

MEASURING UP



WAKE COUNTY
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EVALUATION AND RESEARCH DEPARTMENT

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The Relationship Between Blue Diamond and End-of-Grade Mathematics Assessments WCPSS Elementary and Middle Schools, 2007-2008

Brad McMillen

In June 2008, Wake County Public School System (WCPSS) asked Compass Consulting Group to conduct a study to explore the relationship among Blue Diamond and End-of-Grade (EOG) mathematics scores for a sample of schools in the district. Students' 2007-08 Blue Diamond assessment scores were matched with their 2007-08 EOG scores for three middle and six elementary schools. The schools were purposely selected to be representative of the district as a whole in terms of their student populations, and because they had been implementing the Blue Diamond assessments schoolwide at regular intervals during the school year.

The purpose of the study was to address two basic questions: 1) To what extent do Blue Diamond assessments correlate with EOG Math scores? and 2) What score does a student need to get on Blue Diamond assessments in order to stand a reasonable chance of scoring at or above Achievement Level III on the EOG Math test?

Grades 3-5

During 2007-08, Blue Diamond assessments in grades 3-5 were generally given in two ways: either quarterly, or by splitting up those quarterly assessments into smaller chunks and administering them in line with the instructional calendar throughout the quarter (hereafter referred to as "Project Achieve" assessments). The correlations between these assessments and EOG Math scores ranged from .57 to .72 for schools that were administering the assessments quarterly (Table 1). For schools administering the Project Achieve assessments (i.e., dividing the quarterly assessments into smaller item sets administered throughout the quarter), the average percent correct across the Project Achieve assessments within each quarter showed somewhat stronger relationships to EOG Math scores, ranging from .71 to .79. Note that this does not imply that the Project Achieve quarterly averages led to *higher* EOG Math scores – it just means that those averages were a slightly better predictor of the students' ultimate EOG Math results at the end of the year. Of particular note is the fact that the first quarter results in both cases correlated almost as highly with EOG Math scores as did the average percent correct across all assessments over the course of the year, implying that a student's EOG score could be predicted nearly as accurately at the end of the first quarter as it could from the full year's worth of assessment results.

Table 1
Correlations between Grades 3-5 Blue Diamond Assessments
and EOG Math Scores

	Quarterly Assessments					Project Achieve Quarterly Averages				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
EOG	.72	.70	.57	.69	.77	.76	.79	.73	.71	.85
Q1		.67	.51	.66	.87		.79	.73	.68	.90
Q2			.56	.65	.87			.76	.70	.93
Q3				.70	.86				.70	.89
Q4					.89					.84

NOTES: Ns range from 271 to 1,388 for Quarterly Assessment correlations (due to less available data available at Q4). Ns range from 1,654 to 2,011 for Project Achieve quarterly averages.

Grades 6-8

During 2007-08, Blue Diamond assessments in grades 6-8 were given quarterly. Like the elementary results, the correlations between these assessments and EOG Math scores were relatively high, ranging from .64 to .75 (Table 2). As was true for the elementary results, the first quarter results correlated almost as highly with EOG Math scores as did the average percent correct across all assessments over the course of the year, implying that a middle school student's EOG Math score could be predicted nearly as accurately at the end of the first quarter as it could from the full year's worth of assessment results.

Table 2
Correlations between Grades 6-8 Blue Diamond Assessments
and EOG Math Scores

	Q1	Q2	Q3	Q4	Total
EOG	.75	.67	.71	.64	.80
Q1		.70	.67	.63	.91
Q2			.66	.64	.85
Q3				.67	.85
Q4					.82

NOTES: Ns range from 1,210 to 2,273.

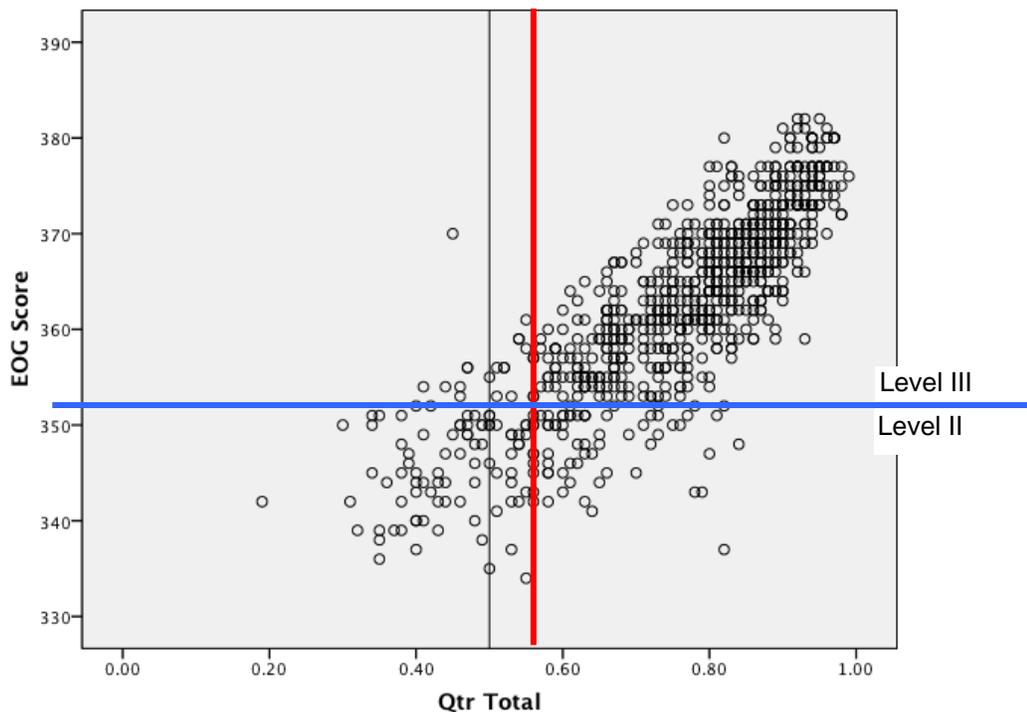
To address the second question of interest, a regression analysis was conducted to estimate the approximate scores necessary on Blue Diamond assessments in order to attain a Level III and a Level IV on the EOG for each grade level. Based on this analysis, it was possible to estimate the percentage of Blue Diamond assessment items a student should be answering correctly in order to stand a good chance (50% or greater) of scoring at or above Achievement Level III or IV on the EOG Math test at the end of the year (Table 3).

Table 3
Approximate Blue Diamond Assessment Score Ranges
to Predict EOG Levels III and IV

Grade	Quarterly Assessments (Total)		Project Achieve (Total)	
	Level III	Level IV	Level III	Level IV
3	55-60%	75-80%	60-65%	80-85%
4	60-65%	80-85%	60-65%	80-85%
5	60-65%	80-85%	60-65%	80-85%
6	60-65%	80-85%	N/A	N/A
7	55-60%	80-85%	N/A	N/A
8	55-60%	75-80%	N/A	N/A

The distribution of scores for 6th grade is displayed in Figure 1 to provide a sample visual for the performance ranges specified in Table 3. As the figure demonstrates, students who answered more than 60%-65% of Blue Diamond quarterly assessment items correctly (represented by the dots to the right of the red line) generally scored at or above Level III – a scale score of 352 – on the EOG 6th Grade Math test at the end of the year (represented by the dots above the blue line). While it is true that a few students who were above 60% on the Blue Diamond assessments still scored below Level III on the EOG, the vast majority of students above that 60% threshold did.

Figure 1
Scatter plot of 6th Grade Math EOG Scores and the
Proportion of Blue Diamond Quarterly Assessment Items Answered Correctly



NOTE: “QTR Total” is the total proportion of items answered correctly across all four quarterly assessments during the year.

Summary

In conclusion, it appears that EOG Math scores can be predicted with reasonable accuracy from the percentage of items students answer correctly on both the Blue Diamond quarterly and Project Achieve math assessments. Generally, students who score at or above 60% correct on Blue Diamond math assessments appear to stand a good chance (i.e., better than 50/50) of scoring at or above Achievement Level III on the EOG Math test. Schools are encouraged to use the results of this study to identify students who may be in need of additional assistance early in the year to ensure that they are performing at a level during the semester that portends success on the EOG math test at the end of the year.