EVALUATION OF NEW CENTURY HIGH SCHOOLS
Profile of an Initiative to Create and
Sustain Small, Successful High Schools

Final Report

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EXECUTIVE SUMMARY

The evaluation of the New Century High Schools (NCHS) initiative examined operations and student outcomes in 75 schools from 2002-03 through 2005-06. This report, the final in a series of annual evaluation reports, presents data collected over those years, with a focus on school year 2005-06.

The NCHS initiative grew out of a program theory that emphasized small school enrollments, instructional rigor and focus, youth development and positive relationships, and the mobilization of supplementary educational resources. The initiative's central method for promoting these school features was through frameworks and supports for *disciplined innovation*, which relies on informed problem-solving to address student needs within broad, agreed-upon boundaries and which emphasizes continuous data-driven feedback and tailored assistance.

The evaluation used the percent of students in the Class of 2006 who graduated on time as its prime indicator of success. The study's central finding is that NCHS schools graduated more students on time than did larger New York City schools with comparable youngsters, by 18 percentage points (78.2 percent versus 60.6 percent), and more students than did New York City high schools generally, by 20 percentage points (78.2 percent versus 58.2 percent).

NCHS effects were notable with regard to drop-out prevention and on-time graduation. About 17 percent of students in comparison-group schools dropped out and about 22 percent remained enrolled in high school for a fifth year, compared to 3 percent and 19 percent, respectively, in NCHS schools. Examination of the Class of 2006 graduates in the two groups of schools indicates that graduates of comparison-group schools were more likely to earn a Regents diploma or Advanced Regents diploma, however, than were NCHS graduates (67 percent versus 46 percent). When the unit of comparison is students rather than graduates, however, the difference is less stark, with 41 percent of comparison-group students and 36 percent of NCHS students earning a Regents or Advanced Regents diploma. NCHS students were slightly more likely to earn a Regents or Advanced Regents diploma than were New York city students in the class of 2005 (36 percent, compared to 35 percent).

Compared to New York City high schools generally, NCHS schools enrolled students from backgrounds characterized by higher rates of poverty and lower eighth-grade test scores. While in high school, however, NCHS students surpassed citywide averages in school attendance and grade promotion, although their suspension rates were higher. The average daily attendance of NCHS students in 2005-06 was 84 percent, compared to 81 percent for New York City high school students overall (including students in ungraded special education). Median NCHS student attendance was 91 percent. NCHS ninth-graders were promoted to the next grade at a rate of 80 percent, compared to 72 percent citywide (based on 2004-05 data for the city). NCHS students were suspended from school at a rate of almost 8 percent, however, compared to a citywide high school rate of 6.5 percent in 2006. (NCHS suspension rates may be the result of the schools' adoption of strict standards and not necessarily a reflection of relatively poorer student behavior.)

NCHS classes following the Class of 2006 differ from their 2006 predecessors in lower rates of high school attendance and credit accrual, higher rates of school suspension, and higher Regents passing rates. This pattern is consistent with the eighth-grade profile of these subsequent classes. As eighth-graders, later NCHS entrants had poorer attendance and higher suspension rates, comparable reading scores, and higher math scores.

Evaluators used both hierarchical multivariate statistical methods and qualitative approaches to identify school features associated with student outcomes. Using the statistical methods available to the evaluation, the most important school-level influence on student performance, as measured by credit accrual, was a construct evaluators labeled "the quality of instructional systems." The index defining this construct included measures of the perceived alignment of instruction with Regents standards, agreement on educational focus, the effectiveness of principal leadership, the quality and amount of professional development, teacher influence, and professional collaboration on instruction. Evaluators measured the effects on credit accumulation of higher scores on the index of instructional systems quality. The maximum hypothetical effect was found to be seven credits over a two-year period, although no NCHS school matched the characteristics of the extreme conditions at either end of this spectrum. Practically speaking, a typical student's credit accumulation was 1.4 credits higher in a school with a better score on the index (by one standard deviation), compared to 1.4 credits lower in a school with a worse score on the index (by one standard deviation).

Case studies in the 2005-06 school year and earlier evaluation findings illuminated the influence on student outcomes of conditions that were fairly uniform across NCHS schools. Influential factors included small enrollments, close student-teacher relationships and adult mentoring of youth, the extension of student learning outside the regular school setting and school day, and the use of data to track student performance.

Using surveys of teachers, principals, and students to assess educational conditions in each successive wave of new NCHS schools, evaluators found that perceptions of most measured conditions remained stable over the four years of the evaluation. The perceived alignment of instruction with Regents requirements, however, rose over time, according to surveys of teachers. And perceptions of the quality of student discipline and teacher influence on policy and curriculum declined, according to teacher survey responses.

Perceptions of school conditions that were both positive and stable included the following: teachers' expectations for students, teacher-student relationships, agreement on the schools' educational focus, the effectiveness of principal leadership, professional collaboration, quality of teacher-made tests, and availability of supplementary learning opportunities and of instructional materials. Perceptions of school conditions that were both somewhat negative and stable included the following: the adequacy of school facilities, the quality and amount of professional development, and parental involvement.

ACKNOWLEDGMENTS

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LIST OF EXHIBITS

1. BACKGROUND ON THE NEW CENTURY HIGH SCHOOLS AND THIS REPORT

Between September 2002 and September 2005, the New York City Department of Education (DOE) opened 162 new small secondary schools, tripling the number of public secondary institutions in the City. Working closely with the DOE, the United Federation of Teachers, and the Council of Supervisors and Administrators, New Visions for Public Schools provided leadership and technical support for 75 of these startups, known as the New Century High Schools (NCHS schools). The Bill & Melinda Gates Foundation, the Carnegie Corporation of New York, and the Open Society Institute provided supplementary financial support for the planning and initial implementation of NCHS schools.

In 2002, New Visions for Public Schools asked Policy Studies Associates, Inc., to evaluate the schools it planned to open between September 2002 and September 2005. This is the last in a series of reports describing conditions and achievement outcomes in those 75 schools. The report summarizes research efforts over four years, with a focus on school year 2005-06. It relates youth outcomes to students' background characteristics and to the characteristics of their schools, focusing on school characteristics that New Visions believed would create educational value.

Program Theory Underlying the NCHS Initiative

Exhibit 1 presents New Visions' conception of the process by which the NCHS initiative would create and operate successful small schools of about 400 students each. To support efforts at the school level, New Visions offered school developers small planning grants and supplemental operating grants of $400,000 over four years. To fuel collaborative efforts, the operating grants were provided to private nonprofit organizations, working in collaboration with professional educators, for work within or on behalf of individual schools. In addition, New Visions provided direct technical assistance to NCHS schools, and it cultivated systemic support within the DOE, the local DOE regions, and labor organizations.

The preceding steps constituted the initiative's process theory (or ideas about how to motivate positive change). New Visions expressed their intervention theory (or ideas about how good schools would function) in the following ten principles:

- ■ *Rigorous instructional program,* enabling every student to master challenging skills, content knowledge, and state standards through relevant, individualized, in-depth, and inquiry-based teaching

- ■ *Personalized relationships* between students and teachers, characterized by close continuous communication and each student having at least one adult to coordinate the support needed for the student to achieve educational goals

Exhibit 1
Program Theory

INITIAL PHASE	LATER PHASE

ACTION STEPS	SHORT-TERM OUTCOMES	INTERMEDIATE OUTCOMES	LONG-TERM OUTCOMES

Establish a grant-making, planning, and development process

Provide direct support to grantees in developing effective new schools

Involve community partners in planning and operating new schools

Cultivate systemic support within DOE, regions, and unions

Establish new small high schools

New Century High Schools provide:

- Rigorous instructional program
- Personalized relationships between adults and students
- A clear focus and high expectations for students
- Instructional leadership focused on student achievement
- School-based professional development and collaboration
- Meaningful assessment of student learning
- Partnerships with community organizations
- Family partnership and involvement
- Youth participation and development
- Effective uses of technology and resources

Schools attract cross-section of the student population in communities they serve

Enrolled students outperform students with similar educational and personal backgrounds

Students are positively engaged with their school and community, and prepared for postsecondary experiences

Systemic adoption of New Century elements across New York City high schools

Improved quality of learning experiences for youth, especially those from most disadvantaged communities

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- *Clear focus* on teaching and learning and corresponding expectations that every student will succeed

- *Instructional leadership* through effective collaboration and school-wide support for teaching and learning

- *School-based teacher-driven professional development and collaboration* that is results-driven, standards-based, and embedded in the daily work of the school

- *Meaningful continuous assessment* to diagnose student needs and improve instruction

- *Community partners* that offer support and opportunities for students, families, and the school community and contribute significantly to the school's planning processes, governance, and operations

- *Family/caregiver partnership and involvement* in governance and the design of the school's education program

- *Youth participation and development*, characterized by student voice in teaching and learning and an educational focus on the development of students' social and emotional skills

- *Effective uses of technology and other resources,* including print, visual, audio, and electronic resources to facilitate learning and school operations

New Visions characterized its approach to educational improvement as *disciplined innovation*, in which the 10 NCHS principles provided a framework and direction for improvement efforts that could incorporate school themes, branded education-reform approaches (e.g., America's Choice, Expeditionary Learning), and other organizational and curricular approaches. Disciplined innovation, as employed by New Visions and others, promotes informed problem-solving to address student needs within broad, agreed-upon boundaries and with the use of continuous data-driven feedback and tailored supports.

New Visions also established numerical benchmarks intended to serve as aspirational goals for NCHS schools. The benchmarks encouraged every NCHS school to graduate at least 80 percent of its students in four years and to maintain an attendance rate of at least 92 percent. These benchmarks were intended to motivate educators and other stakeholders to assess students' progress toward graduation on a continuing basis and to take actions as needed to make sure that students stayed on course for on-time graduation.

Organization of Report

This report relates achievement outcomes in NCHS schools to the program model described above. The report is presented in nine chapters and two appendixes.

Chapter 1 describes the initiative's program theory. Chapter 2 reviews prior findings and presents an overview of the design for the 2005-06 research. Methods are presented in detail in later chapters. Chapter 3 describes students attending NCHS schools in 2005-06. Chapter 4 presents stakeholders' assessments of the schools' learning environments over four years.

Chapter 5 presents graduation rates for the NCHS Class of 2006 and compares NCHS results with citywide outcomes and with outcomes in comparison-group schools. Chapter 6 examines the progress of NCHS students scheduled to graduate in later classes.

Chapters 7 and 8 present quantitative and qualitative findings regarding relationships among NCHS inputs, processes, and outcomes. Chapter 7 presents findings from multivariate quantitative analyses. Chapter 8 presents findings derived from case studies over four years. Chapter 9 presents our conclusions. Appendix A provides descriptive statistics for survey data summarized in Chapter 4. Appendix B presents comparisons of the NCHS and contrast-group students at entry to high school.

2. REVIEW OF EARLIER FINDINGS AND RESEARCH DIRECTIONS

Findings through 2004-05

Findings regarding the NCHS initiative through 2004-05 were very promising. More than three-quarters of students in NCHS schools for three years attained credits and passed Regents exams at rates congruent with on-time graduation. And in all years, NCHS students out-performed youngsters with whom they were demographically and academically matched based on middle school performance. Qualitative case study data provided compelling evidence of the utility of specific NCHS process strategies.

■ Collaboration among New Visions and powerful city-level stakeholders— foundation officers, labor leaders, school executives, and the mayor—enabled coherent change at an aggressive pace and on a large scale. The centerpiece of the NCHS reform in its first years was, almost certainly, the collaborative enterprise itself. It ensured the schools would have needed political and financial support.

■ School-level collaboration and partnerships varied in their longevity and effectiveness. Some partnerships developed out of deeply compatible interests and were integral to school life; others may have been useful in the early formation and establishment of the schools but were not sustained over the long term.

■ Planning helped prospective principals to imagine rigorous instructional programs with real-world relevance. But successful program implementation required individuals with the means to attract, manage, and develop teacher talent. It also required leaders with the skills and knowledge to marshal other resources from many sources.

■ Smaller enrollments facilitated social relationships among students and helped teachers in their efforts to personalize instruction.

■ Professional development worked best, as theorized, when it was school-initiated and school-based, but regionally based professional-development sessions remained part of the school system's repertoire.

Research in 2005-06

Some reformers advocate approaches to school development that are likely to provide students with customized learning experiences (Cuban & Shipps, 2000). Others prefer approaches that substantially regulate teacher and student behavior (Ross, Hogaboam-Gray, &

Hannay, 2001). NCHS reformers were in the first camp. They encouraged schools to take initiative and to be entrepreneurial in responding to opportunities and in solving problems. New Visions relied on schools to determine ways to achieve the personalization and engagement needed for positive educational performance. They supported schools, in part, through the sharing of data and analyses that allowed schools to track their students' progress to graduation. Their methodology of disciplined innovation allowed educators to devise specialized solutions while also engaged in continuous assessment and efforts toward the 80/92 benchmarks.

The question for study in 2005-06, Year 4 of the initiative and of the evaluation, was whether this change paradigm worked. Would it be possible with these methods to push anticipated four-year high school graduation rates in NCHS schools from less than 60 percent, as was the norm in New York City schools, to about 80 percent, as New Visions aimed? Below is an overview of the study's design and major hypotheses.

Research Design

In Year 4, as before, we employed a mixed-model research design, an approach that combines both quantitative and qualitative methods (Tashakkori & Teddlie, 1998). The advantage of this strategy was that it allowed us to wrestle with problems flexibly using methods that had differing strengths and weaknesses (Brewer & Hunter, 1989).

In assessing achievement outcomes, we used a quasi-experimental design. This approach had the virtue of inclusiveness as well as relative objectivity. Achievement data were available for almost all NCHS students, and survey data describing school conditions were available for almost all NCHS schools (68 of 75).

A predictable problem in using quantitative data to understand school processes is the likely insensitivity of fixed-response survey items to subtle organizational conditions and interrelationships. To invite the unexpected into our data set, we also looked at school processes in a holistic fashion (Yin, 1994) in a few settings (N = 6) using student records, repeated school-level interviews, and structured classroom observations as data sources. By triangulating data within case study schools and replicating analyses across schools, we hoped both to validate qualitative findings and to be in a position to elaborate on quantitative findings.

Hypotheses

Given earlier findings regarding NCHS students progress over time, it seemed unlikely that the schools would fully achieve New Visions' aims of an 80 percent four-year graduation rate without modification to the NCHS model and school practice. We anticipated that, without such modifications, the initiative would come closest to achieving its graduation goals with the Class of 2006.

We had a rich literature from which to draw hypotheses about factors influencing academic outcomes. We considered four sets of explanations: student characteristics, staff

characteristics, attention to instruction, and arrangements that bolster students emotionally (e.g., small enrollments, advisories, etc.). These frameworks are thoroughly discussed in the literature (e.g., Borman & Rachuba, 2001; Phillips, 1997) and, in the case of attention to instruction and emotional support, well aligned with NCHS core principles.[1] Controlling for student individual and aggregate characteristics and for staff aggregate characteristics, we wagered that credit accumulation would be higher in NCHS schools that were attentive to instruction and also emotionally supportive.

Preview of Year 4 Findings

The lack of variation in staff characteristics and school supportiveness—most principals and teachers were inexperienced, and most schools were small and supportive—constrained the factors we were able to investigate with statistical precision. Student characteristics and the quality of instructional processes did, however, exert a statistically significant influence on achievement outcomes. Qualitative evidence suggests that student outcomes were also influenced by small enrollments, close student-teacher relationships and adult mentoring of youth, the availability of supplemental resources to extend instructional time, and the use of data to track student performance.

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[1] Researchers have associated a number of factors, such as "firm leadership" and "high expectations," with "effective schooling." Rowe, Hill, and Holmes-Smith (1995) discounted much of this work, however, on methodological grounds. They concluded that most school-reform initiatives were poorly supported by evidence. Similarly disposed, Coe and Fitz-Gibbon (1998) argued that even the consensus about Edmonds' five-factor model (1979) and Reynold's and Teddlie's nine-factor model (2000) was premature, given the field's penchant for vague concepts and sloppy measurement.

3. STUDENT CHARACTERISTICS AND PERFORMANCE
IN 2005-06

This chapter describes students who were enrolled in and attending the 72 diploma-granting NCHS high schools as of October 31, 2005.[2] NCHS students are described relative to the full population of New York City public high school students active on October 31, 2004, the most recent date for which system-wide data were available at the time of this evaluation's data analysis.

Characteristics of NCHS and New York City Students in 2005-06

Student profiles are presented in Exhibit 2. The discussion of these data is informal and relies on inspection rather than statistical analyses because NCHS students are included in the citywide counts.

Forty-two percent of NCHS students were in the ninth grade in 2005-06. This was disproportionately high relative to citywide patterns (33 percent) but expected, given that most NCHS schools were in start-up mode, adding a grade per year.

NCHS schools enrolled a higher proportion of females than the city (53 percent versus 49 percent) and higher proportions of African American and Hispanic students (93 percent versus 73 percent). Substantially higher proportions of NCHS students were eligible for free and reduced-price meals (82 percent versus 47 percent), although DOE officials indicated that both eligibility rates were likely to be under-estimates because students in this age group often fail to request assistance.

Compared to citywide rates, slightly lower proportions of NCHS students were English Language Learners (10 percent versus 12 percent) and new immigrants (6 percent versus 8 percent). The proportions of students receiving special education services were very similar in NCHS schools and citywide (10 percent versus 11 percent).

Middle-school achievement was lower among students who entered NCHS schools. In the eighth grade, about 24 percent of NCHS students were proficient or advanced in English language arts (ELA), compared to 36 percent citywide. About 30 percent of NCHS students were proficient or advanced in math, compared to 42 percent citywide.

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[2] As of 2005-06, three of the 75 NCHS secondary schools served students through eighth grade only. We note as well that three NCHS schools opened in September 2005; those schools are not included in this evaluation.

Exhibit 2
Characteristics of NCHS and New York City High School Students, in Percents

Characteristics	NCHS 2005-06	NYC 2004-05 *(N = 307,899)[a]*
All Grades	*(N = 18,466)*	*(N = 276,279)[b]*
Grade 9	41.5	32.6 [b]
Grade 10	36.4	28.1 [b]
Grade 11	15.3	17.2 [b]
Grade 12	5.3	15.3 [b]
Ungraded	1.5	6.8[b]
Gender	*(N = 17,885)*	
Female	52.5	49.1
Male	47.5	50.9
Race	*(N = 17,691)*	
African American	43.0	35.0
Asian and Others	4.4	14.4
Hispanic	49.6	37.5
White	3.0	13.3
Eligible for ELL	*(N = 18,466)*	
Yes	9.9	12.3 [c]
Eligible for Free/Reduced Price Lunch	*(N = 18,466)*	
Eligible	82.2	46.8 [d]
Ineligible	9.1	
Missing Data	8.7	
Recent Immigrant	*(N = 18,466)*	
Yes	5.8	7.8 [e]
Special Education Flag (Integrated and Other)	*(N = 18,466)*	
Yes	9.8	10.5
Eighth-Grade ELA Proficiency	*(N =14,339)*	
Proficient/Advanced	24.0	35.5[f]
Eighth-Grade Math Proficiency	*(N = 15,103)*	
Proficient/Advanced	29.7	42.0 [f]

[a] Data for total enrollment were obtained from the DOE official audited October 31, 2006, register http://sdat.nycboe.net. These data are the basis for all demographic breakouts unless otherwise indicated.

[b] Data for total enrollment disaggregated by grade employed a lower base (276,279); these data too were obtained from the DOE official audited October 31, 2006, register http://sdat.nycboe.net.

[c] Citywide ELL data were obtained from Appendix 4 of *ELLs in New York City: Student Demographic Data Report* (New York City Department of Education, Summer 2006).

[d] Citywide data were obtained from DOE 2004-05 School Report Cards. These data do not appear to be reliable. The proportion of New York City students in the eighth grade in 2005-06 receiving free- or reduced-price lunch was 84 percent, according to the *2005 Trial Urban District Assessment* (December 2005). Any under-reporting would presumably apply to all students, including NCHS students.

[e] Citywide recent immigrant data were obtained from Chart 30 of *ELLs in New York City: Student Demographic Data Report* (New York City Department of Education, Summer 2006).

[f] Citywide proficiency rates are reported for entering ninth- and tenth-graders, as presented in DOE 2004-05 School Report Cards.

Performance of NCHS Students in 2005-06

We examined the school attendance, promotion rates, and suspension rates of NCHS students in 2005-06. The **average daily attendance** rate of NCHS students (including students in un-graded special education classes) was 84 percent; the median was 91 percent. Depending on which marker you choose, the NCHS initiative is either substantially below or very much on target with regard to its 92 percent daily attendance goal. The mean 2005-06 NCHS daily attendance rate compared favorably to the attendance rate of high school students citywide, which was 81 percent. The 2005-06 NCHS rate was, however, a drop from the prior year, when the average was 86 percent. Attendance rates in 2005-06 were higher in NCHS schools relative to city averages at ninth and tenth grade and in un-graded special education, almost identical in eleventh grade, and lower in twelfth grade.[3]

Exhibit 3
NCHS and New York City High School Students,
Average Daily Attendance Rates, by Grade

Grade	NCHS 2005-06 (N =18,466)	NCHS 2005-06 (N =18,466)	NYC 2005-06 (N =283,391)
	Mean ADA	Median ADA	Mean ADA
All	**83.9%**	**91.0%**	**81.2%**
Grade 9	82.7% (n=7,659)	90.8% (n=7,659)	79.0%
Grade 10	84.6% (n=6,719)	91.0% (n=6,719)	83.3%
Grade 11	86.3% (n=2,829)	91.8% (n=2,829)	86.4%
Grade 12	84.7% (n=979)	89.0% (n=979)	86.3%
Un-graded Special Education	69.7% (n=280)	81.2% (n=280)	67.6%

Of the 6,940 ninth-grade students who enrolled in NCHS schools in 2005-06 and remained active in the New York City school system in general education in 2005-06, 80 percent were **promoted**, as indicated by their 2006-07 grade status, a drop from the prior year's 84 percent promotion rate. The citywide ninth-grade promotion rate in 2004-05 was 72 percent. The rates for NCHS tenth- and eleventh-graders were, respectively, 76 percent (of 6,145 students) down from 80 percent and 89 percent (of 2,617 students) down from 93 percent.

NCHS students had high **suspension** rates. Of the 18,466 students enrolled in 2005-06, 1,440 or 7.8 percent were suspended. This is higher than the 2005-06 citywide rate of 6.5 percent, which we calculated based on data provided by DOE. Among general education

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[3] Eleventh- and twelfth-grade attendance patterns of NCHS students may reflect the presence of students who would not be in school at all if they were enrolled in New York City high schools with less holding power.

students in NCHS schools, suspension rates were higher for ninth-grade (9 percent) and tenth-grade students (8 percent), and lower for eleventh-grade (6 percent) and twelfth-grade students (3 percent). About 8 percent of NCHS students in un-graded special education were suspended. Suspension rates were lower in NCHS schools before 2005-06. Of the 1,169 students enrolled in 2002-03, 2 percent were suspended that year. Of the 4,258 students enrolled in 2003-04, 4 percent were suspended in that year. Of the 12,111 students enrolled in 2004-05, 6 percent were suspended.[4]

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[4] In this instance as well, NCHS suspension rates may be high relative to the city because suspension-prone students may be remaining active in their NCHS schools (i.e., they are enrolled and attending school), rather than dropping out. Also, NCHS schools may be setting and enforcing higher behavioral standards than other high schools.

4. EDUCATIONAL ENVIRONMENT IN NCHS SCHOOLS

This chapter describes the methods we used to assess the components of the schools' educational environments that were targeted in the initiative's change theory. It also describes findings regarding change over time in each component and in our composite measure, which characterizes the quality of school-level instructional systems.

Methods

Sample

Annually from 2002-03 through 2005-06, we administered surveys to students, teachers, principals, and community-partner representatives in NCHS schools serving high school students. There were 72 such NCHS schools in the evaluation sample in 2005-06. In that year, staff members in three schools failed to cooperate with survey administration protocols. The proportions of school staff and partners providing data were as follows: principals, 81 percent; community partners, 76 percent; teachers, 73 percent; and students, 73 percent.

Instruments

Survey instruments were constructed to elicit respondents' perceptions of their schools' functioning relative to the organizational principles that formed the NCHS action theory (Exhibit 1). In some cases, single items represented a line of inquiry. In most cases, constructs were examined using multi-item indexes.

Analysis

In analyzing survey data, we worked iteratively on several fronts. We grouped items based on their apparent alignment with each of the 10 NCHS program principles and then again based on output from factor analysis exercises. We pruned groups to exclude items with poor response variation. We examined shortened lists for internal consistency (Cronbach's alpha), and we trimmed those lists to items that optimized cohesion.

All items ultimately included in each index carried the same weight. When a respondent affirmed that a condition aligned with an NCHS founding principle existed in his or her school, we awarded one point. We added points across items and raters, and divided sums by the number of items multiplied by the number of raters. This process placed all indexes on a scale that ranged from 0.00 to 1.00, with higher scores representing more favorable ratings. A score of .80 means that 80 percent of responses were affirmative; a score of .40 means that 40 percent of responses were affirmative.

At the conclusion of these analyses, we grouped seven indexes into a composite measure, labeled the "quality of instructional systems index," based on their high degree of conceptual and statistical relatedness. This composite includes indexes of Regents alignment, educational focus, principal leadership of instruction, quality of professional development, quantity of professional development, teacher influence, and teacher collaboration on instruction.

In analyses, we arrayed responses to questions and indexes in two ways. First, we clustered data for all schools by school year, irrespective of each school's initial year of operation, to determine the overall environmental patterns of NCHS schools. Second, we clustered data for each of three groups of schools, with the groups determined by the school year in which the school began operation.

Data Display

Tables included in this chapter provide the following information: (1) a list of items included in questions and indexes, (2) the respondent group who provided data (principals, teachers, etc.), and (3) for indexes, reliabilities in the form of Cronbach's alpha. Like other reliability coefficients, Cronbach's alpha ranges from 0.00 to 1.00. Scores toward the high end of the range (above 0.70) suggest that items in the index are measuring the same thing.

Following the tables that list survey items, two figures are presented. The first figure depicts respondent ratings of the construct over time *for all* NCHS schools by school year. The second figure depicts ratings over time *within groups* of NCHS schools. Circles, triangles, and squares represent index means, and vertical lines above and below represent the estimated 95 percent confidence intervals of means. When confidence bands for two means do not overlap, the means are statistically different. Appendix A supplements this chapter by presenting descriptive statistics for each data element depicted in the exhibits that follow.

Overview of Findings

We focused analyses on two questions:

■ Did stakeholders' ratings of school conditions improve over time across schools?

■ Did stakeholders' ratings improve over time *within* school groupings?[5]

The second question was a nuanced version of the first question in that it controlled for the number of years NCHS schools had been open. A brief summary of findings is presented immediately below, followed by a detailed presentation of each index.

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[5] We defined school groups by inaugural years. Group 1 schools were those that opened in 2002-03, Group 2 schools were those that opened in 2003-04, and Group 3 schools were those that opened in 2004-05.

Did Ratings Improve Across Schools Over Time?

Whether initial ratings of school conditions were low and suggested vulnerabilities (as they did in areas such as school facilities, quality and quantity of professional development, and parental involvement) or they were high and suggested strengths (as they did in areas such as teacher expectations, educational focus, and teacher-student relations), ratings were largely constant over time.

In one domain, however, ratings clearly improved. Teachers provided successively higher ratings of the alignment of instruction with Regents requirements over time.

On two indexes and one item ratings clearly fell over time. Teachers provided successively lower ratings of student discipline and their own influence on school policy and curriculum. And they indicated that they were teaching increasing numbers of students over time. Ratings of principal leadership and teacher collaboration drifted downward after 2003-04, but those changes were not statistically significant.

Did Ratings Improve within Groups of NCHS Schools over Time?

The change in Regents alignment noted earlier was more of a between-group than a within-group phenomenon. Although some increase in Regents focus occurred within school groupings, most of the change occurred across successive groups of schools. Schools that opened in later years had higher starting points on this school feature and maintained that advantage.

On the other hand, the trends earlier noted in student discipline and teacher influence occurred irrespective of school groups. Within each set of schools, student discipline and teacher influence declined, suggesting the possible influence of increasing school size. (These matters are taken up in subsequent chapters.) Parental involvement and teacher leadership of advisory groups also seemed to decline in Group 2 and Group 3 schools over time, but those patterns were not observed in Group 1 schools.

Findings

1. Rigor

This construct was measured by one item and one scale. The item measures students' perceptions of teacher expectations. The scale examines teachers' assessments of the alignment of school curricula with Regents standards.

Teacher expectations. The question that addressed students' perceptions of teacher expectations is presented immediately below.

Item 1	Survey
Teacher Expectations	Student
Do you agree with the following statement about academic expectations at this school? My teachers have high standards for my academic performance	

There was consistently high agreement with this statement over the years of the initiative.

Teacher Expectations (all schools)
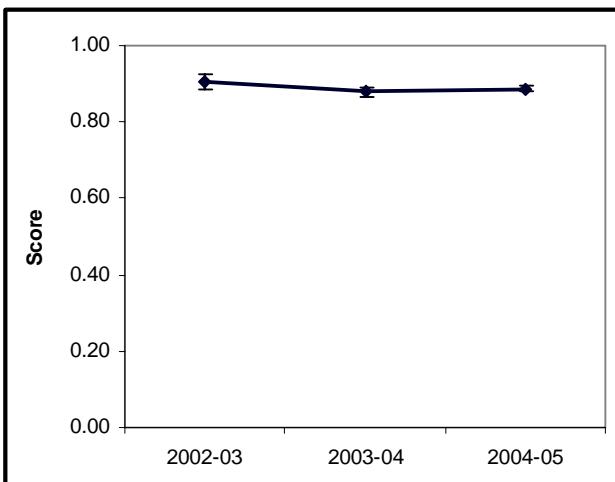
Teacher Expectations (by school group)
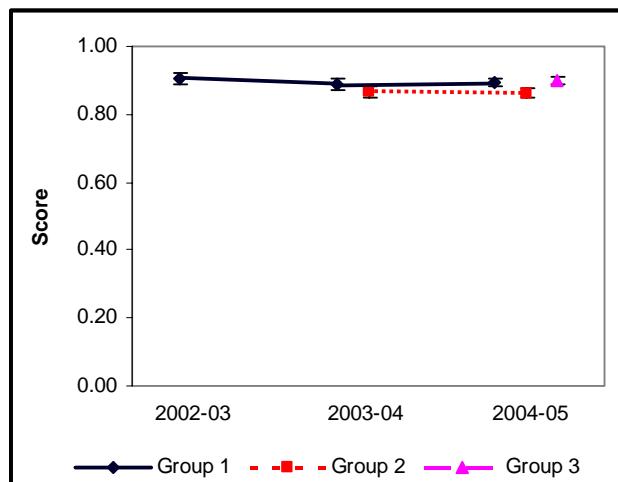
Regents alignment. We asked teachers about their individual efforts to align instruction with Regents requirements for high school graduation. Responses to items included in the index were closely related, as indicated by a high Cronbach's alpha.

Index 1	Survey	Alpha
Regents Alignment	Teacher	0.89

Have the Regents standards been used in the following tasks…
 	
     Selecting curricular materials
     Developing curriculum
     Designing classroom assessments
     Developing a school improvement plan
     Designing or selecting professional development opportunities		

The graphic to the left on the following page shows gradual increases over time in the alignment of instruction in NCHS schools with Regents requirements, resulting in a significant overall increase in alignment between 2002-03 and 2005-06. The graphic to the right shows that instruction in Group 2 schools was from the outset better aligned with Regents requirements than

was instruction in Group 1 schools. By 2005-06 alignment was statistically higher in both Group 2 and Group 3 schools than in Group 1 schools, although alignment also appeared to increase in Group 1 schools.

Regents Alignment (all schools)   **Regents Alignment (by school group)**
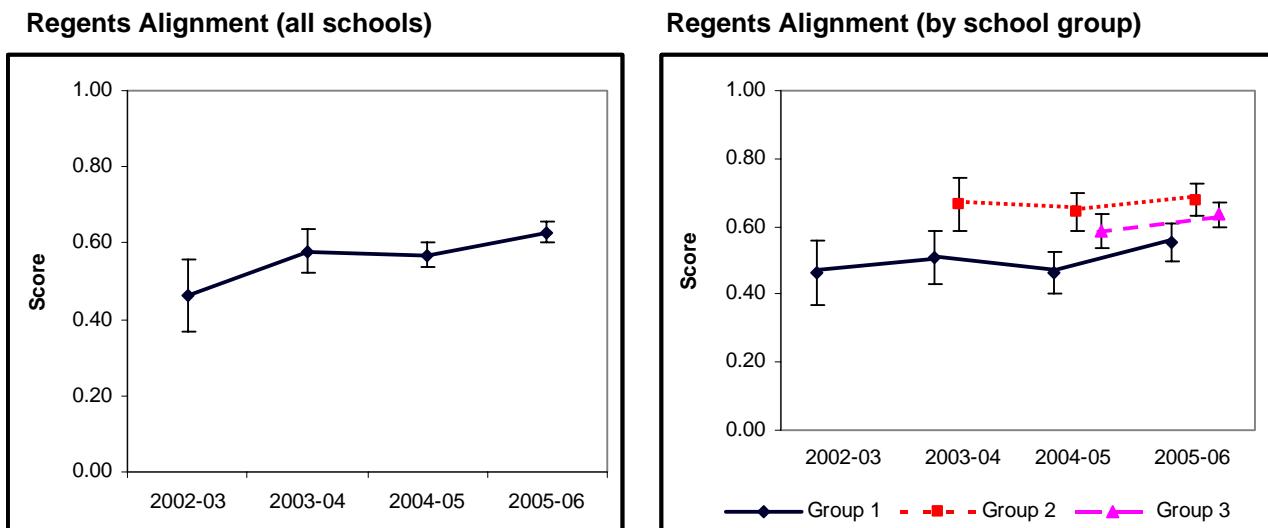
2. Personalized Relationships

This construct was measured by two scales and two variables. The first scale measured teachers' perceptions of student discipline. The second scale measured students' perceptions of teacher-student relationships. The first variable reported on the percentage of teachers who facilitated advisory groups, and the second variable identified the mean numbers of individuals whom instructors reported teaching each week.

Student self-management. The seven items framing teachers' perceptions of student behavior are presented below. Responses to items included in the index were closely related, as indicated by a strong Cronbach's alpha.

Index 2	Survey	Alpha
Student Self-Management	Teacher	0.82

Are the following positive conditions present in your school?
 	
    Low level of student absenteeism
    Low level of students cutting class
    Low level of physical conflicts among students
    Low level of verbal abuse of teachers by students
    Student respect for teachers
    Student respect for other students
    Low level of student apathy		

16

The graphic to the left shows that teachers perceived a sharp and a statistically significant decline in student discipline after 2003-04. The graphic to the right shows that the perceived decline occurred within school groups. This suggests that school-level factors, such as, for example, increasing school enrollments, were more likely drivers than were exogenous events that occurred in specific years.

Student Self-Management (all schools)
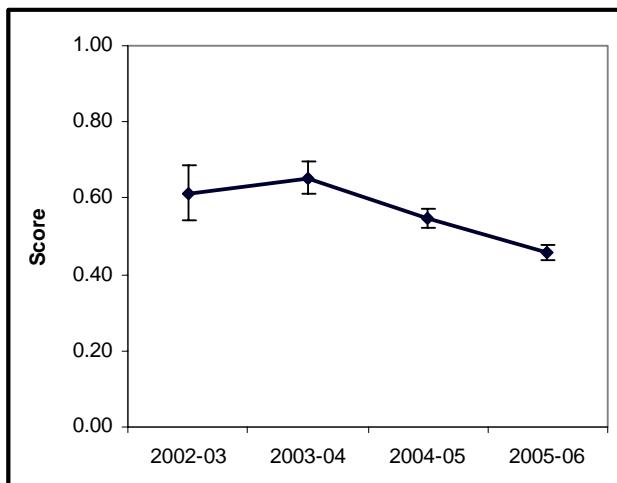
Student Self-Management (by school group)
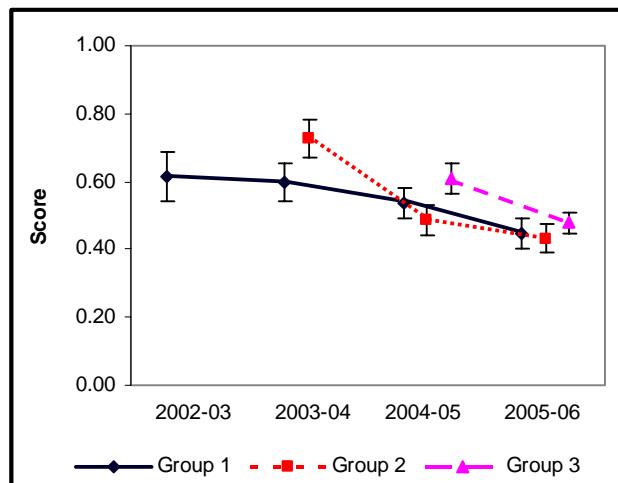
Teacher-student relationships. The six items asking about students' perceptions of teacher expectations are presented below. Responses to items included in the index were closely related, as indicated by the relatively high Cronbach's alpha.

Index 3	Survey	Alpha
Teacher Student Relationships	Student	0.81
How much do you agree with the following statements about teachers in this school? Teachers in this school treat me with respect I feel that I can talk to the teachers in this school about things that are bothering me Teachers in this school really care about me Teachers in this school value my opinions Teachers in this school always try to be fair I feel safe and comfortable with the teachers in this school		

Students displayed consistently high agreement with this statement over the years of the initiative. Ratings of students in Group 2 schools were, however, significantly lower than ratings of students in Group 1 and Group 3.

Teacher Student Relations (all schools)
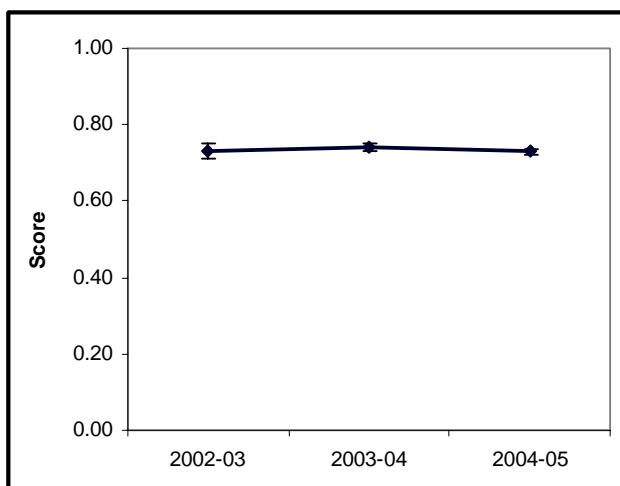
Teacher Student Relations (by school group)
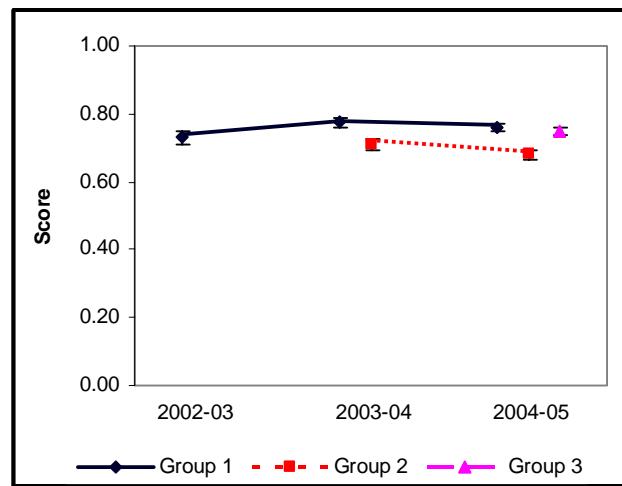
Advisories. We asked teachers whether they led student advisory periods. This single item is presented below.

Item 2	Survey
Advisory Groups	Teacher
Do you currently lead an advisory period?	

The graphic to the left shows decreasing rates of teacher leadership of advisory periods between 2002-03 and 2005-06. The graphic to the right shows that the decline was not due to lower starting points in successive school groups nor was it universal. The decline occurred only in Group 2 and Group 3 schools, possibly because adults other than teachers (e.g., counselors, staff of partner organizations) led at least some advisories in those schools.

Advisory Groups (all schools)
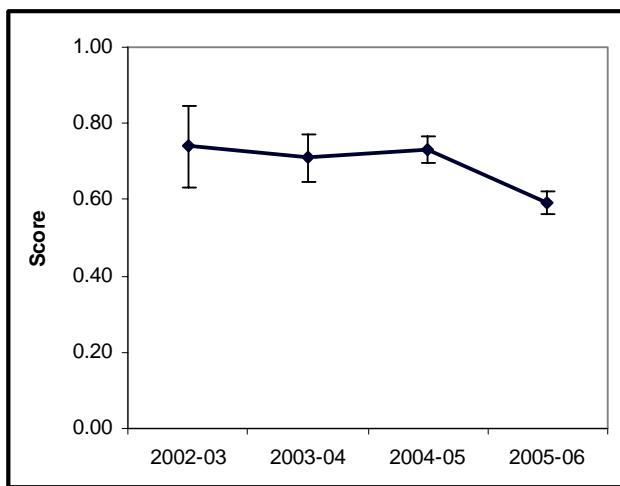
Advisory Groups (by school group)

18
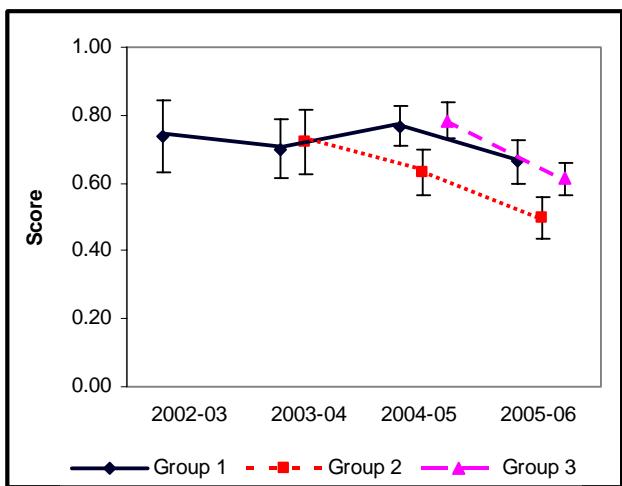
Students taught. A question asked teachers to identify the numbers of students (unique individuals) whom they teach each week, on average.

Item 3	Survey
Number of Students Taught	Teacher
How many different students do you teach each week? _____ (enter number of students)	

The numbers of students whom teachers taught appeared to increase gradually. Student loads in 2005-06 were statistically higher than in 2002-03. The change resulted from gradual increases within and between groups.

Students Taught (all schools)
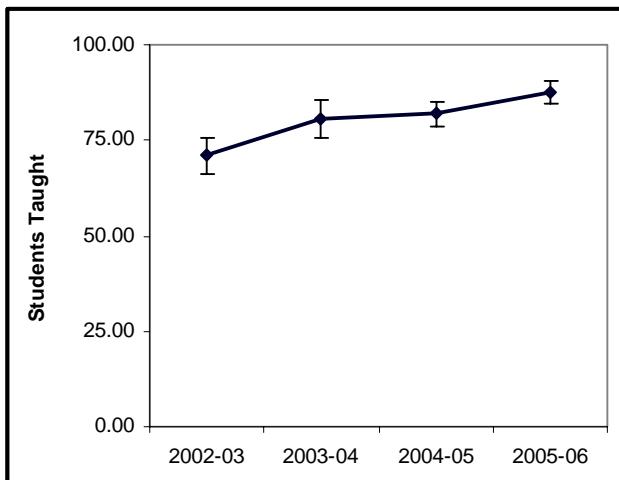
Students Taught (by school group)
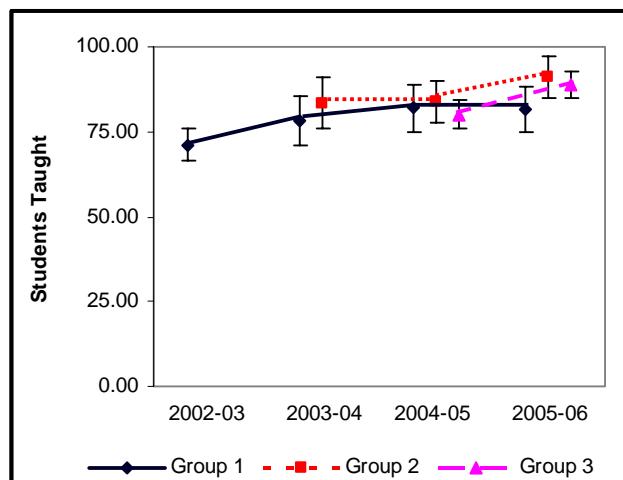
3. Clear Focus

This construct was measured by a single scale. The scale assessed teachers' perceptions of the coherence of educational intentions in the school. The five items in this scale are presented below. Responses to questions included in the index were loosely related, as indicated by a relatively low Cronbach's alpha.

Index 4	Survey	Alpha
Educational Focus	Teacher	0.60

Do you agree with the following statements about the educational focus of your school?

> I understand and support this school's educational focus
> The school's educational focus is closely coordinated across grades
> There is a common set of classroom assessments that I, and all teachers, use
> There is a core curriculum that I, and all teachers, follow
> My course content and instructional materials reflect the school's educational focus

Teacher ratings of instructional focus were high and largely consistent across time and school groups.

Educational Focus (all schools)
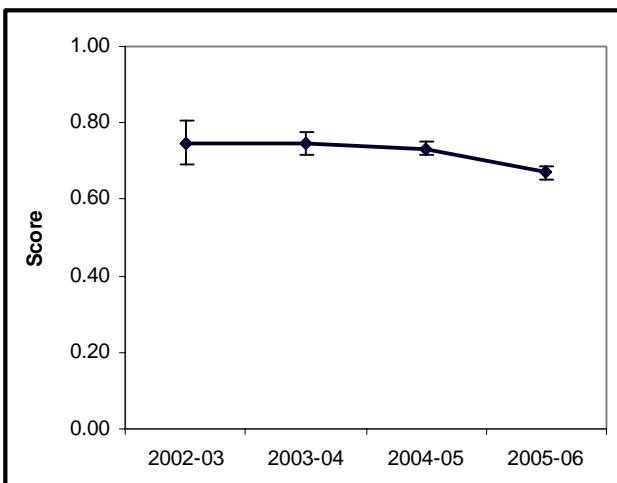
Educational Focus (by school group)
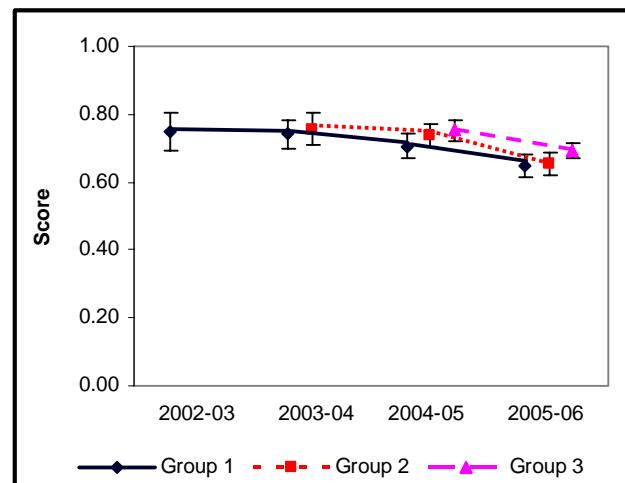
4. Instructional Leadership

This construct was measured by a single scale. The scale assessed teachers' perceptions of principal leadership of the instructional program. Responses to the five items included in the index were closely related, as indicated by a relatively high Cronbach's alpha.

Index 5	Survey	Alpha
Principal Leadership	Teacher	0.83

Do you agree with the following statements about leadership in this school?

My principal monitors the curriculum I use in my classroom to see that it reflects my school's educational focus

My principal monitors my classroom instructional practices to see that they reflect the school's educational focus

My principal evaluates my performance using criteria directly related to the school's educational focus

My principal is available to provide me with guidance and assistance in structuring my instructional practices to reflect the school's educational focus

My principal informs teachers about our progress in meeting our school goals

Teachers' ratings of principal leadership of instruction were high and roughly consistent across time and school groups.

Principal Leadership (all schools)
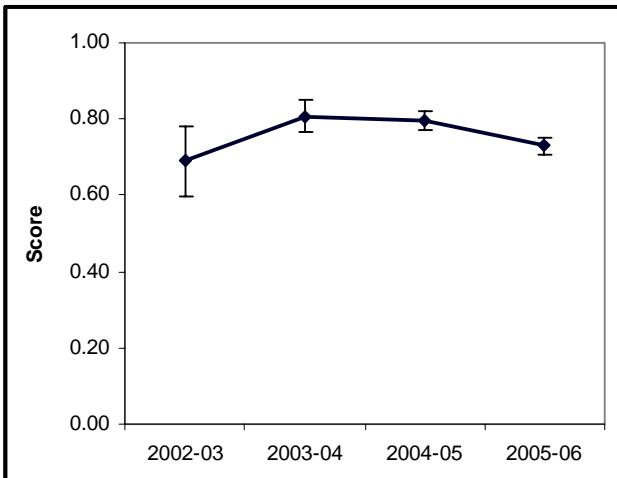
Principal Leadership (by school group)
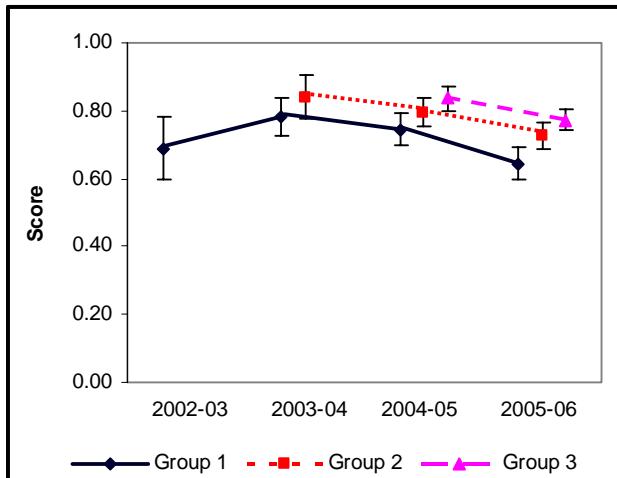
5. Professional Development and Collaboration

This construct was measured by four scales, two relating to professional development and two relating to professional collaboration.

Quality of professional development. This construct was measured by a single scale, which assessed teachers' perceptions of the alignment of the professional-development routines in their school with best practices. Responses to the five items included in the index were adequately related, as indicated by an acceptable Cronbach's alpha.

Index 6	Survey	Alpha
Professional-Development Quality	Teacher	0.77

The professional development I received has usually or always…

Included feedback and guidance while I was trying new strategies in my classroom
Reflected my input into the design and content of the activities
Included opportunities to work productively with colleagues in my school
Helped my school staff work together better

Do you have some or major influence at this school in the following areas?

Determining the content and design of professional development for teachers

Teachers' ratings of the quality of professional development activities were neither high nor improving across time and school groups.

Professional-Development Quality (all schools)
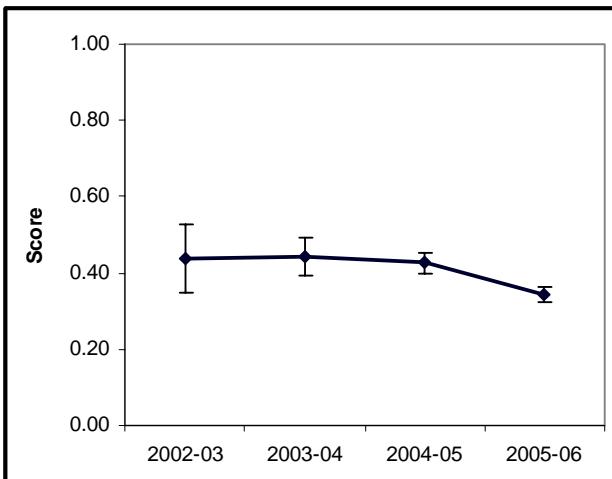
Professional-Development Quality (by school group)
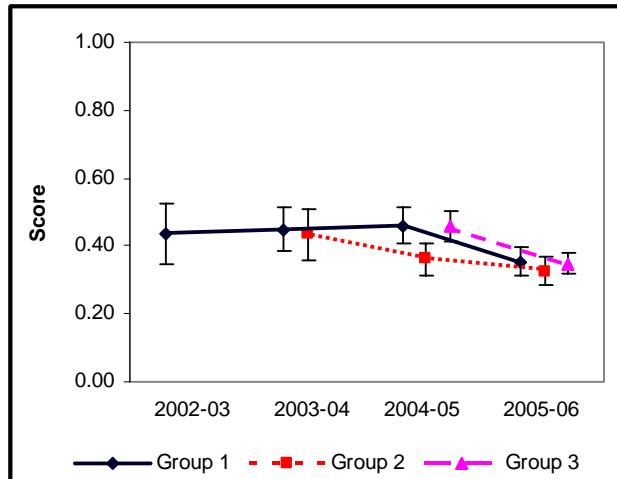
Amount of professional development. This construct was measured by a single scale. The scale asked teachers to identify areas of professional practice in which they had received more than four hours of structured assistance. The focus was on areas of practice that were expected to have general relevance in NCHS schools: subject content, assessment, thematic and interdisciplinary teaching, teaching low achievers, and the promotion of literacy across content areas. Responses to the five items included in the index were related, as indicated by an acceptable Cronbach's alpha.

Index 7	Survey	Alpha
Professional-Development Quantity	Teacher	0.75

Have you received four or more hours of professional development in the following areas this academic year?

Subject-specific content or instructional strategies
Strategies for teaching low achieving students
Methods for interpreting and using assessment data
Methods for teaching literacy across content areas
Methods for thematic and interdisciplinary teaching

Positive responses regarding the availability of staff development occurred in about 40 percent of cases. These relatively low ratings regarding structured staff development opportunities were consistent across years and school groups.

Professional-Development Quantity (all schools) **Professional-Development Quantity (by school group)**
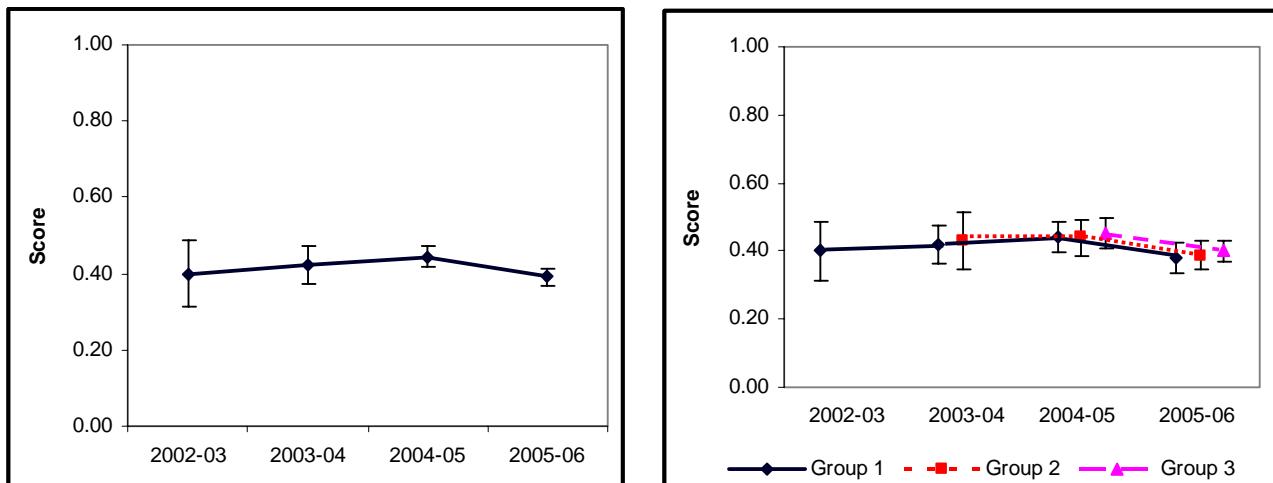
Teacher influence. Questions related to teachers' perceptions of their influence on school policy and curriculum are presented below. Responses to the five items included in the index were related, as indicated by an acceptable Cronbach's alpha.

Index 8	Survey	Alpha
Teacher Influence	Teacher	0.74

Do you think you have some or major influence at this school in the following areas?

Establishing school discipline policies
Establishing and shaping the school curriculum
Selecting instructional materials that support the curriculum
Determining student retention and promotion policy
Making staffing and/or hiring decisions

The graphic to the left shows consistent decreases in perceived influence over time and a statistically significant decrease in perceived influence between 2002-03 and 2005-06. The graphic to the right shows that teacher perceptions of declining influence were not associated with lower starting points in successive school groups. Rather the change in perceptions occurred over time within school groups. This pattern tends to rule out exogenous events as a driver and points toward factors internal to the schools, whether increasing enrollments or some other factor.

Teacher Influence (all schools)

Teacher Influence (by school group)

Group 1 ◆ *Group 2* ■ *Group 3* ▲
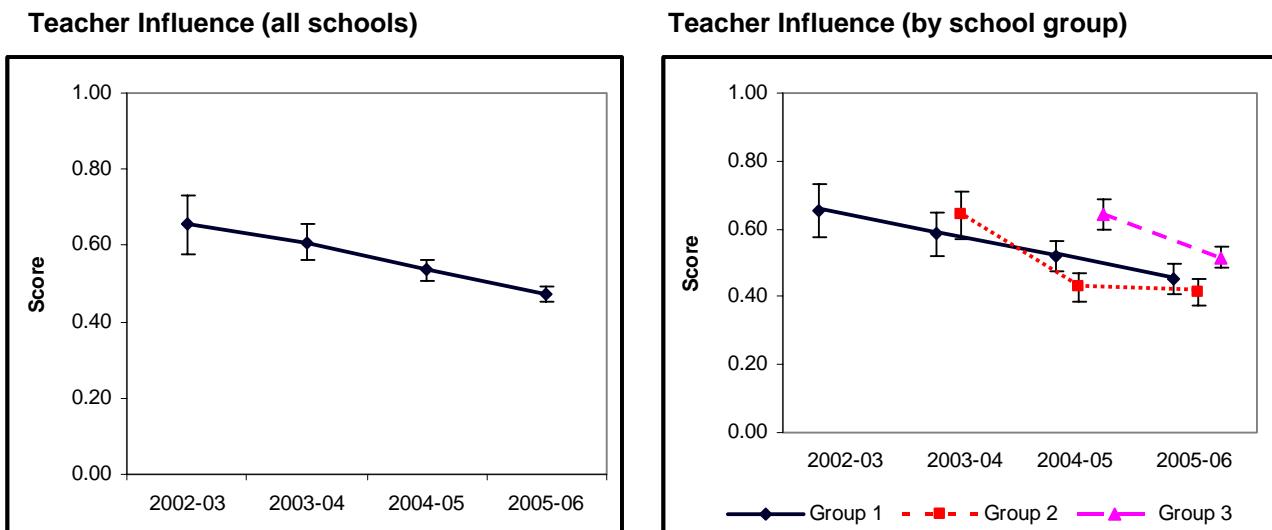
Teacher collaboration. The five items tapping teachers' experience of professional collaboration are presented below. Responses to questions included in the index were loosely related, as indicated by a low Cronbach's alpha.

Index 9	Survey	Alpha
Teacher Collaboration	Teacher	0.63

Do you agree with the following statements about the professional environment in your school?

> Most teachers share the same beliefs and values about the central mission of the school
> There is a great deal of cooperative effort among the staff members

Do you agree with the following statements about your school?

> Teachers are continual learners and team members through professional development, common planning, and collaboration
> There are formal arrangements within the school that provide opportunities for teachers to discuss and critique their own and others' instruction

Would you say that the following activities were usually or always the main task of planning meetings?

> Building effectiveness as a team

Teachers' ratings of collaboration were high and consistent over time in Group 1 and Group 3 schools. Ratings trended downward in Group 2 schools, although differences were not statistically significant.

Teacher Collaboration (all schools)

Teacher Collaboration (by school group)
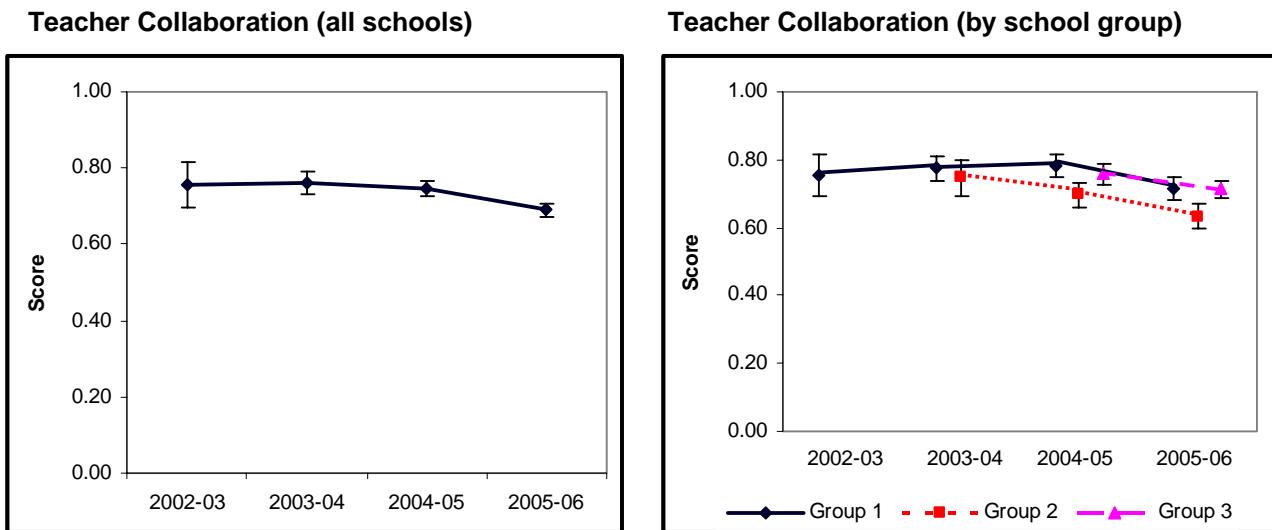
6. Meaningful Continuous Assessment

This construct was measured by one scale examining students' perceptions of the quality of teacher-made tests.

Meaningful assessments. The three items related to students' perceptions of the quality of teacher-made tests are presented below. Responses to questions included in the index were loosely related, as indicated by a low Cronbach's alpha.

Index 10	Survey	Alpha
Meaningful Assessments	Student	0.65
For all or most of your classes, are the following statements true about the tests your teachers give in class? The tests are a good measure of how much I have learned The tests cover the same materials that the teacher presented in class My teachers prepare me well for the tests		

Students' ratings of teacher-made tests were high and consistent over time and across groups of schools.

Meaningful Assessments (all schools)
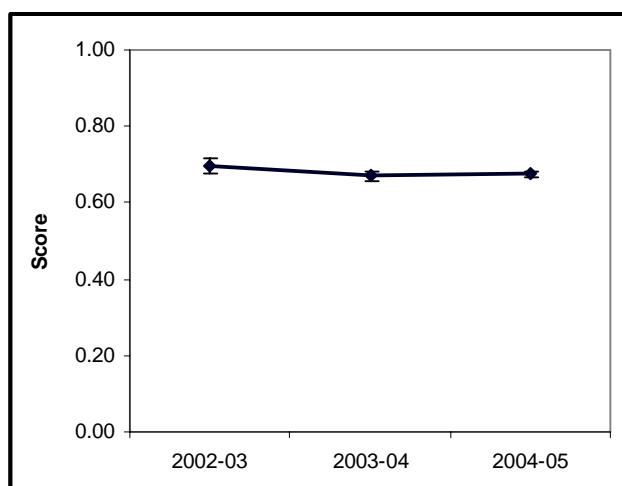
Meaningful Assessments (by school group)
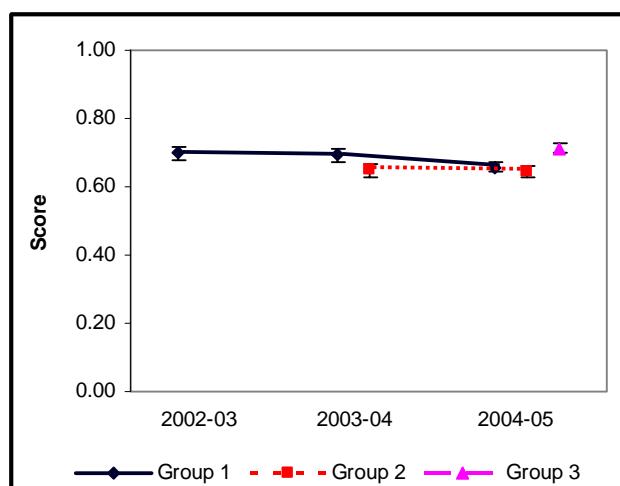
7. Community Partners

This construct was measured by a scale that assessed principals' perceptions of the scope of community partners' involvement in school life. The scale measuring partner involvement included 18 items. Responses to questions included in the index were closely related, as indicated by a relatively high Cronbach's alpha.

Index 11	Survey	Alpha
Role of Community Partners	Principal	0.87

Does the community partner play at least some role in the day-to-day functions of this school in these particular areas?

> Fund raising
> Planning school budgets
> Delivery of instruction
> Tutoring and/or mentoring students
> Academic planning with students
> Evaluating the overall instructional program
> Teacher recruitment and hiring
> Student recruitment and selection
> Professional development planning with teachers
> Administration
> After-school programming
> Curriculum design or selection
> Determining the content and delivery of teacher professional development activities
> Determining specific professional and teaching assignments
> Providing faculty professional development
> Organization of out-of-school learning opportunities for students
> Helping out in the building (e.g., as teachers' assistants, lunchroom monitoring)
> Communicating with parents

Responses indicated substantial variation in principals' assessment of partner involvement at each measurement occasion. The apparently lower involvement of partners in Group 2 schools was not statistically significant.

Community Partners' Role (all schools)

Community Partners' Role (by school group)
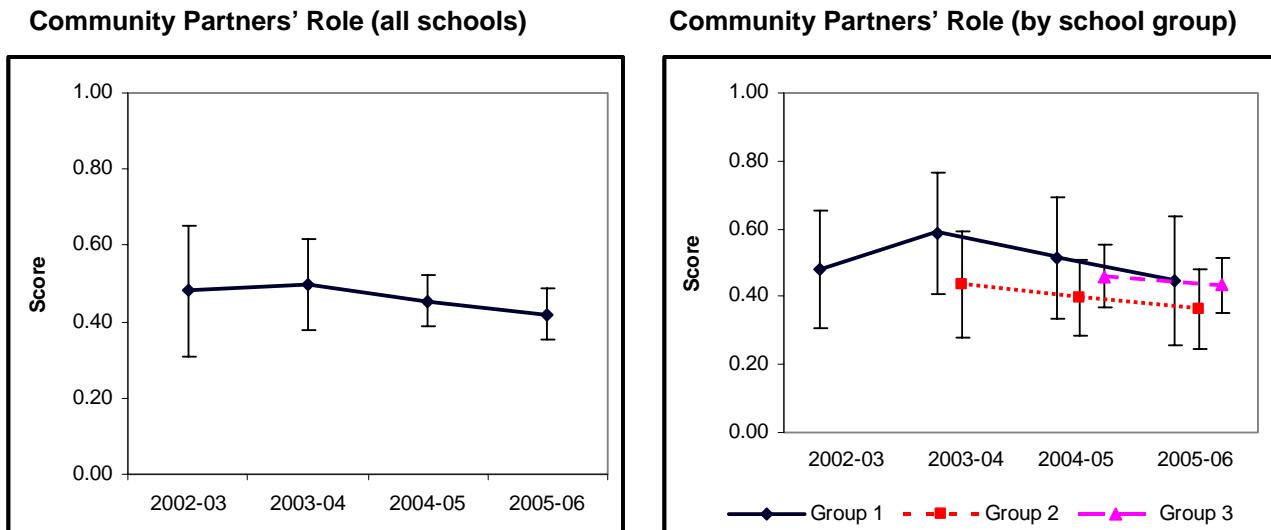
Evaluators also administered this survey scale to respondents in community partner organizations. Their responses were similar to those of the school principals, except that the community partner respondents provided consistently more positive assessments of their involvement in the schools than did the principals.

8. Family/Caregiver Partnership and Involvement

This construct was measured by one item, in which we asked teachers whether parent involvement was adequate in their schools. The item is presented below.

Item 4	Survey
Parental Involvement	Teacher
Are parents sufficiently involved in your school?	

The graphic to the left shows decreases in perceived involvement after 2003-04. The graphic to the right shows that the decline was not due to lower starting points in successive school groups. Rather it was due to lesser involvement over time within Group 3 and especially Group 2 schools.

Parental Involvement (all schools)
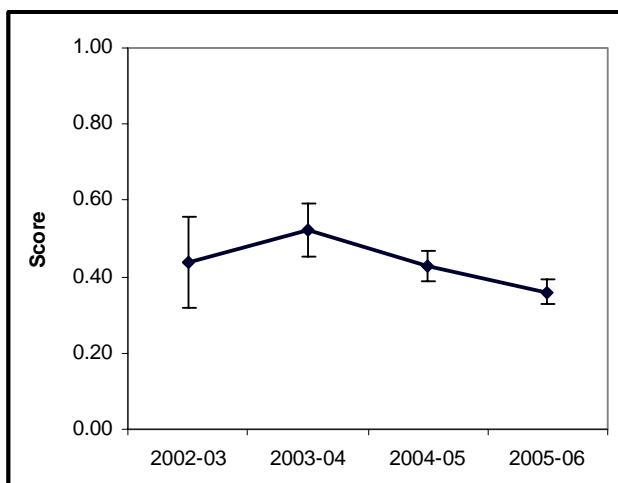
Parental Involvement (by school group)
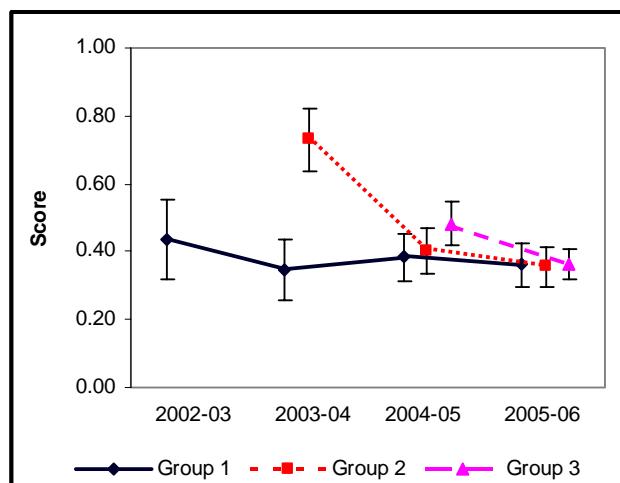
9. Youth Participation and Development

This construct was measured by two scales. One asked students about engagement in school activities. The other asked principals about the range of non-academic learning opportunities in their schools.

Student participation in school life. The scale measuring student engagement included seven items. Responses to questions included in the index were related, as indicated by an acceptable Cronbach's alpha.

Index 12	Survey	Alpha
Student Engagement	Student	0.79

Have you done any of the following things at this school?

Voted in student council elections
Volunteered or been selected to work in or lead an activity (sports, club, etc.)
Helped out in the school office (answered the phone, entered data in the computer, etc.)
Served on a student council or leadership team for this school
Helped plan school events and activities
Helped with meetings for parents and community members
Been asked by staff for feedback/comments about the school or an activity

The graphics show that student engagement in extra-curricular activities and school life was not especially high or increasing, as judged by participation in the listed activities.

Student Engagement (all schools)   **Student Engagement (by school group)**
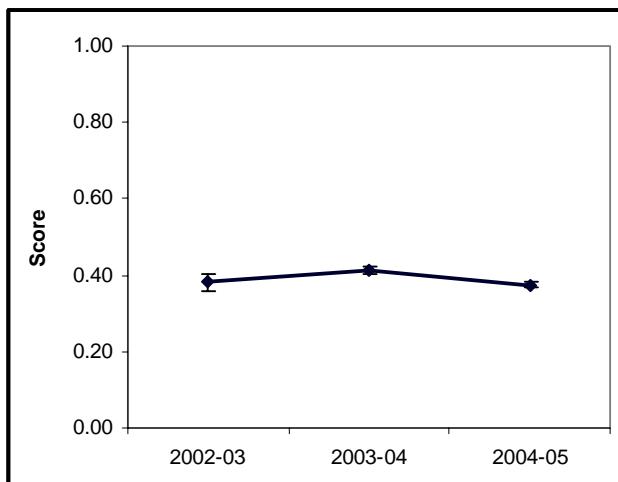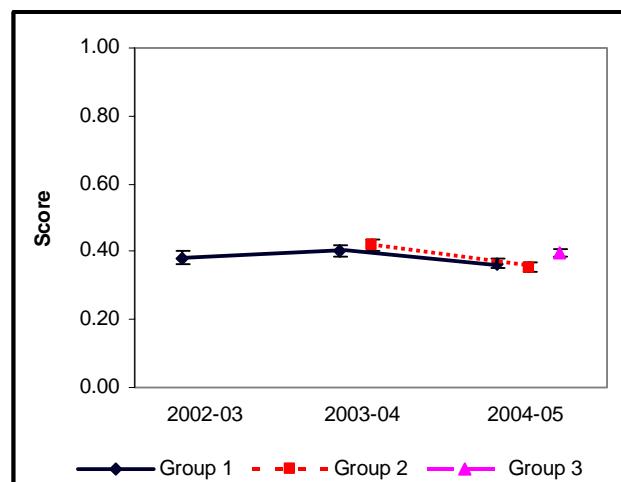
Extended learning opportunities. The scale measuring the availability of extended learning opportunities included six items and appeared in survey instruments distributed in the final two years of this study. Responses to questions included in the index were related, as indicated by an acceptable Cronbach's alpha.

Index 13	Survey	Alpha
Learning Opportunities	Principal	0.71

Are the following extended learning opportunities for students available at your school?

        Mentoring
        Service learning or community service
        Training in youth leadership
        Support for making informed choices
        Preparation for public speaking or presentations
        College awareness activities (e.g., tours, SAT prep)

The graphics show that the schools consistently provided extensive supplementary opportunities for students to learn, as assessed by school principals. Although survey items did not ask who provided extended learning opportunities, interview data indicated that partner organizations were often involved in these school operations.

Learning Opportunities (all schools)
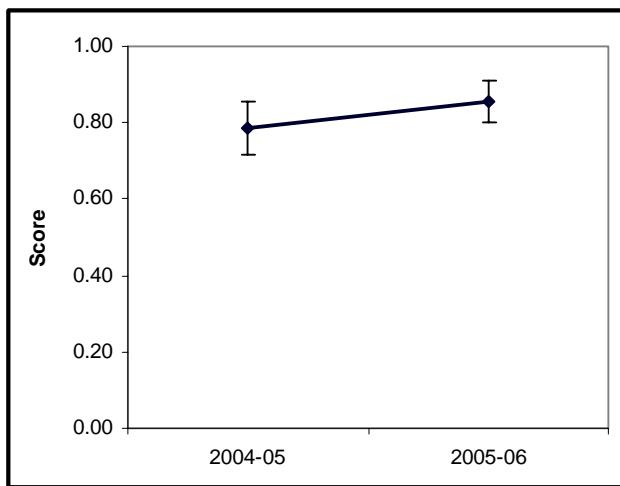
Learning Opportunities (by school group)
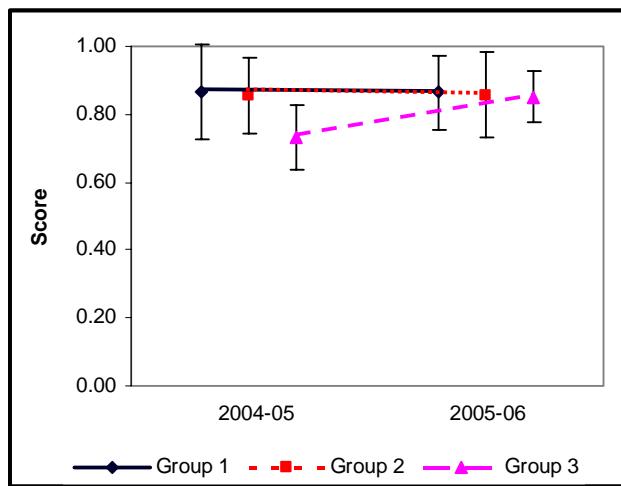
10. Effective Uses of Technology and Other Resources

This construct was assessed by one scale measuring the use of technology and six items measuring the availability of technology and other school resources.

Use of technology. The scale measuring the use of technology included only two items. Responses to questions included were modestly related, as indicated by a low Cronbach's alpha.

Index 14	Survey	Alpha
Computer Use	Teacher	0.66
Do you agree with the following statements about instruction using computers? In my classes, I teach students how to use computers through their course work In my classes I give assignments that require students to use a computer		

The graphics show moderate use of technology and no evidence of increasing use.

Computer Use (all schools)
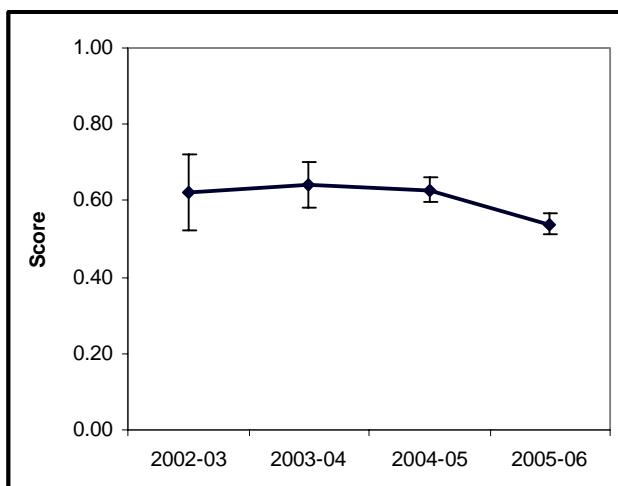
Computer Use (by school group)
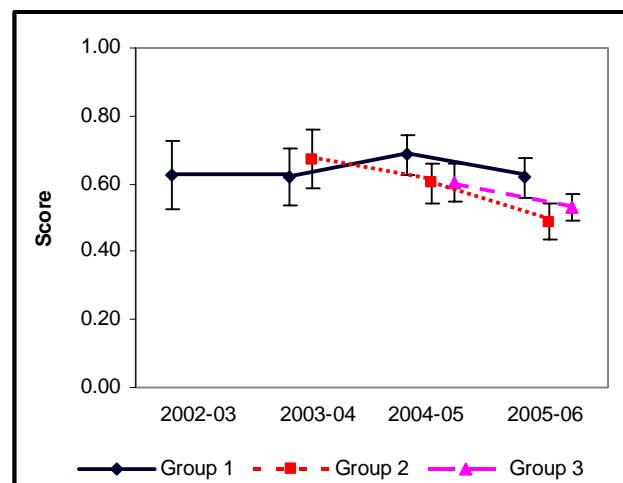
Availability of technology. The item measuring the availability of technology is presented below.

Item 5	Survey
Technology	Teacher
Do you agree with the following statement about instruction using computers? There are enough computers available in this school for teachers to use them in instruction	

The graphics indicate that typically less than half of teachers were satisfied by the availability of computers.

Technology Availability (all schools)
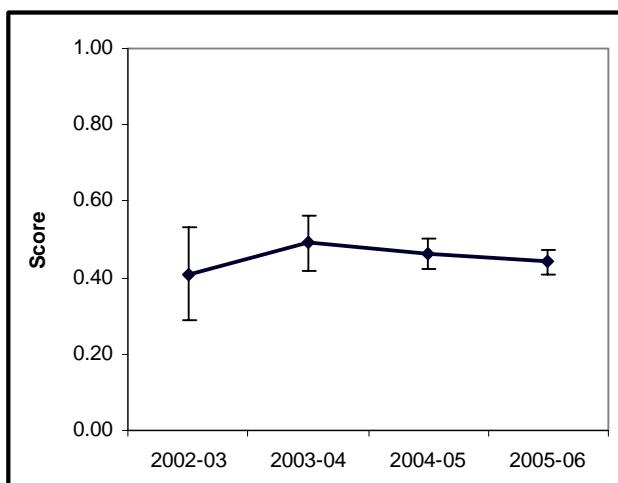
Technology Availability (by school group)

31
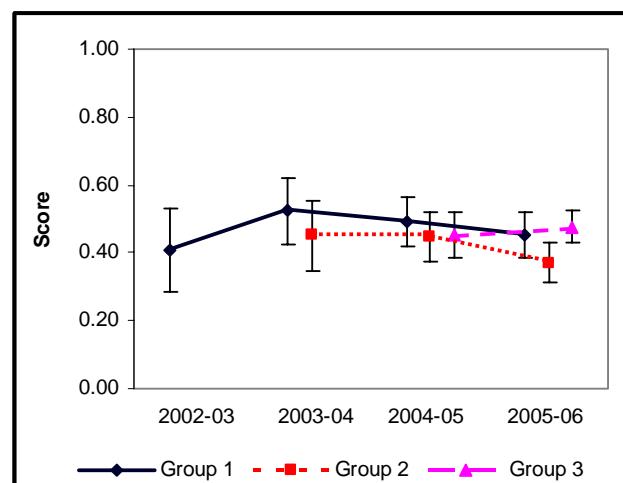
Instructional materials. One item measured teachers' assessment of the availability of instructional materials, and it is presented below.

Item 6	Survey
Instructional Materials	Teacher
Do you agree with the following statement about your school? Necessary instructional materials are available as needed by the staff	

A high proportion of teachers (no less than 70 percent at any point) were satisfied by the availability of instructional resources (other than computers).

Instructional Materials (all schools)

Instructional Materials (by school group)
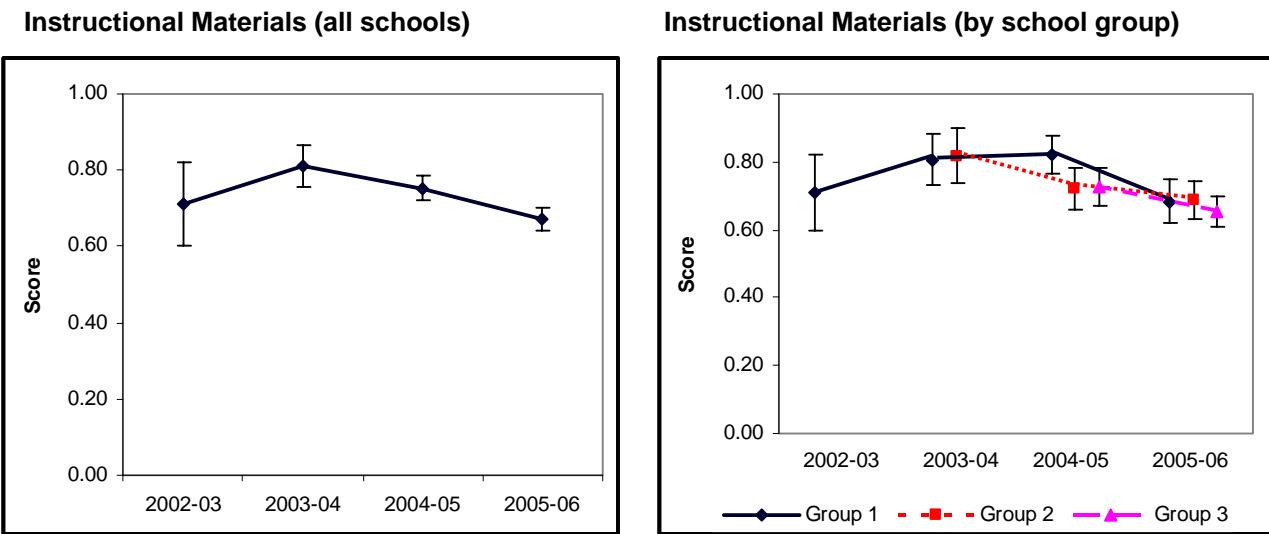
Proportion of teachers with masters degrees. One item inquired about teachers' academic background, and it is presented below.

Item 7	Survey
Teacher Degree	Teacher
Have you earned a Master's Degree or higher?	

Consistently, more than 70 percent of NCHS teachers had graduate degrees.

Teacher Degree (all schools)
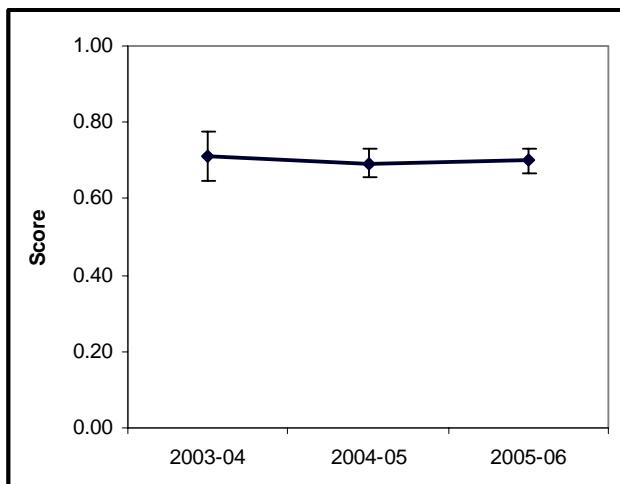
Teacher Degree (by school group)
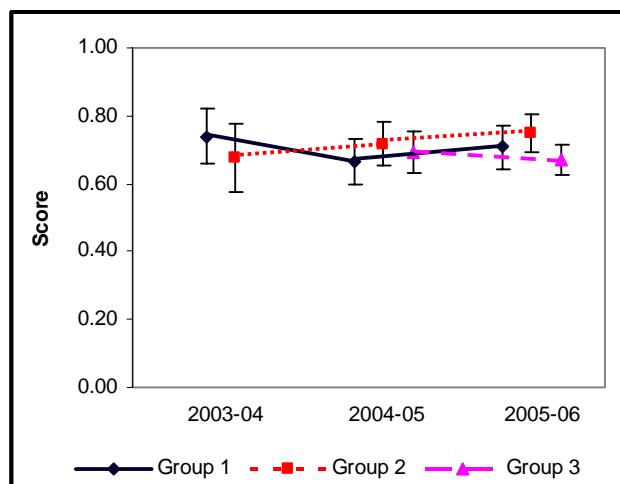
Proportion of teachers certified. One item asked about teacher certification, and it is presented below.

Item 8	Survey
Teacher Certification	Teacher
Do you hold the following types of teaching certificates or licenses? New York State Permanent Certificate	

NCHS teachers were new to their profession, and, as indicated below, consistently less than 30 percent were fully certified teachers.

Teaching Certificate/License (all schools)
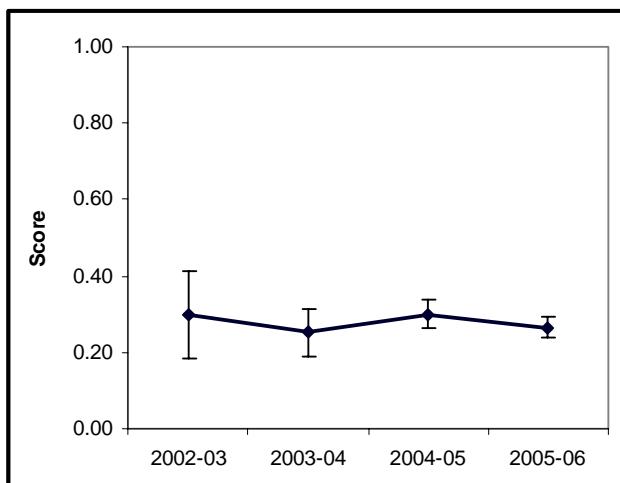
Teaching Certificate/License (by school group)
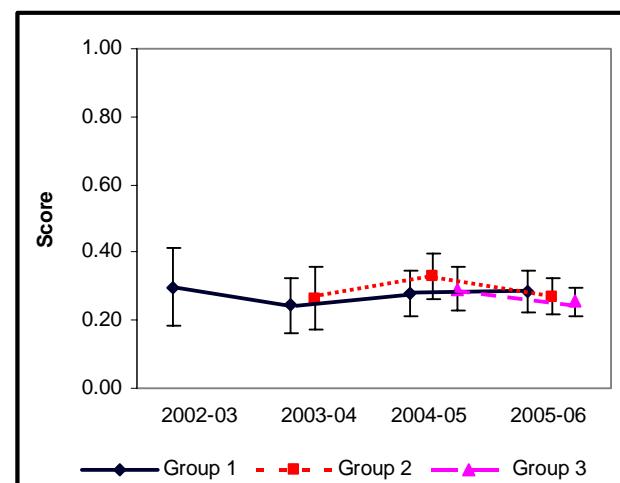
Facilities. One item asked about the adequacy of school facilities, and it is presented below.

Item 9	Survey
Facilities	Teacher
Is there adequate physical space at your school?	

Consistently less than 50 percent of teachers felt that building conditions were adequate.

Adequacy of Facilities (all schools)

Adequacy of Facilities (by school group)
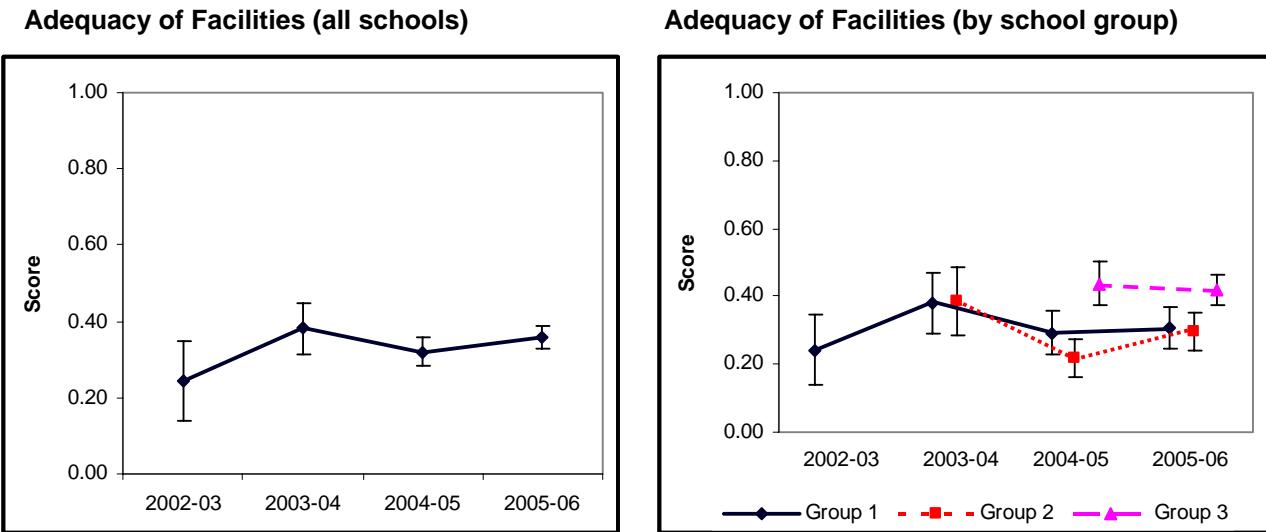
Host school. One question asked about relationships with host schools.

Item 10	Survey
Host School	Teacher
Are relationships with the host school working out?	

Nearly 60 percent of teachers were satisfied with host-school relationships.

Host School (all schools)
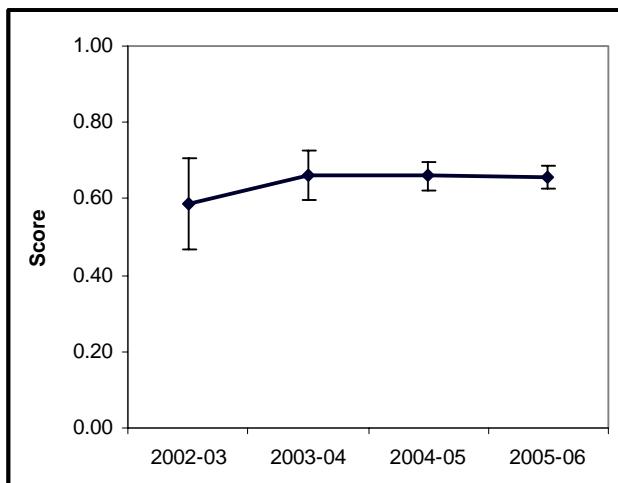
Host School (by school group)
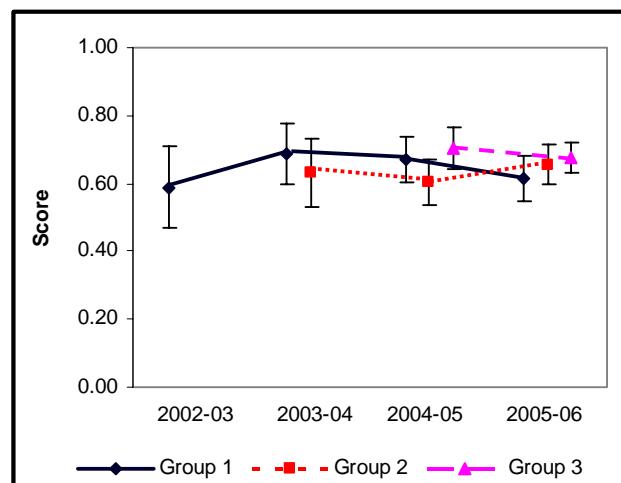
11. Quality of Instructional Systems

Seven of the foregoing indexes drawn from the teacher survey, because of their high degree of statistical relatedness, were ultimately grouped into a composite measure, described here as an "index of the quality of instructional systems." This composite measure includes indexes of Regents alignment, the coherence of the school's educational focus, principal leadership of the instructional program, the quality of professional development, the quantity of professional development, teacher influence, and teacher collaboration on building the instructional program. Two other teacher scales (Student Discipline and Use of Technology), although correlated with the composite index, were not included in the scale to maintain the measure's conceptual integrity.

Index 15 (Composite)	Survey	Alpha
Quality of Instructional Systems	Teacher	0.88
Components	**Index Number**	**Alpha**
Regents Alignment	1	0.89
Educational Focus	4	0.60
Principal Leadership	5	0.83
Quality of Professional Development	6	0.77
Quantity of Professional Development	7	0.75
Teacher Influence	8	0.74
Teacher Collaboration on Instruction	9	0.63

The graphics show a steady pattern of quality in instructional systems over time and school groups.

Quality of Instructional Systems (all schools)
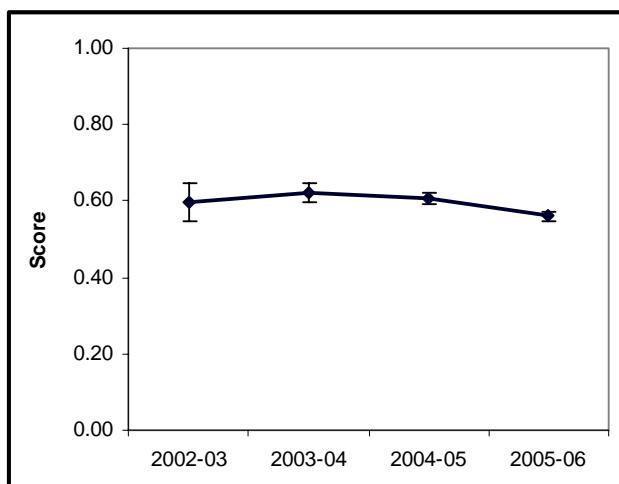
Quality of Instructional Systems (by school group)
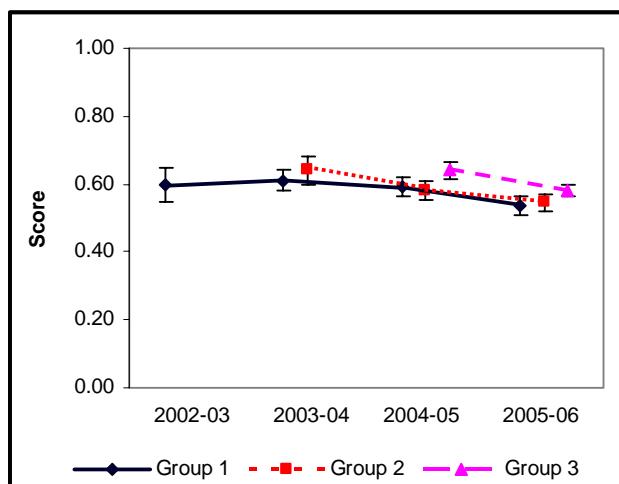
5. CLASS OF 2006 GRADUATION RATES

In this chapter and the next, we examine achievement in NCHS schools from multiple perspectives. This chapter compares the graduation rate of students in the NCHS Class of 2006 with the New York City Class of 2005 overall and with students in the Class of 2006 in matched comparison-group schools. In Chapter 6, as a way of anticipating future graduation rates, we compare the achievement of sampled students in the NCHS Class of 2006 with sampled students in upcoming classes (Class of 2007 through Class of 2009).

We found that graduation rates for the NCHS Class of 2006 exceeded comparisons by 18 to 20 percentage points. The four-year graduation rate of students who transferred from NCHS schools to other city high schools was much lower than was the graduation rate of students who stayed in NCHS schools. However, relatively few students who enrolled in NCHS schools as ninth-graders later transferred to other high schools.

As described in the next chapter, future NCHS classes differed from the Class of 2006 in their prospects for educational success, based on their students' average achievement prior to high school and their current achievement in NCHS schools.

Methods

Every year DOE computes a graduation rate for students in general education classes, which includes students who receive special education services in "a less restrictive setting." It also calculates a graduation rate for students with severe disabling conditions, the Special Education Class. Here we report on the graduation rate of students in general education classes, both citywide (inclusive of NCHS schools), in NCHS schools, and in comparison-group schools.

We calculated graduation rates for NCHS schools following DOE standards and procedures in place through 2005. At that time, DOE calculated graduation rates for general education students in two steps. First, it defined a "class" based on students' projected four-year graduation dates. Most students assigned to the Class of 2006, for example, entered the class as ninth-graders in 2002-03. The remainder transferred into the DOE system later in high school: as tenth-graders in 2003-04, eleventh-graders in 2004-05, or twelfth-graders in 2005-06.

Having thus defined a class, the school system next determined the status of students at their expected graduation date (defined not as June but as August of the graduation year to allow for summer-school graduates), using four categories: *graduated, still enrolled, dropped out*, and *discharged*. *Graduates* were students who received a high school diploma, GED, or special education certificate. *Still-enrolled* were students who remained on the school system's register. *Dropouts* were students who left the system without enrolling in another school system or diploma program. *Discharges* were students who left the system to enroll in another education program or setting, who reached the age of 21, or who died prior to completing high school. DOE calculated graduation rates exclusive of discharges, such that the denominator for the graduation-rate calculation was the sum of graduates, students still enrolled, and dropouts.

In *The Class of 2006 Four-Year Longitudinal Report*, published in May 2007 (subsequent to our data analysis), the New York City DOE revised its longstanding policy of counting students who received GEDs through its auspices and students who completed summer school successfully as graduates. Because our 2006 NCHS graduation rates were calculated according to DOE's earlier protocols, we contrast NCHS graduation rates for 2006 with citywide patterns in 2005.

Ten of the twelve NCHS schools that opened in 2002-03 are included in this analysis.[6] Excluded schools (Community Prep and South Brooklyn) did not enroll a full class of ninth-graders in 2002-03.

Findings

Citywide Graduation Rates

More than one-half (58 percent) of New York City students in the Class of 2005 graduated in four years, as shown in Exhibit 4. This was the highest on-time graduation rate since DOE began reporting these statistics over 20 years ago. Twenty-seven percent of the Class of 2005 remained enrolled in high school for a fifth year. Less than 15 percent of the Class of 2005 had dropped out by the end of four years.

Exhibit 4
Class of 2005 Four-Year Outcomes, Citywide, in Percents

Status	Class of 2005 (N = 65,705)	Graduates of 2005 (N = 38,240)
Graduates	58.2	
Regents Diploma		35.9
Advanced Regents Diploma		24.8
Local Diploma		34.8
G.E.D.		4.5
Still Enrolled	27.0	
Dropouts	14.8	

As shown in Exhibit 4, over a third of graduates (36 percent) received a Regents diploma. Beginning with the Class of 2005, a Regents diploma was achieved by earning appropriate credits and passing five Regents exams (English, Math, Global History & Geography, a science Regents exam, and U.S. History & Government) with a score of 65 or above. Previously, a Regents diploma required eight Regents with a score of 65 or above. The next most frequent

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[6] Those schools are as follows: Millennium, Bronx High School of Visual Arts, Marble Hill, Mott Haven, School for Excellence, Bronx Leadership Academy, Bronx Guild, Bronx International High School, High School for Teaching and the Professions, and Community High School for Social Justice.

graduation status among 2005 graduate citywide was a local diploma, earned by 35 percent of all graduates. A local diploma was achieved by earning appropriate credits and obtaining a score of 55-64 on five Regents exams. Almost one-quarter of graduates (25 percent) received an Advanced Regents diploma. Beginning with the Class of 2005, an Advanced Regents Diploma was achieved by earning appropriate credits and obtaining a score of 65 or above on eight Regents exams. A relatively small proportion of students (4.5 percent) graduated with an equivalency diploma.

NCHS Graduation Rates

As shown in Exhibit 5, 78 percent of students in the NCHS Class of 2006 graduated in four years. Almost 19 percent of the Class of 2006 remained enrolled in high school for a fifth year. Three percent of the Class of 2006 had dropped out within four years.

The four-year graduation rate for the NCHS Class of 2006 was 20 percentage points higher than the citywide graduation rate for the Class of 2005. This difference in graduation rates derives from both lower dropout rates in NCHS schools (3 percent versus 15 percent) and faster completion rates (19 percent "still enrolled" in NCHS schools versus 27 percent citywide).

A higher percentage of graduates of NCHS schools received local diplomas (52 percent of total graduates) than received those less challenging diplomas citywide (35 percent). And as would follow, a lower percentage of NCHS graduates received Regents or Advanced Regents diplomas (46 percent) than received those diplomas citywide (61 percent of graduates), as shown in Exhibits 4 and 5. When the unit of comparison is students rather than graduates, however, a slightly higher percentage of NCHS students in the Class of 2006 received a Regents or Advanced Regents diploma, compared to New York City students in the Class of 2005 (36 percent versus 35 percent).

Exhibit 5
Class of 2006 Four-Year Outcomes, NCHS Schools, in Percents

Status	Class of 2006 (N = 728)	Graduates of Class of 2006 (N =569)
Graduates	78.2	
Regents Diploma		43.6
Advanced Regents Diploma		2.6
Local Diploma		52.4
G.E.D.		0.0
I.E.P. Diploma		1.2[a]
Special Education Diploma		0.2 [a]
Still Enrolled	18.8	
Dropouts	3.0	

[a] Eight students who entered the Class of 2006 transferred to the Special Education Class of 2006.

Graduation Rates in Comparison-Group Schools

The preceding comparisons are relevant to an assessment of the NCHS schools, but they are not ideal from a methodological perspective. The "classes" discussed were a year apart, and the students compared were not matched based on their demographic characteristics and their prior achievement. We conducted a second set of analyses that controlled for students' prior characteristics and found persuasive although slightly smaller differences in the performance of NCHS students and comparison-group students. Graduation rates among students in NCHS schools were 18 percentage points higher than graduation rates among students in matched schools, as shown in Exhibit 6.

Exhibit 6
Class of 2006 Four-Year Outcomes, Comparison Schools, in Percents

Status	Class of 2006 (N = 4,228)	Graduates of Class of 2006 (N = 2562)
Graduates	60.6	
Regents Diploma		47.4
Advanced Regents Diploma		19.6
Local Diploma		30.7
G.E.D.		0.1
I.E.P. Diploma		0.5
Other Diploma		1.7
Still Enrolled	22.1	
Dropouts	17.3	

Our matching procedures were as follows. First, we limited possible matches to New York City high schools that enrolled over 750 students (as compared to the 400 students enrolled in NCHS schools). Next, we used optimal matching procedures (Bergstralh, Kosanke, & Jacobsen, 1996) to identify 10 larger schools most like the NCHS schools in our sample. The variables we used for matching were Class of 2006 eighth-grade math and reading scores on standardized tests, percent Black/Hispanic, percent new immigrant, percent English Language Learners, percent free- or reduced-price lunch, percent female, average age, and percent eligible for special education. Subsequent to the identification of optimal matches,[7] we conducted analyses to determine if there were any statistically significant differences between the two groups of schools. We found no statistically significant differences ($p = 0.05$) at the school level. There were, however, differences at the student level. Comparison-group students had somewhat better prior achievement in math, a lower proportion of comparison-group students were African-American, and a lower proportion of comparison-group students were recent

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[7] The comparison-group schools identified through this procedure were Cobble Hill School of American Studies, Health Professions and Human Services, Manhattan Center for Math and Science, High School for the Humanities, Washington Irving High School, Louis D. Brandeis High School, A. Philip Randolph High School, Long Island City High School, Flushing High School, and Adlai E. Stevenson High School.

immigrants. A possible implication of these findings is that comparison-group students were somewhat more advantaged than NCHS students (see Appendix B).

As shown in Exhibit 6, 60.6 percent of students in the Class of 2006 in comparison-group schools graduated in four years, compared to 78.2 percent in NCHS schools. About 22 percent of students in comparison-group schools remained enrolled in high school for a fifth year, as compared to 19 percent in NCHS schools. In comparison-group schools, 17 percent of students in the Class of 2006 dropped out, compared to 3 percent in NCHS schools.

As we saw in comparing NCHS graduates with graduates citywide, a higher percentage of graduates of NCHS schools received local diplomas (52 percent) than received those less challenging diplomas in comparison-group schools (31 percent). And as would follow, a lower percentage of NCHS graduates received Regents or Advanced Regents Diplomas (46 percent) than received those diplomas in comparison-group schools (67 percent), as shown in Exhibits 5 and 6. When the unit of comparison was students rather than graduates, however, the comparison was less stark. Thirty-six percent of NCHS students in the Class of 2006 received a Regents or Advanced Regents diploma, compared to 41 percent of students in comparison-group schools.

Graduation Rates of NCHS Transfer Students

Noting statistically significant and important differences in graduation-related outcomes between NCHS and other schools, we were curious about variations in transfer rates, because the latter metric is not a factor in calculating "class" outcomes. We then examined outcomes for transfers and non-transfers from NCHS schools and the characteristics of both groups.

Exhibit 7 presents outcomes (as of October 31, 2006) for students who entered the Class of 2006 in NCHS schools in 2002-03 (N = 855). Over the next four years, 179 of these students (25 percent) transferred to other city high schools.[8] The transfer rate in comparison-group schools was 31 percent, indicating greater mobility in comparison-group schools.

The four-year graduation rate for Class of 2006 persisters in NCHS schools was 84 percent [475/(675-111)]. The four-year graduation rate for ninth-grade entrants who later transferred was 35 percent [58/(179-12)]. These findings are somewhat surprising, given that other research has tended to find beneficial effects of school mobility (Swanson & Schneider, 1999).

Exhibit 8 presents the demographic and educational characteristics of students who remained in the NCHS schools in which they started ninth grade and the demographic characteristics of students who eventually transferred to other schools. The surprising finding, given the group's dramatically different outcomes, was their many similarities.

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[8] Thirty percent of NCHS transfers were to alternative schools, 42 percent went to other NCHS schools, and 28 percent went to other city high schools.

Exhibit 7

2002-03 Ninth-Grade Entrants to NCHS Schools, Four-Year Graduation Status[a]

Total new ninth-graders enrolled in NCHS schools as of October 31, 2002	**855**
Number not changing schools before October 31, 2006	675
Number changing schools before October 31, 2006	179
Number missing data for School Assignment/Graduation Status as of October 31, 2006	1
Status of Non-Transfers as of October 31, 2006	**675**
Number Graduated	475
Number Still Enrolled	76
Number Dropped Out	13
Number Discharged Out of the School System	111
Status of Transfers as of October 31, 2006	**179**
Number Graduated	58
Number Still Enrolled	80
Number Dropped Out	29
Number Discharged Out of the School System	12

[a] As of October 31, 2006

Equal proportions of boys and African American and Hispanic students were represented in both groups. Students in these groups entered high school at about the same age, and about equal proportions were proficient in math and in English Language Arts. Interestingly, lower proportions of transfers were ELL students or in special education.

Transfers were, however, three times more likely than non-transfers to have been suspended in ninth grade. And transfers had lower attendance by more than two percentage points the year before high school and lower attendance by almost five percentage points in ninth grade.

Exhibit 8
Demographic Characteristics of 2002-03 Ninth-Grade Entrants to NCHS Schools,
by Transfer Status[a]

Characteristic	Students Not Changing Schools before October 31, 2006	Students Changing Schools before October 31, 2006
Gender	*(N = 675)*	*(N = 179)*
Female	56.0	54.7
Male	44.0	45.3
Race	*(N = 675)*	*(N = 179)*
African American	35.7	33.0
Asian and Others*	9.2	4.5
Hispanic	50.8	54.7
White	4.3	7.8
Eligible for ELL	*(N = 675)*	*(N = 179)*
Yes**	13.0	6.1
Average Age (years)	*(N = 675)*	*(N = 179)*
Ninth Grade	14.4	14.3
Eligible for Free/Reduced Price Lunch	*(N = 675)*	*(N = 179)*
Eligible	89.2	83.2
Ineligible	8.3	12.3
Missing Data	2.5	4.5
Recent Immigrant	*(N = 675)*	*(N = 179)*
Yes	13.2	8.4
Special Education	*(N = 675)*	*(N = 179)*
Yes*	5.8	2.2
Suspended in Ninth Grade	*(N = 675)*	*(N = 179)*
Yes*	2.1	6.7
Eighth-Grade ELA Proficiency	*(N = 518)*	*(N =148)*
Proficient/Advanced	20.1	22.3
Eighth-Grade Math Proficiency	*(N = 532)*	*(N = 149)*
Proficient/Advanced	20.1	22.1
Average Daily Attendance	*(N = 583)*	*(N = 156)*
Eighth Grade***	92.0	89.7
Average Daily Attendance	*(N = 675)*	*(N = 179)*
Ninth Grade***	92.4	87.5

[a] As of October 31, 2006

* p<= 0.05, ** p<=0.01, *** p<=0.001

6. PERFORMANCE OF COHORTS
FOLLOWING THE CLASS OF 2006

This chapter presents performance data for students continuously enrolled in NCHS schools from ninth grade. We refer to such students relative to their expected graduation dates as "treatment cohorts" to distinguish them from "classes," which also include students who transfer into schools after ninth grade. This chapter examines 2007, 2008, and 2009 treatment cohorts, relative to the 2006 treatment cohort, as a way of anticipating outcomes for those later groups of NCHS students.

Findings

Evidence suggests complex patterns of performance among later treatment cohorts. For example, NCHS student performance is trending downward on measures of attendance, suspension, and credit accumulation. Positive patterns are seen, however, in NCHS students' passage of Regents tests and likelihood of obtaining Regents-endorsed diplomas. Positive and negative trends may be associated, at least in part, with the characteristics of the students who enrolled in the 2007, 2008, and 2009 treatment cohorts. The attendance and suspension records of these students as eighth-graders indicate increasingly high levels of education risk. Yet, in comparison to earlier NCHS cohorts, their eighth-grade test scores were about the same in reading and slightly higher in math.

As seen in the top row of Exhibit 9, the first-year attendance rates of successive cohorts of NCHS students declined over the four years of NCHS operations, from 91 to 86 percent. The same trend is also evident among students enrolled in NCHS schools for two years and for three years, as seen in the second and third rows. This pattern of declining attendance raises a red flag about the likelihood of their on-time graduation, but facts regarding actual readiness for graduation are, however, more complicated.

Exhibit 9
Attendance Rates of Successive Cohorts

Years Attending NCHS School	Year Entered Ninth Grade			
	2002-03	2003-04	2004-05	2005-06
1	91.4% (N=855)	90.5% (N=2,577)	88.8% (N=6,238)	86.4% (N=6,323)
2	90.4% (N=741)	89.2% (N=2,239)	86.7% (N=5,304)	
3	87.9% (N=672)	85.3% (N=2,002)		
4	83.0% (N=595)			

Exhibit reads: NCHS students who enrolled in ninth grade in 2002-03 attended school at a mean rate of 91.4 percent in their first year and at a mean rate of 90.4 percent in their second year. NCHS students who enrolled in ninth grade in 2003-04 attended school at a mean rate of 90.5 percent in the first year and 89.2 percent in their second year.

Exhibit 10 presents data regarding suspension rates among NCHS students by cohort. Suspension rates of successive cohorts of NCHS students rose over the four years from 3 percent of ninth-grade students in 2002-03 to 7 percent of ninth-grade students in 2005-06. It is not clear whether these changes reflect actual increases in problem behavior in NCHS schools, a shift in citywide policy toward zero tolerance for serious misbehavior, or a raising of behavior standards in NCHS schools.

Exhibit 10
Suspension Rates of Successive Cohorts

Years Attending NCHS School	Year Entered Ninth Grade			
	2002-03	**2003-04**	**2004-05**	**2005-06**
1	3.0% *(N=855)*	4.7% *(N=2,577)*	6.0% *(N=6,238)*	7.3% *(N=6,323)*
2	1.1% *(N=741)*	6.6% *(N=2,239)*	8.8% *(N=5,304)*	
3	3.6% *(N=672)*	7.9% *(N=2,002)*		
4	2.7% *(N=595)*			

Exhibit reads: Three percent of NCHS students who enrolled in ninth grade in 2002-03 were suspended in that year; 4.7 percent of NCHS students who enrolled in ninth grade in 2003-04 were suspended in that year.

Credit accumulation trends were consistent with negative attendance and suspension trends, as seen in Exhibit 11. Students who entered grade 9 in 2002-03 earned an average of 12 credits in that year, whereas students who entered grade 9 in 2005-06 earned an average of 11 credits in that year.

Exhibit 11
Credit Accumulation by Successive Cohorts

Years Attending NCHS School	Year Entered Ninth Grade			
	2002-03	**2003-04**	**2004-05**	**2005-06**
1	12.0 *(N=786)*	11.9 *(N=2,490)*	11.1 *(N=5,988)*	10.9 *(N=6,048)*
2	24.1 *(N=721)*	23.3 *(N=2,227)*	22.1 *(N=5,257)*	
3	36.0 *(N=666)*	35.2 *(N=2,000)*		
4	47.2 *(N=595)*			

Exhibit reads: Students who entered ninth grade in 2002-03 earned an average of 12 credits in that year; students who entered ninth grade in 2003-04 earned as average of 11.9 credits in that year. Students who entered ninth grade in 2004-05 earned an average of 11.1 credits in that year. Students who entered ninth grade in 2005-06 earned an average of 10.9 credits in that year.

There were two important and related exceptions to these patterns of declining performance. First, students were passing more Regents exams earlier in their high school careers. Exhibit 12 shows that 2003-04 NCHS entrants passed 4.5 Regents exams in three years, while 2002-03 entrants had passed only 4.0 Regents exams in three years.

Exhibit 12
Regents Tests Passed by Successive Cohorts

Years Attending NCHS School	Year Entered Ninth Grade	
	2002-03	2003-04
3	4.0 *(N=632)*	4.5 *(N=1,941)*
4	5.0 *(N=588)*	

Exhibit reads: NCHS students who enrolled in ninth grade in 2002-03 passed 4.0 Regents after three years in high school. NCHS students who enrolled in ninth grade in 2003-04 passed 4.5 Regents after three years in high school.

Second, Exhibit 13 shows that the percentage of students prepared to graduate after only three years of high school with Regents diplomas increased from 28 percent of 2002-03 entrants to 30 percent of 2003-04 entrants. Further, the proportion of students ready for graduation after three years of high school increased from 38 percent of those admitted in 2002-03 to 50 percent of those admitted in 2004-05. A possible explanation for this pattern is that NCHS schools, after their start-up year, began to administer Regents exams to students earlier in their high school careers. Credit accumulation was not higher, but it was better focused in terms of graduation requirements.

Positive and negative trends, where they existed, may be related, in part, to the changing characteristics of entering ninth-graders, as seen in their eighth-grade profile, which is summarized in Exhibit 14. Incoming ninth-graders demonstrated increasing levels of risk, as measured by their eighth-grade rates of school attendance and suspension. This pattern was not seen in students' eighth-grade scores in reading and math, however. In fact, math scores appeared to be improving over time.

Exhibit 13
NCHS Regents Test Performance, by Regents Diploma Requirements

Years Attending NCHS School	Diploma Status	Year Entered Ninth Grade	
		2002-03	**2003-04**
3	Total number of students with Regents data	*N=632*	*N=1,941*
	Students meeting Regents Diploma test requirements	28.2%	29.9%
	Students meeting Local Diploma test requirements (only)	9.5%	20.3%
	Students meeting either Regents or Local Diploma requirements	37.7%	50.2%
4	Total number of students with Regents data	*N=588*	
	Students meeting Regents Diploma test requirements	41.0%	
	Students meeting Local Diploma test requirements (only)	36.9%	
	Students meeting either Regents or Local Diploma requirements	77.9%	

Exhibit reads: Of students who entered ninth grade in 2002-03 and remained in an NCHS school for three years, 28.2 percent completed requirements for a Regents Diploma. Of students who entered ninth grade in 2003-04 and remained in an NCHS school for three years, 29.9 percent completed requirements for a Regents Diploma.

Exhibit 14
Prior Performance Characteristics, by Treatment Cohort

Eighth-Grade Characteristic	Year Entered Ninth Grade			
	2002-03	**2003-04**	**2004-05**	**2005-06**
Attendance	91.5% *(N=739)*	91.4% *(N=2,293)*	90.4% *(N=5,414)*	89.9% *(N=5,537)*
Suspension	0.5% *(N=739)*	2.4% *(N=2,293)*	2.3% *(N=5,414)*	3.7% *(N=5,537)*
Reading scale score	685.5 *(N=666)*	683.9 *(N=2,132)*	687.2 *(N=5,082)*	683.7 *(N=5,134)*
Math scale score	693.5 *(N=681)*	698.7 *(N=2,264)*	702.2 *(N=5,332)*	701.6 *(N=5,467)*

Exhibit reads: Students who entered ninth grade in 2002-03 had an average daily attendance rate of 91.5 percent as eighth-graders. Students who entered ninth grade in 2003-04 had an average daily attendance rate of 91.4 percent as eighth-graders.

7. STATISTICAL MODELS FOR ESTIMATING INFLUENCES ON CREDIT ACCUMULATION

This chapter and the next identify student and school-level factors that influenced student outcomes in NCHS schools. Chapter 7 presents the results of hierarchical multivariate statistical analyses of NCHS inputs, processes, and outcomes. Chapter 8 presents the results of similarly focused qualitative analyses.

Overview of Findings

First, as one might expect, students' individual demographic characteristics, especially their age, gender, and free-lunch status, anticipated or predicted their individual achievement. Girls earned more credits than boys. More economically advantaged students (not eligible for lunch subsidies) earned more credits than lower-income students. And students who entered high school at a younger age (i.e., those who were less likely to have earlier been retained in grade) had higher credit accumulation in high school than older entrants.

Second, and again as one might expect, academic performance prior to high school, especially special education status, eighth-grade math test scores, and eighth-grade school attendance, anticipated or predicted individuals' high school credit accumulation. The differentiating effect of prior achievement was positive, meaning that students in general education, those with higher Grade 8 attendance, and those with higher eighth-grade math scores, accumulated higher numbers of credits in high school than students in special education and those with lower prior attendance and lower prior math scores.

Third, schools' group demographics—the average age of students at entry to the school, the percent of girls attending the school, and the percent of low-income students attending—did not predict individuals' personal credit accumulation. Group-level differences in prior academic performance did, however, help to account for variation in individual achievement. Individual achievement was lower in schools that had higher *concentrations* of youngsters with lower prior math achievement and lower prior school attendance rates.

Fourth, a single variable describing school processes was associated with variation in individuals' credit accumulation. This composite variable was the average teacher rating of the quality of their schools' instructional systems on a 35-item scale. Analyses indicated that weighted credit accumulation could be expected to increase by seven credits as a school moved from a score of 0.0, or lowest quality instructional systems, to a score of 1.0 or highest quality instructional systems. For purposes of future policy development and school support, this finding is particularly salient. It identifies a set of essential school processes, which are consistently associated with positive student outcomes and readily measurable through teacher surveys.

Fifth, several valued NCHS model components (e.g. advisories, partnerships, etc.), as measured in this evaluation, did not help explain variation in student outcomes across schools. The failure to find such relationships may, of course, be related to limitations of the measures used in the evaluation's surveys and/or the modeling process.

Methods

Analytic Approach

In modeling achievement outcomes, nesting matters. When individuals are gathered into groups such as classrooms and schools, it is appropriate to take account of the variance occurring at group levels as well as at the individual level. A proper statistical approach for considering group differences is multilevel modeling with maximum likelihood estimation (MLE).

In practice, multi-level analyses are often performed without taking *each* level of nesting into account (Van den Noortgate, Opdenakker, & Onghena, 2005). In this research, we employed a two-level hierarchical model: we accounted for variation among students and schools but not classrooms.[9]

In preparing data for hierarchical analyses, we used SPSS (version 13.0) software. In hierarchical analyses, we employed hierarchical linear modeling (HLM) (version 6.1) software.

Samples

School level. The research sample included 64 NCHS schools. Nine of 75 NCHS schools did not meet the student-level data requirements for inclusion in this analysis,[10] and four were missing school-level data (at least one survey data element). Given overlap in those two categories of missing data, we were left with a sample of 64 schools.

Student level. Credit accumulation data were systematically available for two NCHS student cohorts: ninth-grade students who entered NCHS schools in 2004-05 and ninth-grade students who entered NCHS schools in 2005-06. We chose the former cohort for study (N = 4,660) because credit accumulation over two years constitutes a more reliable indicator of success than credit accumulation over one year. All students with the demographic and achievement data necessary for analyses (83 percent of the population) were included in the study (N = 3,864).[11]

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[9] The classroom level is a particularly demanding one at which to work because students in high schools are cross-nested (i.e. they are enrolled in multiple classrooms).

[10] Three were middle schools, one did not enroll ninth-grade students, three were missing specific data elements (two were missing attendance data and one was missing credit data), and two served transitioning youth.

[11] Data were, by definition, missing for excluded students. One suspects that students who were missing data were more at-risk than those with data and that their presence in the sample would have lowered achievement means.

Variables

Through hierarchical analyses, we sought to understand the role of NCHS program components (see Chapter 4) in generating program outcomes. We paid particular attention to the role of schools' instructional processes and their ways of supporting students' emotional development (e.g., small enrollments, advisories, etc.). In addition, we attempted to control for factors such as students' individual and aggregate characteristics and staff members' aggregate characteristics.

Student-level criterion variable. Our initial interest was in predicting graduation rates, but, at the time of this study, only 10 NCHS schools had graduated a full class of ninth-grade entrants. In place of graduation rates, we selected credit accumulation as the criterion variable. Credit accumulation is a prerequisite for graduation, and credit data were available for students in all NCHS schools. We totaled credit accumulation across two years for students who first entered ninth grade in NCHS schools in 2004-05. A description of the dependent variable (mean, standard deviation, N) is presented in Exhibit 15.

Student-level predictor variables. We estimated credit accumulation, in part, based on student characteristics. Variables included students' gender, age, race, special education status, immigrant status, English language status, free lunch status, ELA score at entry to high school, math score at entry to high school, and attendance in eighth grade.

One is advised to include only cases with complete data in HLM analyses, and this criterion strongly influenced our choice of Level 1 variables. Students' prior reading and math scores were both theoretically important but collinear, or highly correlated. We needed to choose between these two variables, and we chose math scores to account for students' prior achievement because math scores were available for a higher proportion of NCHS students.

The final HLM model ultimately included six student-level variables (gender, age, special education status, free lunch status, eighth-grade math score, and eighth-grade attendance). The variables are presented in Exhibit 15. They were chosen based on their theoretical importance, completeness, independence, and apparent relationship with the dependent variable.

School-level predictor variables. Hierarchical models were developed using three sets of school-level predictor variables: (1) those describing entrants' average characteristics, (2) those describing the average characteristics of school staff (2005-06), and (3) those describing schools' social and academic conditions and processes. Data describing school conditions and processes were gathered in surveys (see Chapter 4) administered to teachers in 2004-05 and 2005-06.

Preliminary analyses showed that two group-level student variables were associated with outcomes (Mean Grade 8 Math Score and Mean Grade 8 Attendance). No staff characteristics were associated with outcomes. One process variable was associated with outcomes (Mean Score on Quality of Instructional Systems Index). These variables were selected for inclusion in HLM analyses based on their theoretical importance, variation, independence, and relationship with the dependent variable.

Exhibit 15
Description of Student-Level and School-Level Variables

Variable Name	Description
Criterion	
Credits Over Two Years	A continuous variable indicating credit accumulation over the first two years of high school for students entering ninth grade in 2004-05 *(M = 23.31, SD = 6.15, N = 3,871)*
Level 1 Predictors	
Grade 8 Math Score	A continuous variable indicating score on math test in eighth grade for students entering ninth grade in 2004-05 *(M = 704.30, SD = 34.20, N = 3,871)*
Grade 8 Attendance	A continuous variable indicating average daily attendance in eighth grade for students entering ninth grade in 2004-05 *(M = 91.92, SD = 6.78, N = 3,871)*
Grade 8 Special Education Status	A dichotomous variable indicating that the student was enrolled in un-graded special education program in the year before entry to high school *(P = 0.01, N = 3,871)*
Age	A continuous variable indicating student's age in years at entry to high school for students entering ninth grade in 2004-05 *(M = 14.75, SD = .56, N = 3,871)*
Gender	A dichotomous variable indicating student was female *(P = 0.54, N = 3,871)*
Free-/Reduced Lunch Status	A dichotomous variable indicating eligibility for lunch assistance at entry to high school for students with data *(P = 0.93, N = 3,871)*
Level 2 Predictors	
Mean Grade 8 Math Score	A continuous variable indicating for each school its 2005 students' average math score at entry to high school *(M = 698.60, SD = 11.46, N = 65)*
Mean Grade 8 Attendance Rate	A continuous variable indicating for each school its 2005 students' average attendance rate at entry to high school *(M = 90.21, SD = 2.29, N = 65)*
Quality of Instructional Systems in 2004 - 2006	A continuous variable indicating for each school the quality of its instructional systems based on the composite measure described in Chapter 4, as averaged across school years 2004-05 and 2005-06 *(M = 0.57, SD = 0.10, N = 65)*

Having framed a basic or preliminary conditional model, we added variables to the model from among the possibilities presented in Chapter 4. No other variable increased the explained variance. The three Level 2 variables included in preliminary HLM analyses are described in the lower panel of Exhibit 15.

Findings

In this investigation, HLM was employed in three modalities. The first was an unconditional model with no explanatory variables. The second was a conditional model that

included explanatory variables of within-group variance (Level 1), and the third was a conditional model that included explanatory variables of both within-group variance (Level 1) and between-group variance (Level 2).

Null Model

The null model seeks to determine the total amount of variability in two-year credit accumulation within and between schools and to determine the average amount of credit accumulation over two years. As indicated in Exhibit 16, the pooled within-school variance of the error term is 31.56, and the variance of the error term between programs is 6.51, yielding a Level 1 variance of random effects of 38.07

The variance of random effects at Level 2 is 6.64. This is the sum of the variance of the error term at Level 2 (6.51) and the mean Level 1 error term variance (31.56/246 = .13). Procedures for calculating Level 1 and Level 2 variances can be found in Chapter 7 of Snijders and Bosker's *Multilevel Analysis* (1999).[12]

The proportion of variance in outcomes between programs (intra-class correlation) is estimated at 17.10 percent. The intercept is estimated at 23.18 with a standard error of 0.33. The intercept can be interpreted as the expected credit accumulation over two years for a randomly selected student drawn from a randomly selected school.

Conditional Model 1

Having determined that there was variability among students and school means, the first conditional model sought to account for that variability based on six student-level (Level 1) variables—three continuous variables (Grade 8 Math Score, Grade 8 Attendance, and Age) and three dichotomous variables (Grade 8 Special Education Status, Gender, and Free-/Reduced Lunch Status), as shown in Exhibit 15.

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[12] The concept of "explained variance" or R^2 is well-known. Two approaches to explained proportion of variance in a two-level model can be defined. The first, and most important, is the proportional reduction of error for predicting an individual outcome. The second is the proportional reduction of error for predicting a group mean.

The Level 1 explained proportion of variance is defined as the proportional reduction in mean square prediction error. The most straightforward way to estimate this quotient is to add sigma-squared and tau-squared, as determined by the empty model (A). Next, add those parameters as determined by the fitted model (B). Then, compute one minus the ratio of the two values or 1 – (B/A).

The Level 2 explained proportion of variance is the proportional reduction of error for predicting a group mean for a randomly drawn Level 2 unit. To estimate this quotient, one must know the n of the usual group size as well as sigma-squared and tau-squared, as determined by the empty model and the fitted model. First, determine the value of [(sigma-squared/n) + tau-squared] for the null model (A). Next, determine the same value for the fitted model (B). The proportional reduction of error for predicting a group mean is estimated at 1 – (B/A). (It is advisable to let n reflect the group sizes in the population, rather than the sample group sizes.)

Exhibit 16
Hierarchical Models of Two-Year Credit Accumulation

	Model 0 Null (empty) model				
	Coefficient	SE	t	df	p
Fixed effects					
Intercept	23.18	0.33	70.80	64	0.00
	Variance Component		χ^2	df	p
Random effects					
Between-school variance	6.51		831.16	64	0.00
Within-school variance	31.56				
	Model 1 Effects of student-level variables				
	Coefficient	SE	t	df	p
Fixed effects					
Intercept	23.47	0.38	61.97	64	0.00
Grade 8 Math Score	0.05	0.00	14.30	3864	0.00
Grade 8 Attendance	0.26	0.02	12.83	3864	0.00
Grade 8 Special Education	-2.08	0.75	-2.79	3864	0.01
Age	-0.68	0.17	-3.91	3864	0.00
Free or Reduced Lunch	-1.01	0.27	-3.67	3864	0.00
Female Gender	1.40	0.21	6.75	3864	0.00
	Variance Component		χ^2	df	p
Random effects					
Between-school variance	4.68		805.35	64	0.00
Within-school variance	23.74				
	Model 2 Effects of program-level variables				
Fixed effects	Coefficient	SE	t	df	p
Intercept	23.47	0.38	61.90	63	0.00
Quality of Instructional Systems	7.00	2.10	3.33	63	0.00
Grade 8 Math Score	0.05	0.00	14.24	3864	0.00
Grade 8 Attendance	0.26	0.02	12.83	3864	0.00
Grade 8 Special Education	-2.09	0.75	-2.80	3864	0.01
Age	-0.68	0.17	-3.91	3864	0.00
Free-/Reduced Lunch	-1.02	0.28	-3.68	3864	0.00
Female Gender	1.39	0.21	6.70	3864	0.00
	Variance Component		χ^2	df	p
Random effects					
Between-school variance	4.27		755.85	63	0.00
Within-school variance	23.74				

In the initial model, the continuous covariates were centered around the grand mean and set to random. In the final Level 1 model, all covariates were fixed.

The results of the analysis (with robust standard errors) are presented in the second panel of Exhibit 16. All predictor variables show a statistically significant relationship to the outcome. Having taken account of Level 1 explanatory variables, the estimated variance of random effects at Level 1 was reduced by 25 percent from 38.07 (null model) to 28.42. The variance of random effects at Level 2 for Model 1 was reduced from 6.64 to 4.78, or by 28 percent.

Conditional Model 2

In the second and final conditional model, efforts were made to account for variability based on three continuous Level 2 variables as well as the aforementioned Level 1 variables. Two variables described the social contexts of schools based on students' average entering characteristics (Mean Grade 8 Math Score and Mean Grade 8 Attendance Rate) and one described school processes (Quality of Instructional Systems in 2004-2006). In the final conditional model, Level 1 variables were explained by only one of the three program-level variables, Quality of Instructional Systems.

The estimated variances of the error terms at Level 1 and Level 2 are reported in the final panel of Table 16. Note that the Level 1 variance of random effects has been substantially reduced from 38.07 in the null model to 28.01 after taking account of Level 1 and Level 2 explanatory variables. The Level 1 proportion of variance explained by this model is 26.43 percent. The Level 2 variance of random effects has been reduced from 6.64 in the null model to 4.37 after taking account of the Level 1 and Level 2 explanatory variables. The Level 2 proportion of variance explained is 34 percent.

The expected credit accumulation after two years in an NCHS school was estimated at 23.48 credits for mainstreamed males, of average age, not eligible for free or reduced price lunch, with average prior math scores and average prior attendance. The differentiating effect of Grade 8 Math Scores was positive (.05), meaning that students with higher prior performance could be expected to accumulate more credits in high school. For example, a student whose math scores were 20 points higher than average could be expected to acquire 24.48 credits in two years, or one additional credit beyond the average student.

The differentiating effect of prior attendance was also positive (.26). The effects of special education status (-2.09), increasing age (-0.68), and free lunch status (-1.02) were, as one might expect, all negative. The effect of female gender was positive (1.39), meaning that a typical girl earned 1.39 more credits than a typical boy.

As noted, only one variable describing school processes was associated with variation in weighted credit accumulation. The effect of increasing Quality of Instructional Systems was positive. Weighted credit accumulation could be expected to increase by seven points (or seven credits) as a school moved from a score of 0 or lowest quality instructional systems to a score of 1.0 or highest quality instructional systems. No school matched the extreme conditions at either

end of this hypothetical scale, however. Practically speaking, a typical student's credit accumulation was 1.4 credits higher in a school with a better score on the index (by one standard deviation), compared to 1.4 credits lower in a school with a worse score on the index (by one standard deviation).

8. QUALITATIVE EVIDENCE OF FACTORS
AFFECTING STUDENT OUTCOMES

In case studies of six NCHS schools, we aimed to explore three matters in detail: the role of school conditions that did not differ sufficiently to be treated as *variables* in quantitative analyses, occasional discontinuities between teacher ratings of instructional processes and achievement outcomes, and the relationship between signature NCHS program components (such as partnerships) and outcomes.

Overview of Findings

Case study data suggested that both principal experience and also conditions that were fairly uniform across NCHS schools played an important role in generating positive student outcomes. Those conditions included small enrollments, close student-teacher relationships and adult mentoring of youth, the extension of student learning outside the regular school setting and school day, and the use of data to review progress.

Case study data also suggested possible explanations for the occasional discontinuities between teacher ratings of school conditions and student achievement outcomes. In Case 1, teacher assessment of school quality was well aligned with student achievement. In Cases 2 and 3, it was not. In Case 2, teachers made class credits easy to earn, which inflated student outcomes beyond the level predicted by the quality of academic processes. In Case 3, the lack of alignment between school processes and school outcome data appears to have been a function of the variables' different time horizons. The case data were of the moment and showed an inexperienced but improving school staff. Credit accumulation and graduation data represented over-time achievements. In that sense, they lagged behind the case data and the survey data.

Finally, case study data brought the possible impact of data dependencies to our attention. In measurement terms (as well as functionally), complex NCHS signature program components (like partnerships) were dependent on the systems that created them. This may have interfered with efforts to determine in quantitative analyses the specific value they added.

Methods

In selecting case study schools, we limited ourselves to those that were relatively well established, which were those that opened their doors in the initiative's first year. From this group, we identified six target schools that illustrated a range of student populations, themes, partnerships, teacher ratings of instructional processes, and achievement outcomes.

Within each case study school, we conducted face-to-face interviews with the principal, a guidance counselor, and the primary school partner (when there was one). We conducted telephone interviews with parents of at least three seniors, and we conducted two focus groups,

one with seniors and one with teachers of seniors. The parents, students, and teachers whom we interviewed were selected by school personnel. We anticipated, therefore, should our impressions be biased, that the direction would be positive. We observed at least one senior-level humanities classroom lesson in order to gather some impression, albeit quite limited, of the tenor and level of instruction.

In structured interviews and focus groups, we asked respondents about the dynamics of life in their school—how *school context*, *resources* (students, staff, partners, discretionary funds, and learning time), and *processes* influenced *outputs* (programming and instruction) and *outcomes* or results. This sounds tidy, but we were actually looking for the untidy nature of interactions, and we asked respondents to consider the tangle of connections that influenced results. A specific challenge that we set was to understand what was most puzzling in our quantitative data. For example, why did NCHS program components with high theoretical utility, themes, advisories, and partnerships, appear to be less influential in quantitative analyses than we might have expected?

The full case study team consisted of seven people, the team leader and three two-person pairs of school visitors. Each pair visited two schools and each member of the pair transcribed his or her own interviews from those school visits. The lead member of the pair reviewed all school-level transcripts, applied à priori codes to the data (derived from interview questions), and developed added codes as needed. The lead member next prepared case-level display tables organizing data elements by code and wrote memos noting relationships among codes. Tables and memos were debriefed within pairs. Over several months, the three pairs met to triangulate codes across cases (three meetings), create a framework for displaying the data in multi-case matrices (two meetings), and review final case-level memos (one meeting per case).

In presenting qualitative data, we have chosen to concentrate on three *typical* NCHS schools. The schools are typical in the sense that they served average NCHS students as compared to special populations, and they faced challenges that are experienced to one degree or another by many NCHS schools.

Findings

Case 1—A Typical NCHS School

Case 1 was a typical NCHS school in several ways. Its students were average within the overall NCHS population. It had average instructional processes, according to teacher ratings, and it had a 70+ percent 2006 graduation rate (also typical within NCHS).

Respondents attributed the school's success to several factors: (1) the principal's leadership experience, (2) the community partner's strengths in after-school programming, GED preparation, college advisement, and job placement, and (3) a deepening approach to discipline, advisement, and curricula development.

Here are a few comments regarding the principal's efforts:

- Teacher: "The majority of the teaching staff is eager to make connections with students, but [they are] new. The principal is an invaluable resource and leader."

- Principal: "Unlike many others, I wasn't a new principal. I was experienced in working with difficult populations. With a new crop of teachers each year, you have to help people learn how to consistently challenge students."

Interviewees commented on the partner organization:

- Teacher: "The community partner has provided program and financial resources to the school we wouldn't have otherwise had."

- Principal: "Our partner is fully engaged in the advisement program in the school and has sought outside funding for extra programming. Our students have unrestricted access to our partner's facilities and support systems. Our partner has many things to offer. We just have to be better about accessing those services."

Staff members identified some of the school's challenges:

- Teacher: "The admissions process is [awful] and getting into a school you want is luck."

- Partner: "Ideally, all of the kids would want to be here…but this is not the case."

- Guidance counselor: "A lot of students come in with poor academic skills, and we have to do a lot of academic catch up. Some just lack motivation. They don't believe in themselves and have given up."

- Teacher: "Discipline is a time-consuming problem. In the first year, I must have logged 40 hours of mediation for one student's fights."

Interviewees commented on the school's systems for responding to challenges:

- Principal: "The school's theme is how we battle the belief that fighting is okay. There's a formal curriculum in the ninth and tenth grades around self-management, but it is also emphasized throughout the day. Still, we need clearer consequences for students when they break rules."

- Guidance counselor: "We have a four-year plan to interest students in college. It starts in the ninth grade with envisioning the future and why college is important. At the end of the twelfth grade, when we know who does not have plans, we help students over the summer to complete applications. We also have career fairs to highlight post-secondary opportunities that are not directly related to higher education or the military."

■ Principal: "We had to find ways of individualizing instruction and advisement. I don't have enough classrooms to run regular classes, let alone separate ELL, bilingual, and special education classes. Each discipline has a four-year instructional program, but annually teachers make modifications to the curriculum based on the profile of the upcoming class of students. One thing that was valuable last year, in preparing for the future, was studying our data."

■ Principal: "The school has an academic support program for students who are over-age and under-credit. The program functions as a one-on-one independent study and allows more flexibility than a traditional classroom. The school also has an active advisory system that provides students with academic support, conflict management skills, and post-secondary exposure. Plus there's tutoring constantly and enrichment."

Case 2—A School with Low Expectations

This school was typical in only one sense of the word. The student population was more or less average for NCHS schools. It was atypical in that teachers judged it to have weak instructional processes. And it was atypical in that its graduation rate was over 90 percent, or very high. One might ask how these facts could be simultaneously true, and this is what we set out to understand through this case analysis.

Here is a sample of what staff and students said about expectations for student achievement and behavior in this school:

■ Principal: "We have a policy for rigor, but I haven't seen it. I see a lot of busy work. Our teachers have yet to understand what rigor is."

■ Teacher: "The school lacks rigorous courses and…only offers the minimum state standards. Students are apathetic and expect things to be given to them."

■ Student: "It's not challenging. The most challenging coursework occurred during the ninth grade."

Explanations as to how these conditions emerged centered on staff members' inexperience and their misguided response to student resistance:

■ Principal: "We didn't realize the depth and breadth of the academic neglect students had experienced. We didn't realize how hard it was going to be to leave the ghetto and the street in the street."

■ Principal: "The school was founded to be a nurturing place, but the lenient approach to grading and make-up work derailed student motivation. We had, just to illustrate, a lot of seniors who didn't want to take [classes around the theme],

and we let them go home. We have always given them [the students] loopholes and incompletes so they could make work up."

■ Guidance counselor: "Students could fail a semester and do a project over the summer to make up a grade. Grade changes went on like crazy."

Despite these policies, students were able to pass Regents exams, in part, because of the resources directed at helping them prepare for those exams and other hurdles:

■ Student: "There are all types of extra help, and teachers stay after school for you."

■ Teacher: "We have been running academic boot camps to get up the statistics….some of the seniors have …gone back to night school, and summer school to make up for some of their …deficiencies."

Like most NCHS schools, this one had an investment in counseling and in schoolwide themes, but its systems for work on shared professional problems were weak, and staff members were uncertain about how to develop unscripted program components:

■ Guidance counselor: "The school's advisory system has a great deal of potential, but we haven't worked out a curriculum, and sessions aren't sufficiently standardized or substantial."

■ Teacher: "The theme could be a hook, or it could alienate students. As for now, we're not sure what to do with it, and it has very little to do with school programming."

■ Student: "The theme is absent from the curriculum or in just one class."

■ Guidance counselor: "Screening students more rigorously before they entered the school might make it possible to integrate the theme without negative consequences, but as it stands now, quite a few students just aren't interested."

■ Partner: "Our work is very focused on and relevant to the theme of the school, but our resources are seriously under-utilized."

Despite the problems, school personnel expressed an impulse toward change and signs of hope:

■ Principal: "We have to come together; we are not just 24 teachers."

■ Guidance counselor: "Without buy-in, we're not going to have a true effect on students."

■ Teacher: "We need to work together and break down the isolation."

■ Principal: "There are weekly meetings for teachers to discuss their needs, and the school has recently become more data focused."

Case 3—A School with Inexperienced Staff

This school was typical in two ways. Its students were about average, as were its work processes. It was atypical in that the 2006 graduation rate was surprisingly low, under 60 percent. We wanted to know why results were sub-par.

According to staff, their abilities to frame expectations and meet students' instructional needs were emerging very slowly:

■ Teacher: "We almost all had less than five years' [teaching] experience."

■ Teacher: "We're far more prepared to work with students now than the first couple of years."

■ Guidance counselor: "My principal wasn't big on suspensions, but when it [behavior problems] became more serious, she had to work on that, and now we do in-house suspension when we have to."

■ Principal: "Before I was touchy-feely, but as I grow, and the people around me grow, expectations and structures are put into place. Now I have zero tolerance for do-rags, fighting, cell phones, and hats. It's about teaching and learning. Everyone's on the same signal. I think kids like knowing the expectations."

The school made some headway by incorporating scripted curricula, increasing instructional time, and relying on a strong partner:

■ Principal: "The school now incorporates Ramp Up, 90-minute math periods, and 90-minute ESL classes to help students learn in a more flexible environment. Next year, we plan to run a PM school."

■ Teacher: "Teachers offer tutoring on their off-periods. Kids aren't mandated to come, but they often do, and no one's turned away. They know we want them to pass and go on to other things."

■ Teacher: "The partner contributes many varieties of learning opportunities for students, including a network of academic support."

■ Principal: "Our partner is very helpful, especially in getting students to see that they are all college bound, but their bureaucracy is [challenging]."

Nagging problems remained, however, with regard to development of the curriculum and teachers' professional skills:

- ■ Principal: "Only now am I looking at the theme and its instructional relevance. The bottom line is academic. The kids must all be college-bound. I've focused on that."

- ■ Teacher: "Learning opportunities abound for students, but not for teachers."

- ■ Teacher: "Professional development is not helpful. How often can you be taught how to make a lesson plan?"

- ■ Teacher: "We need more in-house discussions about ways of working in a small school."

- ■ Teacher: "We need to talk about the specific needs of our students and our school."

9. CONCLUSIONS

Few school-related research procedures are more debated than ways of capturing academic success. Here we have used the percent of students in the Class of 2006 who graduated on time as a prime indicator of achievement. This measure has limitations. First, schools that accept a high proportion of students with high risk factors have much worse odds of achieving success, compared to schools serving students with lower risk factors. Second, graduation is an important expectation from schooling, but it is not the equivalent of college readiness.

To cope with the first limitation, we identified the size of the NCHS effect after controlling for student characteristics. Looked at in this way, we saw that NCHS schools graduated more students on time than larger New York City schools with comparable types of youngsters, by about 18 percentage points. Importantly, NCHS schools achieved these results without recruiting more experienced teachers or more advantaged students from the school system at large.

To cope with the second limitation regarding expectations for student performance, we disaggregated students' graduation status by the types of diplomas they received. The NCHS Class of 2006 had a 78.2 percent four-year graduation rate, compared to the 60.6 percent four-year graduation rate in comparison-group schools. Only 36 percent of students in the NCHS Class of 2006 received, however, a state-endorsed diploma, compared to 41 percent of students in comparison-group schools.

We conclude that the NCHS intervention was notable with regard to drop-out prevention and on-time graduation. Keeping youth in school earning credits and passing exams is a significant accomplishment, and it is a basis on which to build deeper accomplishments. Through what means did NCHS schools reduce student attrition and improve graduation rates? We have answers based on several data sets.

Civic Explanations

First among the lessons we extracted from this initiative was that efforts were scalable because leaders had opportunities for and embraced joint action. This ignores neither the difficulty of collaboration nor the other important ideas about schooling that are at the heart of this innovation. It is simply to start with its first causes.

Financial contributions from the Bill & Melinda Gates Foundation, the Carnegie Corporation of New York, and the Open Society Institute quickened a decades-old disposition within the school system and among reformers and intermediaries to move aggressively forward in creating small high schools. Educators and other civic leaders in New York City were experienced with such schools, and labor leaders supported the work. The cohesion among New York City stakeholders made it possible for New Visions, the Department of Education, and

other stakeholders to super-size the reform. Ultimately, the scale of the work was a distinct advantage, as it riveted public and private energies to the project.

School-Level Explanations

Our data regarding school-level factors influencing achievement outcomes are strong, having been collected over four years using multiple research methods. We'll start by describing easily observed phenomena.

The simile students regularly used to describe NCHS schools was family-like, and in many ways, the reference was apt. The schools were small, and relationships among teachers and students were warm, personal, and encouraging. The schools were not, however, permissive. Codes of conduct were clear. Students were suspended if they took any part in, let alone instigated, aggressive or otherwise dangerous acts. In the best of these schools, serious attention was paid through advisories, other forms of counseling, and internships to helping students imagine and take steps toward positive futures, not merely stay out of trouble.

In addition to being friendly and supportive, it was obvious that the schools were places of learning. Teachers worked not only on the basics, but also to prepare students for Regents exams and to provide experiential learning opportunities. Mixed in with the standard fare of instruction, students could find opportunities to travel abroad, double doses of reading and math instruction, and individual tutoring. This instructional mix of the traditional, individual, and experiential was achieved by extending school time—sometimes the day, the week, *and* the year.

Instruction was most successful when collaborative work on curriculum and pedagogy was a firm organizational priority. In thriving NCHS schools, principals, master teachers and, at times, partners were classroom regulars who directed their energies to expanding teachers' instructional repertoire. Their engagement in instruction and teachers' reciprocal engagement in school decision-making made instructional problem-solving a part of everyday school life.

These findings are resonant of lessons from successful elementary schools. And they are aligned with the reform language of the new 3Rs (rigor, relevance, and relationships), with *relationships* including ideas about the organization of professional work as well as teacher-student interactions.

To the foregoing 3Rs, we would add *resources* and *review*. NCHS schools had, through the foundations, businesses, and community organizations that helped to create them, the wherewithal to enable small-group learning, learning in out-of-school settings, and learning in out-of-school time. The schools were also under regular review as a part of the system's and the initiative's combined focus on accountability. It made sense, in that context, for principals to study their data, and we found them doing just that, with help from New Visions.

Program Challenges

One might imagine based on the initiative's results and the foregoing discussion that NCHS schools were all exceptional. This wasn't the case. NCHS principals and teachers were almost always eager novices just learning how to present the basics, to individualize instruction, and to provide students with cooperative learning opportunities.

Growth and sustainability remain real issues for this innovation. NCHS school staff members continue to need help in framing expectations for student learning, in wringing value from instructional time, and in working collaboratively, both with in-school colleagues and with others.

There are, as well, systemic challenges to be addressed. The high school admissions process needs to be simplified. Students transferring out of NCHS schools require additional support. And, based on the performance of the NCHS schools, the process for system renewal through school closings and new-school creation needs to be sustained.

Taken together, the final two points suggest a particular challenge. How can the school system meet the needs of students who transfer out of NCHS schools? These schools are among the best options the system has to offer, especially for keeping educationally at-risk students in school. Students who transfer out of NCHS schools to other city schools are *very* likely to drop out later. New York City needs more convenient, appealing options for this population of youngsters.

Research Support Going Forward

Focusing on results has powerful effects, but a few are subversive. To keep the focus on best practices and off quick fixes, education policymakers will need to make full use of the school-process data newly available as part of New York City's performance feedback system.

There is no more efficient and reliable way of understanding schools than by asking teachers about their work lives. Over time, we hope the new annual teacher survey will provide the system with both school-specific and citywide feedback on the quality of critical school systems, including those for: recruiting teachers; setting academic and social expectations for students; creating, adapting, and implementing new curricula; assessing and developing staff capacities; and vetting and engaging in partnerships with external experts and organizations.

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Appendix A
Descriptive Statistics on Survey Data Presented in Chapter 4

Item 1: Teacher Expectations

School Group	2002-03			2003-04			2004-05		
	Data Collection Year								
	M	SE	N	M	SE	N	M	SE	N
1	.90	.01	974	.89	.10	1541	.89	.01	2338
2				.87	.01	1643	.86	.01	2487
3							.90	.01	3188
ALL	.90	.01	974	.88	.01	3184	.89	.00	8013

Index 1: Regents Alignment

School Group	2002-03			2003-04			2004-05			2005-06		
	Data Collection Year											
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	.46	.05	64	.51	.04	111	.47	.03	185	.56	.03	213
2				.66	.04	90	.64	.03	203	.68	.02	267
3							.59	.03	217	.63	.02	430
ALL	.46	.05	64	.58	.03	201	.57	.02	605	.63	.01	910

Index 2: Student Self-Management

School Group	2002-03			2003-04			2004-05			2005-06		
	Data Collection Year											
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	.61	.04	70	.60	.03	118	.54	.02	198	.45	.02	226
2				.73	.03	93	.48	.02	245	.43	.02	274
3							.61	.02	244	.48	.02	467
ALL	.61	.04	70	.65	.02	211	.55	.01	657	.46	.01	967

Index 3: Teacher-Student Relationships

School Group	2002-03			2003-04			2004-05		
	M	SE	N	M	SE	N	M	SE	N
1	.73	.01	937	.77	.01	1480	.76	.01	2250
2				.71	.01	1541	.68	.01	2379
3							.75	.01	3013
ALL	.73	.01	937	.74	.01	3021	.73	.00	7642

Data Collection Year

Item 2: Advisories

School Group	2002-03			2003-04			2004-05			2005-06		
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	.74	.01	69	.70	.04	117	.77	.03	198	.66	.03	223
2				.72	.05	93	.63	.03	215	.50	.03	275
3							.78	.03	240	.61	.02	469
ALL	.74	.01	69	.71	.03	210	.73	.02	653	.59	.02	967

Data Collection Year

Item 3: Number of Students Taught

School Group	2002-03			2003-04			2004-05			2005-06		
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	70.99	2.38	71	78.38	3.63	100	81.91	3.45	158	81.71	3.35	171
2				83.39	3.71	79	83.68	3.09	175	91.16	3.15	203
3							80.15	2.18	192	88.70	1.88	372
ALL	70.99	2.38	71	80.59	2.61	179	81.86	1.66	525	87.77	1.49	746

Data Collection Year

Index 4: Educational Focus

School Group	2002-03			2003-04			2004-05			2005-06		
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	.75	.03	66	.74	.02	116	.71	.02	195	.65	.02	219
2				.76	.02	93	.74	.02	211	.65	.02	272
3							.75	.02	235	.69	.01	460
ALL	.75	.03	66	.75	.02	209	.73	.01	641	.67	.01	951

(Data Collection Year)

Index 5: Principal Leadership

School Group	2002-03			2003-04			2004-05			2005-06		
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	.69	.05	66	.78	.03	115	.74	.02	189	.64	.02	219
2				.84	.03	88	.79	.02	212	.73	.02	269
3							.84	.02	236	.77	.01	457
ALL	.69	.05	66	.81	.02	203	.80	.01	637	.73	.01	945

(Data Collection Year)

Index 6: Professional-Development Quality

School Group	2002-03			2003-04			2004-05			2005-06		
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	.44	.04	65	.45	.03	113	.46	.03	189	.35	.02	218
2				.44	.04	91	.36	.02	210	.32	.02	266
3							.46	.02	238	.35	.02	455
ALL	.44	.04	65	.44	.02	204	.43	.01	637	.34	.01	939

(Data Collection Year)

Index 7: Professional-Development Quantity

| School Group | Data Collection Year | | | | | | | | | | | |
| | 2002-03 | | | 2003-04 | | | 2004-05 | | | 2005-06 | | |
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	.40	.04	62	.42	.03	107	.44	.02	191	.38	.02	222
2				.43	.04	86	.44	.03	212	.39	.02	269
3							.45	.02	235	.40	.02	450
ALL	.40	.04	62	.42	.02	193	.44	.01	638	.39	.01	941

Index 8: Teacher Influence

| School Group | Data Collection Year | | | | | | | | | | | |
| | 2002-03 | | | 2003-04 | | | 2004-05 | | | 2005-06 | | |
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	.66	.04	70	.58	.03	118	.52	.02	193	.45	.02	223
2				.64	.03	92	.43	.02	212	.41	.02	273
3							.64	.02	237	.52	.01	458
ALL	.66	.04	70	.61	.02	210	.54	.01	642	.47	.01	954

Index 9: Teacher Collaboration

| School Group | Data Collection Year | | | | | | | | | | | |
| | 2002-03 | | | 2003-04 | | | 2004-05 | | | 2005-06 | | |
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	.75	.03	71	.77	.02	114	.78	.02	199	.71	.02	223
2				.75	.03	91	.70	.02	213	.63	.02	274
3							.76	.02	237	.71	.01	460
ALL	.75	.03	71	.76	.02	205	.75	.01	649	.69	.01	957

Index 10: Meaningful Assessments

School Group	Data Collection Year								
	2002-03			2003-04			2004-05		
	M	SE	N	M	SE	N	M	SE	N
1	.70	.01	962	.69	.01	1479	.66	.01	2248
2				.65	.01	1563	.64	.01	2353
3							.71	.01	3025
ALL	.70	.01	962	.67	.01	3042	.68	.00	7626

Index 11: Community Partners' Role

School Group	Data Collection Year											
	2002-03			2003-04			2004-05			2005-06		
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	.48	.09	8	.59	.09	11	.51	.09	12	.45	.10	12
2				.43	.08	15	.40	.06	16	.36	.06	14
3							.46	.05	35	.43	.04	36
ALL	.48	.09	8	.50	.06	26	.45	.03	63	.42	.03	62

Item 4: Parental Involvement

School Group	Data Collection Year											
	2002-03			2003-04			2004-05			2005-06		
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	.44	.06	71	.35	.04	115	.38	.03	195	.36	.03	222
2				.73	.05	96	.40	.03	213	.36	.03	270
3							.48	.03	245	.36	.02	461
ALL	.44	.06	71	.52	.03	211	.43	.02	653	.36	.02	953

Index 12: Student Engagement

School Group	2002-03			2003-04			2004-05		
	M	SE	N	M	SE	N	M	SE	N
1	.38	.01	906	.40	.01	1479	.37	.01	2236
2				.42	.01	1527	.35	.01	2358
3							.40	.01	3015
ALL	.38	.01	906	.41	.01	3006	.37	.00	7609

Data Collection Year

Index 13: Learning Opportunities

School Group	2004-05			2005-06		
	M	SE	N	M	SE	N
1	.87	.07	10	.86	.05	11
2	.86	.06	15	.86	.06	14
3	.73	.05	35	.85	.04	36
ALL	.79	.03	60	.86	.03	61

Data Collection Year

Index 14: Computer Use

School Group	2002-03			2003-04			2004-05			2005-06		
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	.62	.05	65	.62	.04	109	.69	.03	191	.62	.03	220
2				.67	.04	87	.60	.03	201	.49	.03	267
3							.60	.03	219	.53	.02	444
ALL	.62	.05	65	.64	.03	196	.63	.02	611	.54	.01	931

Data Collection Year

Item 5: Availability of Technology

| School Group | Data Collection Year | | | | | | | | | | | |
| | 2002-03 | | | 2003-04 | | | 2004-05 | | | 2005-06 | | |
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	.41	.06	66	.52	.05	111	.49	.04	190	.45	.03	215
2				.45	.05	91	.45	.04	199	.37	.03	262
3							.45	.03	223	.48	.02	445
ALL	.41	.06	66	.49	.04	202	.46	.02	612	.44	.02	922

Item 6: Instructional Materials

| School Group | Data Collection Year | | | | | | | | | | | |
| | 2002-03 | | | 2003-04 | | | 2004-05 | | | 2005-06 | | |
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	.71	.06	69	.81	.04	113	.82	.03	195	.68	.03	221
2				.82	.04	93	.72	.03	213	.69	.03	277
3							.73	.03	237	.65	.02	460
ALL	.71	.06	69	.81	.03	206	.75	.02	645	.67	.02	958

Item 7: Teacher Degree

| School Group | Data Collection Year | | | | | | | | |
| | 2003-04 | | | 2004-05 | | | 2005-06 | | |
	M	SE	N	M	SE	N	M	SE	N
1	.74	.04	115	.66	.03	185	.71	.03	195
2	.67	.05	89	.72	.03	201	.75	.03	235
3				.70	.03	223	.67	.02	421
ALL	.71	.03	204	.69	.02	609	.70	.02	851

Item 8: Teacher Certification

School Group	2002-03			2003-04			2004-05			2005-06		
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	.30	.06	67	.24	.04	111	.28	.03	180	.29	.03	228
2				.26	.05	91	.33	.03	195	.27	.03	285
3							.29	.03	215	.25	.02	483
ALL	.30	.06	67	.25	.03	202	.30	.02	590	.27	.01	996

Data Collection Year

Item 9: Facilities

School Group	2002-03			2003-04			2004-05			2005-06		
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	.24	.05	70	.38	.05	116	.29	.03	199	.31	.03	225
2				.39	.05	96	.22	.03	218	.30	.03	279
3							.44	.03	244	.42	.02	472
ALL	.24	.05	70	.38	.03	212	.32	.02	661	.36	.02	976

Data Collection Year

Item 10: Host School

School Group	2002-03			2003-04			2004-05			2005-06		
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	.59	.06	68	.69	.04	109	.67	.03	188	.61	.03	214
2				.63	.05	95	.60	.03	213	.66	.03	264
3							.70	.03	240	.68	.02	456
ALL	.59	.06	68	.66	.03	204	.66	.02	641	.66	.02	934

Data Collection Year

Index 15: Quality of Instructional Systems

| School Group | Data Collection Year | | | | | | | | | | | |
| | 2002-03 | | | 2003-04 | | | 2004-05 | | | 2005-06 | | |
	M	SE	N	M	SE	N	M	SE	N	M	SE	N
1	.60	.03	67	.61	.02	113	.59	.01	188	.54	.01	222
2				.64	.02	91	.58	.01	209	.55	.01	264
3							.64	.01	233	.58	.01	448
ALL	.60	.03	67	.62	.01	204	.61	.01	630	.56	.01	934

Appendix B
Means Comparisons: Entering Characteristics of Class of 2006 Students
in NCHS and Comparison-Group Schools

Variables	Group (NCHS=1)	N	Mean	Std. Deviation	Std. Error Mean	t-test for Equality of Means	
						Mean Difference	Sig. (2-tailed)*
Reading Score	.00 1.00	4447 666	686.56 685.52	22.39 18.03	.34 .70	1.04	.180
Math Score	.00 1.00	4692 681	696.60 693.49	32.43 28.14	.47 1.08	3.11	.008*
Black	.00 1.00	5802 855	.30 .35	.46 .48	.01 .02	-.05	.002*
Hispanic	.00 1.00	5802 855	.54 .52	.50 .50	.01 .02	.03	.151
Recent Immigrant	.00 1.00	5802 855	.09 .12	.29 .33	.00 .01	-.03	.008*
ELL Services Eligibility	.00 1.00	5802 855	.13 .12	.33 .32	.00 .01	.01	.392
Lunch Eligibility	.00 1.00	4763 830	.92 .91	.28 .29	.00 .01	.01	.339
Gender	.00 1.00	5802 855	.55 .56	.50 .50	.01 .02	-.01	.637
Special Education Eligibility	.00 1.00	5802 855	.05 .05	.21 .22	.00 .01	.00	.628
Age	.00 1.00	5802 855	14.84 14.85	.68 .74	.01 .03	-.01	.758

* Indicates statistical significance.