Houghton Mifflin Reading Program Efficacy Studies

Recent initiatives at the federal and state level have focused attention on reading instruction in an effort to improve the reading performance of our nation's children. Through the America Reads challenge, the President has established the goal of having all children reading well, independently, and at grade level by the end of third grade. Increasingly, school districts are requiring publishers to show evidence that the approach and materials in their reading programs will support districts in achieving this goal.

Houghton Mifflin has participated in multiple studies undertaken to evaluate the effectiveness of its reading program in helping students learn to read. The results of four of these efficacy studies are summarized in this report.

The NICHD Early Interventions Project

Since September 1997, Houghton Mifflin Company has participated in the Early Interventions Project in Washington, D. C., under the direction of the National Institute of Child Health and Human Development (NICHD), a branch of the federal National Institute of Health. In this five-year study, the effects of different aspects of reading instruction on the reading performance of 880 children from kindergarten and first grade through the end of their fourth-grade year have been evaluated. The goal is to prevent reading failure by using research-based techniques to raise the reading achievement levels in nine participating schools in the District of Columbia. Six of the schools are using Houghton Mifflin reading programs and the other three, a reading program published by another company. Many of the sites selected for participation in the study were targeted Assistance schools with a history of unacceptably low achievement.

As part of the study design, the project staff has provided Houghton Mifflin with ongoing feedback from user sites. Houghton Mifflin has responded to this feedback and made other changes in program content to address the growing body of reliable, replicable research in beginning reading instruction. As these newer programs became available, they were included in the study.

Methodology

Children were evaluated several times during each year that they were in the study. Kindergarten and first graders were tested on a limited "growth" test battery that covered phonological skills, rapid naming ability, vocabulary, word recognition, and knowledge of letters and spelling.

All children were tested at the beginning and end of the year on achievement measures that included the Woodcock-Johnson Reading Test, a spelling test (K-TEA), and the Gray Oral Reading Test. As students advanced through the grades, their comprehension was assessed using appropriate measurements. In addition, the Stanford 9 Achievement Test (SAT 9) was administered annually at each grade level in all District of Columbia Public Schools.

Preliminary Findings

Although the research phase at the Washington, D. C. study site has been completed, the formal publication of results has not taken place. However, at a number of recent national meetings, Dr. G. Reid Lyon of the NICHD has commented publicly that some publishers have had the courage to agree to participate in clinical trials, and that *Houghton Mifflin Reading* has done well in these kinds of trials.

Washington, D. C. District-Administered Assessment—SAT

Since 1997, Houghton Mifflin has been tracking results of the district-administered Stanford Achievement Test (SAT 9), across all Washington, D. C. schools, as a measure of reading performance. These SAT 9 data confirm the efficacy of Houghton Mifflin reading programs.

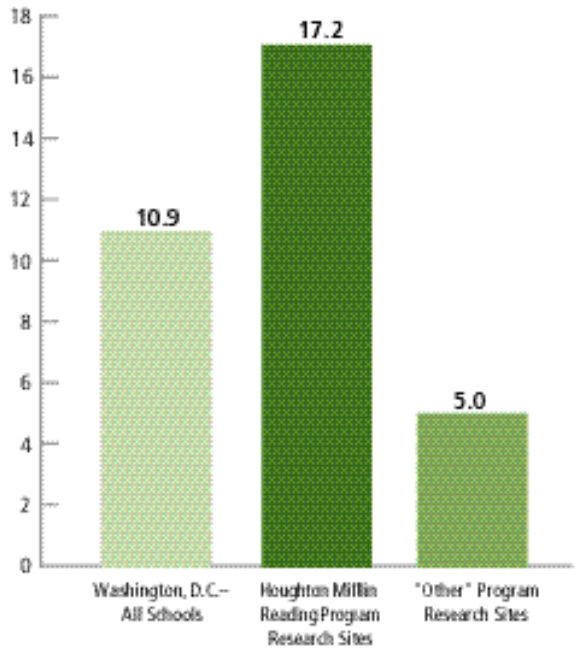
At the end of the first year for which the SAT 9 data have been tracked (1997-1998 school year), first graders made significant gains in relative standing in each of the six Houghton Mifflin sites.

- In two of the schools for which data is available, the percentage of students scoring at Basic and Above on the reading portion of the SAT 9 increased approximately 30 percentage points.
- The average total reading score for first grade increased significantly at the other four schools.

Between 1997 and 2001, all six Houghton Mifflin-user schools have shown improvement in reading performance as measured on the SAT 9.

- All Houghton Mifflin-user schools have had an increase in the percentage of students scoring at Basic and Above on the reading portion of the SAT 9.
- Houghton Mifflin-user schools saw an average increase of 17.2 percentage points in the percentage of students scoring at Basic and Above, compared to 5.0 percentage points for the other schools participating in the study.
- During the period of the study, the district-adopted reading program was published by Houghton Mifflin. The average gain in the percentage of students scoring at Basic and Above in the district as a whole was 10.9 percentage points.

Average Increase* in the Percentage of Students at Basic and Above (SAT 9) 1997–2001**



*Weighted averages, based on the number of students taking the reading portion of the SAT 9 at each site.
**Data source: www.dcschoolsearch.com for 1997-1998 and www.k12.dc.us for 1999-2001.

Independent Two-Year Study of the Effectiveness of *Houghton Mifflin Reading*

In 2000, Houghton Mifflin Company contracted with Abt Associates, a public policy research and consulting firm based in Cambridge, Massachusetts, to design and conduct an external evaluation of the effectiveness of *Houghton Mifflin Reading*. This two-year study involves 10,030 students at Grades 1-3 in a major urban school district located in the Midwest. The focus on the primary grades reflects the increasing attention paid to beginning reading instruction in recent years.

Methodology

The study focuses on student achievement in reading, as measured on the Iowa Test of Basic Skills (ITBS), and also collects information on characteristics of the classroom environment (such as class size and composition, teacher background, and teaching practices) and teachers' perceptions of and satisfaction with *Houghton Mifflin Reading*.

The research design provides for within-district comparison groups. Using schools within the same district for comparison addresses many of the usual threats to the validity of such studies. Of the ten schools participating in the study, five are using *Houghton Mifflin Reading* and five are using other reading programs. The "comparison" schools are matched to the *Houghton Mifflin Reading*-user schools in terms of student enrollment and demographic characteristics.

The sample size, combined with the multi-year research design, allows for both cross-sectional and longitudinal analysis of student test data.

Preliminary Results

This study is ongoing, and complete results are not yet available. However, preliminary results for the first year of the study (2000-2001 school year) show that *Houghton Mifflin Reading* (*HMR*) has a significantly positive effect on students' vocabulary development.

- Third graders in classrooms where *HMR* is used as the primary reading curriculum show statistically significant gains on the vocabulary subtest on the ITBS.
- Compared to the control group of non-*HMR* users, there is a slightly higher proportion of grades 2 and 3 students in *HMR-ALL* classrooms who improve their vocabulary test scores from below grade level to at or above grade level over the course of one school year.

Furthermore, the majority of teachers using *Houghton Mifflin Reading* (*HMR*) give it high ratings for effectiveness as an instructional program.

- 89% think that *HMR* addresses their state's content standards in reading and language arts either "well" or "very well."
- Overall, 90% of teachers describe *HMR* as "effective" or "very effective" at increasing student reading achievement.
- 84% of teachers describe *HMR* as "effective" or "very effective" at increasing student interest in reading.

An Analysis of First-Year Test Scores in Districts Using *Houghton Mifflin Reading*

During the 2000-2001 school year, hundreds of classrooms around the country adopted and began using *Houghton Mifflin Reading.* The company invited school districts that purchased the program to participate in a study designed to evaluate its effectiveness as measured by student performance on district-administered tests.

Methodology

In order to qualify to take part in the survey, districts/schools were required to have been using *Houghton Mifflin Reading* as their primary tool for reading instruction, practice, and assessment since fall of 2000. Six school districts, 59 schools, and 5,667 students located in Colorado, Michigan, Ohio, and Wisconsin took part in this phase of the study.

The districts provided test scores from standardized tests administered spring of 2001, the first year *Houghton Mifflin Reading* was in use, and from the previous year for purposes of comparison. Two districts provided results from the Terra Nova; the other districts provided results from the following tests: Stanford 9 Achievement Test (SAT 9), Metropolitan Achievement Test, Colorado Student Assessment Program (CSAP), the Wisconsin Student Assessment System (WSAS), and the Michigan Educational Assessment Program (MEAP).

The schools represented in this study are located mostly in suburban or urban areas, although a small number of rural schools are included. The socioeconomic makeup of their communities is skewed to the low to lower-middle end of the spectrum. The percentage of students who qualify for free or reduced lunch ranges from none to 75%. About half of the districts have a significant population of students qualifying as Title I.

The composition of students in these schools ranges from 29% Caucasian to 97% Caucasian, with dominant minority populations of Hispanic and African American students. The percentage of students with limited English proficiency tends to be low overall (under 10%) with the exception of one large urban district, where 20% of students are LEP.

Results

During the first year of use of *Houghton Mifflin Reading*, the majority of participating districts saw improvements in their students' scores on the reading portion of standardized tests.

- The greatest improvement was made at Grade 1. Of the districts reporting test scores for Grade 1, six reported an increase; one, a decrease; and one, no change. (The total adds to eight because some of the districts reported test scores by school building.)
- Looking at all grades, the improvement in reading scores is less dramatic but still noteworthy. Across the participating districts, half of the grade-level scores increased, a third decreased, and the remainder were unchanged compared to the previous year's scores.
- These increases are notable because it is not unusual for test scores to drop during the first year of implementation of a new program, as teachers become familiar with new instructional approaches and materials.
- Scores in the next few years will provide evidence on the degree to which improvement at Grade 1 results in improved performance in the later grades.

In addition, teachers who responded to a written survey rated *Houghton Mifflin Reading* as effective on several measures of reading performance.

- Over 90% of teachers said that their students have shown growth in their enjoyment of literature, amount of time spent reading, confidence in their reading ability, confidence in their writing ability, and improvement in their test scores.

Houghton Mifflin Research Symposia

Between June and November 1998, Houghton Mifflin hosted a series of research symposia in preparation for developing *Houghton Mifflin Reading*. Each symposium brought together distinguished researchers for a two-day discussion of research implications for program development in these areas:

- Word Identification
- Kindergarten and Pre-K
- Classroom Management
- Assessment

Researchers participating included

Dr. Kathryn Au, *University of Hawaii*
Former President of the National Reading Conference; areas of expertise include beginning reading and instruction for language minority children.

Dr. David Chard, *University of Oregon*
Currently Director of Graduate Studies, Department of Special Education, in the College of Education at the University of Oregon.

Dr. J. David Cooper, *Ball State University*
Senior author of *Houghton Mifflin Reading;* author of college texts in literacy and assessment; research expertise in reading instruction for struggling readers in intermediate grades.

Dr. Patricia Cunningham, *Wake Forest University*
Developer of the Four Block model for literacy instruction.

Dr. Claude Goldenberg,
California State University, Long Beach
Co-author of the National Research Council report, *Preventing Reading Difficulties in Young Children*; expertise in classroom instructional dialogue and teaching language minority students.

Dr. Ed Kame'enui, *University of Oregon*
Co-author of the National Research Council report, *Preventing Reading Difficulties in Young Children*; expertise in beginning reading, special education, language minority students.

Dr. Marge Lipson, *University of Vermont*
Author of numerous articles and textbooks; expertise in reading strategies and comprehension, struggling readers, assessment.

Dr. Susan Neuman, *U.S. Department of Education*
Assistant Secretary, Office of Elementary and Secondary Education, for the United States Department of Education in Washington, D. C. Former Director, Center for the Improvement of Early Reading Achievement.

Dr. John J. Pikulski, *University of Delaware*
Former President of International Reading Association (IRA); senior author of *Houghton Mifflin Reading*; expertise in beginning reading and reading intervention models.

Dr. Barbara Taylor, *University of Minnesota*
Developer of the Early Intervention in Reading (EIR) instructional model; expertise in beginning reading, best classroom literacy practices; researcher at Center for Improvement in Early Reading Achievement (CIERA).

Dr. Shane Templeton, *University of Nevada, Reno*
Expertise in spelling, vocabulary, language arts, and beginning word identification; author of *Words Their Way*.

Dr. Sheila Valencia, *University of Washington*
Widely published in areas of assessment and literacy instruction; expertise in portfolio and ongoing classroom assessment.

National Center for Improving the Tools of Educators (NCITE)

The National Center for Improving the Tools of Educators is a federally funded center at the University of Oregon focusing on the development of research-based curriculum materials.

During the development of *Houghton Mifflin Reading*, editors held a series of meetings with NCITE researchers. NCITE researchers in these meetings included Dr. Doug Carnine, Dr. Ed Kame'enui, and Dr. Deborah Simmons. Dr. Kame'ennui also participated in the Houghton Mifflin research symposia mentioned earlier.

In the course of these meetings, NCITE researchers reviewed prototypes of student literature and word identification lessons for Grades K and 1 to assess the fidelity of these materials to current scientific research findings.

NCITE recommendations impacted the development of the program particularly in these areas:

- The scope and sequence of phonemic awareness instruction in Grades K and 1
- Introduction of short vowels early in Grade 1
- Emphasis on sequential decoding of CVC words in K and early Grade 1
- Explicitness of instruction
- Diagnostic checks built into lessons across Grades K-6
- Multiple opportunities for teachers to check for understanding.

National Reading Panel Scientific Evidence

Houghton Mifflin Reading was developed based upon the scientific evidence of the National Reading Panel.

To be considered as scientific evidence, the research studied had to address achievement of one or more skills in reading, had to be generalizable to a larger population, had to examine the effectiveness of an approach and needed to be regarded as high quality.

The analysis and discussion in the study focused on five areas of reading instruction: phonemic awareness, phonics, fluency, vocabulary, and text comprehension.

The research report reviews the evidence from research, suggests implications for classroom instruction and describes proven strategies for teaching reading skills. The report makes the following conclusions:

Phonemic Awareness—Instruction is most effective when manipulation of phonemes is linked to learning the letters of the alphabet and when instruction focuses on only one or two—rather than several types of phonemic manipulation.

Phonics—Programs of phonics instruction are effective when they are systematic and explicit and when they provide ample opportunities for children to apply what they are learning about letters and sounds to the reading of words, sentences, and stories.

Fluency—Reading fluency can be developed by modeling fluent reading and by having students engage in repetitive oral reading.

Vocabulary—Vocabulary can be developed indirectly when students engage daily in oral language, listen to adults read to them, and read extensively on their own. Vocabulary can be developed directly when students are explicitly taught both individual words and word-learning strategies.

Comprehension—Text comprehension can be developed by teaching comprehension strategies through explicit instruction, through cooperative learning, and by helping readers use strategies flexibly and in combination.

National Research Council

In 1997 a distinguished group of reading researchers was appointed by the National Research Council to develop a meta-analysis of the scientific research on reading instruction. The NRC report, *Preventing Reading Difficulties in Young Children*, published in 1999, was immediately recognized as an important and balanced summary of our current scientific knowledge about teaching reading.

The NRC researchers developed their report during the same time period that Houghton Mifflin was creating its new reading program. We at Houghton Mifflin believed it was important for our program to reflect the conclusions of this distinguished group. We took several steps to accomplish that. Two key members of the NRC research group, Dr. Ed Kame'enui and Dr. Claude Goldenberg, participated in the Houghton Mifflin research symposium held in 1998. Dr. Goldenberg subsequently joined the author team of *Houghton Mifflin Reading*.

Dr. Catherine Snow, the chair of the NRC research group, also met with the Houghton Mifflin editorial leadership to discuss the researchers' emerging conclusions and their implications for instructional design.

This dialogue with NRC researchers impacted many aspects of *Houghton Mifflin Reading*, resulting in the following:

Primary Grades:

- Emphasis on learning the alphabetic principle in Kindergarten and Grade 1
- Extensive opportunities to develop phonemic awareness in Grades K and 1
- Rich oral language experiences throughout the primary grades
- Explicit, systematic instruction, particularly in phonics and beginning reading
- Appealing mnemonics to help children learn sound-spelling correspondences
- Carefully controlled vocabulary in practice text for beginning readers, with emphasis on applying phonics skills that have been taught
- Opportunities for children to read new text every day to apply phonics skills and develop fluency early in Grade 1.

Intermediate Grades:

- Consistent development of metacognitive strategies across Grades K-6
- Phonics review instruction through Grade 6
- Emphasis on decoding longer words, syllabication, and morphemic awareness
- Grammar instruction that is explicit, systematic, and thorough.

All Levels:

- Spelling instruction coordinated with phonics, so that encoding and decoding skills mutually reinforce each other
- Teacher Read Alouds that use high-quality authentic literature to develop oral language and comprehension
- Diagnostic and ongoing assessment to assist teachers in differentiating instruction to reach all learners.