

The Enhanced Reading Opportunities Study Final Report

The Impact of Supplemental Literacy Courses for
Struggling Ninth-Grade Readers

Executive Summary

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The listed authors of this report represent only a small part of the team involved in this project. Linda Kuhn and the staff at Survey Research Management managed and conducted the follow-up testing and survey data collection effort.

At AIR, Suzannah Herrmann and Kathryn Drummond conducted site visits and phone interviews for the implementation study. Christopher Doyle and Andrea Olinger coordinated data management and conducted phone interviews. Nancy Lang conducted phone interviews and site visits, processed data, and ensured the thoroughness of the implementation fidelity ratings. Eva Lyman-Munt conducted phone interviews with district and school staff for this report. Midori Rome conducted phone interviews and assisted with the analysis of interview data. Seth Brown conducted phone interviews, participated in collecting and analyzing the data for the cost study, and participated in writing up the results.

At MDRC, James Kemple served as the project director during the first few years of the study, and, in that role, he provided the strong leadership needed to get the project off the ground and a sturdy foundation for all aspects of the study, from school and student recruitment to the research design and analysis. Elizabeth Nelson was involved in all phases of program implementation, including site relations, student recruitment, and conducting implementation research. Alma Moedano, Alixandra Barasch, and Asa Wilks assisted with data collection and provided programming and analysis support. Corinne Herlihy and Kristin Porter served as school district coordinators. Daniel Fallon oversaw the ordering of the literacy assessment. Shirley James and her staff entered data. Gordon Berlin, Alison Black, Howard Bloom, Fred Doolittle, Corinne Herlihy, John Hutchins, Robert Ivry, Janet Quint, Michael Weiss, and Pei Zhu provided substantive expertise through their thoughtful comments on, and reviews of, this report. Alma Moedano, Julia Gomez, Asya Magazinnik, and Mario Flecha assisted with report production. Margaret Bald, John Hutchins, Alice Tufel, and Robert Weber edited the report, and Stephanie Cowell and Inna Kruglaya prepared it for publication.

The Authors

Disclosure of Potential Conflicts of Interest¹

The research team for this evaluation consists of a prime contractor, MDRC, Inc., of New York City, NY, and two subcontractors, American Institutes for Research (AIR) of Washington, DC, and Survey Research Management (SRM) Corporation of Boulder, CO. None of these organizations or their key staff has financial interests that could be affected by findings from the evaluation of the two supplemental literacy interventions considered in this report. No one on the eight-member Expert Advisory Panel, convened by the research team once a year to provide advice and guidance, has financial interests that could be affected by findings from the evaluation. One member of the Expert Advisory Panel, Dr. Timothy Shanahan of the University of Illinois at Chicago, participated in an early panel meeting (2005) on the study design and a review meeting (2009) about the findings presented in this report. During the course of the study, a commercial literacy intervention he had developed was on the market that was targeted to striving middle-school readers. This intervention might either compete with or be used along with the two programs for high school students chosen and evaluated as part of the current study, but it is no longer actively marketed. Dr. Shanahan had no role in the selection of the study programs or in the analysis of evaluation data.

¹Contractors carrying out research and evaluation projects for IES frequently need to obtain expert advice and technical assistance from individuals and entities whose other professional work may not be entirely independent of or separable from the particular tasks they are carrying out for the IES contractor. Contractors endeavor not to put such individuals or entities in positions in which they could bias the analysis and reporting of results, and their potential conflicts of interest are disclosed.

Executive Summary

According to the National Assessment of Educational Progress (NAEP), just over 70 percent of students nationally arrive in high school with reading skills that are below “proficient” — defined as demonstrating competency over challenging subject matter.¹ Of these students, nearly half do not exhibit even partial mastery of the knowledge and skills that are fundamental to proficient work at grade level.² These limitations in literacy skills are a major source of course failure, high school dropout, and poor performance in postsecondary education.³ While research is beginning to emerge about the special needs of striving adolescent readers, very little is known about effective interventions aimed at addressing these needs.⁴

To help fill this gap and to provide evidence-based guidance to practitioners, the U.S. Department of Education initiated the Enhanced Reading Opportunities (ERO) study — a demonstration and rigorous evaluation of supplemental literacy programs targeted to ninth-grade students whose reading skills are at least two years below grade level.⁵ As part of this demonstration, 34 high schools from 10 school districts implemented one of two reading interventions: Reading Apprenticeship Academic Literacy (RAAL), designed by WestEd, and Xtreme Reading, designed by the University of Kansas Center for Research on Learning. These programs were implemented in the study schools for two school years. The U.S. Department of Education’s (ED) Office of Elementary and Secondary Education (OESE)⁶ funded the implementation of these programs, and its Institute of Education Sciences (IES) was responsible for oversight of the evaluation. MDRC — a nonprofit, nonpartisan education and social policy research organization — conducted the evaluation in partnership with the American Institutes for Research (AIR) and Survey Research Management (SRM).

The goal of the reading interventions — which consist of a year-long course that replaces a ninth-grade elective class — is to help striving adolescent readers develop the strategies and routines used by proficient readers, thereby improving their reading skills and ultimately,

¹The NAEP is a nationally representative assessment of student achievement overseen by the National Center for Education Statistics (<http://nces.ed.gov/nationsreportcard/>).

²Lutkus, Rampey, and Donahue (2006) provide an analysis of NAEP reading results for urban school districts in the context of the national NAEP performance trends.

³Carnevale (2001); Kamil (2003); Snow and Biancarosa (2003).

⁴Biancarosa and Snow (2004).

⁵The ERO study is known more formally as “An Evaluation of the Impact of Supplemental Literacy Interventions in Freshman Academies.”

⁶The implementation was initially funded by the Office of Vocational and Adult Education (OVAE), but this role was later transferred to OESE.

their academic performance in high school. The first two reports for the study evaluated the programs' impact on the two most proximal outcomes targeted by the interventions — students' reading skills and their reading behaviors at the end of ninth grade.⁷ This report — which is the final of three reports for this evaluation — examines the impact of the ERO programs on the more general outcomes that the programs hope to affect — students' academic performance in high school (grade point average [GPA], credit accumulation, and state test scores) as well as students' behavioral outcomes (attendance and disciplinary infractions). These academic and behavioral outcomes are examined during the year in which they were enrolled in the ERO programs (ninth grade), as well as the following school year (tenth grade for most students).

Overall, the findings from these reports show that over the course of ninth grade, the ERO programs improved students' reading comprehension skills and helped them perform better academically in their high school course work. However, these benefits did not persist in the following school year, when students were no longer receiving the supports provided by the ERO programs. The key findings from the study are the following:⁸

- **The ERO programs improved students' reading comprehension skills over the course of ninth grade.** Across both cohorts of participating ninth-grade students, the ERO programs improved students' reading comprehension scores by an effect size of 0.09,⁹ corresponding to an improvement from the twenty-third percentile to the twenty-fifth percentile nationally. However, 77 percent of students assigned to the ERO classes were still reading at two or more years below grade level at the end of ninth grade.
- **During the ninth grade, the ERO programs also had a positive impact on students' academic performance in core subject areas.** Students' GPA in core subject areas¹⁰ was 0.06 point higher (out of a maximum of 4 points) as a result of being assigned to the ERO program (effect size = 0.07). The programs also helped students earn 0.6 percentage point more of the core credits that they need to graduate (effect size = 0.06). In the subset of high schools located in states where standardized tests are administered in ninth grade, students also scored higher on their English lan-

⁷The first report presented implementation and impact findings for the first year of program operations (Kemple et al., 2008), while the second report focused on impacts in the second year of implementation (Corrin et al., 2008). Chapter 3 of this report provides a review of the implementation and impact findings from these two reports and also presents the average impact of the reading programs across both cohorts.

⁸The statistical significance of all impact estimates in this report is evaluated at the 5 percent level.

⁹In this report, effect sizes are expressed as a proportion of the overall variability (standard deviation) in the outcome measure among students who were *not* assigned to the reading program (non-ERO group).

¹⁰The four core subject areas are English language arts, social studies, science, and mathematics.

guage arts and mathematics tests as a result of having been assigned to the ERO program; the estimated effect size of these impacts are 0.11 and 0.07, respectively.

- **However, in the school year following students' participation in the ERO programs, the programs no longer had an impact on academic performance.** Estimated impacts on students' GPA in core subject areas, credit accumulation, and standardized state test scores are not statistically significant in the school year following program participation (tenth grade for most students).
- **The ERO programs did not increase students' vocabulary scores, nor did the programs affect students' reading behaviors or their school behaviors.** The programs did not have a statistically significant impact on students' vocabulary scores at the end of ninth grade. Nor did the programs have a statistically significant effect on how often students read school-related or non-school-related texts, or on how often students use the reading strategies taught by the two programs. Similarly, impacts on student attendance and suspensions were not statistically significant, in either the program year or the following school year.

The first two study reports also examined how well the ERO programs were implemented in the study schools, as well as the extent to which the experience of students in the ERO programs compared with the literacy support received by students not selected for the programs. A key finding from these reports is that, by the end of the second year of program operation, implementation of the reading interventions, as rated through classroom observation, was well aligned with the respective program models. In addition, schools were able to offer the programs for the entire school year. In both implementation years, students in the ERO class received a greater amount of literacy support than they would have received had they not been assigned to the program.

Overview of the ERO Study

The ERO study is both a demonstration and a rigorous evaluation of two established supplemental literacy interventions that are targeted to ninth-grade students whose reading skills are two or more years below grade level as they enter high school. The purpose of the study is to evaluate these interventions' impact on students' reading comprehension skills and their academic performance as they move through high school. See Box ES.1 for a brief overview of the components of the ERO study.

Box ES.1

Overview of the Study

Interventions: Reading Apprenticeship Academic Literacy (RAAL) and Xtreme Reading — supplemental literacy programs designed as full-year courses to replace a ninth-grade elective class. The programs were selected through a competitive applications process based on ratings by an expert panel.

Study sample: Two cohorts of ninth-grade students from 34 high schools and 10 school districts (2,916 students in Cohort 1 and 2,679 students in Cohort 2). Districts and schools were selected by ED’s Office of Vocational and Adult Education through a special Small Learning Communities Grant competition. Students were selected based on reading comprehension test scores that were between two and five years below grade level.

Research design: Within each district, high schools were randomly assigned to use either the RAAL program or the Xtreme Reading program during two school years (2005-2006 and 2006-2007). Within each high school, students were randomly assigned to enroll in the ERO class (ERO group) or to remain in a regularly scheduled elective class (non-ERO group). Because students were randomly assigned to the ERO program, the impact of the programs can be estimated by comparing the outcomes of students in the ERO and the non-ERO group. Impact estimates are regression-adjusted for the blocking of random assignment as well as random baseline differences between the ERO and non-ERO group.

Data collection: Classroom observations in the first and second semester of the school year were used to measure implementation fidelity. A reading comprehension test — the Group Reading Assessment and Diagnostic Examination (GRADE) — and a survey were administered to students in the spring of eighth grade or at the start of ninth grade prior to random assignment, and again at the end of ninth grade. School records data were collected for students’ ninth-grade and tenth-grade year (and for Cohort 1’s eleventh-grade year); these data include course transcripts, state test scores, attendance, and disciplinary outcomes.

Outcomes: Reading comprehension test scores, vocabulary test scores, and self-reported reading behaviors at the end of ninth grade; grade point average, credit accumulation, state test scores, school attendance and suspensions during ninth grade and in the following school year.

A Demonstration of Supplemental Literacy Interventions

The two reading programs selected for the ERO study, RAAL and Xtreme Reading, were selected for the study from a pool of 17 applicants by a national panel of experts on adolescent literacy.¹¹ The applicants had responded to a public request for supplemental reading

¹¹For an overview of research related to RAAL, see Schoenbach, Greenleaf, Cziko, and Hurwitz (1999). For an overview of research related to Xtreme Reading and the Strategic Instruction Model, see Schumaker and Deshler (2003, 2004).

programs that would substantially improve students' reading skills. The programs share common core goals and instructional strategies, and can therefore be considered part of the same broad class of literacy intervention for struggling adolescent readers. The short-term goal of the programs is to help ninth-grade students adopt the strategies and routines used by proficient readers, to improve their comprehension skills, and to motivate them to read more and to enjoy reading. To do so, each program supports instruction in the following areas: (1) student motivation and engagement; (2) reading fluency, or the ability to read quickly, accurately, and with appropriate expression; (3) vocabulary, or word knowledge; (4) comprehension, or making meaning from text; (5) phonics and phonemic awareness (for students who could still benefit from instruction in these areas); and (6) writing.

By addressing the reading needs of students, the programs also aim to improve students' performance in their high school courses and on standardized assessments, thereby helping them meet the milestones required for grade promotion and graduation. The programs seek to improve these longer-term outcomes by targeting not only students' reading skills but also their content literacy — by identifying, modeling, and explaining context-specific strategies that are most applicable in English language arts, science, and social studies texts (for example, differences in text structures). Finally, both interventions have components that promote positive behavioral norms, which in turn may improve students' attendance rates and reduce their disciplinary infractions.

Experienced, full-time English language arts or social studies teachers volunteered to teach the ERO class and were approved by ED, the districts, and the schools to teach the programs for a period of two years. During each year of the project, the programs' developers provided three types of training and technical assistance to the ERO teacher from each school: (1) a summer training institute before the start of the school year (five days in the first year of the study and three days in the second year); (2) booster training sessions; and (3) coaching visits during the school year (a minimum of two one-day visits during the first year and three two-day visits during the second year).

Each ERO teacher (one per school) was responsible for teaching four sections of the ERO class. Each section accommodated between 10 and 15 students. Classes were designed to meet for a minimum of 225 minutes per week and were scheduled as a 45-minute class every day or as a 75- to 90-minute class that met every other day during the school year. As noted earlier, the classes are supplemental, in that they replace a ninth-grade elective class, rather than a core academic class, and in that they are offered in addition to students' regular English language arts classes. The average annual cost of the programs, as implemented, was \$1,931 per student. Salary expenditures represent the largest portion of this cost (72 percent). An additional 13.4 percent of the per-student cost was spent on training resources, while 5.9 percent paid for

travel to and from training activities. The remaining 8.5 percent covered equipment/supplies, other direct costs, and indirect costs.¹²

A Rigorous Impact Evaluation

The supplemental reading programs were implemented in 34 high schools from 10 school districts across the country. The districts were selected through a special grant competition organized by the U.S. Department of Education's Office of Vocational and Adult Education (OVAE). As an extension of the Smaller Learning Communities (SLCs) grant program, this competition sought to provide funding for the implementation of two supplemental ninth-grade literacy programs in selected high schools and to sustain and enhance existing SLCs in these high schools.

The ERO evaluation uses a two-level random assignment research design. First, within each district, high schools were randomly assigned to use one of the two supplemental literacy programs: 17 high schools were assigned to use RAAL, and 17 schools were selected to use Xtreme Reading. Each school implemented the same program in both the 2005-2006 and 2006-2007 school years. In the second stage of the study design, eligible students within each of the participating high schools were randomly assigned either to enroll in the ERO class (ERO group) or to take one of their school's regularly offered elective classes (non-ERO group).

Across both years of implementation, the participating high schools identified 5,595 ninth-grade students reading two to five years below grade level (an average of 82 students per school per cohort). Fifty-seven percent of these students were randomly assigned to the ERO group and 43 percent randomly assigned to the non-ERO group. Random assignment resulted in two groups of students that were similar with respect to their background characteristics and prior achievement at the start of the study.

The ERO evaluation uses a variety of data sources to measure impacts on student outcomes as well as the nature and quality of program implementation. To learn about the fidelity with which the programs were implemented, the study conducted observations of the supple-

¹²Program costs were calculated by identifying the key program inputs and resources (that is, personnel salaries and fringe benefits, training and travel costs, equipment and supplies, other direct costs, and indirect costs), and then calculating program costs based on the unit cost and quantities of these resources. Costs per student were then obtained by dividing the total cost by the number of students enrolled in the ERO programs in the study schools. Cost data were obtained from documents prepared by districts as part of their application for the Smaller Learning Community (SLC) grant, developer budget documents, teacher salary step schedules obtained from district Web sites, and the National Center for Education Statistics (NCES) Common Core of Data (CCD) Fiscal Survey (F-33 data).

mental literacy classes during the first and second semester of the school year. To measure the amount of literacy instruction received by students — as well as the contrast between the nature and quantity of the literacy services received by students in the ERO and non-ERO groups — the study team used a combination of attendance records from ERO teachers and a student survey. To measure program effectiveness, data were collected on four types of student outcomes: reading achievement (reading comprehension and vocabulary scores from the Group Reading Assessment and Diagnostic Examination, also known as the GRADE),¹³ reading behaviors (frequency of reading and use of reading comprehension strategies from a student survey), academic performance in core subject areas (GPA, credits earned, and state assessment scores from school records), and school behaviors (attendance and disciplinary data from school records).

Implementation Findings

The ERO study examined three aspects of program implementation that may influence whether and by how much the reading interventions can improve student outcomes: (1) the extent to which the study schools were implementing the ERO programs as specified by the program developers (implementation fidelity), (2) the amount of ERO instruction received by students (dosage), and (3) whether the literacy services received by students in the ERO group differed in amount and type from the services received by students in the non-ERO group (service contrast). These implementation findings are discussed in the first two study reports and summarized below.

- By the end of the second year, most participating high schools' implementation of the ERO programs was well aligned with the program models.

During each year of the project, observers from the study team used a structured classroom observation protocol to examine whether the study schools were implementing the ERO programs as specified by the program developers.¹⁴ The overall implementation of the ERO program in a given school was classified as “well aligned,” “moderately aligned,” or “poorly

¹³The GRADE is a norm-referenced, research-based reading assessment that is used widely to measure performance and track the growth of an individual student and groups of students. The average score on the reading comprehension or vocabulary subtests is 100 for a nationally representative group of students at the end of their ninth-grade year. The national standard deviation of scores for both tests is 15. For more information, see American Guidance Service (2001a, 2001b).

¹⁴The analysis of implementation fidelity is based on three field research visits to each of the 34 high schools — one during the second semester of the first implementation year, and one in each of the first and second semesters of the second implementation year.

aligned,” based on observers’ ratings of how reflective the ERO classroom’s learning environment (classroom climate) and comprehension instruction (the teacher’s use of ERO instructional strategies) were of the behaviors and activities specified by the developers. At the spring site visit in the second year of the study, the ERO courses at 26 of the 34 schools (76 percent of schools) were categorized as being well aligned with the program models.

- In the second year of the study, schools operated the ERO programs for the entire school year, and student participation was close to what was intended.

To measure the amount of ERO instruction received by students (dosage), the study team collected data on the duration of the ERO classes as well as the frequency with which students attended the ERO classes, from ERO teachers’ attendance records. On average, students in the ERO group attended 79 percent of scheduled ERO classes, and they received 98 hours of ERO instruction during the school year, or 11 hours per month, which is the same monthly average as in the first year of implementation. The programs were designed to meet for a minimum of 225 minutes per week (15 hours per month), and the schools were able to offer the ERO classes an average of 14 hours per month. Thus, the 11 hours per month of ERO instruction received by students represents 79 percent of the amount offered and 73 percent of the amount intended.

- In both implementation years, students in the ERO group reported a higher frequency of participation in supplemental literacy services than students in the non-ERO group.

For a program to have an impact on outcomes, it needs to provide services that differ (for example, in quality, nature, frequency) from the services students would have otherwise received; this difference is known as the “service contrast.” The ERO study team collected data to better understand what types of literacy services were received by the non-ERO students and the extent to which such supports may have reduced the service contrast between the ERO and non-ERO group. A student survey (administered at the end of ninth grade) was used to measure ERO and non-ERO students’ participation in different types of supplementary literacy support activities (including the ERO class).¹⁵ These data confirm that, as expected, students in the ERO group attended a greater number of school-based literacy classes annually than students in the non-ERO group. On average, the ERO students reported attending 52 more literacy class sessions than the non-ERO students in the first year of implementation and 58 more sessions in the second year.

¹⁵Although students in the ERO group were not specifically instructed to include ERO classes in their survey response, it is highly likely that their responses include this class.

Impact Findings

The previous two study reports — which focused on the effect of the programs on students' reading outcomes in ninth grade — showed that the ERO programs improved students' reading comprehension scores. Students' reading achievement at the end of ninth grade was measured using the reading comprehension and vocabulary subtests in the GRADE.

- The ERO programs improved students' reading comprehension scores over the course of ninth grade.

Figure ES.1 shows the impact of the ERO programs on students' GRADE reading comprehension test scores in standard score units at the end of ninth grade.¹⁶ The impact on students' reading comprehension scores was 0.9 standard score point (effect size = 0.09).¹⁷ As seen in the figure, students in the ERO group started their ninth-grade year with an average standard score of 85.3, which corresponds, approximately, to a grade equivalent of 5.0 (the start of fifth grade) and a reading level at the fifteenth percentile for ninth-grade students nationally. In the spring of ninth grade after enrolling in the program, the ERO group's average score was 90.1 points (twenty-fifth percentile nationally), which means that these students' reading scores increased by 4.9 points over the course of ninth grade. In contrast, had these students not been assigned to the ERO class, their reading scores would have increased by 4.0 standard score points during the year (the estimated growth of the non-ERO group), to 89.2 points or the twenty-third percentile nationally. The impact of the ERO programs is the difference between the growth in test scores of the two groups (0.9 standard score point) and represents an 23 percent improvement over and above the growth that the ERO group would have experienced if they had not had the opportunity to attend the ERO classes (4.0 points).

Despite this impact, ERO students' reading skills were still below grade level at the end of the program. As shown by the solid line at the top of Figure ES.1, students with a score of 100 points on the GRADE reading comprehension test at the end of ninth grade are considered to be reading at grade level. In contrast, students in the ERO group had an average standard score of 90.1 at the end of ninth grade, which means that ERO students were nearly 10 points below the national average, or almost four years below grade level. More concretely, 77 percent of students in the ERO group would still be eligible for the ERO programs were these programs

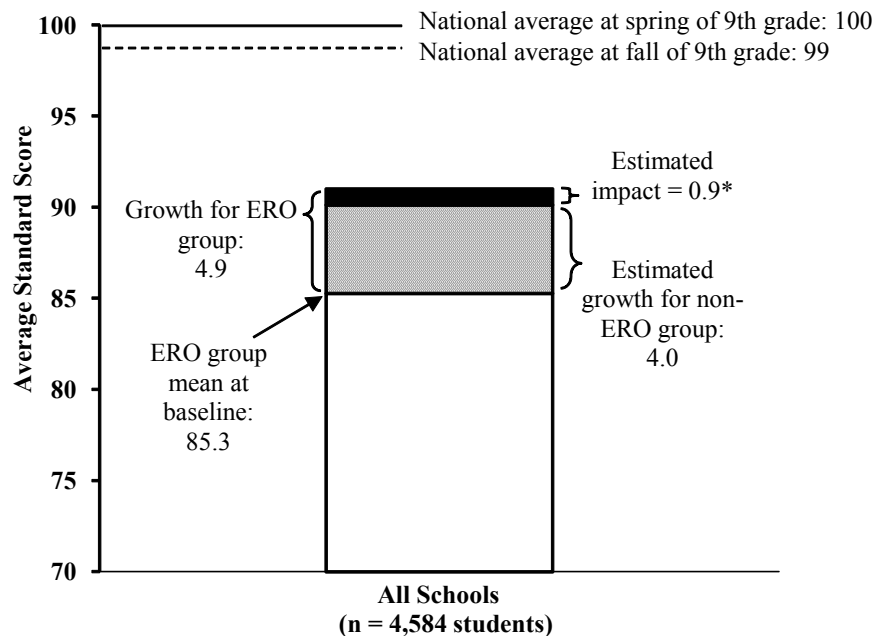
¹⁶Impact estimates are regression-adjusted using ordinary least squares, controlling for the blocking of random assignment by school and cohort and for random differences between the ERO and non-ERO groups in their baseline characteristics and prior achievement.

¹⁷The impact on students' reading comprehension scores does not differ by a statistically significant amount between the two implementation years (effect size = 0.09 for students in the first cohort and 0.08 for students in the second cohort).

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Figure ES.1

Impacts on Reading Achievement, GRADE Respondent Sample



SOURCE: MDRC calculations from the Enhanced Reading Opportunities GRADE assessment, administered at the end of ninth grade (spring 2006 for Cohort 1 and spring 2007 for Cohort 2).

NOTES: The estimated impacts are regression-adjusted using ordinary least squares, controlling for the blocking of random assignment by school and cohort, as well as random baseline differences between the ERO and non-ERO groups in terms of the following variables: GRADE reading comprehension test score at baseline and whether a student was overage for grade at random assignment. The ERO group growth at follow-up is calculated as the difference between the unadjusted ERO group mean at baseline and the unadjusted ERO group mean at follow-up. The expected ERO group growth at follow-up is the difference between the actual ERO group growth and the impact.

A two-tailed t-test was applied to the impact estimate. The statistical significance is indicated (*) when the p-value is less than or equal to 5 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

^aThe national average for standard scores is 100, and its standard deviation is 15. The grade equivalent and percentile are those associated with the average standard score as indicated in the GRADE *Teacher's Scoring and Interpretive Manual* (Level H, Grade 9, Spring Testing, Form B). No statistical tests or arithmetic operations were performed on these reference points.

again made available to them (because they scored two or more years below grade level at the end of their ninth-grade year).

This report presents new findings related to the ERO programs' impact on students' academic performance and their behavioral outcomes, in ninth grade (the "program year") and in the subsequent school year (tenth grade for most students). School records provided by the study districts included information on students' GPA in core subject areas (English language arts, social studies, and science), the number of credits earned by students in these subject areas, and students' scores on the tests mandated by their state.

- The ERO programs had a positive impact on students' GPA and credits earned while students were in the program (ninth grade), but these impacts did not persist into the following school year.

As shown in the top panel of Figure ES.2, students in the ERO group had a GPA of 1.60 points during their ninth-grade year (out of a maximum of 4 points), while students in the non-ERO group had a GPA of 1.53 points, which means that both groups of students had a D average during the program year. However, the GPA of students in the ERO group was statistically higher than that of students in the non-ERO group (a difference of 0.06 point; effect size = 0.07). This improvement is such that ERO students were 13 percent closer to achieving C average (2.0 points), which is an important milestone associated with a higher likelihood of graduating from high school.^{18,19}

As shown in the top panel of Figure ES.3, the ERO programs also helped students accumulate a greater number of credits in core subject areas. By the end of ninth grade, students in the ERO group had earned 2.99 credits (or 21.4 percent of the core credits that they need to graduate), while students in the non-ERO group had earned 2.91 credits (20.9 percent of the core credits needed to graduate). To put these findings into perspective, consider that at the end of ninth grade, students should have earned 25 percent of the core credits required for graduation in order to be "on track" to graduate. Therefore, by the end of the program year, neither the ERO group nor the non-ERO group was "on track" to graduate in four years. However, students in the ERO group had earned a greater percentage of required core credits than students in the non-ERO group (a difference of 0.6 percentage point; effect size = 0.06). This improvement is

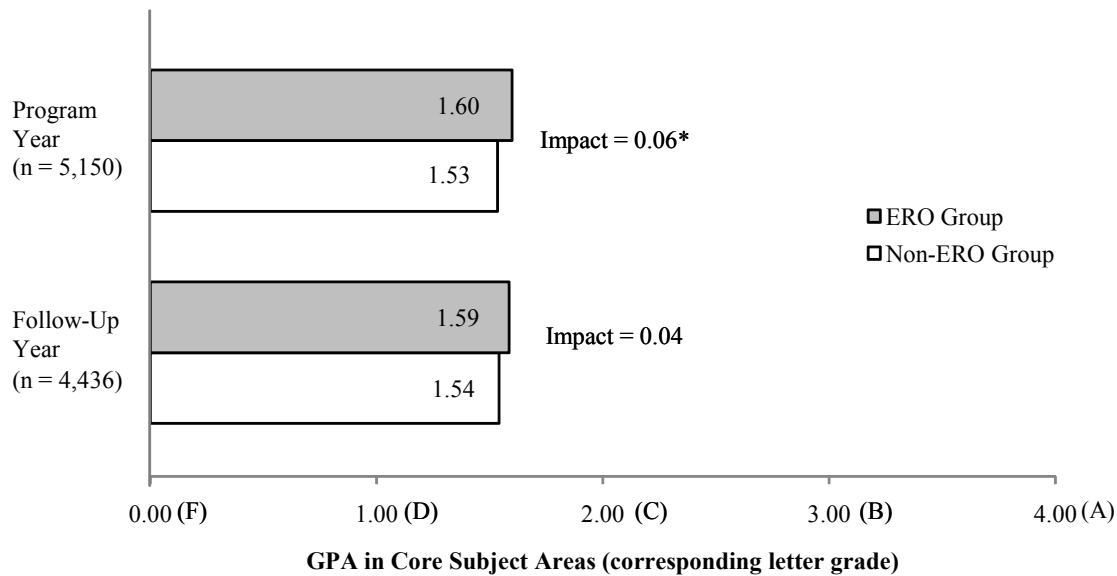
¹⁸Based on Allensworth and Easton (2007), graduation rates in the Chicago Public Schools are 36 percentage points higher for students with a C average (2.0) than for students with a D average (1.0). A grade of C is also used by a majority of the study schools to determine "average" or "satisfactory" achievement in a given course.

¹⁹The value of 13 percent was calculated by dividing the impact (0.06 points) by the amount by which students in the ERO group are below a C average (0.47 points).

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Figure ES.2

Impacts on Grade Point Average (GPA), School Records Sample



SOURCE: MDRC calculations from school records data.

NOTES: The program year is the year in which students were enrolled in an ERO class; it corresponds to the 2005-2006 school year for Cohort 1 and the 2006-2007 school year for Cohort 2. The follow-up year corresponds to the 2006-2007 school year for Cohort 1 and the 2007-2008 school year for Cohort 2.

The estimated impacts are regression-adjusted using ordinary least squares, controlling for the blocking of random assignment by school and cohort, as well as random baseline differences between the ERO and non-ERO groups in terms of the following variables: GRADE reading comprehension test score at baseline, whether a student was overage for grade at random assignment, a student's score on the standardized reading and math assessments (in standardized units) administered by the school district in the year prior to ERO participation, and a baseline measurement of the outcome variable in the school year prior to ERO participation. The ERO group values are the unadjusted mean for the students randomly assigned to the ERO programs. The "Non-ERO Group" values are the regression-adjusted means for students randomly assigned to the non-ERO group, using the observed mean covariate values for the ERO group as the basis for the adjustment.

A two-tailed t-test was applied to the impact estimate. The statistical significance is indicated (*) when the p-value is less than or equal to 5 percent.

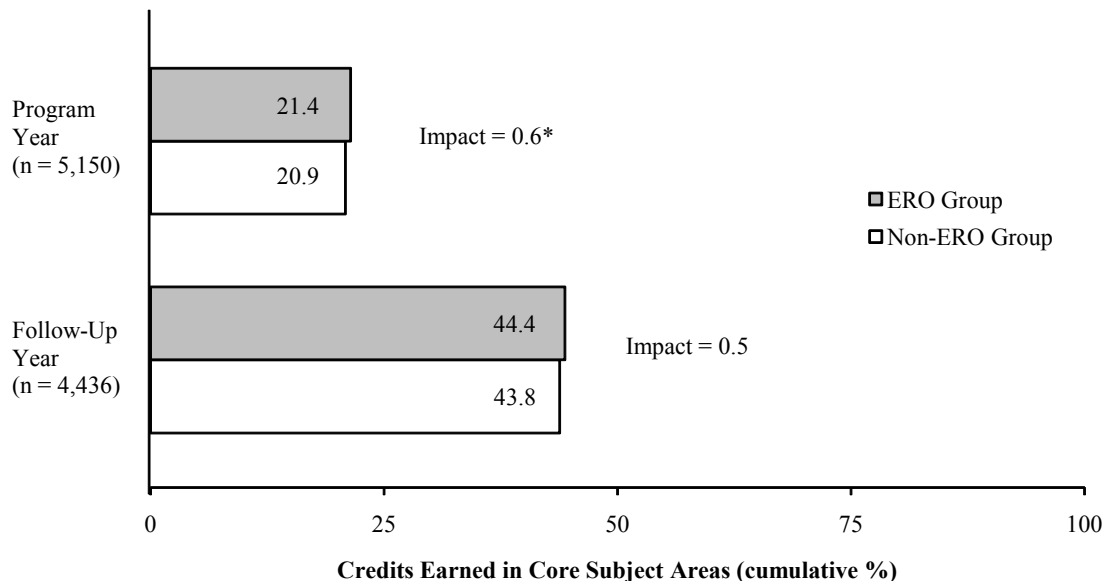
Rounding may cause slight discrepancies in calculating sums and differences.

GPA in core subject areas is based on a 4-point scale: A+/A/A- = 4.0; B+/B/B- = 3.0; C+/C/C- = 2.0; D+/D/D- = 1.0; F = 0.0.

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Figure ES.3

Impacts on Credit Accumulation (Credits Earned as a Percentage of Credits Required for Graduation), School Records Sample



SOURCE: MDRC calculations from school records data.

NOTES: The program year is the year in which students were enrolled in an ERO class; it corresponds to the 2005-2006 school year for Cohort 1 and the 2006-2007 school year for Cohort 2. The follow-up year corresponds to the 2006-2007 school year for Cohort 1 and the 2007-2008 school year for Cohort 2.

The estimated impacts are regression-adjusted using ordinary least squares, controlling for the blocking of random assignment by school and cohort, as well as random baseline differences between the ERO and non-ERO groups in terms of the following variables: GRADE reading comprehension test score at baseline, whether a student was overage for grade at random assignment, a student's score on the standardized reading and math assessments (in standardized units) administered by the school district in the year prior to ERO participation, and a baseline measurement of the outcome variable in the school year prior to ERO participation. The ERO group value is the unadjusted mean for the students randomly assigned to the ERO programs. The "Non-ERO Group" values are the regression-adjusted means for students randomly assigned to the non-ERO group, using the observed mean covariate values for the ERO group as the basis for the adjustment.

A two-tailed t-test was applied to the impact estimate. The statistical significance is indicated (*) when the p-value is less than or equal to 5 percent.

Rounding may cause slight discrepancies in calculating sums and differences.

The cumulative number of credits earned is scaled as a percentage of the total number of core credits required for graduation in a student's district.

statistically significant, and its magnitude is such that students in the ERO group were 15 percent closer to being “on-track” to graduate as a result of the ERO program.^{20,21}

The ERO programs did not affect students’ GPA or credits earned in core classes in the school year following their participation in the ERO programs. The lower set of bars in Figure ES.2 shows the average GPA in core courses for ERO students and non-ERO students during the follow-up year (1.59 and 1.54 points, respectively).²² The estimated impact of 0.04 point is not statistically significant. Nor did the ERO programs have a statistically significant impact on credits earned by the end of the following school year (lower set of bars in Figure ES.3). At the end of the follow-up year, on average, non-ERO students had accumulated 43.8 percent of the credits they need to graduate, while ERO students had accumulated 44.4 percent on average.²³ The estimated impact of 0.5 percentage point is not statistically significant. Therefore, it cannot be concluded that the programs had improved students’ GPA or credit accumulation by the end of the follow-up year.

- The ERO programs had a positive impact on students’ performance on state tests in English language arts and mathematics in ninth grade. Impacts on state test scores in the following school year are not statistically significant.

Table ES.1 shows findings for the estimated impact of the ERO programs on students’ scores on the tests mandated by their state. In the subset of schools where state tests are administered in the ninth grade, the programs had a positive impact on students’ performance on state tests in English language arts (effect size = 0.11) and mathematics (effect size = 0.07). However, impacts on state test scores in the follow-up year were not statistically significant.

- The ERO programs did not have a statistically significant impact on students’ reading vocabulary scores or on their reading behaviors, nor did it affect their school behaviors.

²⁰The value of 15 percent was calculated by dividing the impact (0.6 percentage point) by the percentage of credits needed by the ERO group to attain 25 percent of their core course credits (4.1 percentage points).

²¹Viewed otherwise, the ERO programs had an estimated impact of 0.08 on the number of core credits earned by students (the ERO group earned 2.99 credits on average in the program year, while the non-ERO group earned 2.91 credits). One credit represents a full-year course, so students in the ERO group earned an additional 8 percent of a full-year course credit relative to the non-ERO group.

²²Note that the GPA measure is not cumulative and includes only students’ grades in core courses during the given school year.

²³The measure of credit accumulation is defined cumulatively, in order to capture a student’s progress toward graduation. Thus, credit accumulation at the end of the follow-up year includes credits earned during the program year *and* the follow-up year.

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Table ES.1

Impacts on State Test Scores (Standardized), School Records Sample

Outcome	Number of Students	ERO Group	Non-ERO Group	Estimated Impact Effect Size ^a	P-Value for Estimated Impact
<u>All schools</u>					
Program year					
English language arts (ELA)	2,244	0.11	0.01	0.11*	0.003
Social studies	952	0.07	0.01	0.06	0.343
Science	2,348	0.07	0.01	0.06	0.166
Math	2,668	0.08	0.01	0.07*	0.045
Follow-up year					
English language arts (ELA)	2,408	0.00	-0.01	0.01	0.705
Social studies	2,237	-0.04	0.01	-0.04	0.262
Science	2,661	0.00	0.02	-0.02	0.649
Math	2,537	-0.03	0.02	-0.04	0.265

SOURCE: MDRC calculations from school records data.

NOTES: The program year is the year in which students were enrolled in an ERO class; it corresponds to the 2005-2006 school year for Cohort 1 and the 2006-2007 school year for Cohort 2. The follow-up year corresponds to the 2006-2007 school year for Cohort 1 and the 2007-2008 school year for Cohort 2.

The estimated impacts are regression-adjusted using ordinary least squares, controlling for the blocking of random assignment by school and cohort, as well as random baseline differences between the ERO and non-ERO groups in terms of the following variables: GRADE reading comprehension test score at baseline, whether a student was overage for grade at random assignment, a student's score on the standardized reading and math assessments (in standardized units) administered by their school district in the year prior to ERO participation, and a baseline measurement of the outcome variable in the school year prior to ERO participation. The ERO group value is the unadjusted mean for the students randomly assigned to the ERO programs. The "Non-ERO Group" values in the next column are the regression-adjusted means for students randomly assigned to the non-ERO group, using the observed mean covariate values for the ERO group as the basis for the adjustment. The estimated impact effect size is calculated as a proportion of the standard deviation of the outcome for the non-ERO group during the relevant year (all schools).

A two-tailed t-test was applied to the impact estimate. The statistical significance is indicated (*) when the p-value is less than or equal to 5 percent.

The numbers of students reported in this table are for students in the school records sample who have state test scores for a given subject area in the relevant year. A student may have taken more than one test in a given subject area in more than one year. If a student wrote a specific test more than once, only his or her first score is used.

Rounding may cause slight discrepancies in calculating sums and differences.

^aState test scores are standardized by district, follow-up year, and cohort, using the means and standard deviation of the non-ERO group.

The previous two study reports showed that the ERO programs did not have a statistically significant impact on students' scores on the GRADE vocabulary subtest at the end of ninth grade. Nor did the programs have a statistically significant effect on the frequency with which students read inside or outside of school, or on the extent to which they use the different kinds of reading strategies taught by the ERO programs, based on a student survey administered at the end of ninth grade. The new findings in this report show that, similarly, the programs did not have a statistically significant effect on students' attendance rate, nor did they affect whether students were suspended, in either ninth grade or the following school year. Information on these student behavioral outcomes was available from records provided by the study districts.

- There is no conclusive evidence that the programs were more effective for one subgroup of students than another.

In this report and in prior reports, the impact of the reading programs on reading and high school outcomes was estimated for subgroups of students defined by their baseline reading achievement level, whether or not they were overage for grade at the start of ninth grade, and whether or not a language other than English is spoken in their home. Based on these analyses, it cannot be concluded that the ERO programs' impacts on students in a given subgroup were different from their impacts on students in the other subgroup(s) in that category.

- Each of the two ERO programs had positive impacts for students during the program year, but the statistical certainty (significance) of the impacts varied by outcome.

Because the primary goal of the ERO study is to estimate the impact of full-year supplemental reading programs, the findings in this report focus on the combined impact of the two reading programs together (RAAL, Xtreme Reading). However, in order to contextualize the overall impact findings, program-specific impacts are also examined in this report. Impact findings for each of the two reading programs separately tell a similar story to the pooled findings for both programs together. As shown in Table ES.2, both programs had a positive effect in ninth grade on GPA (statistically significant) and credit accumulation (not statistically significant). For both programs, these two impacts were similar in magnitude to the overall impacts for both programs pooled together. Neither of the two programs had a positive impact on academic performance in the follow-up year. For the GRADE reading comprehension test scores in ninth grade pooled across cohorts, the impact of RAAL was 1.2 standard score points (effect size = 0.12) and statistically significant, and the impact of Xtreme Reading was 0.6 standard score point (effect size = 0.05) and not statistically significant. The difference in the

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Table ES.2

Impacts on Grade Point Average (GPA) and Credit Accumulation in Core Subject Areas (Credits Earned as a Percentage of Credits Required for Graduation), School Records Sample

Outcome	ERO Group	Non-ERO Group	Estimated Impact	Estimated Impact Effect Size	P-Value for Estimated Impact
<u>All schools</u>					
Program year					
GPA in core subject areas	1.60	1.53	0.06 *	0.07 *	0.002
Credits earned in core subject areas (%)	21.4	20.9	0.6 *	0.06 *	0.017
Sample size	2,937	2,213			
Follow-up year					
GPA in core subject areas	1.59	1.54	0.04	0.05	0.061
Cumulative credits earned in core subject areas (%)	44.4	43.8	0.5	0.03	0.212
Sample size	2,542	1,894			
<u>Reading Apprenticeship schools</u>					
Program year					
GPA in core subject areas	1.54	1.47	0.07 *	0.07 *	0.019
Credits earned in core subject areas (%)	20.5	19.9	0.6	0.06	0.072
Sample size	1,468	1,095			
Follow-up year					
GPA in core subject areas	1.55	1.52	0.03	0.03	0.392
Cumulative credits earned in core subject areas (%)	42.6	42.1	0.4	0.03	0.486
Sample size	1,285	927			
<u>Xtreme Reading schools</u>					
Program year					
GPA in core subject areas	1.66	1.60	0.06 *	0.06 *	0.038
Credits earned in core subject areas (%)	22.3	21.8	0.5	0.05	0.138
Sample size	1,469	1,118			
Follow-up year					
GPA in core subject areas	1.62	1.56	0.06	0.06	0.068
Cumulative credits earned in core subject areas (%)	46.2	45.5	0.7	0.04	0.266
Sample size	1,257	967			

(continued)

Table ES.2 (continued)

SOURCE: MDRC calculations from school records data.

NOTES: The program year is the year in which students were enrolled in an ERO class; it corresponds to the 2005-2006 school year for Cohort 1 and the 2006-2007 school year for Cohort 2. The follow-up year corresponds to the 2006-2007 school year for Cohort 1 and the 2007-2008 school year for Cohort 2.

The estimated impacts are regression-adjusted using ordinary least squares, controlling for the blocking of random assignment by school and cohort, as well as random baseline differences between the ERO and non-ERO groups in terms of the following variables: GRADE reading comprehension test score at baseline, whether a student was overage for grade at random assignment, a student's score on the standardized reading and math assessments (in standardized units) administered by their school district in the year prior to ERO participation, and a baseline measurement of the outcome variable in the school year prior to ERO participation. The ERO group value is the unadjusted mean for the students randomly assigned to the ERO programs. The "Non-ERO Group" values in the next column are the regression-adjusted means for students randomly assigned to the non-ERO group, using the observed mean covariate values for the ERO group as the basis for the adjustment. The estimated impact effect size is calculated as a proportion of the standard deviation of the outcome for the non-ERO group during the relevant year (all schools).

A two-tailed t-test was applied to the impact estimate. The statistical significance is indicated (*) when the p-value is less than or equal to 5 percent.

The sample sizes reported in this table are for students with school records data in the relevant year. Because students may not have earned grades in all core subject areas in a given year, sample sizes differ for impacts in the specific core subject areas.

Rounding may cause slight discrepancies in calculating sums and differences.

GPA in core subject areas is based on a 4-point scale: A+/A/A- = 4.0; B+/B/B- = 3.0; C+/C/C- = 2.0; D+/D/D- = 1.0; F = 0.0.

The cumulative number of credits earned is scaled as a percentage of the total number of credits (core or subject-specific) required for graduation in a student's district.

reading comprehension impacts of the two programs is not significant, and thus it cannot be concluded that one program was more effective than the other. Across all other student outcomes measured in this report (16 in total),²⁴ individual program impacts were statistically different from one another for only two outcomes (state test scores in science in the program year and social studies tests in the follow-up year).

Poststudy Implementation of the ERO Programs

After the two years of implementation required by the study, ERO schools and districts continued to receive SLC grant funding, but they were free to decide whether to continue the

²⁴This includes eight types of outcome (GPA, credit accumulation, attendance, suspensions, and state test scores in each of the four core subject areas) measured in two follow-up years.

ERO programs or to use the funds to improve other aspects of their SLCs. Interviews were conducted with school-level staff to find out whether the study schools continued to use the ERO programs after the study-required implementation period, and if so, in what ways (if any) the programs have been modified to fit local circumstances. The study team was able to interview school-level staff from 30 of the 34 study schools.

- Fourteen high schools (47 percent of the interviewed schools) continued to offer the ERO program after the end of the study-required implementation period. Schools that continued to use the ERO programs modified them.

Deviations from the implementation conditions required by the study aimed at increasing the number of students served by the programs (for example, increasing class size [10 schools], or serving students other than ninth-graders [seven schools]) and/or lengthening their duration [seven schools]). Also, eight schools modified the content of the programs and nine schools reduced the levels of professional development and technical assistance provided to teachers. The modifications that these schools made to the programs may alter the programs' effectiveness relative to the impact findings.

References

- Allensworth, Elaine M., and John Q. Easton. 2007. *What Matters for Staying On-Track and Graduating in Chicago Public High Schools: A Close Look at Course Grades, Failure, and Attendance in the Freshman Year*. Chicago: Consortium on Chicago School Research at the University of Chicago.
- American Guidance Service. 2001a. *Group Reading Assessment and Diagnostic Evaluation: Teacher's Scoring and Interpretive Manual, Level H*. Circle Pines, MN: American Guidance Service.
- American Guidance Service. 2001b. *Group Reading Assessment and Diagnostic Evaluation: Technical Manual*. Circle Pines, MN: American Guidance Service.
- Biancarosa, Gina, and Catherine E. Snow. 2004. *Reading Next — A Vision for Action and Research in Middle and High School Literacy: A Report to Carnegie Corporation of New York*. Washington, DC: Alliance for Excellent Education. Web site: <http://www.all4ed.org/publications/ReadingNext/ReadingNext.pdf>.
- Carnevale, Anthony P. 2001. *Help Wanted...College Required*. Washington, DC: Educational Testing Service, Office for Public Leadership.
- Corrin, William, Marie-Andree Somers, James J. Kemple, J., Elizabeth Nelson, and Susan Sepanik. 2008. *The Enhanced Reading Opportunities Study: Findings from the Second Year of Implementation* (NCEE 2009-4036). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance.
- Kamil, Michael L. 2003. *Adolescents and Literacy: Reading for the 21st Century*. Washington, DC: Alliance for Excellent Education. Web site: <http://web.all4ed.org/publications/AdolescentsAndLiteracy.pdf>.
- Kemple, James J., William Corrin, Elizabeth Nelson, Terry Salinger, Suzannah Herrmann, and Kathryn Drummond. 2008. *The Enhanced Reading Opportunities Study: Early Impacts and Implementation Findings* (NCEE 2008-4015). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance.
- Lutkus, Anthony D., Bobby D. Rampey, and Patricia L. Donahue. 2006. *The Nation's Report Card: Trial Urban District Assessment Reading 2005*. NCES 2006-455r. Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.
- Schoenbach, Ruth, Cynthia Greenleaf, Christine Cziko, and Lori Hurwitz. 1999. *Reading for Understanding: A Guide to Improving Reading in Middle and High School Classrooms*. San Francisco: Jossey-Bass.

- Schumaker, Jean B., and Donald D. Deshler. 2003. "Designs for Applied Educational Research." Pages 283-500 in H. Lee Swanson, Karen. R. Harris, and Steve Graham (eds.), *Handbook of Learning Disabilities*. New York: Guilford.
- Schumaker, Jean B., and Donald D. Deshler. 2004. "Teaching Adolescents to be Strategic Learners." In Donald D. Deshler and Jean B. Schumaker (eds.), *High School Students with Disabilities: Strategies for Accessing the Curriculum*. New York: Corwin.
- Snow, Catherine. E., and Gina Biancarosa. 2003. *Adolescent Literacy and the Achievement Gap: What Do We Know and Where Do We Go From Here?* New York: Carnegie Corporation.