

**Predictive Validity of the  
Test Scoring and Reporting Services  
Supplementary Writing Assessments  
in Grades 4, 7, and 10**

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**September, 2002**

During the 2000-2001 school year, Dekalb County students in grades 4, 7, and 10 participated in off-grade writing assessments. Their papers were scored at Test Scoring & Reporting Services by raters trained to use the state-mandated rubric for on-grade assessments. During the 2001-2002 school year, these students completed the state writing assessments for grades 5, 8, and 11. Our goal was to determine how well scores for the off-grade writing assessments would predict scores for the state-mandated on-grade writing assessments. To do this we used Pearson correlation coefficients and frequency distributions.

The correlation coefficient describes the degree of linear relationship between the off- and on-grade scores. Correlation coefficients range from -1.00 to +1.00, with 0.00 indicating no relationship and +1.00 indicating a perfect relationship between the scores. Positive correlations between off- and on-grade scores mean that students who have low off-grade (4, 7, 10) scores tend to have low on-grade (5, 8, 11) scores, and students who have high off-grade scores tend to have high on-grade scores. *The higher the correlation coefficient, the stronger the predictive relationship between the off- and on-grade scores.*

Data from the frequency distributions describe the probability of achieving a particular on-grade score given a particular off-grade score. For example, given a score of 54 (aggregate of two raters' scores) on the grade 10 assessment, the probability of failing the grade 11 assessment is only 3.11%. If a student receives a passing score for the off-grade assessment, he or she is more likely to receive a passing score for the on-grade assessment. It is important to note, however, that the correlation coefficients and frequency distributions are specific to this sample of scores from 2000-2002.

Scores for the off- and on-grade assessments (4 to 5, 7 to 8, and 10 to 11) were merged by student identification number to create data sets containing scores for only those students who had taken both assessments. Scores that could not be matched by identification number were

not included in the final data set. We were able to match over 70% of the scores for grades 4 and 5 (n=5464) and grades 7 and 8 (n=4838). The match for grades 10 and 11 (n=2294) was almost 50%. We were unable to match more of the scores in grades 10 and 11 because many of the students did not provide a complete identification number.

### Scoring

Papers at each grade level were scored by two raters trained to use the state-mandated rubric for on-grade assessments. The total raw score at all grade levels is the aggregate of the two raters' scores. Grade 4 and 5 papers are scored using a 6 point scale. The total score ranges from a low of 2 (stage 1 scores from both raters) to a high of 12 (stage 6 scores from both raters). Grade 7 and 8 papers are scored using a 4-point analytic scale with differential weighting in five domains of effective writing. The total raw score ranges from a low of 16 (a score of 1 in all five domains) to a high of 64 (a score of 4 in all five domains). Grade 10 and 11 papers are scored using a 4-point analytic scale with differential weighting in four domains of effective writing. The total raw score ranges from a low of 20 (a score of 1 in all four domains) to a high of 80 (a score of 4 in all four domains). Please see pages A1 through A3 for a complete explanation of the writing assessment scoring process for each of the on-grade assessments (5, 8, 11).

### Grade 4 and 5

Page A4 provides the correlation coefficient (.53) between the grade 4 total scores and the grade 5 total scores, and descriptive statistics for each set of scores. This moderate correlation might have been limited by the restricted range (2-12) of possible scores. The correlation coefficient measures the degree to which paired sets of off- and on-grade scores deviate together from their respective means. If the scores are farther away from the mean, the correlation coefficient will be higher. If the scores are closer to the mean, the correlation coefficient will be lower. In grades 4 and 5, the scores are closer to the mean because the range of possible scores is so small. Page A5 contains a frequency distribution for the

difference score, which is the grade 5 total score minus the grade 4 total score. A negative number for “diff” indicates that the grade 5 score was lower than the grade 4 score and a positive number indicates that the grade 5 score was higher than the grade 4 score. Zero indicates that the scores did not change from grade 4 to grade 5. Based on the difference score, only 11.66% (n=637) of the students received a lower score in grade 5, 16.64% (n=909) received the same score in grade 5, and 71.71% (n=3918) received a higher score in grade 5. Page A6 contains the probability of students being at risk (defined as a total score below 6) in grade 5 given a particular score in grade 4. For example, with a score of 2 in grade 4, the probability of being at risk in grade 5 is 55.13%. The higher the score in grade 4, the lower the probability of being at risk in grade 5.

#### Grade 7 and 8

Page A7 provides the correlation coefficient (.68) between the grade 7 total scores and the grade 8 total scores, and descriptive statistics for each set of scores. Page A8 contains the probability of students being “not on target” (defined as a total weighted raw score below 35) in grade 8 given a particular score in grade 7. For example, with a score of 24 in grade 7, the probability of being “not on target” in grade 8 is 64.13%. Page A9 is a graph of grade 7 raw score by probability of score category for the three score outcomes (On Target, Not On Target, and Exceeds the Target). If a student achieves a score of 45 or higher in grade 7, the probability of being “not on target” in grade 8 is less than 10%. Students with a score below 45 in grade 7 have a higher probability of being “not on target” in grade 8.

#### Grade 10 and 11

Page A10 provides the correlation coefficient (.71) between the grade 10 total scores and the grade 11 total scores, and descriptive statistics for each set of scores. Page A11 contains the probability of students being at risk of failing in grade 11 given a particular score in grade 10. Page A12 is a graph of grade 10 raw score by probability of score category for the two score outcomes (Pass, Fail). If a student achieves a score of 42 or higher in grade 10, the probability

of failing in grade 11 is less than 20%. Students with a score below 42 in grade 10 have a higher probability of failing the writing assessment in grade 11.

Conclusions and Recommendations

Assumptions made in this analysis were based upon the goal of identifying the students most “at risk” for low performance on state writing assessments. Because the state has not set a standard of proficiency for the grade 5 assessment, we chose a score of 6. State performance standards (in terms of raw scores rather than scale scores) were applied for the Middle Grades Writing Assessment (MGWA) and the Georgia High School Writing Test (GHSWT) analyses. The tables provided allow the reader to calculate effects for the entire range of scores. It is important to note, however, that the results reported here are only valid in the context of Dekalb County Schools in the 2000-2002 time frame. Any predictions need to take into account the instructional activities carried out with these students, including the training of writing coaches and the production of the Dekalb Benchmarks and Best Practices documents for the elementary, middle school, and high school population.

Given these caveats, we would recommend that grade 4 students scoring below 5 on the grade 4 mock assessment be considered “at risk” for low scores on the grade 5 state assessment. Similarly, grade 7 students who score below 35 have a dramatically increased probability of scoring below the “on target” range on the MGWA. Grade 10 students who score below 40-42 have a strong chance of failing the GHSWT. “At risk” students at each grade level would probably benefit from additional practice.

At-Risk	
Grade	Total Score Range
4	2 - 5
7	16 - 34
10	20 - 42



Dekalb County Writing Assessment  
Grade 4 2000-2001  
Grade 5 2001-2002

<u>Variable</u>	<u>N</u>	<u>Mean</u>	<u>Standard Deviation</u>
Grade 4 Total Score	5464	7.05	1.91
Grade 5 Total Score	5464	8.61	1.79

Pearson Correlation Coefficient

Grade 4 Total Score and Grade 5 Total Score = 0.53

Dekalb County Writing Assessment  
Grade 4 2000-2001  
Grade 5 2001-2002

Difference Score = Grade 5 Total Score - Grade 4 Total Score

<u>Diff</u>	<u>Frequency</u>	<u>Percent</u>	<u>Cumulative Frequency</u>	<u>Cumulative Percent</u>
-6	1	0.02	1	0.02
-5	2	0.04	3	0.05
-4	20	0.37	23	0.42
-3	48	0.88	71	1.30
-2	189	3.46	260	4.76
-1	377	6.90	637	11.66
0	909	16.64	1546	28.29
1	1000	18.30	2546	46.60
2	1316	24.08	3862	70.68
3	805	14.73	4667	85.41
4	571	10.45	5238	95.86
5	163	2.98	5401	98.85
6	50	0.92	5451	99.76
7	11	0.20	5462	99.96
8	2	0.04	5464	100.00

71.71% (n=3918) of the students received a higher score in grade 5

16.64% (n=909) of the students received the same score in grade 5

11.66% (n=637) of the students received a lower score in grade 5

Dekalb County Writing Assessment  
Grade 4 2000-2001  
Grade 5 2001-2002

<u>Grade 4 Total Score</u>	<u>Probability of At Risk on Grade 5 (total score &lt; 6)</u>
2	55.13%
4	16.89%
5	3.85%
6	3.08%
7	1.57%
8	0.57%
9	0.00%
10	0.00%
11	0.00%
12	0.00%

DeKalb County Writing Assessment  
Grade 7 2000-2001  
Grade 8 2001-2002

<u>Variable</u>	<u>N</u>	<u>Mean</u>	<u>Standard Deviation</u>
Grade 7 Total Score	4838	35.89	10.96
Grade 8 Total Score	4838	39.31	10.28

Pearson Correlation Coefficient

Grade 7 Total Score and Grade 8 Total Score = 0.63

Pearson Correlation Coefficient - Adjusted for Reliability

Grade 7 Total Score and Grade 8 Total Score = 0.68

Dekalb County Writing Assessment  
 Grade 7 2000-2001  
 Grade 8 2001-2002

<u>Grade 7 Total Score</u>	<u>Probability of Not on Target on Grade 8 (total score &lt; 35)</u>
16	88.00%
17	67.50%
18	65.00%
19	80.39%
20	62.50%
21	68.33%
22	47.87%
23	54.55%
24	64.13%
25	61.67%
26	54.12%
27	50.75%
28	50.00%
29	47.52%
30	55.36%
31	41.30%
32	47.03%
33	27.97%
34	24.76%
35	29.41%
36	24.34%
37	22.22%
38	17.13%
39	16.00%
40	22.60%
41	20.74%
42	8.20%
43	16.67%
44	17.09%
45	8.93%
46	5.56%
47	8.93%
48	6.95%
49	7.14%
50	9.52%
51	0.00%
52	3.39%
53	0.00%
54	2.08%
55	0.00%
56	4.17%
57	0.00%
58	0.00%
59	0.00%
60	0.00%
61	0.00%
62	0.00%
63	0.00%
64	0.00%

Dekalb County Writing Assessment  
Grade 10 2000-2001  
Grade 11 2001-2002

<u>Variable</u>	<u>N</u>	<u>Mean</u>	<u>Standard Deviation</u>
Grade 10 Total Score	2294	51.94	12.93
Grade 11 Total Score	2294	56.85	11.96

Pearson Correlation Coefficient

Grade 10 Total Score and Grade 11 Total Score = 0.65

Pearson Correlation Coefficient - Adjusted for Reliability

Grade 10 Total Score and Grade 11 Total Score = 0.71

Dekalb County Writing Assessment  
 Grade 10 2000-2001  
 Grade 11 2001-2002

<u>Grade 10 Total Score</u>	<u>Probability of Fail on Grade 11 (total score &lt; 43)</u>
20	66.67%
22	60.00%
24	60.71%
26	44.44%
28	62.50%
30	36.84%
32	46.43%
34	39.02%
36	36.84%
38	40.91%
40	31.75%
42	18.52%
44	13.61%
46	14.41%
48	10.19%
50	6.93%
52	4.73%
54	3.11%
56	1.96%
58	4.42%
60	0.87%
62	0.00%
64	0.00%
66	0.00%
68	0.00%
70	0.00%
72	0.00%
74	0.00%
76	0.00%
78	0.00%
80	0.00%

