



## The Effect of Supplemental Reading Comprehension Curricula on Grade 5 Students

Educators are looking for ways to improve reading comprehension across content areas in late elementary years, especially among more disadvantaged students who increasingly fall behind. But first-year results from this study of four grade 5 supplemental reading comprehension curricula show no effects for three of the curricula and a negative effect for the fourth.

In the late elementary grades—when students begin reading to learn, rather than learning to read—the cognitive demands on students increase. Students from disadvantaged backgrounds often lack not only general vocabulary but the academic vocabulary that enables them to comprehend what they are reading and thus acquire content knowledge. In addition, they often do not know how to organize and obtain knowledge from text in content areas, such as science and social studies. Instructional approaches for improving comprehension are not as well developed as those for improving decoding and fluency. Although multiple reading comprehension techniques for narrative text have been well demonstrated in small studies, there is little evidence on teaching reading comprehension within content areas.

Improving the ability of disadvantaged students to read and comprehend text is also fundamental to the federal education policy aimed at closing the achievement gap between low- and high-achieving students. Title I of the No Child Left Behind Act of 2001 calls on educators to close the gap using approaches shown to be effective through scientifically based research. But such rigorous research is relatively scarce, making it difficult for educators to determine how

best to use Title I funds to improve student outcomes. Identifying curricula that improve reading comprehension is part of this challenge. The Institute of Education Sciences has undertaken a rigorous evaluation of curricula designed to improve reading comprehension to meet that research challenge.

### The program

Four supplemental curricula were selected in a competitive process to participate in a rigorous test of their effectiveness beginning in the 2006/07 school year:

- *Project CRISS by CRISS*. Project CRISS focuses on five keys to learning—background knowledge, purpose setting, author's craft (which involves using text structure to improve comprehension), active learning, and metacognition. The program is designed for daily use during language arts, science, or social studies.
- *ReadAbout by Scholastic*. Primarily through a computer program, students learn reading comprehension skills, such as author's purpose, main idea, cause and effect, compare and contrast, summarizing, and

inferences, which they then apply to a selection of science and social studies books.

- *Read for Real by Chapman University and Zaner-Bloser.* Teachers use a six-volume set of books to teach reading strategies students can use before, during, and after reading (such as previewing, activating prior knowledge, setting a purpose, establishing the main idea, using graphic organizers, and finding text structures). Each unit includes vocabulary, fluency, and writing activities.
- *Reading for Knowledge by the Success for All Foundation.* Reading for Knowledge makes extensive use of cooperative learning strategies and a process called SQRRRL (survey, question, read, restate, review, learn).

### The study

The study used a rigorous experimental design to assess the effects of four supplemental reading comprehension curricula on the reading comprehension of grade 5 students in schools randomly assigned to either an intervention group that used one of the four study curricula or to a control group that continued with its usual curriculum. Control group teachers could, however, use other supplemental reading strategies. Intervention group teachers received training to implement the curriculum to which their school was assigned and then developed their own strategies for incorporating the assigned reading comprehension curriculum into their daily schedules and their core reading instruction—as the curricula were designed to supplement, not replace, the core curriculum.

The experimental design ensures a strong basis for answering the study's two primary research questions:

- What is the impact of the reading comprehension curricula as a whole on student reading comprehension in grade 5, and how do the impacts of the individual curricula compare?
- How are student, teacher, and school characteristics related to curriculum impacts?

The study sample consisted of 10 districts, 89 schools, 268 teachers, and 6,350 grade 5 students. Districts worked with

the study team to identify schools for study participation that served low-income students and did not use any of the four selected curricula.

The study focus was on testing curricula designed to improve comprehension of expository text. Outcomes were defined as the ability to comprehend such text generally and in two specific content areas, science and social studies. Impact estimates focused on student reading comprehension test scores. Data on student outcomes were collected from student tests at the end of the 2006/07 school year on the Group Reading Assessment and Diagnostic Evaluation (GRADE) and on tests of comprehension of social studies and science text, using assessments developed by Educational Testing Service for the study. In addition, classrooms were observed during the school year, and data were collected from teacher surveys, school information forms, student and school records, and the intervention developers.

### The findings

The study's main findings include information on curriculum implementation and the effects of each of the four tested curricula.

#### Curriculum implementation

During the summer and early fall of 2006 more than 90 percent of teachers of each intervention curriculum were trained to use their curriculum: Read for Real, 91 percent of teachers; Reading for Knowledge, 96 percent; and Project CRISS and ReadAbout, 100 percent. More than half the teachers of each intervention curriculum reported feeling very well prepared by the training to implement their assigned curriculum: Reading for Knowledge, 56 percent of teachers; Project CRISS, 69 percent; ReadAbout, 72 percent; and Read for Real, 80 percent.

At the time of the classroom observations in the spring of 2007 more than 80 percent of teachers of each intervention curriculum reported using their assigned curriculum: Read for Real, 81 percent of teachers; Reading for Knowledge, 83 percent; ReadAbout, 87 percent; and Project CRISS, 91 percent. Classroom observation data showed that, on average, teachers implemented 55–78 percent of the behaviors deemed important by the curriculum developers: Project CRISS, teachers implemented 78 percent of such behaviors;

ReadAbout, 71 percent; Reading for Knowledge, 58 and 65 percent of the behaviors for the curriculum's two types of instructional days; and Read for Real, 55 and 71 percent.

To describe teacher practices, the study team constructed scales summarizing practices in three areas. Two of three scales were not statistically significantly different between the intervention and control groups: the reading strategy guidance and classroom management scale and the student engagement scale. Scores on the traditional interaction scale were statistically significantly lower for the intervention group than for the control group (an effect size of  $-0.52$ ).

### *Achievement effects*

Student achievement findings are based on the first year of data collected for the study (2006/07) for the first cohort of grade 5 students. Two types of impacts were analyzed. First, impacts were analyzed for each curriculum intervention; these impacts provide information on the effectiveness of each intervention. Second, the outcomes for students in all four intervention groups were combined and compared with the outcomes for all students in the control group; these findings address whether the use of these types of interventions, in general, improves comprehension.

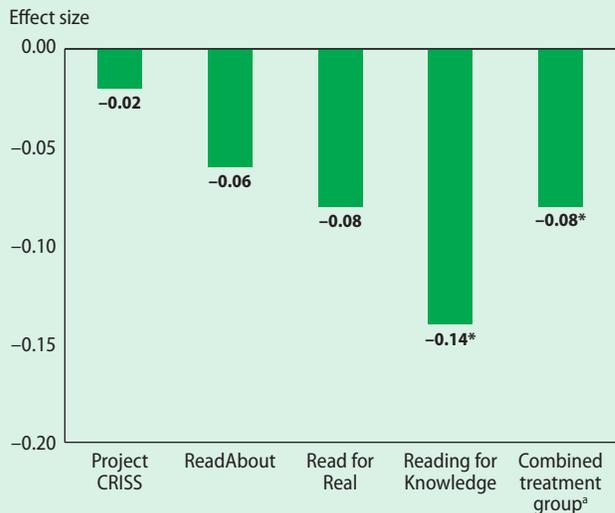
For the basic question of intervention effectiveness, findings showed that reading comprehension test scores were not statistically significantly higher in intervention schools than in control schools for three of the four tested curricula using a composite test score (an average of the scores on the three tests; see figure 1). The fourth tested curriculum, Reading for Knowledge, resulted in a statistically significant negative effect on student achievement for intervention schools, with an effect size of  $-0.14$ .

For questions about for whom and under what conditions the interventions may be effective, findings revealed that reading comprehension test scores were statistically significantly lower in intervention schools than in control schools for some student subgroups, but no clear pattern emerged. For the combined intervention group as a whole, negative and statistically significant impacts were observed for the following subgroups on the identified tests:

- Students with above-average baseline fluency, on the social studies reading comprehension test.

FIGURE 1

### Effects of reading comprehension curricula on composite test scores for first cohort, 2006/07



\*Statistically different from the control group at the .05 level.

a. The combined treatment group shows the outcomes for students in all four intervention groups combined. These impacts are compared to those for students in the control group, providing information on the effectiveness of reading comprehension interventions more broadly rather than the specific impacts of any one intervention.

- Students with baseline comprehension levels in the bottom third of the sample, on the GRADE and the composite measure of the three test scores.
- Students in schools with an above-average concentration of students eligible for the federal lunch program, on the composite measure of the three test scores.
- Students in schools with a below-average concentration of English language learner students, on the composite measure of the three test scores.
- Students whose teachers had more than five years of experience, on the composite measures of the three test scores.

Several other subgroups were tested using teacher characteristics that could have been affected by the training teachers received, and therefore the findings should not be used to suggest a causal relationship. For the combined intervention group a negative, statistically significant impact on the composite test measure was found for students in

schools with a below-average school professional culture scale score. No significant impacts were found for subgroups based on teachers' past professional development or teaching efficacy.

### The next steps

In the 2007/08 school year the study team collected a second year of data. To examine the extent to which intervention impacts are sustained over time, students from the study's first year were followed for one more year using the same follow-up outcome measures. With a new cohort of grade 5 students, the study was repeated for three of the four interventions to assess whether the interventions are more effective after schools and teachers have had a year of

experience using them. Results from year 2 of the study will be presented in a later report.

**For the full report, please visit:**

<http://ies.ed.gov/ncee/pubs/20094032/>

James-Burdumy, S., Mansfield, W., Deke, J., Carey, N., Lugo-Gil, J., Hershey, A., Douglas, A., Gersten, R., Newman-Gonchar, R., Dimino, J., and Faddis, B. (2009). *Effectiveness of Selected Supplemental Reading Comprehension Interventions: Impacts on a First Cohort of Fifth-Grade Students* (NCEE 2009-4032). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance.

NCEE developed the Evaluation Briefs to offer short synopses of complex technical evaluation reports. This brief was not prepared by the study authors.