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Making the Most of Instructional Time: Teaching Reading at an Accelerated Rate to Students At Risk

Abstract: Students who are performing below their grade-level can be considered to be "at risk for school failure." These students need to learn at an accelerated rate, that is, faster than national norms to move out of the at risk situation. Direct Instruction is one means of accelerating learning (Carnine, 1988). *Reading Mastery*, a Direct Instruction program, was used to teach reading to first- and second-grade students at risk. The Woodcock Reading Mastery Test-Revised was administered pre and post to determine students' reading grade level and rate of reading gain prior to and during the implementation of *Reading Mastery*. The rate of reading gain prior to the implementation of *Reading Mastery* was compared to the rate of reading gain during the *Reading Mastery* intervention using a dependent one-tailed *t* test with Bonferroni corrections for each grade level. A significant difference in rate of gain was found for Total Reading in both grades and for Word Attack in first grade and Word Identification in second grade.

Making the most of instructional time means teaching as much as possible in the time students are in school. Maximizing efficient use of instructional time may be the only way to ensure success for some students. In elemen-tary school, this success is largely defined by success in reading (Slavin et al., 1996). Frequently, however, students experience failure in learning to read and, before long, in other subjects that rely on reading (Slavin et al., 1996). Students who are likely to experience such failure often are considered to be at risk.

In a review of programs for students identified as at risk, McLaughlin and Vacha (1992) found no clear definition of "at risk." Instead, they found that the term is generally used to identify students who are not likely to graduate from high school or who are likely to experience emotional or behavioral problems. Students may be at risk because of "poverty, cultural and language differences, race differences, family and community differences, and schools that do not yet consistently make a difference in these children's learning" (Stringfield & Hollifield, 1996, p. 1). However, if the term is simply used as a synonym for "racial or cultural minority," or implies blame of a culture for a student's struggles in school, then the term is detrimental rather than helpful. We use the term to refer to students who have been achieving less than a year's academic growth per academic year. They are at risk because they have to achieve more than the average student to catch up and they are likely to fall further and further behind as they go through school (Condon & Blaney, 1995).

Little is done to prepare some students to read before they come to school, and this is what places many students at risk for academic failure. Students who are already behind when they begin first grade will need to achieve more than a year's worth of reading in a year's time if they are ever to move out of the at risk situation. These students "constantly face the tyranny of time in trying to catch up with their peers, who continue to advance in their literary development" (Condon & Blaney, 1995, p. 23).

If we are to have any hope of meeting the educational needs of students at risk, we must teach them at an accelerated rate so they can catch up with their peers (Carnine, 1988). As soon as students enter school, we must begin this process by teaching them to read. Students who do not begin to read by the middle of first grade are likely to fall further and further behind in school and are thus at greater risk of failing to graduate from high school or of developing behavioral and emotional problems (Honig, 1996; Juel, 1994).

Learning to read begins with phonemic awareness, "the ability to reflect explicitly on the sound structure of spoken words" (Hatcher, Hulme, & Ellis, 1994, p.41). The importance of phonemic awareness and systematic phonics instruction is well documented in the literature (Adams, 1990; Brown & Felton, 1990; Carnine, 1988; Chall, 1989; Condon & Blaney, 1995; Hatcher et al., 1994; Honig, 1996; Juel, 1994). In a summary of research on early reading instructions, the Center for the Future of Teaching and Learning (1996) emphasized the importance of explicit instruction in phonemic awareness, sound-symbol correspondence, and sound-spelling relationships. The Center also encouraged extensive practice in using students' emerging knowledge of sound-symbol relationships to read connected, decodable text. Although these highly decodable texts are initially constrained by the students' limited knowledge of phonics, the texts become more sophisticated and natural as students become more accomplished readers with greater repertoires of knowledge about sound-symbol decoding.

Unfortunately, many of our students are not receiving the systematic reading instruction necessary to become competent readers; instead, their reading instruction is being guided by a Whole Language philosophy. This approach is based on the idea that reading, like basic oral language, is best learned without explicit instruction in fundamental skills. Teachers who follow the Whole Language approach tend to provide classrooms rich in print materials including trade books and good literature and eschew the controlled readers necessary for explicit, systematic reading instruction. Whole Language teachers often read to students who follow along and perhaps eventually begin to read for themselves. Phonemic awareness is typically not specifically developed, nor are decoding skills taught in any explicit, systematic way as such instruction is thought to be unnatural. Instead words are often deciphered by fitting them into the context of the material, and correct reading is judged by whether words make sense in context rather than by whether they match the text.

Many students are not able to learn to read without explicit instruction and they quickly fall behind in their reading achievement. This problem then compounds itself as students find themselves increasingly behind their peers. Before long they begin to believe that they cannot learn to read.

The purpose of this study was to evaluate the *Reading Mastery* program to determine its effect on the reading growth rates of students at risk whose previous reading instruction had been based on the Whole Language method.

Method

Participants and Setting

This study began with four 1st-grade classes (85 students and 4 teachers) and four 2nd-

grade classes (87 students and 4 teachers) in an elementary school in a large urban school system. One of the four 1st-grade classes was dropped from the study when the teacher was seriously injured in an automobile accident and the class was taught by a series of substitute teachers not trained in the *Reading Mastery* program. In addition, the school served a highly mobile population. As a result of these factors, pre and posttest data were available for only 44 first-grade and 63 second-grade students. These students received 7 months of instruction from the classroom teacher in small groups (no more than 8–10 students) in the regular classroom. *Reading Mastery* was scheduled to be taught daily for 30 min to each group. Participants were used as their own controls in a repeated-measures design that compares participants to themselves at two different points in time.

Instructional Procedures

All teachers used the *Reading Mastery Series Level I* (Engelmann & Bruner, 1995a), *Level II* (Engelmann & Bruner, 1995b), or *Level III* (Engelmann & Hanner, 1995). *Reading Mastery* is a code-based approach to reading that incorporates many features of phonemic awareness and explicit synthetic phonics. *Reading Mastery* includes phonemic awareness tasks found to have a positive effect on reading acquisition: rhyming, blending, isolating sounds in words, and segmenting spoken words into sounds (Grossen, 1996). Letter-sound correspondences also are taught explicitly in the program, as recommended by two extensive reading research reviews (Adams, 1990; Anderson, Hiebert, Scott, & Wilkinson, 1985). All levels of *Reading Mastery* are based on Direct Instruction teaching principles and curriculum analysis. In addition, multiple opportunities to respond are provided through group responses; errors are corrected immediately, and the teacher's presentation is scripted to reliably replicate the demonstrated high success of the program (Grossen, 1996). Placement tests are available at each level. Placement testing was conducted by the experimenters and trained graduate research assistants during the second week of school, and instruction began immediately afterward. Based on their placement tests, students were assigned to instruction in *Reading Mastery I, II, or III*.

Teacher Training

Two of the first-grade teachers in this study participated in a similar study the previous year and did not receive any additional formal training. The six additional teachers were trained in July. Teacher preparation was provided by a professional trainer experienced in training teachers to implement *Reading Mastery*. This training lasted 2 days and included an overview of Direct Instruction programs, specific instruction in the implementation of *Reading Mastery I, II,* and *III*, and role playing using the *Reading Mastery* materials.

Pre and Posttesting

When placement testing was completed, graduate research assistants administered the Word Identification, Word Attack, and Passage Comprehension subtests of the Woodcock Reading Mastery Test-Revised, Form G (WRMT-R; Woodcock, 1987) to each student individually. In addition to the scores from these three subtests, a Short Scale Total Reading Score was available using the scores from the Word Identification and Passage Comprehension subtests. Pretesting was completed in October. The same graduate assistants administered these subtests using Form H of the WRMT-R as a posttest in May.

Schedule

Teachers were instructed to teach each group for the entire 30 min scheduled. They were told that if they finished a lesson in less than 30 min they should start the next lesson and could stop at the end of any task after they taught for 30 min. Each day, teachers recorded the lesson taught to each group.

Technical Support

Technical support was provided by the first two authors and two graduate research assistants. One author observed reading instruction in each first grade once every week with one graduate research assistant also observing in each first grade on a different day each week. This was replicated in the second grade with the second author and graduate research assistant so that each teacher had a person trained in *Reading Mastery* to provide technical assistance at least twice a week. We did not conduct a measure of fidelity of implementation as the teachers were uncomfortable being assessed on their implementation of the program, but quite willing for us to visit and offer support. Therefore, rather than conduct a formal measure of fidelity of implementation during these visits, we observed, modeled, answered questions, tracked progress, and checked for material needs. If, while we were observing, we noticed a teacher struggling with a format we offered to model the format and then had the teacher practice. In addition, teacher questions often led us to additional modeling of formats that were not in that day's lesson. We tracked student progress as a measure of the extent to which the program was being implemented regularly, and we frequently administered mastery tests to confirm that students were mastering the content and not just moving through the lessons. As students were demonstrating mastery and we were observing regularly, we concluded the programs were being implemented correctly. Finally, we met with teachers in each grade at least once each month to answer any questions, practice new formats, and encourage the teachers to implement the program consistently.

Results

Pre and posttest data from the WRMT-R were complete for 44 first-grade and 63 second-grade students who participated in the *Reading Mastery* program for the 7-month evaluation period. We compared students' reading grade equivalents and rate of reading gain prior to *Reading Mastery* to their rate of reading gain during the implementation of *Reading Mastery* (Snyder-McLean, 1987). Rate of reading gain prior to *Reading Mastery* was calculated by dividing students' pretest grade equivalent scores by the number of months they were in school before the start of the program. Rate of academic gain during *Reading Mastery* was calculated by dividing students' months of academic gain during the evaluation by the number of months students were in the program (7 months). These rates of progress were calculated for the Word Identification, Word Attack, Passage Comprehension, and Total Reading scores of the WRMT-R. Pre and posttest grade equivalents and rates of progress for the first- and second-grade classes are presented in Table 1.

Dependent one-tailed t tests with Bonferroni corrections (Kirk, 1995) for each grade level were conducted to determine if there were significant differences between the rate of academic gain prior to and during *Reading Mastery* instruction. With the Bonferroni correction for the four t-tests, p values must reach the .0125 significance level ($.05/4 = .0125$), found at $t = 2.32$ for $df = 43$, in order to hold the overall .05 significance level. For first-grade students significant differences were indicated for Word Attack ($t(43) = 2.77$, $p < .008$) and for Short Scale Total Reading ($t(43) = 5.67$, $p < .001$). Pre to post differences were not statistically significant for Word Identification ($t(43) = 0.90$, $p < .374$ or Passage Comprehension ($t(43) = 0.18$, $p < .861$).

There were 63 participants ($df = 62$) at the second grade level, therefore t-values must exceed $t = 2.30$ in order to hold the overall .05 significance level. For second-grade students, significant differences were indicated for Word Identification ($t(62) = 2.40$, $p < .002$) and for Short Scale Total Reading ($t(62) = 2.78$, $p < .007$). Statistically significant differences were present in Word Attack ($t(62) = 0.47$, $p < .639$) or Passage Comprehension ($t(62) = 1.38$, $p < .172$).

Discussion

The purpose of this study was to evaluate *Reading Mastery* to determine its effect on the reading growth rates of students at risk. Prior to this study, all reading instruction students received was based on the Whole Language philosophy. We compared students' rate of progress in reading before the study to their rate of progress during the implementation of *Reading Mastery.* The accelerated rate of progress associated with *Reading Mastery* demonstrates that students at risk can be taught to read in an efficient manner. While there was not a significant difference in rate of academic gain in all subtests, there were sig-

Table 1

Mean Reading Grade Equivalent and Rate of Academic Gain
Per Instructional Month for Grades 1 and 2

Skill	Grade level	Mean grade equivalent and rate of academic gain	
		Prior to *Reading Mastery*	During *Reading Mastery*
Word Identification	Grade 1		
	Grade Equivalent	1.3	2.0
	Rate of Academic Gain	0.983	1.051
	Grade 2		
	Grade Equivalent	1.9	2.6
	Rate of Academic Gain	0.832	0.997
Word Attack	Grade 1		
	Grade Equivalent	1.0	1.7
	Rate of Academic Gain	0.750	1.143
	Grade 2		
	Grade Equivalent	1.7	2.2
	Rate of Academic Gain	0.727	0.764
Passage Comprehension	Grade 1		
	Grade Equivalent	1.1	1.7
	Rate of Academic Gain	0.872	0.856
	Grade 2		
	Grade Equivalent	1.8	2.4
	Rate of Academic Gain	0.789	0.901
Total Reading	Grade 1		
	Grade Equivalent	1.0	1.8
	Rate of Academic Gain	0.768	1.207
	Grade 2		
	Grade Equivalent	1.7	2.4
	Rate of Academic Gain	0.754	0.917

nificant accelerations of learning evident in the Short Scale Total Reading for both first- and second-grade students. In addition, there was a statistically significant difference on one subtest at each grade level—Word Attack in first grade and Word Identification in second grade. At the beginning of first grade, students at risk typically are not able to read and benefit from word attack skills that allow them to begin reading printed text. As these skills develop and students move to the second grade, they are better prepared to identify new words that may not be phonetically regular. In both cases, however, total reading proficiency is enhanced. This is in contrast to the normal expectation that students at risk will fall further behind as instruction continues.

Looking at the mean rate of academic gain by grade level in each of the subtests and the Short Scale Total Reading, it appears there was a greater effect in first grade than in second grade. Possibly this is because two of the three 1st-grade teachers were implementing *Reading Mastery* for the second year and were more experienced in its implementation than the four 2nd-grade teachers who were implementing *Reading Mastery* for the first time. In addition, records of lessons taught indicate that except for one second-grade class, *Reading Mastery* was implemented more regularly in first grade than in second grade. First-grade teachers completed an average of four to five lessons a week compared to second-grade teachers who completed an average of three to four lessons a week.

The goal is to have students who are at risk gain *more* than one year in reading achievement for each year they are in school. This accelerated gain is their only means of moving out of the at risk situation. This appears to be a possibility for the first-grade students in this study. Additional research will be necessary to determine if it is possible to move students out of at risk situations once they begin second grade.

One limitation of this study is that students served as their own controls rather than using a separate control group. A control group was not used for two reasons. First, the school's administration was not comfortable assigning some students to a control group that did not receive *Reading Mastery*. This was seen as denying them the best possible instruction. Second, we felt a stronger demonstration of the effectiveness of Direct Instruction would result from showing an increase in academic gain for the same students with a different approach.

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