

**Performance of District 23 Students Participating in
Scholastic READ 180**

Richard N. White
Imeh J. Williams
M. Bruce Haslem

June 2005

Policy Studies Associates
1718 Connecticut Avenue, NW
Suite 400
Washington, DC 20009

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Community School District 23 (CSD 23) in Region 5 of the New York City public schools serves students who reside in central Brooklyn. The district enrolls approximately 12,800 students in grades K-8 in 18 schools. Scholastic READ 180 is one of several reading interventions that the district is using to improve student performance.

The staff of District 23 and Scholastic asked Policy Studies Associates to assist in the analysis of data on end-of-year tests in reading and language arts (ELA) administered by the New York State Department of Education (SDE) and the New York City Department of Education (DOE) as part of an effort to identify the contribution of READ 180 in changing student performance. That analysis is the focus of this report.

Using student-level data collected by DOE, PSA compared test outcomes for READ 180 students to outcomes of their peers attending the same schools who did not participate in READ 180 in the 2001-02 school year. These data included, in addition to each student's end-of-year score on the math and ELA achievement tests, information on student characteristics such as the grade in which the student was enrolled, whether the student was eligible for the Free or Reduced Priced Lunch program (FRPL), whether the student was eligible for special education services, and each student's school attendance rate.

Who Participates in READ 180?

During the 2001-02 school year, 652¹ students in grades 4 to 8 in the 16 CSD23 schools participated in READ 180. Well over half were in the fourth and fifth grades. Thirty-one percent of participants were fourth-graders and 29 percent were fifth-graders (Exhibit 1).

Of all of the students enrolled in grades 4-8 in the 16 CSD23 schools, 12 percent were enrolled in READ 180. Nearly one-in-five CSD23 fourth- and fifth-grade students participated in the program (Exhibit 2).

¹ The complete READ 180 roster included 652 students; however, for some of these students, descriptive and test data were missing.

**Exhibit 1
READ 180 Participants' Grade Levels**

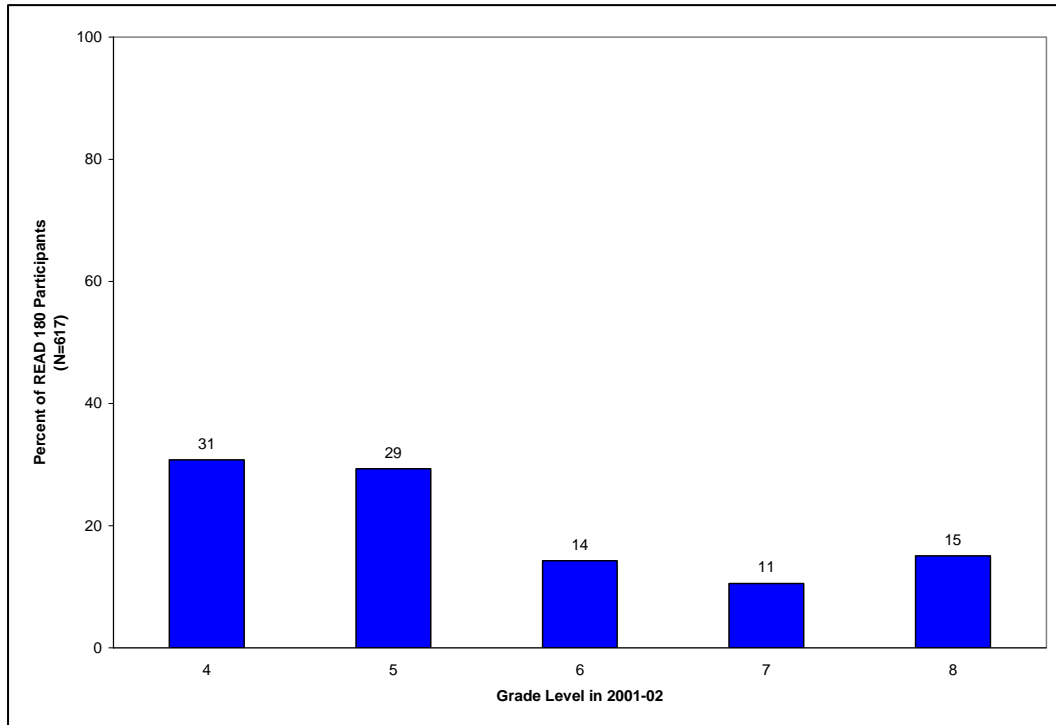


Exhibit reads: Thirty-one percent of READ 180 participants in 2001-02 were in fourth grade.

**Exhibit 2
Proportion of CSD23 Students in Grades 4-8 Participating
In READ 180**

Grade-Level in 2001-02	Percent of CSD23 Students in This Grade Who Participated in READ 180	<i>N</i>
4	16	1,188
5	17	1,068
6	9	1,030
7	7	946
8	9	1,004
Total	12	5,236

Exhibit reads: Sixteen percent of fourth-graders out of 1,188 CSD23 students participated in READ 180.

Overall, the profile of the students selected to participate in READ 180 was similar to that of all CSD23 students, with a few minor exceptions (Exhibit 3). A comparison shows that READ 180 students were somewhat more likely to be female and somewhat less likely to be eligible for special education services than nonparticipating students.

Exhibit 3
Characteristics of READ 180 Participants and Nonparticipants
(Percentages)

Characteristic		READ 180 Participants (N=617)	Nonparticipants (N=4,619)
Race/Ethnicity	African American	86	84
	Hispanic	14	15
	Other	0	1
Gender	Male	46	49
	Female	54	51
Eligible for Special Education	Yes	6	11
	No	94	89
Eligible for Free Lunch	Yes	91	90
	No	9	10
Eligible for English Language Learner Services	Yes	3	3
	No	97	97
Recent Immigrant Status	Yes	3	3
	No	97	97

Exhibit reads: Eighty-six percent of 2001-02 READ 180 participants were African American, 14 percent were Hispanic, and 0 percent were members of other racial/ethnic groups.

READ 180 participants in grades 4-8 were more likely than nonparticipants to have scored in Proficiency Level 2 on the ELA exam.² Nearly two-thirds (65 percent) of the READ 180 participants scored in Proficiency Level 2, compared with 44 percent of nonparticipants (Exhibit 4).

² New York City school officials have created learning standards in reading and language arts for each grade level. Using the scale scores on the annual achievement test, each student is assigned to one of four proficiency levels that indicate the extent to which the student has mastered the skills and knowledge that make up the learning standard for their grade. The proficiency levels are: Level 1: Below Basic, Level 2: Basic, Level 3: Proficient, and Level 4: Advanced. Students scoring at Proficiency Level 3 or 4 are said to be performing at grade level. See Appendix A for additional information about the tests and scoring.

Exhibit 4
ELA Proficiency Levels in Spring 2001
READ 180 Participants vs. Nonparticipants

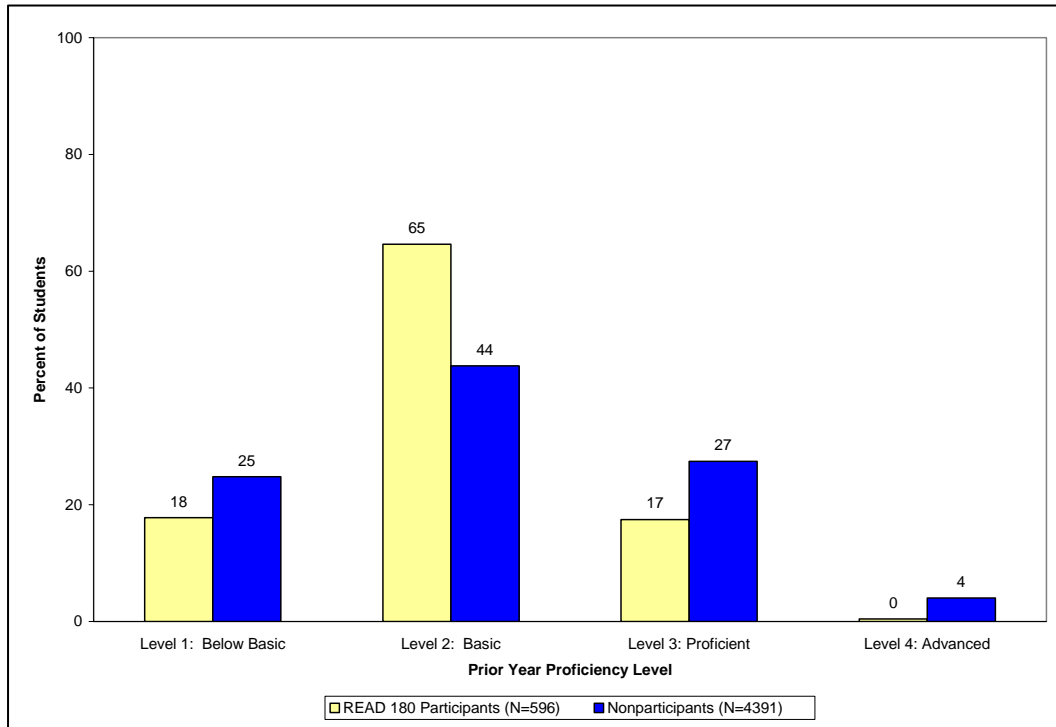


Exhibit reads: Eighteen percent of READ 180 participants scored in Proficiency Level 1 on the spring 2001 ELA exam, compared with 25 percent of nonparticipants.

A larger proportion of students selected for READ 180 performed below grade level in the year prior to participation than students who were not selected (83 percent vs. 69 percent). This difference is statistically significant ($p < .01$, Chi Square).

Change in Performance on the ELA Exam

Each student's performance on the end-of-year achievement tests administered by the New York City Public Schools is reported as scaled scores.³ Change in a student's academic performance is measured by calculating the change in the scaled scores across grade levels.

READ 180 participants averaged larger scale-score gains on the ELA exam between the spring of 2001 and the spring of 2002 than did nonparticipants. They averaged a gain of 17.2 scale-score points, with a median of 19 scale-score points, while nonparticipants in the same schools and grades averaged a gain of

³ See Appendix A for a description of the end-of-year achievement tests and scoring.

14.3 scale-score points, with a median of 13 scale-score points, as shown in Exhibit 5. The difference is statistically significant ($p < .05$, ANOVA)⁴

Change in Proficiency Level

A larger proportion of READ 180 students than of other students who scored below grade level (Proficiency Levels 1 and 2) during the year prior to participating in READ 180 scored above grade level after participating in READ 180 for one year (Exhibit 6). Twenty-one percent of READ 180 participants scored above grade level after one year of participation, compared with 11 percent of other students. This difference was statistically significant ($p < .01$, Chi Square).

Exhibit 5
Performance Change on ELA Test from Spring 2001 to Spring 2002
READ 180 Participants vs. Nonparticipants

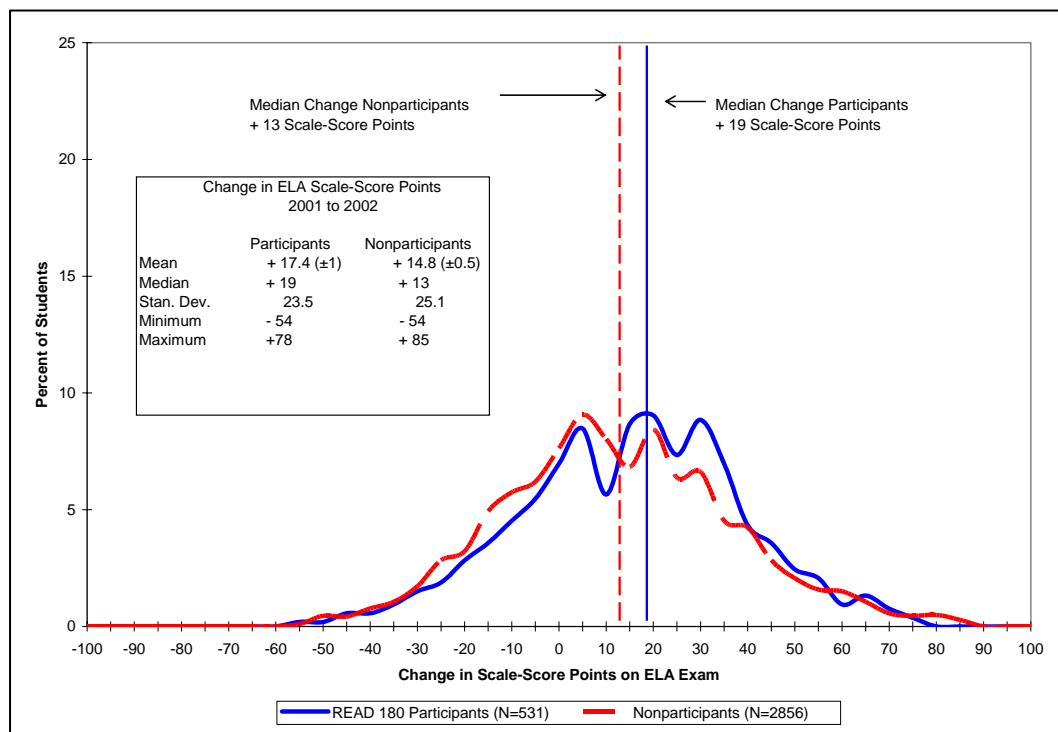


Exhibit reads: The change in scale-score points on the ELA achievement tests for nonparticipants ranged from a decrease of 54 scale-score points to an increase of 85 points, with a median increase of 13 points.

⁴ The effect size of this relationship is 0.12, suggesting the relationship is weak but substantive.

Exhibit 6
Performance on Spring 2002 ELA Exam Among Students Who
Scored Below Grade Level on the Spring 2001 ELA Exam
READ 180 Participants vs. Nonparticipants

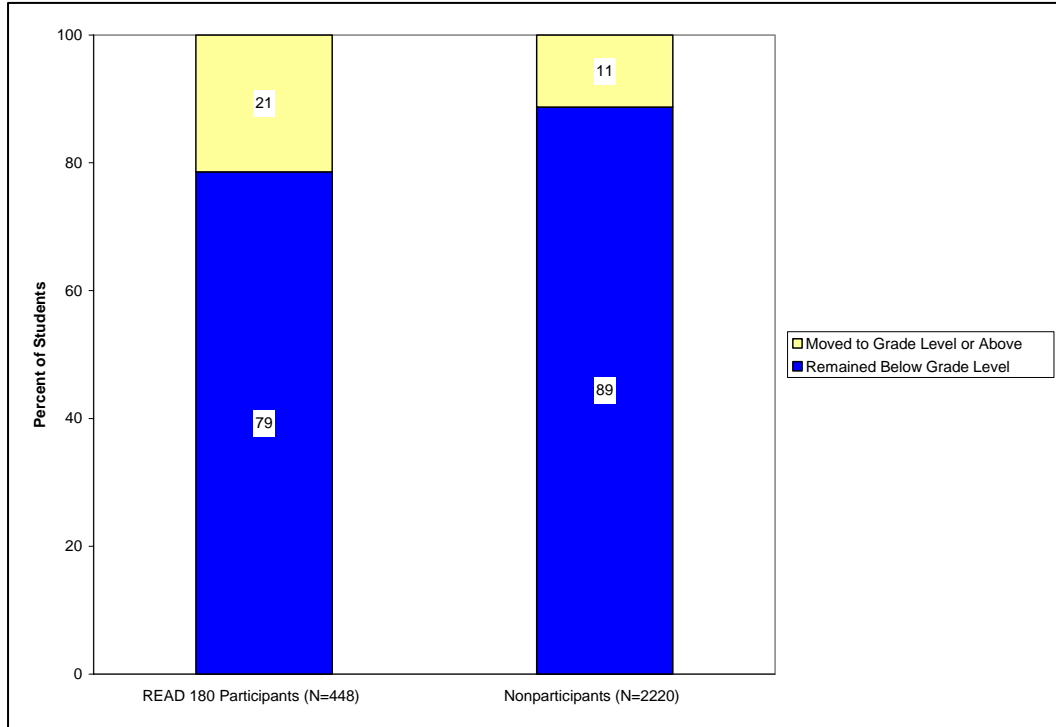


Exhibit reads: Twenty-one percent of READ 180 participants who scored in Proficiency Level 1 or 2 on their 2001 ELA exam scored in Proficiency Level 3 or 4, on the 2002 ELA exam.

Controlling for Prior Level of Performance

Among students who scored in Proficiency Level 2, Basic, on their 2001 ELA exam, READ 180 participants averaged larger increases in scale-score points than did nonparticipating students in the same schools. READ 180 participants averaged a gain of 16.5 scale-score points between spring 2001 and spring 2002, while nonparticipants averaged a gain of 13.1 scale-score points, as shown in Exhibit 7. The difference in gains was statistically significant ($p < .01$, ANOVA).

No statistically significant difference appeared in the change in scale-score points between READ 180 participants and nonparticipants who scored in Proficiency Level 1 on their 2001 ELA exam. This was also true for students who scored in Proficiency Level 3 or 4.

Exhibit 7
Scale-Score Change by Proficiency Level on Spring 2001 ELA Exam
Read 180 Participants vs. Nonparticipants

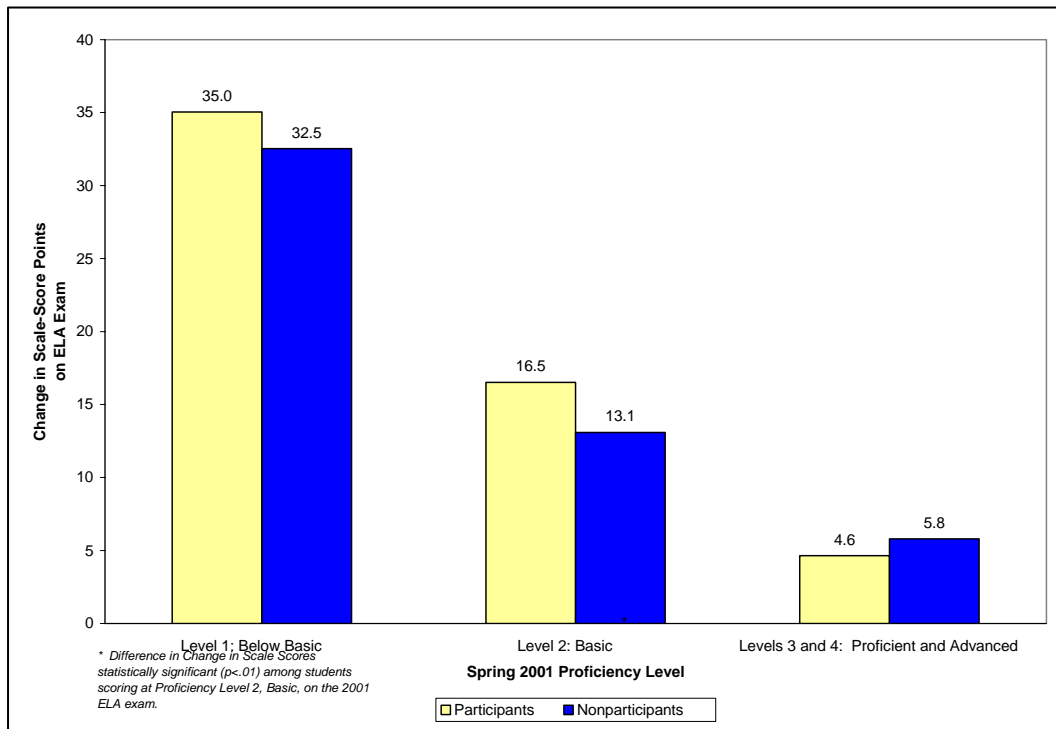


Exhibit reads: READ180 participants who scored in Proficiency Level 1 on the 2001 ELA exam gained an average of 35 scale-score points in 2002.

Changes in performance on ELA test components. Three subtests are embedded within the ELA exams administered to students in the New York City Public Schools. They are: “Information and Understanding,” “Literary Response,” and “Expression, and Critical Analysis.” Student performance on each component is reported in terms of the percent of items in each subtest that students answer correctly.

Among CSD23 students who performed in Proficiency Level 1 on the spring 2001 ELA test, READ 180 students achieved larger gains in the percentage of items answered correctly on the “Information and Understanding” and Literary Response” subtests than did nonparticipants. These differences were statistically significant ($p < .05$, ANOVA).

Controlling for Grade Level

Fifth-graders participating in READ 180 averaged larger gains on the ELA exam between spring 2001 and spring 2002 than did fifth-graders in the same school but not participating in the program. The differences were statistically

significant ($p < .05$, ANOVA). Differences in the change in ELA scale score points were not significant for students enrolled during 2001-02 in other grades.⁵

Exhibit 8 Change in Scale-Score Points by 2001-02 Grade Level READ 180 Participants vs. Nonparticipants

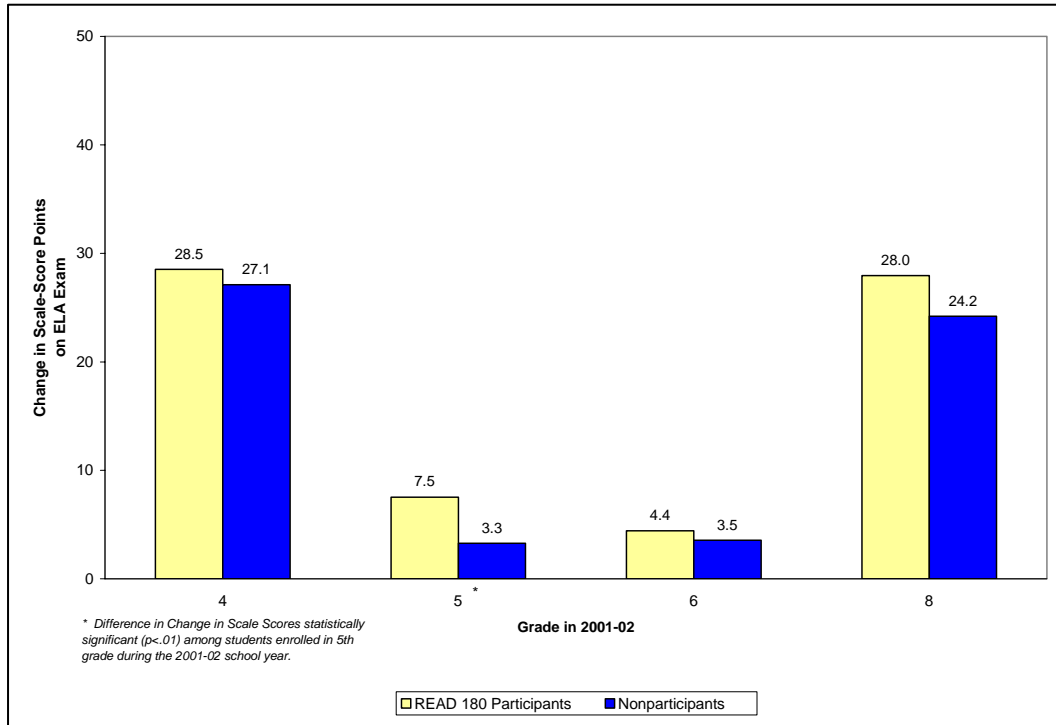


Exhibit reads: READ 180 participants enrolled in fifth grade in 2001-02 averaged an increase of 7.5 scale-score points between spring 2001 and spring 2002. Nonparticipants averaged a gain of 3.3 scale-score points. The difference is statistically significant.

What Can We Conclude from These Results?

The typical CSD23 student participating in READ 180 and enrolled in grades 4-8 during the 2001-02 school year achieved gains in literacy as measured by the end-of-year tests administered by the state and city. Overall, these gains were greater than those achieved by students attending the same schools and not participating in READ 180.⁶

⁵ Note that because of problems with the scoring of the 2002 ELA exam, no scores were reported for students in seventh grade during the 2001-02 school year.

⁶ With the information available, we cannot attribute any gains solely to READ 180. However, the gains observed are an encouraging sign. If we found the opposite, that the test scores of READ 180 were decreasing, it would be difficult to suggest that READ 180 had led to improvements in student learning.

The difference in gains in scale-score points was most pronounced among students who scored in Proficiency Level 2 on the spring 2001 ELA exam. READ 180 students achieved larger gains in scale-score points than did nonparticipants, and were more likely to perform above grade level (at Proficiency Levels 3 and 4). The differences were also noticeable among students enrolled in fifth grade.

Appendix A

Context for Assessing Change in Achievement in New York City

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Students attending the New York City public schools participate in achievement testing in reading and mathematics throughout their school years. Beginning in third grade, students take achievement tests in reading and in math in the spring of each school year. State law specifies that fourth- and eighth-graders be administered standardized tests in mathematics and English/language arts (ELA). The New York State Department of Education designates the tests to be administered and the rubrics for scoring.

To monitor student performance on a regular, continuing basis, the New York City system contracts with CTB-McGraw-Hill, the publisher of the state tests, to create tests for the third, fifth, sixth, and seventh grades, which are appropriate for students' age and years of education at each grade and are similar in form and content to the state tests. The city tests produce scores that can be aligned with and compared to the scores for the fourth and eighth grades. In grades 9-12, students take the statewide Regents Exams for specific courses in order to meet the requirements for a diploma.

**Exhibit A1
Tests Taken by Grade in the New York City Public Schools**

Grade	English/ Language Arts (ELA or Reading)	Mathematics	Other
3	CTB-Reading	CTB-Mathematics	
4	State English Language Arts (ELA) Test	State Mathematics Test	
5	CTB-Reading	CTB-Mathematics Performance Assessment in Mathematics	
6	CTB-Reading Performance Assessment in Language (PAL)	CTB-Mathematics	
7	CTB-Reading	CTB-Mathematics Performance Assessment in Mathematics	
8	State ELA Test	State Mathematics Test	State Assessment in Social Studies State Assessment in Science State Assessment in Technology

The results of NY State and City English Language Arts and Mathematics Tests are reported as scale scores and performance levels.

- Scale scores. The number of correct answers is converted to scores on a common scale using item response theory so that achievement can be compared across grade levels.
- Proficiency levels. The four proficiency levels that show how students have mastered the knowledge and skills that make up the learning standards. When a student is at Level 3 or 4, he or she has met or exceeded the standard.

The four proficiency levels indicate the extent to which students have met the learning standards for their grade and are defined as follows:

Exhibit A2 Proficiency Level Descriptions

ELA Examination

- Level 4 (Advanced): Students exceed the learning standards for English Language Arts. Their performance shows superior understanding of written and oral text.
- Level 3 (Proficient): Students meet the learning standards. Their performance shows thorough understanding of written and oral text.
- Level 2 (Basic): Students show partial achievement of the learning standards. Their performance shows partial understanding of written and oral text.
- Level 1 (Below Basic): Students do not meet the learning standards. Their performance shows minimal understanding of written and oral text.

Mathematics Examination

- Level 4 (Advanced): Students exceed the learning standards for mathematics. Their performance shows superior understanding of key math ideas.
- Level 3 (Proficient): Students meet the learning standards. Their performance shows thorough understanding of key math ideas.
- Level 2 (Basic): Students show partial achievement of the learning standards. Their performance shows partial understanding of key math ideas.
- Level 1 (Below Basic): Students do not meet the learning standards. Their performance shows minimal understanding of key math ideas.

- Test score ranges by grade in New York City. On the state and city ELA/reading test for grades 3-8, the possible scale scores range from 427 to 830. The cut points for the four proficiency levels established by the New York State Department of Education and DOE are shown in Exhibit A3.

Exhibit A3
State and City ELA/Reading Tests
Proficiency Levels and Scale-Score Ranges, by Grade

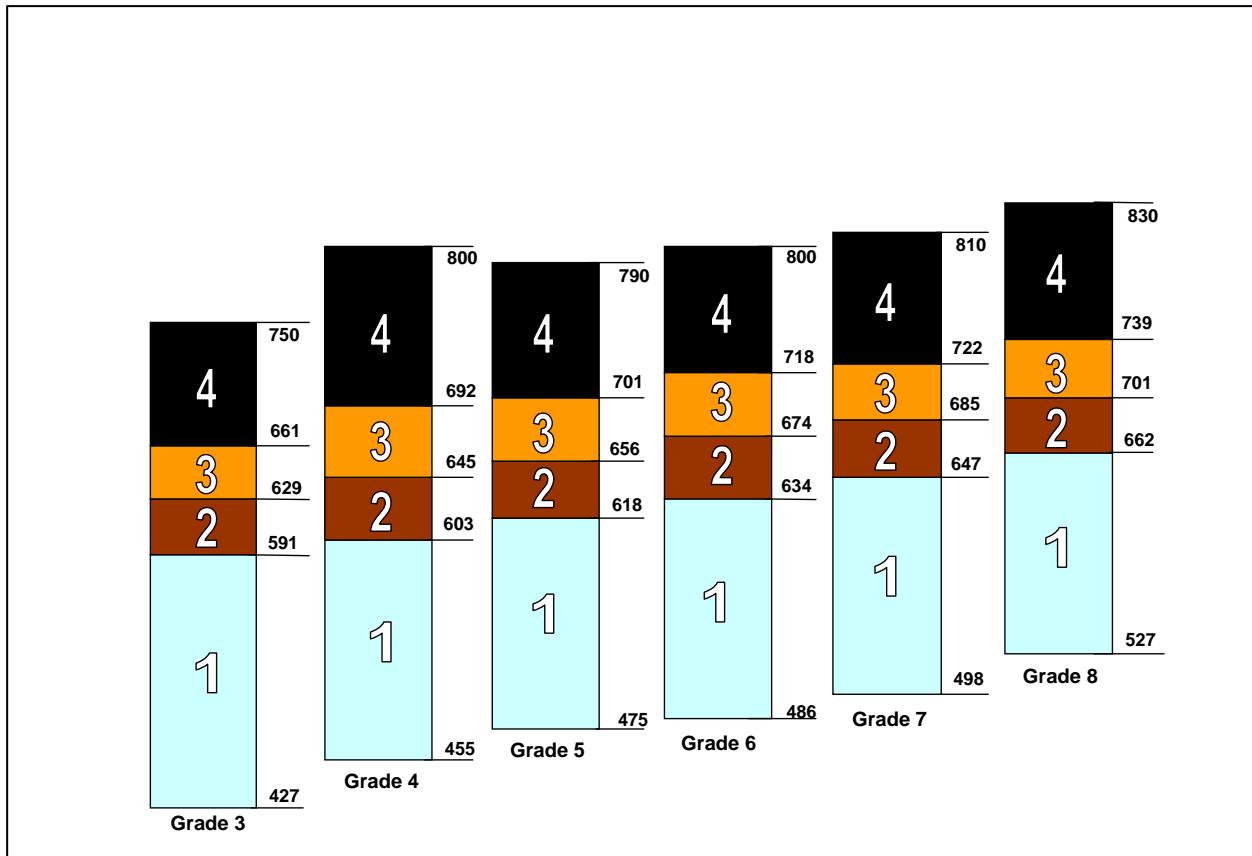


Exhibit reads: Among students in third grade, students with scale scores on the ELA test below 591 were assigned to Proficiency Level 1, those with scale scores between 591 and 629 to Level 2, between 630 and 661 to Level 3, and those with scores of 662 and above to Level 4.

On the mathematics test, possible scale scores ranged from 385 to 882. The cut points for the four proficiency levels are shown in Exhibit A4.

Exhibit A4
State and City Mathematics Tests
Proficiency Levels and Scale-Score Ranges, by Grade

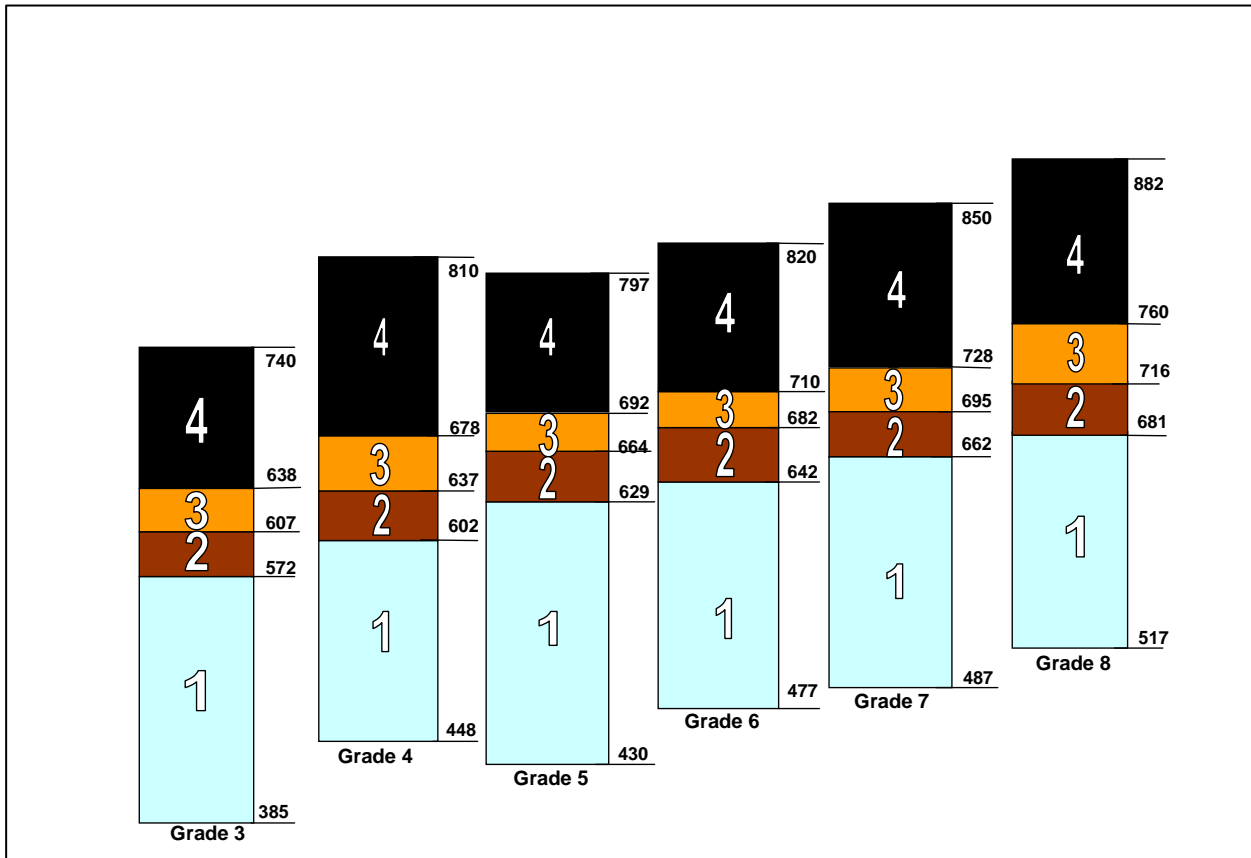


Exhibit reads: Among students in third grade, students with scale scores on the math test below 572 were assigned to Proficiency Level 1, those with scale scores between 572 and 607 to Level 2, between 608 and 638 to Level 3, and those with scores of 639 and above to Level 4.

Special Challenges Affecting the Analysis of Achievement Patterns in Grades 3-8

At the heart of any analysis to assess whether participation in a program such as READ 180 is associated with gains in test scores is a comparison of the scale scores achieved at one grade level to the scores achieved at a later grade for two groups of students, those participating in the program and those not participating. The method for computing the scale scores from student achievement test results in New York City poses special challenges for the analysis of test score change. In particular, a different formula is used to compute scale scores at each grade level. The resulting distribution of scale scores is neither identical across grade levels, nor does it follow a regular progression across grade levels. This lack of a predictable pattern presents technical challenges to using scale score data to compare and interpret changes in test scores across grade levels.

- The range from the lowest to the highest possible scale scores is different for each grade level (e.g., on the ELA/reading test the range was 322 scale-score points for the sixth-grade test, 312 for the seventh-grade tests, and 303 for the eighth-grade test)
- The lowest possible scale score varies from grade to grade (e.g., on the math test the minimum scale score was 477 in sixth grade, 487 in seventh grade, and 517 in eighth grade). A student achieving the minimum score at each grade level would have a gain of 10 scale-score points between sixth and seventh grades, and an increase of 30 points between seventh and eighth grades, both substantial changes, while in fact scoring at the minimum level on all tests
- The maximum possible scale score also varies from grade to grade (e.g., on the mathematics test, the maximum score was 820 in sixth grade, 850 in seventh grade, and 882 in eighth grade)

These characteristics present technical challenges when scale-score data are used to compare and interpret changes in test scores across grade levels.

Another attribute of the system for assigning scale scores on these tests that creates technical challenges is the absence of an established standard for the expected gain between grade levels. When estimating the impact of any educational intervention, it is important to take into account the change in test scores that would have occurred in the absence of the intervention. This expected increase should incorporate an estimate of the gain that would be expected because of the completion of another year's schooling and also the maturation entailed in the student being a year older. For example, some states and school districts factor in the expected gain into the calculation of scale scores (i.e., a score of 500 in the first year and a score of 500 in the second year can be interpreted as the customary gain in achievement, while a score of 500 in the first year and a score of 510 in the second year indicates a larger-than-expected gain in achievement), but this is not the case in the system used in New York. Neither the New York State Department of Education nor the New York City Department of Education incorporates an estimate of expected gain into the determination of scale scores across grade levels. Neither does the test publisher. While it is clear that on the tests used in New York City schools an individual student's scores should increase each year, it is not clear what constitutes the "normal" increase and how to identify gains that are larger than expected and may represent the impact of a specific educational program.

The New York City Department of Education has pointed out that a fifth-grade student who achieved the lowest possible score on the ELA test and still met the standard (Proficiency Level 3, a score of 656 scale-score points), needed to score 18 scale-score points higher on the sixth-grade test, 674 scale-score points, to remain classified as meeting the standard. On the math test, a fifth-grade student needed at least a score of 664 scale-score points to be considered meeting the standard. On the sixth-grade test, the student needed a score of at least 682 points, a gain of 18 scale-score points, to remain at that level. The difficulty in applying this as a standard for the expected gain in scale scores is that the number of scale-score points a student needs to increase to remain at the same point varies depending on the scale score obtained on the ELA or math test for the earlier grade. For example, students at the lowest score that places them at

Proficiency Level 2 on the ELA test in fifth grade need to gain 16 points to remain at that level, instead of the 18 points to remain at Level 3. The minimum change in scale-score points needed to remain in the same proficiency level in each grade is shown in Exhibit A5.

Exhibit A5
Change in Scale-Score Points Needed to Remain at Same Position Relative to Proficiency Levels, ELA and Math Exams

Scale Position		Number of scale score points required to remain at same position within proficiency levels				
		3rd to 4th	4th to 5th	5th to 6th	6th to 7th	7th to 8th
ELA Exam	Maximum score, top of proficiency Level 4	50	-10	10	2	20
	Minimum score in proficiency Level 4	31	9	17	4	15
	Minimum score in proficiency Level 3	15	11	18	11	12
	Minimum score in proficiency Level 2	12	15	16	13	11
	Minimum score in proficiency Level 1	28	20	11	12	29
Math Exam	Maximum score, top of proficiency Level 4	70	-13	23	30	32
	Minimum score in proficiency Level 4	40	14	18	18	32
	Minimum score in proficiency Level 3	30	27	18	13	21
	Minimum score in proficiency Level 2	30	27	13	20	19
	Minimum score in proficiency Level 1	63	-18	47	10	30

Exhibit reads: Students who achieve the maximum score on the third-grade ELA test needed to score 50 scale-score points higher on the fourth-grade ELA test to remain at the maximum score.