Does Reading Recovery Work in Kansas? A Retrospective Longitudinal Study of Sustained Effects

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At a time when all states are making difficult decisions concerning funding of educational initiatives, it is more important than ever before that accountability and exemplary results be the major criteria for any educational programs implemented in schools or districts. Reading Recovery delivers on both of these counts. Reading Recovery has over 18 years of replicated evaluation data in the United States to document its effectiveness as an early literacy intervention (Gómez-Bellengé, Rodgers, & Fullerton, 2003).

Since 1985 Reading Recovery has served over one million children in the United States. Nationally, in 2001–2002, 60% of all children served (children who received one lesson or more) and 77% of students who went through a full series of lessons successfully completed the Reading Recovery program with reading and writing competencies equivalent to or exceeding the average achievement of their peers. Of the 83,618 students who successfully completed the program and for whom data were available, only 120 (less than 1%) were placed in literacy-related learning disability programs after the Reading Recovery intervention. For Reading Recovery children who received a full program of 12–20 weeks during the 2001–2002 school year, less than 1% (120 students) were placed in a learning disability program for reading after Reading Recovery. In comparison to this figure, 1% (372 students) of the random sample children, representing the full range of reading and writing competencies, were placed in learning disability programs for reading (Gómez-Bellengé, Rodgers, & Fullerton, 2003).

Not only has Reading Recovery consistently shown that the majority of the lowest-achieving first-grade students can be accelerated to read and write within the average of their classmates, follow-up studies in eight states show that those gains are sustained (Askew, Fountas, Lyons, Pinnell, & Schmitt, 1998; Brown, Denton, Kelly, & Neal, 1999; Forbes, in press; Fountas, 1997; Homan, 1999; Hovest & Day, 1997; Jaggar & Simic, 1996; Williamson & Johnson, 1999). Two of these studies collected data for Reading Recovery children in second through fifth grades; three studies documented students' progress through fourth grade; and three studies followed students through third grade. All eight follow-up studies revealed that the majority of former Reading Recovery students continued to perform within the average range of performance when compared with their peers in subsequent years.

Reading Recovery in Kansas

Reading Recovery was first implemented in Kansas in 1993 when one teacher leader was trained at Texas Woman's University. The implementation has steadily grown over the past 10 years. Currently, eight teacher training sites serve 161 teachers in 69

Reading Recovery teacher leader Mischel Miller works with Sebastian Morales at Sublette Elementary School in Sublette, Kansas.

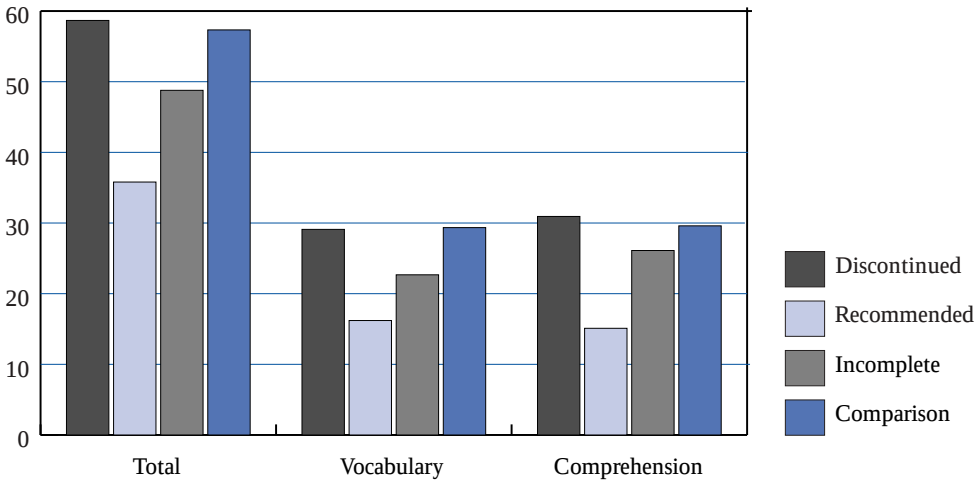
school districts throughout Kansas. During the 2001–2002 school year, 1,302 students received Reading Recovery as an early intervention.

While sufficient scientifically based Reading Recovery follow-up studies are available to provide data that are generalizable, Kansas legislators and other Kansas stakeholders wanted to study the longitudinal results of Kansas Reading Recovery children in order to provide data to receive state financial support. The quickest way to do this was to design a retrospective longitudinal study which would identify the Kansas school districts with a Reading Recovery implementation in 1998, find the fourth-grade students who were still attending these schools, and test those students with a standardized measure. Further, we determined that a comparison group of Kansas' fourth graders in similar socioeconomic districts without Reading Recovery implementation in 1998 would also be tested using the same assessment.

Methods

The purpose of the Kansas Retrospective Longitudinal Reading Recovery Study was to document the sustainable results of Reading Recovery on Kansas children's reading performance. We hypothesized that children who went through the Reading Recovery program as first graders in 1998–1999 would continue to score as well as a comparison group of students representing a normal distribution of reading and writing abilities, on a standardized reading test administered in fourth grade in 2000–2001.

Figure 1. Comparison of Gates-MacGinitie Test Raw Scores for Discontinued, Recommended, Incomplete, and Comparison Groups



In 1998–1999 Reading Recovery was implemented in only 10 school districts in Kansas. Permission was requested from each of these school districts for participation in this study; all but two districts consented to the request. Archival data from Reading Recovery's National Data Evaluation Center in Columbus, Ohio was used to identify Kansas Reading Recovery students in those eight school districts who had completed the Reading Recovery program during the 1998–1999 school year. From this list, teacher leaders used school records to identify which students were still attending school in the school districts as fourth graders (n = 295). The treatment group consisted of 56 students who were randomly selected from the available pool of 295 Reading Recovery students across the eight consenting districts. These students were further disaggregated by Reading Recovery end-of-program status categories:

- *Discontinued category:* Students who successfully completed the program (n = 42)
- *Incomplete category:* Reading Recovery students who did not have enough time during the school year to complete a full program (n = 9)
- *Recommended category*: Students who were recommended for longer-term intervention after going through a full series of Reading Recovery lessons (n = 5)

To identify a comparison group of children, teacher leaders were asked to identify schools in their geographic areas that compared to the treatment group schools in size, socioeconomic status, and race/ethnicity and that did not have a Reading Recovery implementation in 1998–1999. These initial recommendations were confirmed by information obtained from the Kansas State Department of Education Web site. Size of school populations was determined by average daily attendance numbers; pupil socioeconomic status was determined by free and reduced-price lunch categories; and pupil race/ethnicity status was identified by average daily attendance of minority students as determined by the racial/minority percentages of the school. These schools were invited to participate in the study. Three schools gave permission and collectively included a large enough fourth-grade population to statistically serve as a valid comparison group (n = 79). For this study, then, the comparison group is defined as a fourth-grade cohort of students at demographically similar schools that did not have a Reading Recovery implementation in 1998–1999.

Sustained effects for former Reading Recovery students were determined by administering the Gates-MacGinitie Reading Test (Level 4, Form K). This widely respected reading assessment includes a vocabulary, comprehension, and total reading score. The test was administered to the entire class by either the classroom teacher or a Reading Recovery teacher in the

Table 1. One-Way ANOVA Comparing Reading Recovery Status Groups and Comparison Group on Gates-MacGinitie Vocabulary, Comprehension, and Total Scores

Source		df	MS	F	Effect Size	Est. Power
Vocabulary	Between Groups	3	377.38	5.37**	.087	.94
	Within Groups	132	70.72			
	Total	135				
Comprehension	Between Groups	3	405.98	4.63**	.074	.89
	Within Groups	132	87.69			
	Total	135				
Total	Between Groups	3	1085.91	3.63*	.055	.77
	Within Groups	132	299.14			
	Total	135				

* p < .05
** p < .01

Table 2. Tukey Post Hoc Test Comparing Student Status on Gates-MacGinitie Vocabulary Scores

Student Status	N	1	2
Recommended	5	16.20	
Incomplete	9	22.67	22.67
Discontinued	42		29.10
Comparison	80		29.35

Note: Uses Harmonic Mean Sample Size = 11.513

Table 3. Tukey Post Hoc Test Comparing Student Status on Gates-MacGinitie Comprehension Scores

Student Status	N	1	2
Recommended	5	15.10	
Incomplete	9		26.11
Comparison	80		29.60
Discontinued	42		30.93

Note: Uses Harmonic Mean Sample Size = 11.513

spring of 2002. Student answer sheets were collected by the teachers who administered the assessment and mailed to the Emporia State University Reading Recovery University Training Center. The answer sheets were hand-scored and statistically analyzed by the researchers using the statistical software SPSS.

Results

Overall means of each status group (see Figure 1, page 60) revealed that students who discontinued from Reading Recovery in first grade scored very near or above the comparison group on vocabulary, comprehension, and overall reading scores in the fourth grade. A one-way analysis of variance (ANOVA) was applied to these data to determine whether any observed differences in the means were statistically significant (i.e., not due to chance).

The results of the ANOVA (see Table 1, page 61) reveal significant differences in vocabulary ($F = 5.37$, $p < .01$), comprehension ($F = 4.63$, $p < .01$), and the total reading score ($F = 3.63$, $p < .01$) on the Gates-MacGinitie test among the separate status groups, all with fairly strong power and effect size. However, when a Tukey post hoc analysis was run on the data (see Table 2, page 61, as well as Tables 3 and 4), we observed that all of the significant differences in the data were between the mean scores of the recommended status group and the comparison group. In other words, no statistical differences in mean scores were observed between the discontinued and incomplete groups and the comparison group. No observed statistical difference between groups means Reading Recovery is fulfilling its purpose. The mean scores of the discontinued and incomplete Reading Recovery students, when tested in fourth grade, were not significantly different from the mean scores of the comparison group of fourth-grade students for vocabulary, comprehension, or total score. Most Reading Recovery students scored nearly as well or better than the comparison group mean scores for vocabulary, comprehension, and total reading score 3 years after their initial Reading Recovery instruction.

Table 4. Tukey Post Hoc Test Comparing Student Status on Gates-MacGinitie Total Reading Scores

Student Status	N	1	2
Recommended	5	35.80	
Incomplete	9	48.78	48.78
Discontinued	80		58.67
Comparison	42		58.94

Note: Uses Harmonic Mean Sample Size = 11.513

While all of the schools appeared to be similar in size, socioeconomic status, and race/ethnicity, another one-way ANOVA was performed to determine if the students from each school scored significantly different (see Table 5), perhaps due to teaching style, classroom size, resources available, or other factors. This analysis revealed that the vocabulary section of the test was the only aspect of the reading test on which students scored differently ($F = 2.17$, $p < .05$). While statistically significant, the F value in this case was not extremely high. Another Tukey post hoc analysis found that there was only one school that scored substantially lower than the remaining seven schools (see Table 6). Given that the ANOVA yielded no significant difference in the overall scores of the school's students, there seems to be credence to the statement that the schools used in this study were relatively comparable.

Discussion

Longitudinal studies are difficult to carry out because of student mobility and shrinking numbers of students to follow as the years progress. This longitudinal study of a relatively small but statistically significant number of students found that when scores for a group of students originally identified as most at-risk for learning to read in first grade were compared to scores of

a randomly selected comparison group spanning all ability levels, the at-risk children who successfully finished their individual Reading Recovery programs performed at near-mean levels compared to the comparison group. This outcome suggests that the gains made in first grade were maintained. Moreover, the results are consistent with the results of the previously cited, larger longitudinal studies from eight other states.

Dr. Marie Clay, the founder of Reading Recovery, states that the goal of Reading Recovery is to significantly reduce the numbers of students who have extreme difficulty with literacy learning and the cost of these learners to the educational system (Askew et al., 1998). Two positive outcomes benefit children who have received Reading Recovery instruction. The first positive outcome of this early intervention is that children will successfully complete the program reading and writing within the average of their classmates and will continue to profit from good classroom instruction. The discontinued category of students in this study represent the first outcome. This study revealed that in Kansas, Reading Recovery students who were once the lowest literacy learners in first grade and who successfully completed their Reading Recovery lessons are reading as well as their fourth-grade peers 3 years later.

The second positive outcome of Reading Recovery is referral for further specialist help for those students who have benefited from the intensive diagnostic intervention but do not meet the criteria to successfully complete the program. The recommended group in this study represent the second outcome. The results of the Tukey post hoc test support the decision that these students needed further help since they were still performing significantly lower in vocabulary, comprehension, and total reading scores than the fourth-grade comparison group. Hence, the decision making regarding recommendation of a few children for longer-term intervention appears to be affirmed.

Table 5. One-Way ANOVA Comparing Schools on Gates-MacGinitie Vocabulary, Comprehension, and Total Reading Scores

Source		df	MS	F
Vocabulary	Between Groups	10	154.83	2.17*
	Within Groups	125	71.35	
	Total	135		
Comprehension	Between Groups	10	117.03	1.26
	Within Groups	125	92.99	
	Total	135		
Total	Between Groups	10	505.69	1.67
	Within Groups	125	301.49	
	Total	135		

* $p < .05$

Data from this study indicate that students who did not have enough time, due to mobility or end of school year, to complete the series of lessons did not score as well as students who received a full series of lessons. Considering time-on-task research, this is not a remarkable finding, but it does serve as impetus to find creative ways to ensure that more students have a complete Reading Recovery literacy intervention.

Two of the hallmarks of Reading Recovery that set it apart from other early interventions are that teachers teach for acceleration and they teach

Table 6. Tukey Post Hoc Test Comparing Schools on Gates-MacGinitie Vocabulary Reading Scores

School	N	1	2
1	9	20.22	
2	3	25.00	25.00
3	10	25.30	25.30
4	51	27.24	27.24
5	6	28.33	28.33
6	6	28.83	28.83
7	9	29.44	29.44
8	11	29.45	29.45
9	23	32.35	32.35
10	2	32.50	32.50
11	6		35.83

Note: Uses Harmonic Mean Sample Size = 6.079

towards students building a self-extending system. Building a self-extending system ensures that readers will develop a set of cognitive strategies enabling them to continue to acquire more literary expertise each time they read and write. This study appears to affirm the concept of developing a self-extending system of literacy learning by which Reading Recovery students continue to learn with their peers well beyond the time frame of the intervention itself.

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