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ABSTRACT

A pilot study was conducted to evaluate the instructional effectiveness of the SIGNATURES program (Harcourt Brace), an elementary reading program that aimed to reflect the best thinking about reading instruction. In developing the program, the publishers reviewed current curriculum guides and content standards for most states and from professional groups such as the National Council of Teachers of English and the International Reading Association. Also, they met in small focus groups with hundreds of teachers and consulted with several nationally recognized reading educators regarding content and instructional practices. A total of 18 teachers from Illinois, Massachusetts, Minnesota, Missouri, New Jersey, and Ohio participated in the study: 9 at grade 1, and 9 at grade 4. The teachers had not used the program previously. A quasi-experimental pretest-posttest design was used. At grade 1 the mean Skills Test score increased from 78.5% before instruction to 86.1% after instruction; at grade 4, the mean Skills Test score increased from 72.5% to 83.1%. Both groups showed a significant gain in the Stanford 9 Total Reading score, and additional analysis was conducted to see which subtests may have contributed to those gains. Findings suggest that SIGNATURES is instructionally effective, and this appears to hold up across grade levels. Contains 4 tables of data. (NKA)

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SIGNATURES
Technical Report #1

A Study of the Instructional Effectiveness
of the SIGNATURES Program

Prepared by

The Center for Innovation in Assessment
Indiana University

and

Department of Test Services
Harcourt Brace School Publishers



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A Study of the Instructional Effectiveness of the *SIGNATURES* Program

The purpose of this report is to describe a pilot study that was conducted to evaluate the instructional effectiveness of the *SIGNATURES* program.

Background Information

Developing an instructional program is a complex and demanding task that takes many months, if not years. In order to create an elementary reading program that reflected the best thinking about reading instruction, Harcourt Brace took several factors into consideration. First, they reviewed current curriculum guides and content standards for most states and many large school districts to identify common instructional elements and their developmental placement. As part of this process, they examined the standards emanating from professional groups such as the National Council of Teachers of English and the International Reading Association to determine how the new program could meet those standards. Second, they met in small focus groups with hundreds of teachers around the country to find out what they desired in a reading program, and which features would be most beneficial to them in their day-to-day teaching. Finally, they consulted with several nationally recognized reading educators for their advice regarding content and instructional practices.

In spite of the considerable effort that publishers expend in creating new programs, they are increasingly being asked to provide evidence that the programs they develop are effective. "Do students really learn if they use this program?" has become the rallying cry for some policy makers and state departments of education. Most educators would agree that no program is "teacher proof" and capable of producing student gains in spite of the teacher. Rather, research has consistently shown that the classroom teacher is the single, most important variable in the instructional equation. None the less, good teachers desire effective programs to help them achieve their goals.

It is within this context that Harcourt Brace Educational Publishers asked the Center for Innovation in Assessment at Indiana University to conduct an independent pilot study to evaluate the effectiveness of *SIGNATURES*. Harcourt Brace Educational Publishers sought out volunteer teachers to participate in the study; the Department of Test Services assisted in designing, securing, and scoring the data collection instruments; and Indiana University conducted the study and analyzed the data that were collected.

Research Questions

The following research questions guided the design, procedures, and data analysis of the pilot study:

Is SIGNATURES instructionally effective? Do selected themes significantly increase students' understanding of key reading skills, concepts, and strategies as measured by a program Skills Test? As measured by a standardized achievement test?

Does SIGNATURES have a positive impact on students' attitudes and interests? Do selected themes significantly increase students' attitudes toward reading as measured by an informal survey?

Design and Procedures of the Study

Because of cost and time considerations, the study was limited to two grades – grades 1, and 4. It was believed that these two grades would give a good cross-sectional look at the primary and upper elementary levels of the program.

Teachers who volunteered to participate in the study had not used the program previously. The teachers were allowed to select one theme to pilot over a four- to six-week period. They also agreed to administer data collection instruments before beginning instruction and again after completing instruction.

A total of 18 teachers volunteered to participate in the study: 9 at grade 1, and 9 at grade 4. The participating teachers came from six states: Illinois, Massachusetts, Minnesota, Missouri, New Jersey, and Ohio.

A quasi-experimental pretest-posttest design was used. Before instruction began, students were administered the following pretests: (1) the appropriate *SIGNATURES* Skills Test; (2) the reading section of the *Stanford 9 Achievement Test, Ninth Edition* (Abbreviated Battery); and (3) and the *Elementary Reading Attitude Survey*, an informal instrument designed to measure attitudes toward reading.

Following the pretests, the teachers taught the selected themes using the resources and procedures contained in *SIGNATURES*. Teachers also received training from experienced consultants in methods of implementing and using the program. Instructional time varied from four to six weeks depending on the themes taught. In most cases, *SIGNATURES* replaced the existing reading program.

Upon completion of the theme, students were administered the same three instruments as posttests. All data collection instruments were returned to Indiana University where they were processed. The *Stanford 9 Achievement Tests* were scored at the Harcourt Brace Educational Measurement Scoring Center. The *SIGNATURES* Skills Tests and the *Elementary Reading Attitude Surveys* were scored at Indiana University, and all of the data were analyzed at Indiana University.

Table 1 summarizes the skills taught in the themes that were piloted by teachers in the study.

TABLE 1
Content of the *SIGNATURES'* Themes
Taught by the Pilot Teachers

Theme	Grade 1	Grade 4
1	<i>Vocabulary</i> Keywords <i>Decoding</i> Initial, medial, final consonants	
2		<i>Vocabulary</i> Key Words <i>Decoding</i> Structural analysis: prefixes, suffixes, roots <i>Literary Appreciation</i> Narrative elements
3		<i>Vocabulary</i> Key Words <i>Comprehension</i> Cause and effect Sequence
4	<i>Vocabulary</i> Key Words <i>Decoding</i> Short vowels/long vowels Structural analysis: inflected forms <i>Comprehension</i> Make predictions <i>Study Skills</i> Alphabetical order	<i>Vocabulary</i> Key Words Context clues <i>Comprehension</i> Cause and effect Main idea/details Sequence
5	<i>Vocabulary</i> Key Words <i>Decoding</i> Short vowels/long vowels Consonant clusters/digraphs Structural analysis: inflected forms <i>Comprehension</i> Main idea/details	<i>Vocabulary</i> Key Words Context clues <i>Comprehension</i> Main idea/details Summarize/paraphrase Sequence <i>Study Skills</i> Reference sources
6		<i>Vocabulary</i> Key Words <i>Comprehension</i> Compare/contrast Fact/opinion Main idea/details <i>Study Skills</i> Reference Sources <i>Literary Analysis</i> Narrative elements

As Table 1 indicates, the pilot study included a broad sample of reading skills from the strands of decoding, vocabulary, comprehension, literary appreciation, and study skills.

Findings

Table 2 summarizes the pre- and posttest means and standard deviations for the Skills Test, the Stanford 9, and the *Elementary Reading Attitude Survey* for both grades. The means and standard deviations for the Skills Tests and the *Elementary Reading Attitude Survey* are presented in percentages; those for the Stanford 9 are in raw scores.

TABLE 2
Means and Standard Deviations of
Pretests and Posttests

Grade	Skills Test		Stanford 9 Total Reading		Attitude Survey	
	Mean	SD	Mean	SD	Mean	SD
Grade 1 (N=194)						
Pretest	78.5	20.5	53.5	10.8	76.5	13.7
Posttest	86.1	16.5	56.3	9.4	72.8	15.7
Grade 4 (N=157)						
Pretest	72.5	22.0	35.8	9.4	71.1	14.8
Posttest	83.1	16.1	38.2	8.6	70.5	17.1

At grade 1, the mean Skills Test score increased from 78.5% before instruction to 86.1% after instruction. This increase was highly significant ($t=9.417$; $p<.0001$). Likewise, the raw score means for Total Reading on the Stanford 9 increased from 53.5 to 56.3 as a result of instruction ($t=5.858$; $p<.0001$). The raw score means were converted to scale scores, percentiles, and grade equivalents in order to interpret the increase in normative scores. The mean scale score increased from 548 to 558; the percentile scores for the means increased from 65 to 72; and the grade equivalent scores for the means increased from 2.2 to 2.3. Unlike the achievement measures, the mean score on the Attitude Survey decreased from 76.5% to 72.8% percent. This decline was significant ($t=4.085$; $p<.0001$).

At grade 4, the mean Skills Test score increased from 72.5% to 83.1%, a statistically significant gain ($t=8.368$; $p<.0001$). The Total Reading raw score mean on the Stanford 9 increased from 35.8 to 38.2. This increase is also significant ($t=6.573$; $p<.0001$). When interpreted in terms of normative scores, the scale score went from 638 to 646, the percentile score from 50 to 58, and the grade equivalent score from 4.8 to 5.3. The mean score for the Attitude Survey decreased from 71.1% to 70.5%. This decline was not significant ($t=.642$; $p<.522$).

Because both groups showed a significant gain in the Stanford 9 Total Reading score, an additional analysis was conducted to see which subtests may have contributed to those

gains. Table 3 shows the pre- and posttest subtest means and standard deviations for the Stanford 9 for grade 1.

TABLE 3
Means and Standard Deviations of the
Stanford 9 Subtests for Grade 1
(N=194)

Test	Word Study Skills		Word Reading		Reading Comprehension	
	Mean	SD	Mean	SD	Mean	SD
Pretest	15.2	3.4	14.9	4.4	22.6	4.9
Posttest	16.3	3.3	15.6	3.5	24.0	4.3

As Table 3 shows, mean scores increased for all three subtests. The increases for Word Study Skills ($t=5.240$; $p<.0001$) and for Reading Comprehension ($t=5.169$; $p<.0001$) were highly significant. However, the increase in Word Reading was moderately significant ($t=2.3$; $p<.025$).

A similar analysis was conducted for grade 4. At grade 4, the Stanford 9 yields two subtest scores – Vocabulary and Reading Comprehension. Table 4 presents the pre- and posttest means and standard deviations for these subtests.

TABLE 4
Means and Standard Deviations of the
Stanford 9 Subtests for Grade 4
(N=157)

Test	Vocabulary		Reading Comprehension	
	Mean	SD	Mean	SD
Pretest	15.3	3.4	20.1	6.9
Posttest	16.2	3.2	21.8	6.1

As in grade 1, mean scores increased on each of the subtests. The increase in Vocabulary ($t=5.7$; $p<.0001$) and the increase in Reading Comprehension ($t=5.4$; $p<.0001$) were both highly significant.

Conclusions

The following conclusions can be made based on the findings:

- *SIGNATURES* is instructionally effective. Students using *SIGNATURES* increase their understanding of key reading skills, concepts, and strategies.
- The instructional effectiveness of *SIGNATURES* appears to hold up across grade levels. In this study, students in grades 1 and 4 showed similar increases in reading achievement.
- The instructional effectiveness of *SIGNATURES* also appears to demonstrate itself on both criterion-referenced measures related to the program as well as standardized achievement tests that are independent of the program.
- At grade 1, the average increase on the Stanford 9 was approximately 7 percentile points after completing instruction in only one theme, with the greatest gains coming in Word Study.
- At grade 4, the average increase on the Stanford 9 was about 11 percentile points after completing instruction in only one theme, with the greatest gains coming in Reading Comprehension.
- There were decreases in student attitudes toward reading. At grade 1 the decrease was statistically significant; at grade 4 the decline was not significant. The decrease in student attitudes was an unexpected finding of the study. Since it is likely that attitudes and interests toward reading are formed over a longer period of time, it is difficult to explain what may have contributed to these decreases.



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