater than half a point are noted by “\*\*\*”. The SIG? column now indicates both statistical and practical significance, as recommended by the TTAC.

FINAL\_CBT\_SS – Final recommended online scale score conversion. For tests where an alternate score table is recommended, the FINAL\_CBT\_SS column includes the rounded scores from the CBT\_SS column. For tests where an alternate score table is not recommended, the FINAL\_CBT\_SS column includes the rounded scores from the PAP\_SS column. In all cases, the FINAL\_CBT\_SS associated with the lowest and highest raw scores (RS) are the rounded PAP\_SS. At the lowest and highest raw scores, the large differences occur between online and paper in the scale scores because WINSTEPS does not estimate abilities for zero and perfect scores. Therefore the differences between the operational and comparability study conversions are not meaningful at these score points. The FINAL\_CBT\_SS column also reflects rounding for the 2 SEM, 1 SEM, “Met the Standard”, and “Commended” cuts.

Finally, Table 4 contains information about the open-ended items and the essay that are part of the ELA exit level retest.

### *ELA Results*

The results for ELA, shown in Table 3, indicate differences between the online and paper versions of the test. The differences in the raw score conversions favored the paper group at the lower end of the score range but favored the online group at the upper ends of the score range. We believe this interaction occurred because the paper group ( $M = 36.31$ ) did better on the multiple choice items than the online group ( $M = 35.91$ ), whereas the online group did better on the essay item ( $M = 2.12$ ) than the paper group ( $M = 1.97$ ).

Table 4 shows the percent of student earning each score point for the three open-ended items and for the essay item for the paper and online groups. Students typing their essay online tended to score higher than students writing their essay on paper,  $\chi^2(4, N=24,452) = 353.04, p < .0001$ .

Although the scale score differences at the upper end in favor of the online group appear large, they are at least in part attributable to the impact of weighting the essay prompt (4 point rubric x weight of 4=16 points). The scale score differences exceeded two standard errors of the linking for two sections of the raw score scale. For most the raw score range, differences favored the paper group; however, at the upper end, the differences favored the online group. According to Table 3, the raw score cut associated with the “Met the Standard” performance level was 43 for the paper group and 41 for the online group. The raw score cut associated with the “Commended” performance level was 63 for paper and 64 for online.

### *Mathematics Results*

The results for mathematics, shown in Table 5, indicate that the online version was more difficult than the paper version. The differences in the raw score conversions were just less than one raw score point throughout most of the scale. In terms of scale score conversions, the differences were around 10 or 11 points over most of the scale. Across the entire raw score range, the scale score differences exceeded two standard errors of the linking. The raw score cut associated with the “Met the Standard” performance level was 32 for the paper version and 31 for the online version. The raw score cut associated with the “Commended” performance level was 53 for paper and 52 for online.

### *Science Results*

The results for science, shown in Table 6, indicate that the online version of the test was slightly more difficult than the paper version. Differences in raw score conversions were around a half a raw score point throughout the entire score range. Differences in scale score conversions were 6 or 7 points over most of the score range. All of the differences in scale score conversions exceeded two standard errors of the linking. The raw score cut associated with the “Met the Standard” performance level was 29 for the paper version and 28 for the online version. The raw score cut associated with the “Commended” performance level was 50 for paper and 49 for online.

### *Social Studies Results*

The results for social studies, shown in Table 7, indicate that the online version of the test was comparable to the paper version. Differences in raw score conversions were less than half of a raw score point over the entire score range. Differences in scale score conversions were around 5 points or less over most of the score range. The differences in scale score conversions exceeded two standard errors of the linking only at raw scores of 40 and above. The raw score cut associated with the “Met the Standard” performance level was 28 for paper and online. The raw score cut associated with the “Commended” performance level was 49 for paper and online.

### *Process for Decision Making*

In order to evaluate comparability between the paper and online testing modes of the Texas Assessment of Knowledge and Skills (TAKS), PEM recommended the consideration of three pieces of information: the standard error of the linking, the magnitude of the raw score differences, and the rounding differences for cut scores.

The standard error of the linking criterion was suggested by Dorans and Lawrence (1990): “To assess equivalence, it is convenient to compute the difference between the equating function and the identity transformation, and to divide this difference by the standard error of equating. If the resultant ratio falls within a bandwidth of plus or minus two, then the equating function is deemed to be within sampling error of the identity function” (p. 247). In using this procedure, we paid special attention to differences in the range of scale scores around the “Met the Standard” and “Commended” score levels. Differences at the extremes of the scale are less important, given the purpose and primary uses of the TAKS tests. This standard error procedure is sensitive to sample size such that the standard errors will be greater when the sample sizes are smaller. Therefore, we also considered additional criteria.

The magnitude of the raw score differences was evaluated using the criterion of differences that matter (DTM; Dorans & Feigenbaum, 1994). This was originally developed in the context of the SAT where scaled scores are reported in 10-point units. For a given raw score, if the resulting scales scores from the linking differed by fewer than 5 points, then the scale scores would ideally be rounded to the same value and would be considered equivalent. This process was adapted to other tests and the DTM was considered to be a half of a score unit for unrounded scores (Dorans, Holland, Thayer, & Tateneni, 2003). For the TAKS, the DTM was considered to be half of a raw score point. For a given proficiency level, if the corresponding raw scores from the linking differed by less than half of a raw score point, then the two could be considered equivalent.

The third piece of information we considered is the rounding differences for the cut scores. The raw score to scale score conversions for the paper and online tests were compared to see if they result in different raw score cut points across the two modes of test administration. Cuts were evaluated for both “Met the Standard” and “Commended.” PEM recommended that this information be used in conjunction with the magnitude of the raw score differences, and the statistical significance of the differences (based on the Dorans and Lawrence [1990] two standard errors of the linking).

In addition to those three pieces of information, subgroup analyses were conducted and used to inform decision-making in borderline cases. Using these pieces of information, overall psychometric judgment determined the recommendation for use of an alternate score table for the online TAKS administration.

### *Alternate Score Table Decisions*

Based on the results of the comparability analyses, PEM recommended the use of separate October 2006 scale score conversion table for students taking exit level **ELA, mathematics, and science** online for the following reasons:

- The results indicate that scale score conversions differ by more than two standard errors of the linking across the entire range of raw scores.
- The results indicate that the magnitude of the raw score differences exceeds half of a raw score point throughout most of the raw score range (DTM).
- The “Met the Standard” performance level corresponds to different cut scores for the online and paper versions of the test.
- The “Commended” performance level corresponds for different cut scores for the online and paper versions of the test.
- As shown in Table 8, the use of an alternate scoring table for the online students results in passing rates that are more similar to the paper students for mathematics.
- Although it may appear from Table 8 that the alternate score tables for ELA and science make passing rates less similar between online and paper, the relative proficiency level of the two groups must be considered. Looking at the previous score composites (estimated raw score) shown in Table 6, the ELA and science online students were predicted to perform better than the paper students. However, the online students had mean raw scores that were similar or slightly lower than the paper mean raw scores. Using the alternate score tables for ELA and science result in higher scale scores for online students which matches the expectation based on the estimated raw scores.

PEM therefore recommended the ELA, mathematics, and science scale score conversions for students testing October TAKS exit level online as shown in the last column of the comparability analyses in Tables 8, 10, and 11.

For **social studies**, the recommended online scale score conversions are the same as the paper scale score conversions. An alternate scoring table would have resulted in the same raw score cuts and was therefore not recommended. PEM recommended the scale score conversions for social studies as shown in the last column of Table 12.

### Effect Sizes

The TTAC recommended adding effect size analyses to the comparability studies as another method for evaluating the size of the mode effects. For the online and paper matched samples selected at each bootstrap replication, we calculated the effect size for the difference in raw score means. The effect size for each bootstrap sample was calculated according to:

$$d = \frac{\bar{X}_{online} - \bar{X}_{paper}}{\sqrt{\left(\frac{SD_{online}^2 + SD_{paper}^2}{2}\right)}} \quad (1)$$

where  $\bar{X}_{online}$  and  $\bar{X}_{paper}$  are the mean of the online and paper raw scores for the replication, and  $SD_{online}$  and  $SD_{paper}$  are the standard deviations of the raw scores for the replication. Then the average effect size over all the replications was calculated.

Table 9 shows the mean, minimum, and maximum effect size for ELA, mathematics, science and social studies. All effect sizes would be considered small by Cohen's (1992) definition where 0.2 is indicative of a small effect, 0.5 a medium and 0.8 a large effect size. Although the effect sizes for the mean differences between the online and paper groups are small, the recommendations for using alternate score tables are not made based on overall mean differences. Recommendations about whether or not to use an alternate score table are made by evaluating differences between online and paper at each raw score point, paying particular attention to differences around the "Met the Standard" and "Commended" proficiency levels.

**Table 9. Average Effect Size for Raw Score Differences between Paper and Online**

	<b>Mean</b>	<b>Minimum</b>	<b>Maximum</b>
ELA	-.072	-.153	.010
Mathematics	-.113	-.168	-.070
Science	-.091	-.133	-.053
Social Studies	.034	-.019	.082



## Subgroup Analyses

After the test level comparability results for the entire group was evaluated, additional analyses were conducted to evaluate mode effects for different subgroups. Subgroups of interest included males, females, whites, Hispanics, and African Americans. Sample sizes were too small for meaningful analyses of the 'Other' ethnicity subgroup or the special education subgroup, so these groups were not included.

To conduct the subgroup analyses, the mean raw score for each gender and ethnic group was calculated for the online and paper matched samples selected at each bootstrap replication. These values were averaged over the replications and overall bootstrap means and standard deviations (or bootstrap standard errors) were calculated. In addition, a z-difference statistic was calculated as follows:

$$Z_{dif} = \frac{\overline{D}_{online-paper}}{\sqrt{SE_{Diff}^2}} \quad (2)$$

where  $\overline{D}_{online-paper}$  is the grand mean of the differences between mean online and mean paper essay scores over the replications, and  $SE_{diff}$  is the bootstrap standard error of the mean differences over the replications.

Tables 10-13 summarize the comparisons of subgroup performance between the online and paper samples for ELA, mathematics, science, and social studies respectively. For each subgroup, the raw score mean for the online (cbt mean) and paper (paper mean) samples are listed, followed by the differences of the means (mean\_dif) and bootstrap standard error over the replications (se\_dif). The last three columns of the table list the average effect size, described in equation 1, the z-difference statistic ( $Z_{dif}$ ) described in equation 2, and differences are noted (by \*) in the final column if the  $Z_{dif}$  is significant at the 0.05 alpha level. Overall, the results of the subgroup analyses seemed fairly consistent with the results of the test level comparability studies.

Results showed that for ELA (Table 10), there were mode differences in the mean scores for males and Hispanics. Mode effects, however, may not be as apparent in the mean differences for ELA because the mode effects seen at the test level went in different directions (see Table 4). The multiple choice items (especially the reading items) were more difficult online, but the essay was easier online. These effects may cancel out at the total test level for some subgroups.

For Mathematics (Table 11), there were mode differences for males, females, whites, and Hispanics. In all cases, the paper version of the test was easier. This is consistent with the test level comparability results for mathematics where the online version of the test was more difficult than the paper version (see Table 5).

Similarly, the results for science (Table 12) also indicated mode differences for males, females, whites, and Hispanics. In all cases, students did better on the paper version of the test, which is consistent with the test level effects.

Mode effects were found in social studies (Table 13) only for the African American subgroup, indicating that this group did somewhat better on the online version of the test.

Tables 14-18 present information about the impact of using the paper or alternate scoring table for each subject for the male, female, white, Hispanic, and African American subgroups respectively. This impact data were *not* calculated on matched groups, so proficiency differences between the online and paper groups have not been accounted for.

## Item Level Analyses

For each bootstrap replication, the mean and standard deviation of the p-values (or item mean) for each item was calculated along with the differences of p-values (or item mean) for each item between the online and paper matched samples. From this information, the average effect size was calculated according to equation 1, and a z-difference statistic was calculated according to equation 2.

Tables 19-22 summarize the comparisons of p-values between the online and paper samples for ELA, mathematics, science, and social studies respectively. For each item, the p-values for the online (cbt\_pval) and paper (pap\_pval) samples are listed, followed by the differences of the p-values (pval\_dif) and bootstrap standard error over the replications (se\_dif). The last three columns of the table list the average effect size (ES) described in equation 1, the z-difference statistic (Z\_dif) described in equation 2, and differences are noted (by \*) in the final column if they are significant at the 0.05 alpha level.

Table 23 shows a general summary of the item-level mode effects for each subject. Specifically, results showed that for ELA (Table 19), 23 of the 48 multiple choice items showed significant differences in the p-values, 11 of which had p-value differences of 0.05 or greater. In all cases, the items were more difficult online. In addition, two of the three open-ended, short response items (29 and 30) were more difficult online. The essay item, item 52, however, showed mode differences in favor of the online group. For mathematics (Table 20), there were 24 items that showed significant p-value differences. Of these, only four favored the online group. The other 20 items were easier on paper. Additionally, only five of the items had differences in p-values that were 0.05 or greater. All five of these items favored the paper group. For science (Table 21), 17 of the 55 items showed mode differences. All 17 items favored the paper group, but only one item had a p-value difference of 0.05 or greater. Results for social studies (Table 22) showed that eight items displayed significant mode differences in p-values. Of these, seven favored online and one favored paper. Four of the items, all favoring online, had p-value differences that were 0.05 or greater.

**Table 23. Item-level Mode Effects shown in October Exit Level Retests**

Subject	Number of Items Showing Mode Effects	Number of Items Favoring Paper	Number of Items Favoring Online	Detailed Information can be found in Table
ELA	26	25	1	19
Mathematics	24	20	4	20
Science	17	17	0	21
Social Studies	8	1	7	22

## Texas Online Comparability Summary

Texas began conducting online comparability studies in Spring 2005. Table 24 presents a summary of the results for each online administration comparability study since then. The table is organized by subject area. Tests that were comparable across modes used the same scale score conversion table. Tests that were not comparable used an alternate scale score conversion table for online. As shown in the table, mode effects have been found fairly consistently in reading, ELA, and mathematics. In all cases, the online test has been more difficult than the paper version. The results for science and social studies have been less consistent, with the online test sometimes being comparable to paper and sometimes being more difficult. Thus far, no studies have shown the online test to be easier than the paper test.

**Table 24. Summary of the Texas Comparability Results from April 2005 – October 2006**

	Used Same Score Table	Used Alternate Score Table
<b>Reading/ELA</b>	July Exit Level 2006	Grade 8 2005 June Exit Level 2005 Grade 8 2006 Grade 9 2006 October Exit Level 2006
<b>Math</b>	Grade 8 2005	June Exit Level 2005 Grade 8 2006 Grade 9 2006 July Exit Level 2006 October Exit Level 2006
<b>Science</b>	June Exit Level 2005 July Exit Level 2006	Grade 8 2006 October Exit Level 2006
<b>Social Studies</b>	Grade 8 2005 June Exit Level 2005 October Exit Level 2006	Grade 8 2006 July Exit Level 2006

**Table 3: Summary of Comparability Analysis – October Exit Level ELA**

RS	CBT_RS	RS_SD	PAP_SS	CBT_SS	SS_SD	RS_DIF	SS_DIF	SIG?	FINAL_CBT_SS
0	0.47	0.07	1416.19	1469.75	7.52	0.47	53.56		1416
1	1.51	0.18	1528.97	1570.63	14.22	0.51	41.66	**	1571
2	2.88	0.27	1609.98	1651.77	11.60	0.88	41.79	**	1652
3	4.15	0.32	1658.33	1697.17	9.44	1.15	38.84	**	1697
4	5.37	0.34	1693.34	1729.36	8.12	1.37	36.02	**	1729
5	6.54	0.36	1721.04	1754.70	7.16	1.54	33.66	**	1755
6	7.67	0.37	1744.11	1775.77	6.39	1.67	31.66	**	1776
7	8.79	0.37	1764.01	1793.96	5.78	1.79	29.95	**	1794
8	9.89	0.38	1781.58	1810.06	5.28	1.89	28.48	**	1810
9	10.97	0.38	1797.39	1824.59	4.87	1.97	27.20	**	1825
10	12.04	0.38	1811.79	1837.90	4.54	2.04	26.11	**	1838
11	13.11	0.38	1825.10	1850.22	4.27	2.11	25.12	**	1850
12	14.16	0.38	1837.48	1861.74	4.05	2.16	24.26	**	1862
13	15.21	0.38	1849.10	1872.60	3.86	2.21	23.50	**	1873
14	16.25	0.38	1860.09	1882.89	3.71	2.25	22.80	**	1883
15	17.29	0.38	1870.53	1892.71	3.58	2.29	22.18	**	1893
16	18.32	0.39	1880.50	1902.12	3.47	2.32	21.62	**	1902
17	19.34	0.39	1890.07	1911.19	3.38	2.34	21.12	**	1911
18	20.36	0.39	1899.30	1919.95	3.30	2.36	20.65	**	1920
19	21.38	0.39	1908.23	1928.44	3.24	2.38	20.21	**	1928
20	22.39	0.39	1916.90	1936.72	3.19	2.39	19.82	**	1937
21	23.39	0.39	1925.34	1944.80	3.14	2.39	19.46	**	1945
22	24.39	0.40	1933.59	1952.71	3.11	2.39	19.12	**	1953
23	25.39	0.40	1941.68	1960.49	3.08	2.39	18.81	**	1960
24	26.38	0.40	1949.63	1968.14	3.05	2.38	18.51	**	1968
25	27.37	0.40	1957.46	1975.69	3.03	2.37	18.23	**	1976
26	28.36	0.40	1965.20	1983.16	3.01	2.36	17.96	**	1983
27	29.34	0.40	1972.86	1990.56	3.00	2.34	17.70	**	1991
28	30.31	0.40	1980.46	1997.92	2.99	2.31	17.46	**	1998
29	31.28	0.40	1988.02	2005.24	2.98	2.28	17.22	**	2005
30	32.25	0.39	1995.56	2012.55	2.98	2.25	16.99	**	2013
31	33.22	0.39	2003.09	2019.85	2.98	2.22	16.76	**	2020
32	34.18	0.39	2010.63	2027.17	2.97	2.18	16.54	**	2027
33	35.13	0.39	2018.20	2034.51	2.97	2.13	16.31	**	2035
34	36.08	0.38	2025.82	<u>2041.89</u>	2.97	2.08	16.07	**	<u>2045</u>
35	37.03	0.38	2033.48	2049.31	2.98	2.03	15.83	**	2049
36	37.98	0.37	<u>2041.22</u>	2056.80	2.98	1.98	15.58	**	2057
37	38.91	0.37	2049.05	2064.38	2.98	1.91	15.33	**	2064
38	39.85	0.36	2056.98	<u>2072.03</u>	2.99	1.85	15.05	**	<u>2072</u>
39	40.78	0.36	<u>2065.05</u>	2079.80	2.99	1.78	14.75	**	2080
40	41.71	0.35	2073.25	2087.69	2.99	1.71	14.44	**	2088
41	42.63	0.34	2081.62	<b>2095.71</b>	3.00	1.63	14.09	**	<b>2100</b>
42	43.55	0.33	2090.17	2103.88	3.01	1.55	13.71	**	2104
43	44.46	0.33	<b>2098.93</b>	2112.22	3.01	1.46	13.29	**	2112
44	45.37	0.32	2107.92	2120.76	3.02	1.37	12.84	**	2121
45	46.28	0.31	2117.18	2129.49	3.03	1.28	12.31	**	2129
46	47.18	0.30	2126.72	2138.46	3.03	1.18	11.74	**	2138
47	48.08	0.29	2136.60	2147.68	3.04	1.08	11.08	**	2148
48	48.97	0.28	2146.82	2157.18	3.04	0.97	10.36	**	2157
49	49.86	0.27	2157.47	2166.99	3.04	0.86	9.52	**	2167
50	50.74	0.26	2168.55	2177.14	3.05	0.74	8.59	**	2177
51	51.62	0.25	2180.15	2187.69	3.07	0.62	7.54	**	2188
52	52.49	0.24	2192.33	2198.65	3.09	0.49	6.32		2199
53	53.36	0.23	2205.14	2210.07	3.13	0.36	4.93		2210
54	54.23	0.22	2218.69	2222.02	3.16	0.23	3.33		2222

55	55.09	0.21	2233.08	2234.56	3.18	0.09	1.48		2235
56	55.95	0.20	2248.41	2247.78	3.19	-0.05	-0.63		2248
57	56.81	0.19	2264.83	2261.79	3.21	-0.19	-3.04		2262
58	57.67	0.18	2282.52	2276.70	3.26	-0.33	-5.82		2277
59	58.53	0.18	2301.71	2292.65	3.36	-0.47	-9.06		2293
60	59.39	0.17	2322.63	2309.80	3.49	-0.61	-12.83	**	2310
61	60.25	0.16	2345.62	2328.32	3.65	-0.75	-17.30	**	2328
62	61.11	0.15	2371.12	2348.50	3.84	-0.89	-22.62	**	2349
63	61.98	0.15	<b>2399.66</b>	2370.73	4.08	-1.02	-28.93	**	2371
64	62.85	0.16	2431.90	<b>2395.46</b>	4.56	-1.15	-36.44	**	<b>2400</b>
65	63.73	0.17	2468.70	2423.21	5.54	-1.27	-45.49	**	2423
66	64.62	0.20	2511.14	2454.79	7.28	-1.38	-56.35	**	2455
67	65.55	0.24	2560.88	2492.08	10.16	-1.45	-68.80	**	2492
68	66.59	0.29	2621.07	2540.59	14.82	-1.41	-80.48	**	2541
69	67.97	0.34	2698.63	2621.27	23.19	-1.03	-77.36	**	2621
70	70.58	0.34	2803.79	2876.64	42.65	0.58	72.85		2877
71	72.34	0.25	2928.34	3114.97	35.22	1.34	186.63	**	3115
72	72.79	0.11	3067.22	3177.36	16.03	0.79	110.14	**	3177
73	72.95	0.03	3207.31	3199.96	4.68	-0.05	-7.35		3207

**Table 4: Student Performance on October ELA Multiple Choice, Open-Ended Items, and Essay by Test Mode**

	Online				Paper					
Multiple Choice	35.91				36.31					
	0	1	2	3	0	1	2	3		
OE 1	12.27%	48.01%	39.72%	0.00%	11.27%	50.10%	38.44%	0.19%		
OE 2	12.09%	53.70%	34.20%	0.00%	10.90%	56.43%	32.44%	0.23%		
OE 3	29.28%	47.95%	22.76%	0.00%	33.13%	48.18%	18.59%	0.09%		
	0	1	2	3	4	0	1	2	3	4
Essay	2.19%	20.57%	45.35%	27.03%	4.86%	1.09%	25.57%	56.27%	16.01%	1.05%

**Table 5: Summary of Comparability Analysis – October Exit Level Mathematics**

RS	CBT_RS	RS_SD	PAP_SS	CBT_SS	SS_SD	RS_DIF	SS_DIF	SIG?	FINAL_CBT_SS
0	0.33	0.01	1300.40	1348.00	0.81	0.33	47.60		1300
1	1.11	0.02	1442.74	1453.84	1.84	0.11	11.10		1454
2	2.20	0.03	1545.22	1557.67	2.05	0.20	12.45		1558
3	3.28	0.05	1607.23	1620.00	2.10	0.28	12.77		1620
4	4.35	0.06	1652.68	1665.45	2.09	0.35	12.77		1665
5	5.41	0.07	1689.03	1701.70	2.07	0.41	12.67		1702
6	6.47	0.08	1719.64	1732.17	2.04	0.47	12.53		1732
7	7.52	0.08	1746.28	1758.68	2.02	0.52	12.40	**	1759
8	8.57	0.09	1770.07	1782.27	1.98	0.57	12.20	**	1782
9	9.61	0.10	1791.56	1803.63	1.96	0.61	12.07	**	1804
10	10.65	0.11	1811.32	1823.27	1.93	0.65	11.95	**	1823
11	11.69	0.11	1829.70	1841.54	1.91	0.69	11.84	**	1842
12	12.72	0.12	1846.95	1858.69	1.89	0.72	11.74	**	1859
13	13.75	0.12	1863.24	1874.82	1.86	0.75	11.58	**	1875
14	14.78	0.13	1878.64	1890.18	1.84	0.78	11.54	**	1890
15	15.81	0.13	1893.41	1904.86	1.82	0.81	11.45	**	1905
16	16.83	0.13	1907.57	1918.96	1.81	0.83	11.39	**	1919
17	17.86	0.14	1921.23	1932.55	1.79	0.86	11.32	**	1933
18	18.88	0.14	1934.44	1945.70	1.77	0.88	11.26	**	1946
19	19.90	0.14	1947.26	1958.47	1.76	0.90	11.21	**	1958
20	20.92	0.14	1959.75	1970.91	1.75	0.92	11.16	**	1971
21	21.93	0.15	1971.95	1983.06	1.74	0.93	11.11	**	1983
22	22.95	0.15	1983.89	1994.96	1.72	0.95	11.07	**	1995
23	23.96	0.15	1995.61	<u>2006.64</u>	1.71	0.96	11.03	**	<u>2015</u>
24	24.97	0.15	<u>2007.14</u>	2018.13	1.71	0.97	10.99	**	2018
25	25.98	0.15	2018.51	2029.47	1.70	0.98	10.96	**	2029
26	26.98	0.15	2029.75	2040.68	1.69	0.98	10.93	**	2041
27	27.99	0.15	2040.89	<u>2051.77</u>	1.69	0.99	10.88	**	<u>2058</u>
28	28.99	0.15	<u>2051.93</u>	2062.79	1.68	0.99	10.86	**	2063
29	29.99	0.15	2062.92	2073.75	1.67	0.99	10.83	**	2074
30	30.99	0.15	2073.87	2084.66	1.67	0.99	10.79	**	2085
31	31.98	0.15	2084.80	<b>2095.56</b>	1.66	0.98	10.76	**	<b>2100</b>
32	32.98	0.15	<b>2095.74</b>	2106.46	1.66	0.98	10.72	**	2106
33	33.97	0.15	2106.70	2117.40	1.66	0.97	10.70	**	2117
34	34.96	0.15	2117.72	2128.37	1.65	0.96	10.65	**	2128
35	35.95	0.15	2128.80	2139.43	1.65	0.95	10.63	**	2139
36	36.94	0.14	2139.99	2150.57	1.64	0.94	10.58	**	2151
37	37.92	0.14	2151.29	2161.85	1.64	0.92	10.56	**	2162
38	38.90	0.14	2162.76	2173.27	1.64	0.90	10.51	**	2173
39	39.88	0.14	2174.40	2184.87	1.63	0.88	10.47	**	2185
40	40.86	0.13	2186.26	2196.69	1.63	0.86	10.43	**	2197
41	41.84	0.13	2198.37	2208.77	1.63	0.84	10.40	**	2209
42	42.81	0.13	2210.79	2221.14	1.62	0.81	10.35	**	2221
43	43.78	0.12	2223.55	2233.86	1.62	0.78	10.31	**	2234
44	44.75	0.12	2236.71	2246.98	1.62	0.75	10.27	**	2247
45	45.72	0.11	2250.34	2260.57	1.62	0.72	10.23	**	2261
46	46.69	0.11	2264.53	2274.72	1.61	0.69	10.19	**	2275
47	47.65	0.10	2279.36	2289.51	1.61	0.65	10.15	**	2290
48	48.61	0.10	2294.95	2305.06	1.61	0.61	10.11	**	2305
49	49.57	0.09	2311.45	2321.53	1.62	0.57	10.08	**	2322
50	50.53	0.09	2329.06	2339.16	1.63	0.53	10.10	**	2339
51	51.49	0.08	2348.12	2358.17	1.63	0.49	10.05		2358
52	52.44	0.07	2368.80	<b>2378.84</b>	1.64	0.44	10.04		<b>2400</b>
53	53.39	0.06	<b>2391.63</b>	2401.68	1.65	0.39	10.05		2402
54	54.34	0.06	2417.31	2427.41	1.68	0.34	10.10		2427

55	55.29	0.05	2446.91	2457.11	1.71	0.29	10.20	2457
56	56.24	0.04	2482.20	2492.62	1.76	0.24	10.42	2493
57	57.18	0.03	2526.51	2537.41	1.85	0.18	10.90	2537
58	58.12	0.02	2587.35	2599.63	2.11	0.12	12.28	2600
59	59.06	0.01	2688.59	2697.33	1.52	0.06	8.74	2697
60	59.72	0.00	2830.62	2790.66	0.46	-0.28	-39.96	2831



**Table 6: Summary of Comparability Analysis – October Exit Level Science**

RS	CBT RS	RS SD	PAP SS	CBT SS	SS SD	RS DIF	SS DIF	SIG?	FINAL CBT SS
0	0.33	0.01	1402.46	1445.47	0.73	0.33	43.01		1402
1	1.09	0.02	1533.71	1541.75	1.59	0.09	8.04		1542
2	2.16	0.03	1627.35	1636.21	1.74	0.16	8.86		1636
3	3.22	0.04	1683.89	1692.79	1.75	0.22	8.90		1693
4	4.27	0.05	1725.01	1733.80	1.72	0.27	8.79		1734
5	5.31	0.06	1757.81	1766.45	1.69	0.31	8.64		1766
6	6.35	0.07	1785.37	1793.85	1.66	0.35	8.48		1794
7	7.39	0.08	1809.33	1817.65	1.63	0.39	8.32		1818
8	8.42	0.08	1830.65	1838.83	1.61	0.42	8.18		1839
9	9.45	0.09	1849.99	1858.03	1.58	0.45	8.04		1858
10	10.48	0.09	1867.76	1875.68	1.56	0.48	7.92		1876
11	11.50	0.10	1884.27	1892.08	1.54	0.50	7.81	**	1892
12	12.53	0.10	1899.76	1907.43	1.51	0.53	7.67	**	1907
13	13.55	0.11	1914.32	1921.93	1.50	0.55	7.61	**	1922
14	14.57	0.11	1928.23	1935.74	1.48	0.57	7.51	**	1936
15	15.58	0.11	1941.52	1948.96	1.47	0.58	7.44	**	1949
16	16.60	0.12	1954.31	1961.68	1.45	0.60	7.37	**	1962
17	17.61	0.12	1966.65	1973.96	1.44	0.61	7.31	**	1974
18	18.62	0.12	1978.62	1985.87	1.43	0.62	7.25	**	1986
19	19.63	0.13	1990.27	1997.46	1.42	0.63	7.19	**	1997
20	20.64	0.13	2001.64	2008.78	1.41	0.64	7.14	**	2009
21	21.65	0.13	2012.77	2019.87	1.41	0.65	7.10	**	2020
22	22.65	0.13	2023.71	<u>2030.76</u>	1.40	0.65	7.05	**	<u>2035</u>
23	23.66	0.13	<u>2034.49</u>	2041.50	1.39	0.66	7.01	**	2042
24	24.66	0.13	2045.13	2052.11	1.39	0.66	6.98	**	2052
25	25.66	0.13	2055.67	<u>2062.61</u>	1.38	0.66	6.94	**	<u>2068</u>
26	26.66	0.13	<u>2066.13</u>	2073.04	1.38	0.66	6.91	**	2073
27	27.66	0.13	2076.54	2083.42	1.38	0.66	6.88	**	2083
28	28.66	0.13	2086.92	<b>2093.78</b>	1.37	0.66	6.86	**	<b>2100</b>
29	29.66	0.13	<b>2097.31</b>	2104.15	1.37	0.66	6.84	**	2104
30	30.65	0.13	2107.72	2114.54	1.37	0.65	6.82	**	2115
31	31.65	0.13	2118.18	2124.98	1.37	0.65	6.80	**	2125
32	32.64	0.13	2128.72	2135.50	1.37	0.64	6.78	**	2136
33	33.63	0.13	2139.37	2146.14	1.37	0.63	6.77	**	2146
34	34.62	0.12	2150.16	2156.92	1.37	0.62	6.76	**	2157
35	35.60	0.12	2161.12	2167.87	1.37	0.60	6.75	**	2168
36	36.59	0.12	2172.28	2179.02	1.37	0.59	6.74	**	2179
37	37.58	0.12	2183.70	2190.43	1.37	0.58	6.73	**	2190
38	38.56	0.11	2195.41	2202.14	1.37	0.56	6.73	**	2202
39	39.54	0.11	2207.47	2214.21	1.38	0.54	6.74	**	2214
40	40.52	0.11	2219.95	2226.68	1.38	0.52	6.73	**	2227
41	41.50	0.10	2232.91	2239.65	1.39	0.50	6.74		2240
42	42.47	0.10	2246.45	2253.20	1.39	0.47	6.75		2253
43	43.45	0.09	2260.67	2267.43	1.40	0.45	6.76		2267
44	44.42	0.09	2275.72	2282.50	1.41	0.42	6.78		2283
45	45.39	0.08	2291.77	2298.57	1.42	0.39	6.80		2299
46	46.36	0.08	2309.05	2315.89	1.43	0.36	6.84		2316
47	47.33	0.07	2327.88	2334.76	1.45	0.33	6.88		2335
48	48.30	0.06	2348.67	2355.61	1.47	0.30	6.94		2356
49	49.26	0.06	2372.07	<b>2379.10</b>	1.49	0.26	7.03		<b>2400</b>
50	50.22	0.05	<b>2399.06</b>	2406.22	1.53	0.22	7.16		2406
51	51.18	0.04	2431.27	2438.65	1.59	0.18	7.38		2439
52	52.14	0.03	2471.79	2479.58	1.69	0.14	7.79		2480
53	53.10	0.02	2527.49	2536.35	1.93	0.10	8.86		2536
54	54.05	0.01	2620.40	2626.65	1.37	0.05	6.25		2627
55	54.71	0.00	2748.37	2711.88	0.42	-0.29	-36.49		2748

**Table 7: Summary of Comparability Analysis – October Exit Level Social Studies**

RS	CBT RS	RS SD	PAP SS	CBT SS	SS SD	RS DIF	SS DIF	SIG?	FINAL CBT SS
0	0.29	0.01	1441.75	1478.42	0.80	0.29	36.67		1442
1	0.98	0.02	1566.83	1563.93	2.54	-0.02	-2.90		1567
2	1.95	0.04	1657.66	1653.43	3.53	-0.05	-4.23		1658
3	2.93	0.06	1712.16	1708.37	3.11	-0.07	-3.79		1712
4	3.91	0.08	1751.81	1748.16	2.94	-0.09	-3.65		1752
5	4.89	0.09	1783.36	1779.74	2.84	-0.11	-3.62		1783
6	5.86	0.11	1809.81	1806.19	2.78	-0.14	-3.62		1810
7	6.84	0.12	1832.75	1829.11	2.73	-0.16	-3.64		1833
8	7.82	0.13	1853.15	1849.47	2.70	-0.18	-3.68		1853
9	8.80	0.15	1871.62	1867.90	2.67	-0.20	-3.72		1872
10	9.78	0.16	1888.58	1884.81	2.65	-0.22	-3.77		1889
11	10.76	0.17	1904.34	1900.52	2.63	-0.24	-3.82		1904
12	11.74	0.18	1919.12	1915.26	2.61	-0.26	-3.86		1919
13	12.72	0.19	1933.09	1929.17	2.60	-0.28	-3.92		1933
14	13.70	0.19	1946.39	1942.42	2.58	-0.30	-3.97		1946
15	14.68	0.20	1959.12	1955.10	2.57	-0.32	-4.02		1959
16	15.67	0.21	1971.37	1967.30	2.56	-0.33	-4.07		1971
17	16.65	0.22	1983.21	1979.09	2.55	-0.35	-4.12		1983
18	17.64	0.22	1994.71	1990.53	2.54	-0.36	-4.18		1995
19	18.62	0.23	2005.92	2001.69	2.53	-0.38	-4.23		2006
20	19.61	0.23	2016.87	2012.59	2.52	-0.39	-4.28		2017
21	20.60	0.23	<u>2027.62</u>	<u>2023.28</u>	2.51	-0.40	-4.34		<u>2033</u>
22	21.59	0.24	2038.19	2033.80	2.50	-0.41	-4.39		2038
23	22.57	0.24	2048.62	2044.18	2.50	-0.43	-4.44		2049
24	23.56	0.24	<u>2058.94</u>	2054.45	2.49	-0.44	-4.49		<u>2067</u>
25	24.56	0.24	<u>2069.17</u>	<u>2064.63</u>	2.48	-0.44	-4.54		2069
26	25.55	0.24	2079.35	2074.75	2.48	-0.45	-4.60		2079
27	26.54	0.24	2089.50	2084.84	2.47	-0.46	-4.66		2090
28	27.54	0.24	<b>2099.63</b>	<b>2094.92</b>	2.47	-0.46	-4.71		<b>2100</b>
29	28.53	0.24	2109.78	2105.02	2.46	-0.47	-4.76		2110
30	29.53	0.24	2119.97	2115.15	2.46	-0.47	-4.82		2120
31	30.52	0.24	2130.23	2125.35	2.45	-0.48	-4.88		2130
32	31.52	0.24	2140.58	2135.65	2.45	-0.48	-4.93		2141
33	32.52	0.23	2151.05	2146.06	2.44	-0.48	-4.99		2151
34	33.52	0.23	2161.66	2156.61	2.44	-0.48	-5.05		2162
35	34.53	0.23	2172.46	2167.34	2.44	-0.47	-5.12		2172
36	35.53	0.22	2183.47	2178.29	2.43	-0.47	-5.18		2183
37	36.53	0.22	2194.74	2189.50	2.43	-0.47	-5.24		2195
38	37.54	0.21	2206.31	2201.00	2.43	-0.46	-5.31		2206
39	38.55	0.20	2218.24	2212.86	2.43	-0.45	-5.38		2218
40	39.56	0.20	2230.57	2225.13	2.43	-0.44	-5.44		2231
41	40.57	0.19	2243.40	2237.88	2.43	-0.43	-5.52		2243
42	41.58	0.18	2256.73	2251.16	2.42	-0.42	-5.57		2257
43	42.60	0.17	2270.83	2265.15	2.44	-0.40	-5.68		2271
44	43.61	0.16	2285.74	2279.98	2.44	-0.39	-5.76		2286
45	44.63	0.15	2301.64	2295.80	2.44	-0.37	-5.84		2302
46	45.65	0.14	2318.74	2312.83	2.44	-0.35	-5.91		2319
47	46.68	0.13	2337.36	2331.36	2.45	-0.32	-6.00		2337
48	47.70	0.12	2357.90	2351.83	2.44	-0.30	-6.07		2358
49	48.73	0.11	<b>2381.00</b>	<b>2374.86</b>	2.44	-0.27	-6.14		<b>2400</b>
50	49.77	0.09	2407.61	2401.42	2.44	-0.23	-6.19		2408
51	50.80	0.08	2439.32	2433.10	2.42	-0.20	-6.22		2439
52	51.85	0.06	2479.15	2472.98	2.37	-0.15	-6.17		2479
53	52.89	0.04	2533.82	2527.86	2.27	-0.11	-5.96		2534
54	53.94	0.02	2624.82	2619.57	1.98	-0.06	-5.25		2625
55	54.68	0.01	2750.11	2710.26	0.85	-0.32	-39.85		2750

**Table 8: Impact of Alternate Scoring Tables**

	Student Group	Score Table	ELA Raw Score cut only	ELA with Essay**	Math	Science	Social Studies
Pass*	Paper	Paper	70.30%	63.31%	36.84%	36.85%	66.35%
	Online	Paper	69.95%	65.26%	33.38%	35.84%	70.22%
	Online	Alternate	73.80%	68.05%	37.61%	41.00%	70.22%
Commended	Paper	Paper	4.80%	4.80%	0.92%	0.37%	5.66%
	Online	Paper	8.12%	8.12%	1.15%	0.78%	9.62%
	Online	Alternate	6.58%	6.58%	1.54%	0.81%	9.62%
Met Standard	Paper	Paper	65.50%	58.51%	35.92%	36.48%	60.69%
	Online	Paper	61.83%	57.14%	32.23%	35.06%	60.60%
	Online	Alternate	67.22%	61.47%	36.16%	40.19%	60.60%

\* Pass is a combination of students who achieved the “Met the Standard” or “Commended” performance levels.

\*\* Students must achieve an essay score of 2, in addition to meeting the raw score cut, to pass ELA.

**Table 10: Summary of Subgroup Analyses – Exit Level ELA**

Subgroup	Average N-count	CBT Mean	Paper Mean	Mean_dif	SE_dif	Effect Size	Z_dif	Sig
Male	976.50	47.03	48.00	-0.97	0.31	-0.09	-3.10	*
Female	710.50	48.93	49.53	-0.61	0.37	-0.05	-1.64	
White	447.53	54.47	53.97	0.50	0.43	0.05	1.18	
Hispanic	962.16	44.77	46.29	-1.52	0.35	-0.13	-4.34	*
African American	242.48	47.49	47.76	-0.27	0.64	-0.03	-0.43	

**Table 11: Summary of Subgroup Analyses – Exit Level Mathematics**

Subgroup	Average N-count	CBT Mean	Paper Mean	Mean_dif	SE_dif	Effect Size	Z_dif	Sig
Male	1418.74	29.16	29.99	-0.83	0.27	-0.10	-3.10	*
Female	1960.26	28.43	29.44	-1.02	0.18	-0.12	-5.68	*
White	872.05	31.88	32.57	-0.70	0.29	-0.08	-2.42	*
Hispanic	1835.63	27.58	28.84	-1.27	0.19	-0.16	-6.73	*
African American	623.29	27.32	27.72	-0.40	0.31	-0.06	-1.28	

**Table 12: Summary of Subgroup Analyses – Exit Level Science**

Subgroup	Average N-count	CBT Mean	Paper Mean	Mean_dif	SE_dif	Effect Size	Z_dif	Sig
Male	1415.77	27.28	27.75	-0.48	0.20	-0.06	-2.33	**
Female	2289.23	25.95	26.73	-0.77	0.13	-0.11	-5.87	**
White	837.00	30.10	30.64	-0.54	0.25	-0.07	-2.12	**
Hispanic	2127.56	25.05	26.08	-1.04	0.17	-0.15	-6.28	**
African American	669.58	25.91	25.71	0.20	0.25	0.03	0.81	
Other Ethnicity	70.86	31.09	30.00	1.08	0.96	0.13	1.14	

**Table 13: Summary of Subgroup Analyses – Exit Level Social Studies**

Subgroup	Average N-count	CBT Mean	Paper Mean	Mean_dif	SE_dif	Effect Size	Z_dif	Sig
Male	627.47	36.07	35.61	0.46	0.32	0.05	1.42	
Female	806.53	33.09	32.85	0.24	0.27	0.02	0.88	
White	340.32	39.91	39.53	0.38	0.45	0.04	0.83	
Hispanic	840.00	32.42	32.40	0.02	0.27	0.00	0.08	
African American	213.26	32.62	31.17	1.45	0.61	0.15	2.38	*

**Table 14: Impact of Alternate Scoring Tables for Males**

	Student Group	Score Table	ELA*	Math	Science	Social Studies
Pass	Paper	Paper	61.00%	38.57%	39.53%	70.56%
	Online	Paper	61.99%	35.54%	40.10%	76.08%
	Online	Alternate	64.86%	40.32%	45.24%	76.08%
Commended	Paper	Paper	2.98%	0.83%	0.41%	7.82%
	Online	Paper	5.64%	1.27%	0.99%	11.48%
	Online	Alternate	4.61%	1.62%	1.06%	11.48%
Met Standard	Paper	Paper	58.02%	37.74%	39.12%	62.74%
	Online	Paper	56.35%	34.27%	39.11%	64.60%
	Online	Alternate	60.25%	38.70%	44.18%	64.60%

\* Students must achieve an essay score of 2, in addition to meeting the raw score cut, to pass.

**Table 15: Impact of Alternate Scoring Tables for Females**

	Student Group	Score Table	ELA*	Math	Science	Social Studies
Pass	Paper	Paper	66.14%	35.51%	35.03%	63.28%
	Online	Paper	69.76%	31.82%	33.20%	65.68%
	Online	Alternate	72.43%	35.65%	38.36%	65.68%
Commended	Paper	Paper	7.02%	1.00%	0.34%	4.08%
	Online	Paper	11.53%	1.07%	0.66%	8.18%
	Online	Alternate	9.28%	1.33%	0.66%	8.18%
Met Standard	Paper	Paper	59.12%	34.51%	34.69%	59.20%
	Online	Paper	58.23%	30.75%	32.54%	57.50%
	Online	Alternate	63.15%	34.32%	37.70%	57.50%

\* Students must achieve an essay score of 2, in addition to meeting the raw score cut, to pass.

**Table 16: Impact of Alternate Scoring Tables for Whites**

	Student Group	Score Table	ELA*	Math	Science	Social Studies
Pass	Paper	Paper	82.87%	49.64%	56.07%	84.79%
	Online	Paper	85.43%	47.07%	53.64%	90.06%
	Online	Alternate	87.00%	53.04%	58.90%	90.06%
Commended	Paper	Paper	11.98%	1.88%	1.11%	13.45%
	Online	Paper	20.18%	2.87%	2.27%	19.01%
	Online	Alternate	16.37%	3.79%	2.39%	19.01%
Met Standard	Paper	Paper	70.89%	47.76%	54.96%	71.34%
	Online	Paper	65.25%	44.20%	51.37%	71.05%
	Online	Alternate	70.63%	49.25%	56.51%	71.05%

\* Students must achieve an essay score of 2, in addition to meeting the raw score cut, to pass.

**Table 17: Impact of Alternate Scoring Tables for Hispanics**

	Student Group	Score Table	ELA*	Math	Science	Social Studies
Pass	Paper	Paper	55.23%	33.22%	31.72%	62.45%
	Online	Paper	55.08%	28.71%	28.81%	62.90%
	Online	Alternate	58.51%	32.26%	33.65%	62.90%
Commended	Paper	Paper	2.51%	0.60%	0.11%	3.24%
	Online	Paper	3.73%	0.55%	0.38%	6.66%
	Online	Alternate	2.80%	0.66%	0.38%	6.66%
Met Standard	Paper	Paper	52.72%	32.62%	31.61%	59.21%
	Online	Paper	51.35%	28.16%	28.43%	56.24%
	Online	Alternate	55.71%	31.60%	33.27%	56.24%

\* Students must achieve an essay score of 2, in addition to meeting the raw score cut, to pass.

**Table 18: Impact of Alternate Scoring Tables for African Americans**

	Student Group	Score Table	ELA*	Math	Science	Social Studies
Pass	Paper	Paper	64.04%	29.75%	30.43%	54.96%
	Online	Paper	67.36%	26.27%	33.68%	64.93%
	Online	Alternate	69.83%	29.94%	39.82%	64.93%
Commended	Paper	Paper	2.19%	0.15%	0.22%	3.05%
	Online	Paper	2.89%	0.00%	0.00%	4.74%
	Online	Alternate	2.89%	0.00%	0.00%	4.74%
Met Standard	Paper	Paper	61.85%	29.60%	30.21%	51.91%
	Online	Paper	64.47%	26.27%	33.68%	60.19%
	Online	Alternate	66.94%	29.75%	39.82%	60.19%

\* Students must achieve an essay score of 2, in addition to meeting the raw score cut, to pass.

**Table 19: Summary of Item Level Analyses – Exit Level ELA**

Item	cbt_pval	pap_pval	pval_dif	pval_se	ES	Z_dif	Sig
1	0.81	0.84	-0.04	0.01	-0.10	-3.15	*
2	0.86	0.91	-0.05	0.01	-0.16	-4.80	*
3	0.84	0.87	-0.03	0.01	-0.08	-2.69	*
4	0.65	0.67	-0.02	0.02	-0.04	-1.15	
5	0.53	0.59	-0.07	0.02	-0.13	-3.88	*
6	0.70	0.76	-0.06	0.01	-0.14	-4.48	*
7	0.90	0.91	-0.01	0.01	-0.04	-1.30	
8	0.50	0.57	-0.07	0.02	-0.14	-4.89	*
9	0.70	0.75	-0.05	0.01	-0.11	-3.69	*
10	0.63	0.66	-0.02	0.02	-0.05	-1.51	
11	0.85	0.88	-0.03	0.01	-0.08	-2.34	*
12	0.94	0.95	-0.01	0.01	-0.05	-1.28	
13	0.81	0.83	-0.03	0.01	-0.08	-2.24	*
14	0.84	0.89	-0.05	0.01	-0.16	-5.28	*
15	0.75	0.84	-0.08	0.01	-0.21	-6.57	*
16	0.87	0.87	-0.01	0.01	-0.03	-0.73	
17	0.78	0.82	-0.04	0.01	-0.10	-3.01	*
18	0.62	0.63	-0.01	0.02	-0.02	-0.80	
19	0.71	0.74	-0.03	0.02	-0.08	-2.15	*
20	0.68	0.73	-0.04	0.02	-0.10	-2.99	*
21	0.86	0.88	-0.02	0.01	-0.05	-1.36	
22	0.82	0.85	-0.03	0.01	-0.08	-2.48	*
23	0.78	0.79	-0.01	0.01	-0.03	-0.93	
24	0.81	0.84	-0.03	0.01	-0.07	-2.28	*
25	0.67	0.68	-0.01	0.02	-0.01	-0.51	
26	0.71	0.77	-0.06	0.01	-0.15	-4.74	*
27	0.88	0.92	-0.04	0.01	-0.13	-3.67	*
28	0.59	0.64	-0.05	0.02	-0.11	-3.49	*
29	1.27	1.32	-0.04	0.02	-0.07	-2.20	*
30	1.22	1.26	-0.04	0.02	-0.06	-2.03	*
31	0.93	0.91	0.03	0.02	0.04	1.21	
32	0.85	0.88	-0.03	0.01	-0.07	-2.29	*
33	0.81	0.83	-0.02	0.01	-0.05	-1.40	
34	0.70	0.70	0.00	0.02	-0.01	-0.31	
35	0.77	0.78	-0.01	0.01	-0.02	-0.73	
36	0.84	0.84	0.00	0.01	-0.02	-0.41	
37	0.83	0.84	-0.01	0.01	-0.03	-0.98	
38	0.77	0.77	0.00	0.01	0.00	0.02	
39	0.66	0.71	-0.05	0.02	-0.11	-3.30	*
40	0.67	0.69	-0.03	0.02	-0.05	-1.65	
41	0.46	0.48	-0.02	0.02	-0.04	-1.32	
42	0.71	0.75	-0.04	0.01	-0.10	-3.09	*
43	0.91	0.91	0.00	0.01	0.00	0.00	
44	0.76	0.78	-0.02	0.01	-0.04	-1.19	
45	0.60	0.63	-0.03	0.02	-0.06	-1.70	
46	0.71	0.75	-0.05	0.01	-0.10	-3.17	*
47	0.68	0.68	0.00	0.02	0.00	0.12	
48	0.75	0.73	0.01	0.01	0.03	1.10	
49	0.73	0.75	-0.03	0.01	-0.06	-1.83	
50	0.85	0.86	-0.01	0.01	-0.02	-0.72	
51	0.78	0.80	-0.02	0.01	-0.05	-1.47	
52	8.47	7.88	0.59	0.09	0.19	6.45	*

<sup>a</sup> Items 29, 30, and 31 were the open-ended items. Each was worth a possible of 3 points. The numbers in the table reflect item means.

<sup>b</sup> Item 52 was the essay item. This item was worth 4 points and was weighted by 4, for a possible point total of 16. The numbers in the table reflected the weighted item means.

**Table 20: Summary of Item Level Analyses – Exit Level Mathematics**

<b>Item</b>	<b>cbt_pval</b>	<b>pap_pval</b>	<b>pval_dif</b>	<b>pval_se</b>	<b>ES</b>	<b>Z_dif</b>	<b>Sig</b>
1	0.85	0.89	-0.05	0.01	-0.13	-5.30	*
2	0.62	0.64	-0.02	0.01	-0.05	-2.03	
3	0.78	0.78	-0.01	0.01	-0.02	-0.60	
4	0.45	0.48	-0.03	0.01	-0.06	-3.10	*
5	0.27	0.29	-0.01	0.01	-0.03	-1.11	
6	0.45	0.45	0.00	0.01	0.01	0.30	
7	0.53	0.55	-0.02	0.01	-0.04	-1.40	
8	0.36	0.37	-0.01	0.01	-0.02	-0.82	
9	0.51	0.50	0.01	0.01	0.02	0.78	
10	0.65	0.62	0.03	0.01	0.06	2.67	*
11	0.22	0.23	-0.01	0.01	-0.01	-0.54	
12	0.46	0.49	-0.03	0.01	-0.06	-2.55	*
13	0.34	0.33	0.01	0.01	0.02	0.94	
14	0.39	0.39	0.00	0.01	-0.01	-0.33	
15	0.59	0.60	-0.01	0.01	-0.01	-0.54	
16	0.35	0.40	-0.05	0.01	-0.10	-4.01	*
17	0.57	0.56	0.01	0.01	0.02	0.79	
18	0.60	0.58	0.03	0.01	0.05	2.54	*
19	0.54	0.56	-0.01	0.01	-0.02	-1.00	
20	0.79	0.79	0.00	0.01	-0.01	-0.23	
21	0.33	0.36	-0.03	0.01	-0.06	-2.89	*
22	0.32	0.32	0.00	0.01	0.00	0.08	
23	0.27	0.27	0.00	0.01	0.01	0.38	
24	0.69	0.72	-0.04	0.01	-0.08	-3.39	*
25	0.48	0.50	-0.02	0.01	-0.05	-1.69	
26	0.32	0.35	-0.03	0.01	-0.07	-2.95	*
27	0.38	0.43	-0.04	0.01	-0.09	-3.46	*
28	0.36	0.38	-0.01	0.01	-0.03	-1.21	
29	0.37	0.33	0.04	0.01	0.08	3.21	*
30	0.33	0.36	-0.03	0.01	-0.06	-2.67	*
31	0.32	0.33	-0.01	0.01	-0.02	-0.68	
32	0.29	0.28	0.01	0.01	0.02	0.88	
33	0.37	0.40	-0.04	0.01	-0.08	-3.20	*
34	0.32	0.33	-0.01	0.01	-0.02	-0.95	
35	0.41	0.43	-0.02	0.01	-0.03	-1.39	
36	0.43	0.44	-0.01	0.01	-0.01	-0.53	
37	0.67	0.68	-0.01	0.01	-0.02	-0.66	
38	0.42	0.43	-0.02	0.01	-0.04	-1.48	
39	0.52	0.55	-0.03	0.01	-0.05	-1.99	
40	0.22	0.23	0.00	0.01	-0.01	-0.39	
41	0.47	0.50	-0.03	0.01	-0.05	-2.32	*
42	0.35	0.35	0.00	0.01	-0.01	-0.38	
43	0.38	0.41	-0.03	0.01	-0.06	-3.02	*
44	0.48	0.51	-0.03	0.01	-0.06	-2.20	*
45	0.28	0.30	-0.02	0.01	-0.04	-2.01	
46	0.37	0.39	-0.02	0.01	-0.04	-1.59	
47	0.73	0.74	-0.02	0.01	-0.04	-1.77	
48	0.50	0.47	0.03	0.01	0.06	2.72	*
49	0.46	0.48	-0.01	0.01	-0.02	-0.88	
50	0.30	0.34	-0.04	0.01	-0.09	-3.76	*
51	0.65	0.65	0.01	0.01	0.01	0.47	
52	0.74	0.75	-0.02	0.01	-0.04	-1.79	
53	0.50	0.52	-0.03	0.01	-0.06	-2.19	*
54	0.44	0.47	-0.03	0.01	-0.07	-3.11	*
55	0.50	0.57	-0.07	0.01	-0.14	-5.71	*
56	0.56	0.62	-0.06	0.01	-0.13	-5.40	*
57	0.76	0.77	-0.01	0.01	-0.02	-1.06	
58	0.46	0.53	-0.07	0.01	-0.14	-6.02	*
59	0.82	0.83	-0.01	0.01	-0.03	-1.17	
60	0.86	0.88	-0.02	0.01	-0.05	-2.05	*



**Table 21: Summary of Item Level Analyses – Exit Level Science**

<b>Item</b>	<b>cbt_pval</b>	<b>pap_pval</b>	<b>pval_dif</b>	<b>pval_se</b>	<b>ES</b>	<b>Z_dif</b>	<b>Sig</b>
1	0.87	0.90	-0.03	0.01	-0.10	-4.66	*
2	0.53	0.54	-0.01	0.01	-0.02	-0.76	
3	0.65	0.67	-0.02	0.01	-0.05	-2.59	*
4	0.45	0.45	0.00	0.01	0.00	-0.03	
5	0.81	0.81	0.00	0.01	0.00	0.07	
6	0.81	0.83	-0.02	0.01	-0.05	-2.22	*
7	0.61	0.60	0.01	0.01	0.01	0.55	
8	0.55	0.54	0.02	0.01	0.03	1.66	
9	0.65	0.67	-0.02	0.01	-0.05	-2.14	*
10	0.37	0.36	0.01	0.01	0.01	0.53	
11	0.61	0.64	-0.02	0.01	-0.05	-1.89	
12	0.65	0.70	-0.04	0.01	-0.09	-4.02	*
13	0.59	0.58	0.01	0.01	0.03	1.31	
14	0.52	0.50	0.01	0.01	0.03	1.12	
15	0.37	0.40	-0.03	0.01	-0.07	-3.21	*
16	0.39	0.39	0.01	0.01	0.01	0.51	
17	0.46	0.47	-0.01	0.01	-0.03	-1.16	
18	0.44	0.46	-0.03	0.01	-0.05	-2.35	*
19	0.37	0.38	0.00	0.01	-0.01	-0.29	
20	0.52	0.59	-0.06	0.01	-0.13	-5.80	*
21	0.51	0.53	-0.01	0.01	-0.03	-1.09	
22	0.41	0.42	-0.01	0.01	-0.01	-0.48	
23	0.42	0.41	0.01	0.01	0.01	0.73	
24	0.22	0.24	-0.01	0.01	-0.04	-1.88	
25	0.23	0.22	0.01	0.01	0.02	0.75	
26	0.29	0.31	-0.02	0.01	-0.05	-2.13	*
27	0.40	0.42	-0.03	0.01	-0.06	-2.50	*
28	0.51	0.54	-0.02	0.01	-0.05	-2.20	*
29	0.43	0.45	-0.02	0.01	-0.04	-1.64	
30	0.27	0.31	-0.04	0.01	-0.08	-3.85	*
31	0.42	0.43	-0.01	0.01	-0.02	-0.92	
32	0.35	0.36	0.00	0.01	-0.01	-0.42	
33	0.31	0.33	-0.02	0.01	-0.04	-1.94	
34	0.43	0.46	-0.03	0.01	-0.07	-2.90	*
35	0.53	0.54	-0.01	0.01	-0.03	-1.49	
36	0.32	0.34	-0.02	0.01	-0.04	-1.67	
37	0.31	0.32	-0.01	0.01	-0.01	-0.52	
38	0.41	0.41	0.00	0.01	0.00	0.00	
39	0.37	0.41	-0.04	0.01	-0.08	-3.42	*
40	0.30	0.31	-0.01	0.01	-0.01	-0.55	
41	0.44	0.43	0.01	0.01	0.01	0.67	
42	0.34	0.35	-0.01	0.01	-0.03	-1.02	
43	0.48	0.50	-0.02	0.01	-0.04	-1.68	
44	0.29	0.30	-0.01	0.01	-0.01	-0.55	
45	0.45	0.45	-0.01	0.01	-0.02	-0.83	
46	0.30	0.30	0.01	0.01	0.02	0.88	
47	0.61	0.62	-0.01	0.01	-0.01	-0.51	
48	0.66	0.69	-0.03	0.01	-0.07	-3.12	*
49	0.41	0.43	-0.02	0.01	-0.04	-2.05	*
50	0.49	0.50	0.00	0.01	-0.01	-0.43	
51	0.72	0.75	-0.02	0.01	-0.05	-2.35	*
52	0.60	0.61	-0.01	0.01	-0.01	-0.56	
53	0.71	0.71	0.00	0.01	0.00	0.14	
54	0.55	0.53	0.02	0.01	0.04	2.01	
55	0.71	0.73	-0.02	0.01	-0.05	-2.00	

**Table 22: Summary of Item Level Analyses – Exit Level Social Studies**

<b>Item</b>	<b>cbt_pval</b>	<b>pap_pval</b>	<b>pval_dif</b>	<b>pval_se</b>	<b>ES</b>	<b>Z_dif</b>	<b>Sig</b>
1	0.84	0.85	-0.01	0.02	-0.02	-0.40	
2	0.76	0.78	-0.02	0.02	-0.05	-1.40	
3	0.80	0.82	-0.02	0.01	-0.05	-1.27	
4	0.79	0.80	-0.01	0.02	-0.03	-0.86	
5	0.65	0.66	-0.01	0.01	-0.02	-0.65	
6	0.64	0.60	0.04	0.02	0.08	2.05	*
7	0.86	0.87	0.00	0.01	0.00	-0.10	
8	0.65	0.67	-0.02	0.02	-0.05	-1.28	
9	0.71	0.71	0.00	0.02	0.00	-0.05	
10	0.74	0.77	-0.03	0.02	-0.07	-1.98	
11	0.76	0.75	0.01	0.01	0.02	0.79	
12	0.70	0.69	0.01	0.02	0.03	0.78	
13	0.75	0.77	-0.02	0.02	-0.05	-1.32	
14	0.72	0.72	0.00	0.01	0.00	0.10	
15	0.58	0.60	-0.02	0.02	-0.04	-1.24	
16	0.75	0.69	0.06	0.02	0.13	3.43	*
17	0.75	0.74	0.01	0.02	0.02	0.53	
18	0.73	0.74	-0.01	0.01	-0.02	-0.48	
19	0.31	0.28	0.03	0.02	0.07	1.87	
20	0.68	0.69	0.00	0.02	-0.01	-0.24	
21	0.70	0.65	0.05	0.01	0.10	3.44	*
22	0.70	0.70	0.00	0.02	0.00	-0.15	
23	0.76	0.76	0.00	0.01	-0.01	-0.28	
24	0.36	0.36	0.00	0.02	0.00	0.11	
25	0.58	0.60	-0.02	0.02	-0.03	-1.01	
26	0.43	0.44	-0.01	0.02	-0.02	-0.65	
27	0.72	0.69	0.03	0.02	0.06	1.92	
28	0.40	0.40	0.00	0.02	0.00	-0.08	
29	0.42	0.43	-0.01	0.02	-0.03	-0.78	
30	0.83	0.79	0.04	0.01	0.10	2.95	*
31	0.40	0.35	0.06	0.02	0.12	3.30	*
32	0.51	0.47	0.04	0.02	0.08	2.59	*
33	0.57	0.54	0.03	0.02	0.05	1.44	
34	0.37	0.35	0.01	0.02	0.03	0.93	
35	0.53	0.54	-0.02	0.02	-0.03	-0.85	
36	0.52	0.48	0.04	0.02	0.07	1.95	
37	0.48	0.46	0.03	0.02	0.05	1.47	
38	0.46	0.45	0.01	0.02	0.02	0.43	
39	0.61	0.60	0.02	0.02	0.03	0.87	
40	0.52	0.52	0.00	0.02	0.01	0.26	
41	0.57	0.56	0.01	0.02	0.01	0.32	
42	0.66	0.67	-0.01	0.02	-0.02	-0.49	
43	0.58	0.56	0.02	0.02	0.04	1.25	
44	0.71	0.69	0.01	0.02	0.03	0.97	
45	0.55	0.55	-0.01	0.02	-0.02	-0.41	
46	0.61	0.64	-0.03	0.02	-0.05	-1.70	
47	0.73	0.77	-0.04	0.02	-0.08	-2.29	*
48	0.64	0.63	0.01	0.02	0.02	0.56	
49	0.52	0.54	-0.01	0.02	-0.02	-0.66	
50	0.59	0.58	0.00	0.02	0.01	0.17	
51	0.71	0.70	0.01	0.02	0.03	0.72	
52	0.73	0.70	0.03	0.02	0.06	1.61	
53	0.55	0.57	-0.02	0.02	-0.04	-1.22	
54	0.51	0.45	0.06	0.02	0.11	3.14	*
55	0.70	0.67	0.03	0.01	0.06	1.84	

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