

Year Two Report on Evaluation of Elementary Mathematics Implementation of “Investigations in Number, Data, and Space”

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Prince William County

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Comparison of Student Performance on the Stanford Diagnostic Mathematics Test (SDMT) in 2007 and 2008

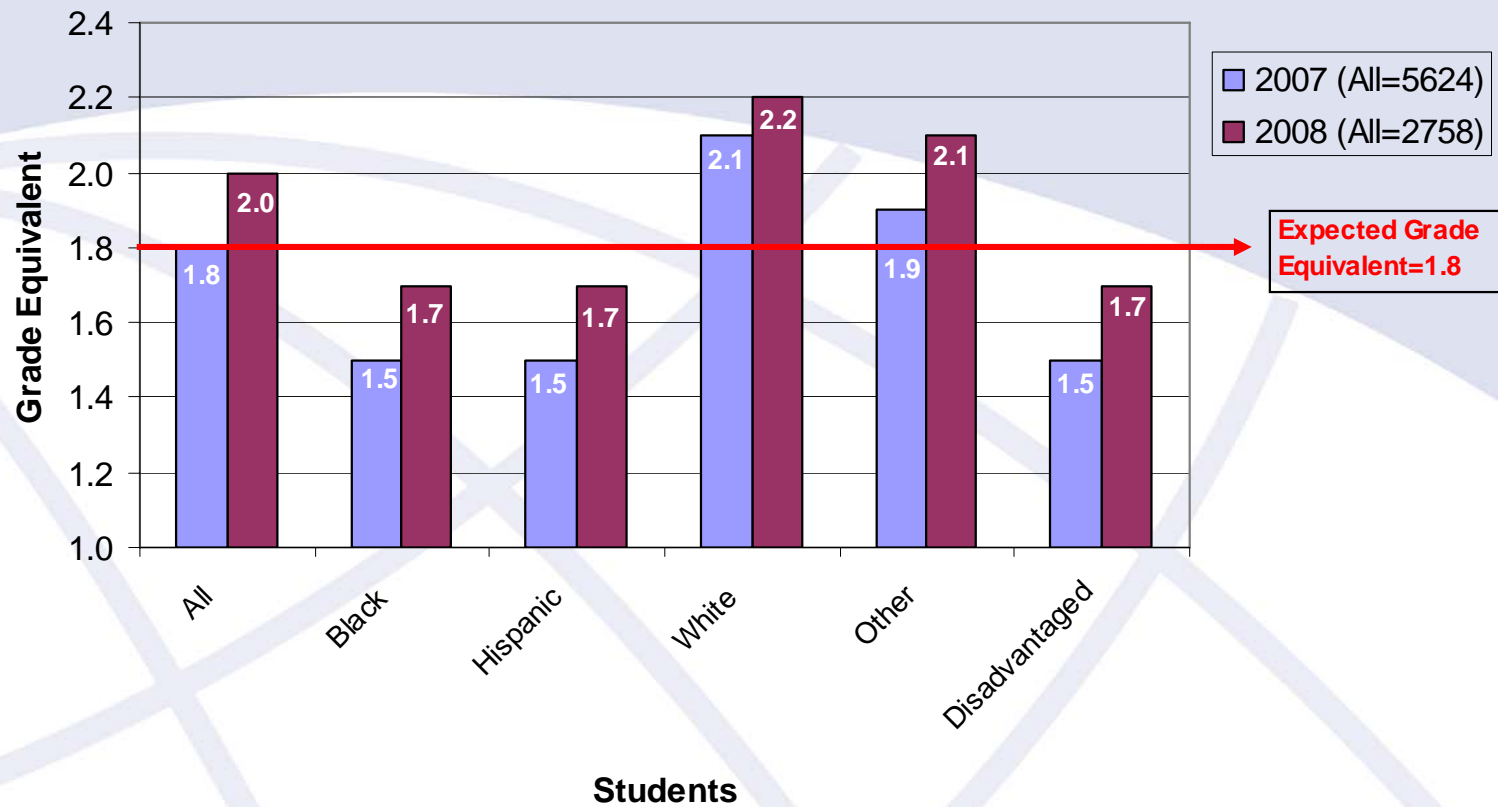
Students	2007			2008			Mean Total Scale Score Difference	Grade Equivalent Difference
	N	Mean Total Scale Score	Grade Equivalent	N	Mean Total Scale Score	Grade Equivalent		
First Grade			(Expected = 1.8)			(Expected=1.8)		
All	5624	546	1.8	2758	555	2.0	9*	0.2
Black	1144	535	1.5	530	543	1.7	8*	0.2
Hispanic	1641	534	1.5	735	543	1.7	9*	0.2
White	2142	559	2.1	1068	568	2.2	9*	0.1
Other	697	553	1.9	425	561	2.1	8*	0.2
Disadvantaged	2055	532	1.5	915	542	1.7	10*	0.2
Second Grade			(Expected=2.8)			(Expected=2.8)		
All	5397	595	3.0	2779	604	3.3	9*	0.3
Black	1137	581	2.5	585	589	2.7	8*	0.2
Hispanic	1416	578	2.4	745	588	2.7	10*	0.3
White	2175	612	3.6	1042	618	3.8	6*	0.2
Other	669	603	3.3	407	614	3.6	11*	0.3
Disadvantaged	1964	579	2.5	889	585	2.6	6*	0.1

Note: The expected grade equivalent for grade 1 students would be 1.8, which corresponds to the 8th month of first grade. Likewise, the expected grade equivalent for grade 2 students would be 2.8, which corresponds to the 8th month of second grade.

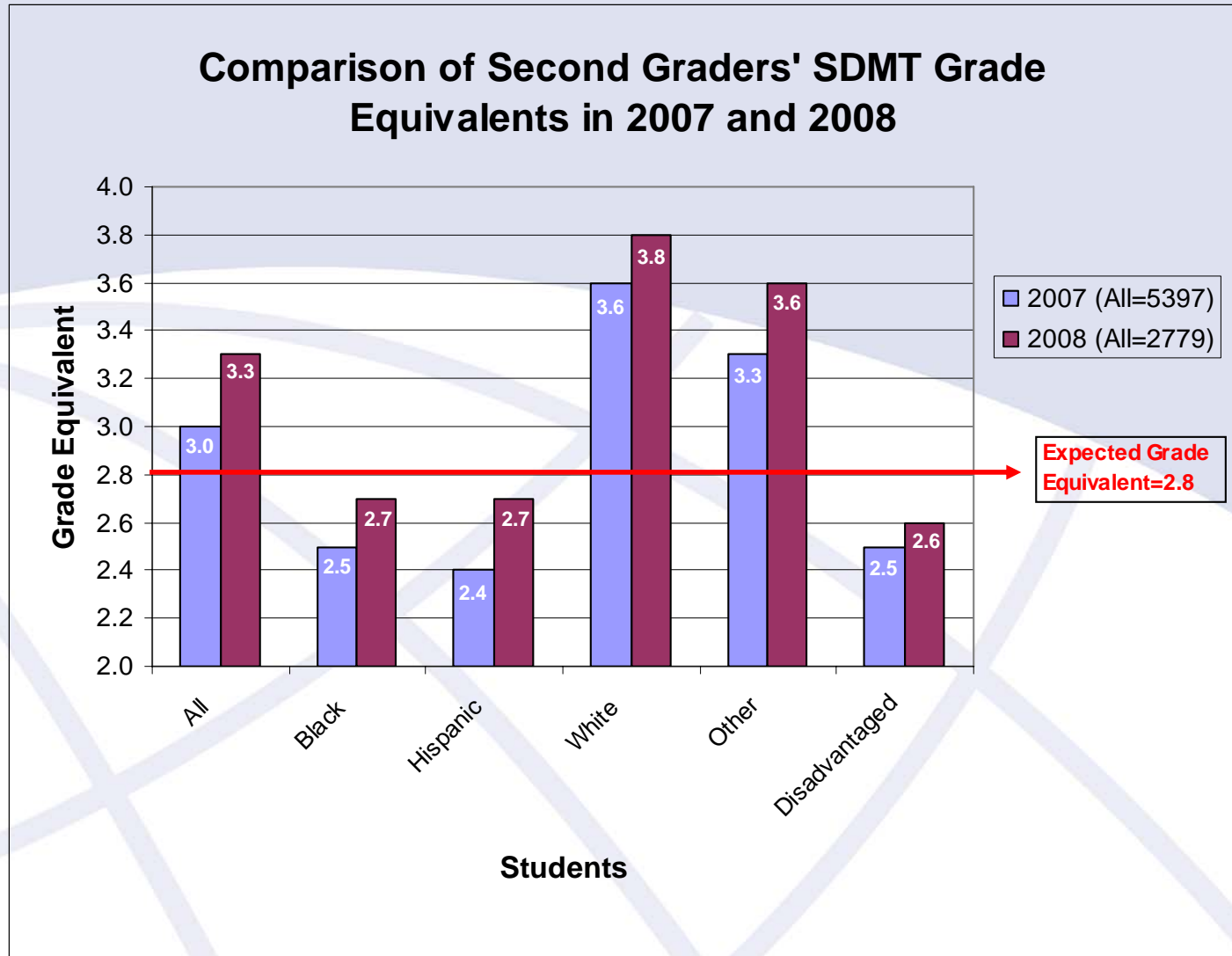
**Mean total scale score differences are statistically significant ($p < .05$).*



Comparison of First Graders' SDMT Grade Equivalents in 2007 and 2008



Comparison of Second Graders' SDMT Grade Equivalents in 2007 and 2008



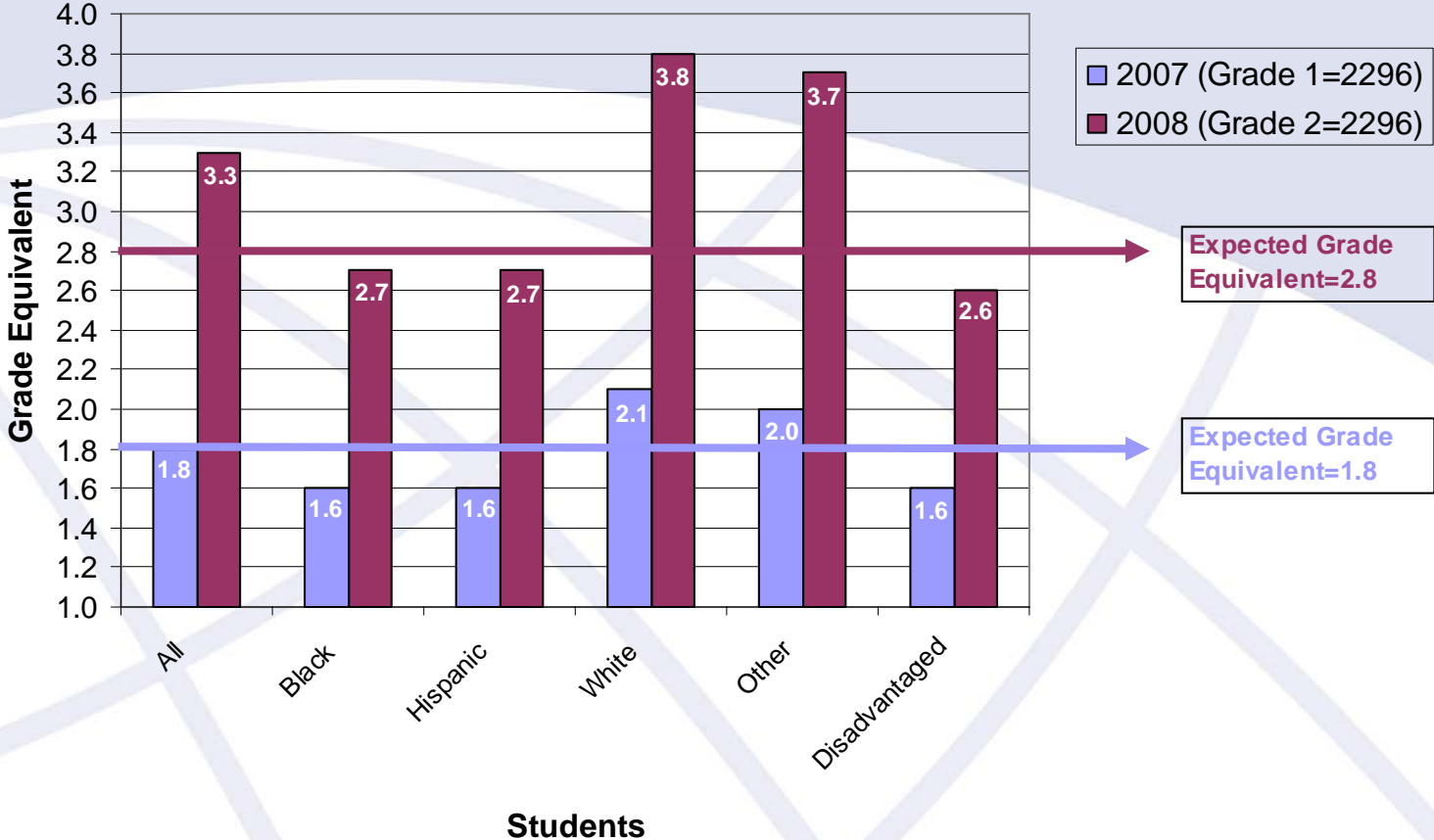
Second Graders' Growth on SDMT Mean Total Scale Scores and Grade Equivalents from First Grade (2007) to Second Grade (2008)

Second Grade Students	N	2007 as First Graders		2008 as Second Graders		Mean Total Scale Score Growth	Grade Equivalent Growth
		Mean Total Scale Score	Grade Equivalent Expected=1.8	Mean Total Scale Score	Grade Equivalent Expected=2.8		
All	2296	549	1.8	604	3.3	55*	1.5
Black	454	537	1.6	589	2.7	52*	1.1
Hispanic	614	537	1.6	589	2.7	52*	1.1
White	907	560	2.1	619	3.8	59*	1.7
Other	321	557	2.0	615	3.7	58*	1.7
Disadvantaged	756	536	1.6	586	2.6	50*	1.0

Note: The expected grade equivalent for grade 1 students would be 1.8, which corresponds to the 8th month of first grade. Likewise, the expected grade equivalent for grade 2 students would be 2.8, which corresponds to the 8th month of second grade.

**Mean total scale score growth values are statistically significant ($p < .05$).*

SDMT Grade-Equivalent Growth of Second Graders in 2008 Who Were First Graders in 2007



Division Performance on SDMT: National Comparisons

Skill Category	Students Tested				Percentile Ranking				Stanine Ranking			
	Grade 1		Grade 2		Grade 1		Grade 2		Grade 1		Grade 2	
	'07	'08	'07	'08	'07	'08	'07	'08	'07	'08	'07	'08
Concepts and Applications	5661	2782	5433	2794	49	55	54	62	5	5	5	6
Computation	5664	2764	5413	2792	44	54	45	47	5	5	5	5
Total	5625	2758	5396	2779	45	53	50	56	5	5	5	5

50th Percentile = National Average

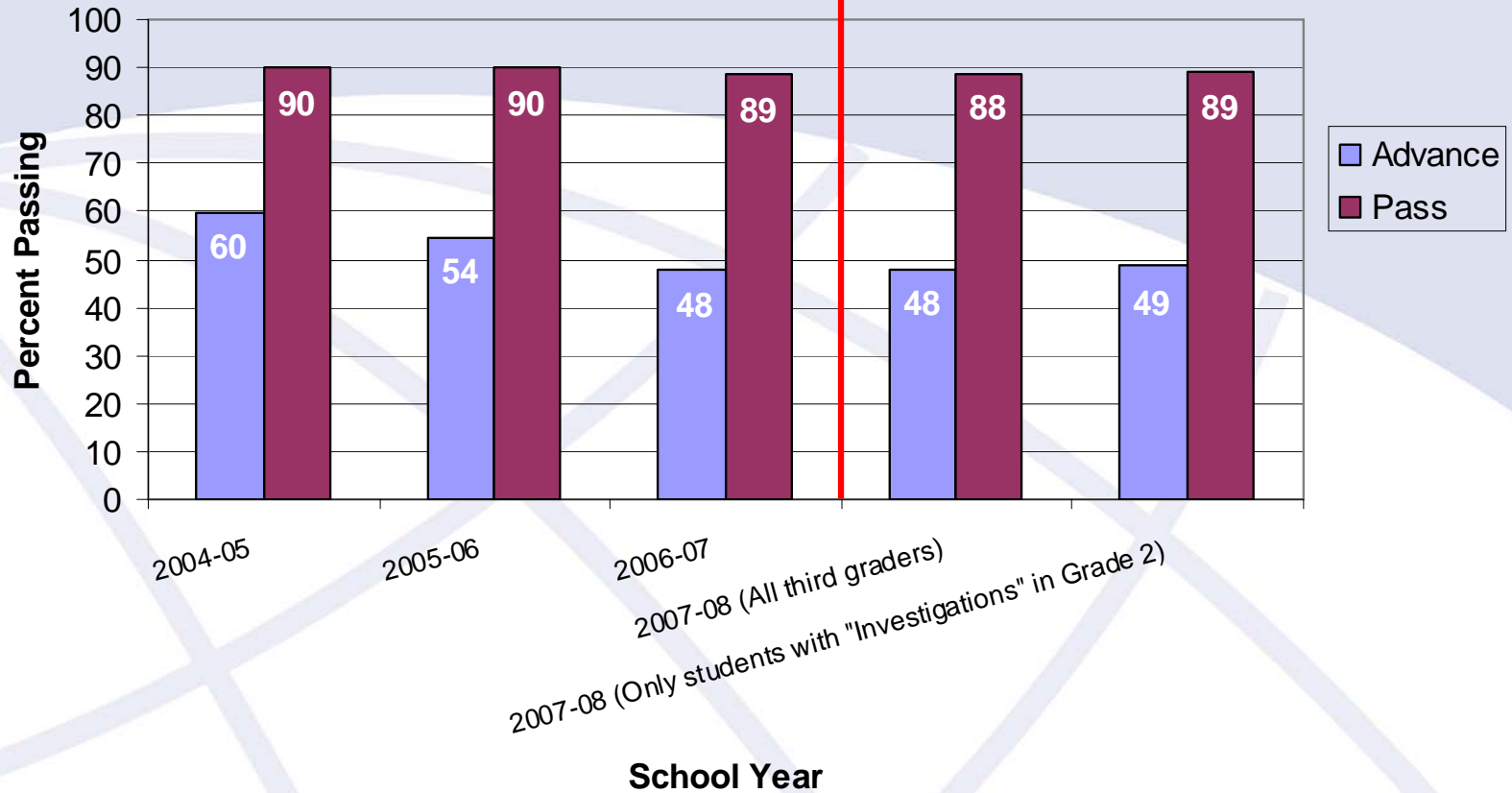
Improvement from 2007 to 2008 in all SDMT categories by 6 to 10 points for first graders and 2 to 8 points for second graders.

Third Grade Students' Performance on the Math Standards of Learning (SOL) Test

- Third graders in 2007 (88.60%) and 2008 (88.41%), which was the first year “Investigations” students took SOL tests, had pass rates that were statistically the same.
- Pass rate for third graders who also experienced “Investigations” as second graders was 89.22%, which is slightly but not statistically significantly higher than the 2007 rate.



Standards of Learning (SOL) Trends in Grade 3 Math



Stakeholder Perceptions

- **Student Enjoyment of Mathematics:** Most principals (95%), teachers (85%), and parents (78%) reported that students enjoyed math during 2007-08.
- **Meeting the Needs of Students:** About three-fourths of principals (74%) and about half the teachers (54%) and parents (53%) reported that “Investigations” meets students’ mathematics needs.

Teacher reporting varied by grade level with grade 3 teachers responding with the lowest level of agreement (32%) compared to teachers in other grades (56-68%).

- **Use of Conventional Algorithms:** Most principals (93%) and teachers (93%), but under half (45%) the parents agreed that conventional algorithms are accepted from students; and 12% of parents disagreed.

A sizable minority of parents (38%) responded that they did not know about the use of algorithms.



Stakeholder Perceptions (Continued)

- **Supporting Parents**: Most principals (91%) and teachers (89%) and about two-thirds (65%) of parents reported that teachers work to enhance parents' understanding on how to support their children with mathematics.

Most principals (86%), and roughly half of teachers (53%) and parents (45%) reported that K-3 parents had the Student Math Handbook to use as a reference at home.

- **Communication with Parents**: Roughly three-fourths of principals (79%) and teachers (74%) and over half (53%) of the parents reported that K-3 teachers send parents family letters related to Math “Investigations” units.
- **Satisfaction with Math “Investigations”**: Perceptions differed with almost all principals (91%) and just over one-half of teachers (55%) and parents (55%) satisfied with the Math “Investigations” program.

Teacher perception varied by grade level with grade 3 teachers expressing lower satisfaction (33%) than teachers in other grades (51-68%).



Recommendations

Communication

- Using various media, schools and teachers should increase communication with parents on general information for Math “Investigations” including access to the Student Math Handbook and all family letters.
- Schools and teachers should continue to provide assistance to parents to help them better understand how best to support their children with mathematics assignments.

Training

- The Mathematics Office should continue to provide general training on Math “Investigations” and specific training to teachers in pedagogical areas such as assessment, differentiation, managing time, and content.



Recommendations (Continued)

Instruction

- The Mathematics Office should continue to assist teachers, administrators, and parents in understanding that "Investigations" includes a balanced approach to mathematics by emphasizing conceptual understanding as well as mastery of facts and use of multiple strategies including traditional ones.
- Elementary Level Associates and administrators should investigate how much time is being devoted to math instruction and ensure all classrooms are devoting the amount of time as required by Regulation 602-1, and why this time might not be sufficient.