

Early Intervention in Reading

From Research to Practice

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This study documents the implementation of research-based strategies to minimize the occurrence of reading difficulties in a first-grade population. Three strategies were implemented: (a) A system of progress monitoring was used to assess student progress and skill acquisition; (b) instruction was characterized by high intensity through the use of groups with a low student-teacher ratio; and (c) an explicit instructional approach was used for children who lacked phonemic awareness or an understanding of the alphabetic principle. Furthermore, teachers were supported in working collaboratively with one another and were provided with ongoing support from a literacy coach. Ninety percent of participants met or exceeded grade-level expectations by the end of the year, and 75% of treatment resisters were eligible for special education. Challenges related to implementation are discussed.

Keywords: *small group instruction; response to intervention; reading disability; phonological skills*

There is widespread agreement that early identification and treatment is the most effective course of action for the prevention of learning disabilities (LD) in reading (Bos, Mather, Friedman Narr, & Babur, 1999; Coyne, Kame'enui, & Simmons, 2001). Children who are identified as poor readers in first grade are more than likely to remain poor readers in fourth grade (Juel, 1988). In light of the fact that only 32% of fourth-grade students were considered proficient on the National Assessment of Educational Progress measures of reading in the year 2003, early and intensive reading instruction must be a priority for schools—particularly for those that serve at-risk populations (National Center for Educational Statistics, 2004).

There is a substantial body of research validating practices that have the potential to prevent reading difficulties (Ehri, Nunes, & Stahl, 2001; Hiebert & Pearson, 2000). A balanced literacy program that emphasizes phonological awareness, language development, and comprehension embedded in a literature-based approach (Foorman & Torgesen, 2001; Juel & Minden-Cupp, 2000) can be the foundation for effective reading instruction. A major difficulty, however, is the implementation of such programs (Frey, Lee, Tollefson, Pass, & Massengill, 2005; Lane & Menzies, 2002). To adequately serve all students, especially those deemed at risk for reading failure, instruction must be both focused and comprehensive, which requires that teachers be able to accurately assess student needs and subsequently plan and deliver instruction based on that

assessment. Otherwise, it is difficult to ensure that all students will master the necessary skills to become proficient readers.

Teaching children to read is a complex endeavor that educators become adept at only after several years of teaching. The abundance of information now available about how to teach reading effectively provides teachers with more strategies but, at the same time, makes reading instruction more difficult to master. Teachers must be familiar with instructional approaches as diverse as explicit phonics instruction and guided reading (Fountas & Pinnell, 1996) and must know when it is appropriate to choose one method over another. They must manage different types of instruction for various groups of students while creating a rich literacy experience for all. In essence, effective reading instruction is predicated on educators skillfully negotiating the knowledge and management demands that “balanced” reading instruction requires. Without an understanding of the components of effective reading instruction, teachers may not have the skills necessary to prevent reading failure for at-risk students.

However, translating validated instructional strategies into actual use in schools has been an area of limited success (Gersten, Vaughn, Deshler, & Schiller, 1997; Vaughn, Klingner, & Hughes, 2000). The difficulty is twofold: The first challenge is to increase educators' awareness and use of research-based practices. Second, and perhaps more difficult, is the need to maintain sustained use of

the adopted practice. It is clear that neither the single-shot model of staff development nor the rigid implementation of researcher-designed interventions is adequate to effect substantial change in teaching practices. Malouf and Schiller (1995) suggested three factors that need to be considered in the application of research-based practices: (a) increasing teacher knowledge by building on their existing knowledge base; (b) understanding teachers' attitudes toward research and the manner in which it affects their teaching; and (c) understanding how the demands of the local context will affect implementation. Gersten, Chard, and Baker (2000) also discussed the importance of finding a balance between programs so narrow in scope that they are virtually "teacher proofed" and those so broad that they lack practical strategies for implementation. Innovations are more likely to be sustained if teachers are supported in using their professional judgment while provided with adequate assistance in learning new information and its practical application in the classroom. Intervention programs must have enough flexibility for teachers to make them their own, yet still be powerful enough that they improve student outcomes. A close connection between the intervention and the state and district curriculum and standards also appears to support teachers' use of a program (Baker, Gersten, Dimino, & Griffiths, 2004). Furthermore, there must be a mechanism in place to support teachers' ongoing implementation of the program, such as collaboration time with colleagues, coaching, or multiday trainings (Gersten & Dimino, 2001; Kamps & Greenwood, 2005).

This article examines efforts at one elementary school to draw on validated research practices to design and implement an early intervention reading program that would minimize the occurrence of reading difficulties in the first-grade population. An additional focus of the program was to provide reliable, yet early identification of those students who should be assessed for possible LD. However, a primary aim in the development of the program was to create an intervention that fit within the framework of the school's current language arts curriculum and used existing school resources, which included Title I funding, but not Reading First grants or assistance. The treatment also had to be acceptable to teachers in terms of the amount of time and work it added to their teaching responsibilities; that is, it needed to be sensitive to the local context. As the purpose of this study was to document the systematic application of best practices in the literature in a real school setting by actual school personnel, it is not an experimental study. However, it is empirical in its effort to implement the intervention with fidelity and to reliably measure its outcomes.

Three research-based components composed the program's design: (a) a system of ongoing assessment implemented to monitor student progress and skill

acquisition (Deno, Fuchs, Marston, & Shin, 2001); (b) instruction characterized by high intensity through the use of groups with a low student-teacher ratio (Foorman & Torgesen, 2001; Vaughn et al., 2003); and (c) an explicit instructional approach used with children who lacked phonemic awareness or an understanding of the alphabetic principle (Coyne et al., 2001; Torgesen, 2002). Furthermore, teachers were supported in working collaboratively with one another and were provided with ongoing assistance from a literacy coach to examine their own understanding of teaching reading. It was felt that these elements, combined with the existing language arts program, would create a framework within which teacher professionalism could be capitalized on to provide both strategic and focused instruction.

In this study, we evaluated the progress that first-grade students made in their reading ability. Specifically, we identified a group of students at risk for reading difficulties and provided reading instruction under the model just outlined. We were interested in the extent to which these children attained grade-level reading expectations when given instruction targeted to their needs. Within the group of students identified as at risk at the beginning of the school year were students who failed to make adequate progress in reading—students who might be termed "treatment resisters." Their reading progress was examined at an individual level in an effort to learn more about the unique challenges they faced and to determine whether a special education placement might benefit them.

Method

Participants

Participants were 42 first-grade students in a small elementary school that serves students from kindergarten to Grade 6 in an urban area of Southern California. At the beginning of the intervention, the mean age of the participants was 6 years 3 months. Table 1 reports the demographic information of the first-grade students involved in the study and compares them to the overall school population.

The school population was considered at risk for school failure, as 78% of the students qualified for free or reduced-price lunch, 26% of the students were English language learners (ELLs), 28% of parents did not complete high school, and less than 10% of parents had any post-high school education. Furthermore, the school had an unusually high transience rate because its attendance area included three shelters for women who were homeless or had substance abuse problems. Children in these temporary housing situations often attended school for less than

Table 1
Student Demographics

Characteristic	First Graders		
	<i>n</i>	%	School %
Gender			
Boys	19	45.2	
Girls	23	54.8	
Ethnicity			
Black	3	7.1	12
White	16	38.1	34
Hispanic	20	47.6	53
Pacific Islander	1	2.4	1
English language status			
Proficient	34	81.0	74
Learning English	8	19.0	26

N = 42.

a month before transferring elsewhere. Whereas 51 students began the yearlong intervention, 9 did not complete the program because they moved, bringing the final sample size to 42. Chi-square tests indicated that the students who left the school did not differ from the final sample by gender, $\chi^2(1, N = 51) = 1.36, p = .24$; ethnicity, $\chi^2(4, N = 51) = 7.91, p = .09$; or English language status, $\chi^2(1, N = 51) = 2.03, p = .15$. An independent-samples *t* test also showed no significant difference on the fall administration of the *Test of Early Reading Ability-Revised* (Reid, Hresko, & Hammill, 2001) between students who left the school ($M = 93.89, SD = 14.32$) and the remaining sample ($M = 95.43, SD = 13.81$), $t(49) = -.30, p = .76$.

Each of the school's first-grade classes, their teachers, four paraprofessionals, a special education resource specialist, and a literacy coach, who was also a graduate student in special education and the primary investigator of this study, participated in the reading interventions. The literacy coach was a district-supported position that used experienced teachers to provide ongoing staff development through coaching.

All teachers held the proper credentials for their assignment. The first-grade teachers were relatively new to their assignment. One had taught for 5 years, but this was her first assignment teaching a primary class. Her previous experience had been in the fourth grade. The remaining teachers were in their second and third year of teaching. They had both taught first grade at the school in the previous year.

In one of the first-grade classrooms, students designated as ELL received instruction in Spanish language literacy as well as instruction in English language development (ELD). The teacher and paraprofessionals in this class were bilingual in English and Spanish. The district

used an early exit model of bilingual education, which provided literacy instruction in Spanish in Grades K–2 in addition to ELD instruction.

Program Description

The school's existing program incorporated a mix of code-based instruction and whole language methods, but lacked a systematic method for providing students with instruction tailored to their particular skill level and needs. Differentiating instruction was a challenge for the teaching staff, as evidenced by the fact that 30% of the first graders were not grade-level proficient in reading by the end of the previous school year, according to the *Developmental Reading Assessment* (DRA; Beaver, 1997).

The current language arts program was the starting point for the newly developed intervention. The curriculum was guided by the state standards, and the district-adopted text, which supported those standards, emphasized explicit and systematic instruction in phonemic awareness and phonics. Although teachers were required to use the district text, they had considerable latitude in how they designed their day-to-day instruction. In addition to whole-class lessons guided by the text, authentic literature was introduced through read-alouds and the shared reading of big books. Students were supported in choosing and reading a variety of books that appealed to them and spent time every day reading independently. A process approach to writing, modeled on the Writers' Workshop method (Atwell, 1998; Calkins, 1994; Fountas & Pinnell, 2001), was used throughout the school, including first grade. As described later, each of the three elements composing the intervention plan was added to the language arts program.

Ongoing assessment. To determine appropriate instructional content for students as well as monitor their progress, a system of ongoing assessment was deemed critical. Although the existing district assessments were informative, they were only administered three times a year. Without an established classroom system of assessment, teachers did not routinely and frequently monitor the pace of every child's acquisition of reading skills. As a result, some students who were not making adequate progress were overlooked, and others did not receive instruction at a level advanced enough for their skills. The *Dynamic Indicators of Basic Early Literacy Skills* (DIBELS; Good & Kaminski, 2002; Kaminski & Good, 1996) was administered weekly to track students' grasp of phonological awareness and understanding of the alphabetic principle. The DIBELS was used in conjunction with the DRA (Beaver, 1997), which consisted of short texts that were used to assess student skill in decoding, fluency, and comprehension. The DRA was administered every 12 weeks.

The data from both the DIBELS and the DRA were used to create small instructional groups based on students' skill levels and to monitor their ongoing progress. Descriptions of each measure follow later.

Small-group instruction. The second element of the program, intensity of instruction, was required to ensure that most if not all students would reach grade-level proficiency by the end of the year. Reducing the student-teacher ratio provided students with the individualized instruction that would help them acquire the literacy skills necessary for proficient reading.

The school's Title I designation provided it with resources that it used to hire paraprofessionals to assist in various classrooms with tasks ranging from making copies to working one on one with students. This assistance was reorganized to shift additional time to the first-grade classrooms. Two paraprofessionals were assigned to each first-grade classroom to assist in leading reading groups. These groups met Monday through Thursday for a 45-min period. A state-wide mandate for class size reduction meant that first-grade classrooms were limited to 20 students per class, allowing teachers to divide students into four instructional groups. Each paraprofessional led one group, and the teacher divided her time between the remaining two groups. The special education resource specialist was able to assist in one class by leading a small group that included students with Individualized Education Programs (IEPs) because the school used an inclusive delivery model for special education services. As a result, all four groups in this class were led by a teacher or paraprofessional for the entire 45 min.

Explicit instruction. Once students had been assessed and placed into similar skill level groups, their assessments were further analyzed to determine what type of instruction they needed. Three types of instructional groups were established. One focused on phonemic awareness, another emphasized decoding and fluency, and the third employed guided reading techniques.

Instruction for the phonemic awareness group consisted of three activities that were used each session. First, students listened to a rhyming story. As they learned the story, students joined in and "read" along with the teacher. Then, a daily lesson from either Scholastic's *Phonics Chapter Books* (Shefelbine, 1998) or the *Cuentos Foneticos* series (Alexander & Cervantes, 1998; for students who were ELL) was covered in its entirety. The initial part of the lesson consisted of blending and segmenting tasks, comparing sounds, and rhyming exercises. After the completion of these phonemic awareness activities, the teacher introduced the new words that students would encounter in the

story and reviewed previously learned words. Students and teachers read the text selection chorally, and then students read it independently while the teacher observed and assisted. The third and final activity was a brief dictation exercise. The teacher dictated words from the text, which students then wrote in their notebooks. If there was additional time, students played games that emphasized phonological awareness.

The decoding and fluency group followed a similar routine but did not spend time on phonological awareness activities. Conspicuous strategies (Coyne et al., 2001) for teaching letter-sound correspondence and practicing fluency with connected text were the instructional focus for this group. At the beginning of each session, new words were introduced and discussed, and previously learned words were reviewed. Students engaged in a "making words" activity (Cunningham & Hall, 1994) and then read independently from texts with a high percentage of decodable words. Selections from previous days were reread. The session ended with a writing task, including dictation activities, and, if there was additional time, students reread their text selections. This routine was the same for ELL students, but Spanish language texts were used.

The guided reading groups were composed of students who had grade-level skills. The activities in these groups were subject to more variation depending on the text. Teachers used trade books that encompassed a variety of stories and topics. Generally, students and teacher completed a picture walk of the selected story, students read it independently, and then the teacher led a discussion of the important story features and probed for comprehension. This was followed by various writing and vocabulary development activities. Parallel activities in Spanish were used for ELL students.

Teachers adjusted their instructional activities and the composition of the groups based on their interpretation of the data and observations of the students with the support of the literacy coach. Membership in the groups was not static. As students met the DIBELS benchmarks for phonemic awareness and nonsense word fluency, teachers considered whether to move them to new instructional groups in order to better meet their needs. Sometimes, the group membership stayed the same, but the activities changed to accommodate the progress that all students were making. Teachers were encouraged to use the assessment data to help interpret or support their perceptions of student growth.

Differentiating instruction ensured that students who needed explicit teaching of phonological awareness and decoding received it. At the same time, instruction was appropriate for advanced students. They were not required to perform activities they had already mastered and,

instead, were engaged in reading trade books and children's literature for a substantial period of time each day.

Collaboration. Teachers at all grade levels collaborated formally on a regular basis. Two school-level teams, one for kindergarten through second grade and one for Grades 3 through 6, met twice a month to examine curricular issues. In addition, grade-level teams met weekly to problem-solve various curriculum concerns and discuss student progress. First-grade teachers also used their grade-level meetings to lesson plan and analyze their student assessment data together. The literacy coach checked in during the grade-level meetings to see if teachers required assistance or materials for the reading program. Furthermore, the literacy coach provided ongoing staff development in reading and writing at each of the bimonthly staff meetings.

Outcome Measures

Developmental Reading Assessment. The *Developmental Reading Assessment* (DRA; Beaver, 1997) is a standardized, criterion-referenced measure used to assess students' literacy growth in a literature-based reading program. There are 38 levels, ranging from kindergarten to fifth grade. Levels A through 12 are considered kindergarten, primer, and preprimer; Levels 14 to 16, first grade; Levels 18 to 28, second grade; and Levels 30 to 38, fourth grade. Each level consists of two short texts with illustrations. The DRA includes the administration of a running record to determine fluency and accuracy rate, and a comprehension portion to assess depth of student understanding. The Spanish language version of this assessment was given to the ELL students.

Test of Early Reading Ability-Revised. The *Test of Early Reading Ability-Revised* (TERA-R; Reid et al., 2001) is a norm-referenced assessment that measures students' mastery of developing reading skills. It was standardized on a sample of 1,454 students. The TERA-R yields information on a student's understanding of the conventions of print and the idea that print has meaning. It also tests students' ability to identify letters of the alphabet. The TERA-R reports a reliability of .89 for alternate forms and inter-item reliability of .99 for Forms A and B. It is considered to have high content validity.

DIBELS. Two of the six subtests of the standardized Dynamic Indicators of Basic Early Literacy Skills were used (Kaminski & Good, 1996). The Phoneme Segmentation Fluency (PSF) subtest is an assessment of phonological awareness designed to measure a student's ability to segment three- and four-phoneme words into their

constituent sounds. Alternate-form reliability is .79 when given 1 month apart in kindergarten. Its predictive validity relative to the Woodcock-Johnson Total Reading Cluster for first grade is .68. The suggested benchmark goal is 35 or more correct phonemes per minute in the fall of first grade. The Nonsense Word Fluency (NWF) subtest assesses students' ability to fluently decode and blend letters into words. It measures student skill in the alphabetic principle. The benchmark goal for mid-first grade is 50 correct letter sounds per minute. One-month alternate-form reliability of the NWF for first grade is .83. Woodcock-Johnson Total Reading Cluster predictive validity for first grade is .66.

Students were assessed weekly by a paraprofessional trained in how to administer the measures. This presented something of a dilemma with the ELL students, as they were receiving instruction in Spanish language literacy; however, we thought that the DIBELS would still give us useful diagnostic information and accepted as correct any Spanish pronunciation of the phonemes.

Proficient and At-Risk Students

For each of the 3 years previous to this study, end-of-first-grade proficiency rates were 71%, 70%, and 69%, as measured by the DRA (with the most recent year listed first). In view of this consistently low proficiency rate, it was decided to err on the side of overidentifying students for intensive instruction. Therefore, rather than using the DIBELS-recommended standard of 10 or fewer phonemes per minute correct on the PSF, students were identified as at risk for possible reading difficulties if they scored 35 or fewer phonemes per minute on a fall administration of the measure. This lower cutoff score was selected in an effort to provide intense intervention services to as many students as might need them.

Sixteen students (38.1%) were identified to form the at-risk group, which had a mean PSF score of 20.94 ($SD = 11.10$). Two students in the at-risk group received special education services and had IEPs with communication and language goals. The proficient group included the remaining 26 students (61.9%) and had a mean PSF score of 50.15 ($SD = 7.33$).

Results

Risk Status \times Time analyses of variance (ANOVAs) with repeated measures on one factor were employed to determine if the groups significantly improved over time as a result of the reading interventions and to determine if the rates of improvement were different across risk status (i.e., at risk and proficient). Descriptive statistics

Table 2
Means, Standard Deviations, and Effect Sizes on the TERA-R Across Time by Risk Status

TERA-R Administration	Risk Status		Effect Sizes ^a			
	At-Risk (<i>n</i> = 16)	Proficient (<i>n</i> = 26)	Time		Risk Status	
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	At-Risk	Proficient	Fall	Spring
Fall	92.06a (14.46)	97.50a (13.27)	.87	.91	-.39	-.24
Spring	105.40b (16.30)	108.73b (11.93)				

Note. TERA-R = *Test of Early Reading Ability-Revised* (Reid, Hresko, & Hammill, 2001). Column means with different subscripts are significantly different at $p < .05$.

^aEffect sizes = Cohen's *d*. For Time, effect sizes were computed for each group as $M_{\text{spring}} - M_{\text{fall}}/\text{Pooled } SD$. For Risk status, effect sizes were computed for each time period as $M_{\text{at-risk}} - M_{\text{proficient}}/\text{Pooled } SD$.

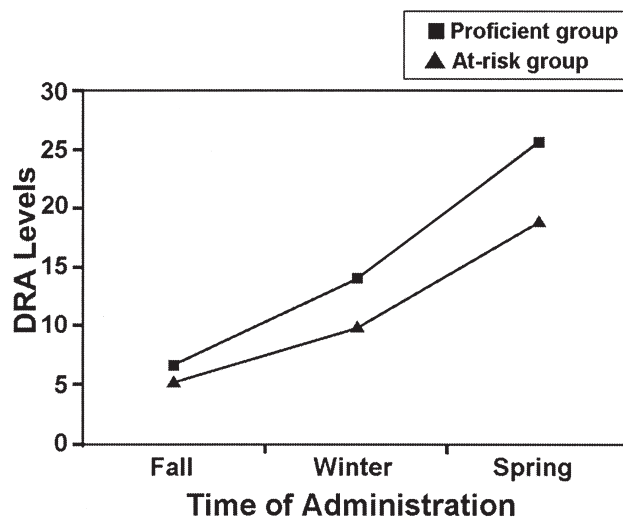
were examined to determine the number of students who reached grade-level proficiency in reading at the end of the year and to evaluate the progress of those students who did not reach proficiency.

Analyses of Variance

The initial ANOVA examined the TERA-R as the dependent measure. The 2×2 (Risk Status \times Time) interaction was not significant, $F(1, 40) = 0.08$, $p > .05$. The omnibus main effect for risk status was also not significant, $F(1, 40) = 1.69$, $p > .05$. The main effect for time was significant, $F(1, 37) = 29.18$, $p < .001$. Mean examinations revealed that TERA-R scores in spring were significantly higher than TERA-R scores in fall for all students regardless of their risk status. Examinations of means and effect sizes also showed that risk status groups showed similar growth over time on the TERA-R (see Table 2).

An additional 2×3 (Risk Status \times Time) factorial ANOVA examined the DRA as the dependent variable of interest. Examination of the Huynh-Feldt ϵ statistic indicated an acceptable amount of departure from sphericity for all within-subjects tests (Huynh-Feldt $\epsilon > .75$). Degrees of freedom and Type I error rates were adjusted according to the amount of departure from sphericity in each case. The two-way interaction was evaluated first and was significant, $F(1.54, 61.75) = 4.47$, $p < .05$, suggesting that growth rates on the DRA were contingent upon risk status. Tests of simple effects for time showed that the group classified as proficient showed significant growth over time, $F(1.52, 38.03) = 154.83$, $p < .001$. The at-risk group also showed significant growth over time, $F(1.53, 22.89) = 49.88$, $p < .001$. Examination of the means revealed that although both groups showed growth, the at-risk group, in light of the omnibus interaction, grew at a significantly lower rate than the

Figure 1
Comparison of Risk Status Groups Across Time on Developmental Reading Assessment (DRA; Beaver, 1997) Levels



typically performing group (see Figure 1). Post hoc between-groups contrasts at each time point revealed that the omnibus interaction was most specifically a result of a significant difference for DRA scores across risk status observed in the spring, $F(1, 40) = 6.48$, $p < .05$, where the at-risk group showed a significantly lower mean. Between-groups contrasts at fall and winter were not significant (see Table 3).

Student Proficiency at the End of the School Year

The school district used the DRA to determine whether students were proficient readers for their grade.

Table 3
Means, Standard Deviations, and Effect Sizes on the DRA Across Time by Risk Status

DRA Administration	Risk Status		Effect Sizes ^a				
	At Risk (<i>n</i> = 16)	Proficient (<i>n</i> = 26)	Time		Risk Status		
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	At Risk	Proficient	Fall	Winter	Spring
Fall	5.19a (4.46)	6.73a (4.20)	1.87	3.00	-.35	-.59	-.79
Winter	9.75a (7.36)	13.69a (5.95)					
Spring	18.81a (9.29)	25.62b (7.84)					

Note. DRA = *Developmental Reading Assessment* (Beaver, 1997). Row means with different subscripts are significantly different at $p < .05$.

^aEffect sizes = Cohen's *d*. For Time, effect sizes were computed for each group as $M_{\text{spring}} - M_{\text{fall}} / \text{Pooled } SD$. For Risk status, effect sizes were computed for each time period as $M_{\text{at-risk}} - M_{\text{proficient}} / \text{Pooled } SD$.

Table 4
Comparing Fall Phoneme Segmentation to Spring DRA Achievement

Spring DRA Level	Risk Status					
	At Risk		Proficient		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Advanced	8	19.0	18	42.6	26	61.9
Proficient	4	9.5	8	19.0	12	28.6
Basic	1	2.4	0	0.0	1	2.4
Below-Basic	3	7.2	0	0.0	3	7.1
Total	16	38.1	26	61.9	42	100.0

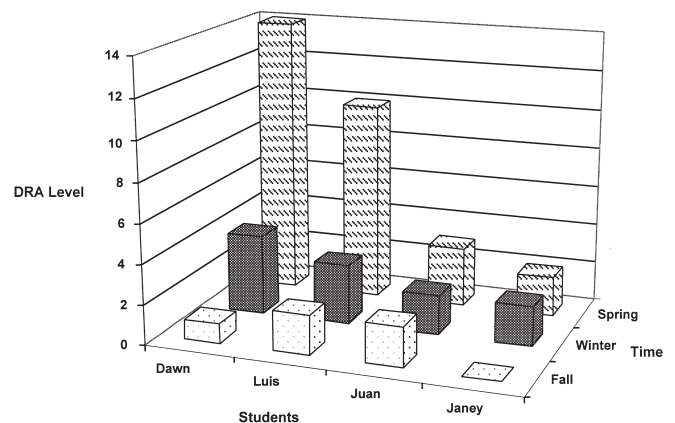
Note. DRA = *Developmental Reading Assessment* (Beaver, 1997).

Most of the students ($n = 35$; 83.3%) were classified as "below basic" according to the DRA administered in the fall trimester, which means that their DRA scores were level 10 or less. On the same measure administered in the spring, only three students (7.1%) were still "below basic." Most (90%) of the first-grade students in the sample were grade-level proficient readers at the end of the year.

To further examine the progress made by the students identified as at risk for reading failure, data describing the performance of these 16 students on the DRA are presented in Table 4. Half of them made enough progress to be considered above grade level on the DRA.

Of particular interest are the four treatment resisters who did not attain grade-level standards by the end of the school year. To get a closer look at their reading growth, their performance on the DIBELS PSF and the DRA is depicted at an individual level in Figures 2 and 3. Although they did not meet grade-level standards, these

Figure 2
Comparison of *Developmental Reading Assessment* (DRA; Beaver, 1997) Levels of Individual Students at Risk for Not Reaching Grade-Level Proficiency

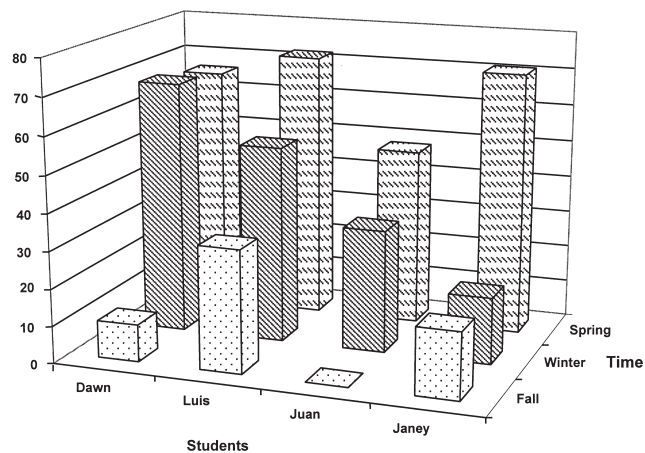


treatment resisters, who had very low skills to begin with, made definite gains on these reading measures.

Discussion

This study examined the efforts of school personnel to use research-validated strategies in the context of an existing language arts program to improve the reading performance of first-grade students. After examining the literature and considering the needs and resources of our school community, we used ongoing assessment, a lower student-teacher ratio, and differentiated instruction to assist students in reaching grade-level proficiency. A

Figure 3
Comparison of Dynamic Indicators of Basic Early Literacy Skills (Kaminski & Good, 1996) Phoneme Segmentation Fluency (PSF) Scores of Individual Students at Risk for Not Reaching Grade-Level Proficiency



critical part of implementing these strategies was to introduce them in a manner that provided teachers with adequate support to use them effectively. To avoid having the new program being viewed as an “add-on,” we integrated the strategies into the existing curriculum and used texts that were already part of the school’s program.

The students demonstrated significant growth over time on both the TERA-R and the DRA. Intensive intervention resulted in reading gains for all of the participants in this study, with 90% reaching grade-level proficiency at the end of the year—a substantial improvement over previous years. Moreover, 8 of the 16 children who were identified as at risk for reading problems at the beginning of the school year demonstrated advanced or above-grade-level reading ability on the spring administration of the DRA. As the DRA is a reading measure that requires children to independently decode text and demonstrate comprehension of a story, it is a strong indicator of how children will perform on school reading tasks.

Although the end-of-year proficiency rate was notable, one of the most interesting aspects of the intervention is found in a closer look at the four children who did not demonstrate mastery of grade-level standards in decoding and reading. All of these children began the study with considerably lower phonemic segmentation fluency scores than did the other students initially considered at risk. Two of the four children qualified for special education due to

communication disorders and had been identified for services in kindergarten. A third child, who was an English language learner and received ELL instruction, was referred for special education assessment during the intervention and found to be eligible under the specific learning disability category. The fourth child was referred for special education assessment, but did not qualify for services. However, this student had not attended kindergarten and moved midway through first grade. She returned a month later, but had not attended school during the time she was gone.

Clearly, the students who did not reach grade-level proficiency had challenges far beyond those faced by the rest of the participants, yet even these students made progress, as demonstrated by the upward trend of their DIBELS scores and their generally higher TERA-R scores from the fall to the spring. Two of the students also made considerable growth on the DRA measures by the end of the year. Although these four students did not attain the performance levels expected of first graders, the intensive intervention did result in gains that might not have otherwise occurred in a general education setting.

Equally interesting is the fact that 26 (61.9%) students achieved above-grade-level marks in reading. It appears that the focused, differentiated instruction provided by the intervention had benefits for all readers, not only for those considered at risk for future reading difficulties.

The targeted, intensive, and effective reading instruction in which children participated required the support of many of the school’s resources. The school’s Title I funding made it possible to provide intensive reading instruction to small groups of children. There is no doubt that adequate funding is necessary for instituting effective programs, and not all schools may have access to resources such as a literacy coach and paraprofessionals. However, this school’s principal and faculty were willing to shift resources and to rethink existing instructional practices in order to make early reading intervention a priority. Many schools are considering inventive ways to meet their students’ needs, and a critical part of the task is identifying what will be effective in the context of each school’s unique situation.

Challenges

Some aspects of the instructional model were more difficult to implement than others. It was a challenge for teachers to use the DIBELS assessment information when making instructional decisions. Interviews with the teachers indicated that they were not convinced of the utility of using frequent assessment to monitor and

adjust student progress. Although the paraprofessionals administered the assessment measures, teachers still felt pressured by a lack of adequate time to systematically examine the data. Without encouragement from the literacy coach, it is unlikely they would have done so on a regular basis.

Initially, it was difficult to rotate the reading groups among the teachers and the support personnel. Once group leaders were comfortable with both the students and the instructional strategies in a particular group, they were reluctant to change to a different one. However, in order for the classroom teachers to be aware of the nuances of each student's progress, they needed to work with all of the groups. Rotating groups also assisted teachers in deciding how to coach the paraprofessionals in their instructional routines. As all personnel became familiar with each of the instructional techniques, leading different groups became less of a problem.

Overall, teachers were positive about the intervention. They reported that it required a high degree of collaboration and additional time to analyze data and plan instruction for the groups led by the paraprofessionals. However, adequate support and resources were provided, so that they did not perceive implementation as unreasonably difficult. Teachers were enthusiastic about the academic success that students were able to achieve with intensive instruction. It may be that, as teachers become more adept at implementing such a model, planning for instruction and analyzing data will become routine and require less effort. Indeed, teachers may even find the benefits of progress monitoring in adjusting instruction to be so effective that they will continue to use these strategies even if support is reduced (Hasbrouck, Woldbeck, Ihnot, & Parker, 1999).

Limitations

This study was performed at only one school, and 17.3% of the initial sample was lost due to high transience levels. However, the students who moved did not differ significantly from the remaining sample in terms of demographics or fall TERA-R scores. Moreover, all but one of the first graders enrolled at the school participated in the study, which allowed researchers to look at progress across the group level as well as to closely examine the progress of individual children who had been classified as at risk. The results may not allow a high level of generalizability, but they do provide a realistic picture of what may be possible when early intervention strategies are combined with a balanced reading program and special attention is given to the school's context.

Researchers were not able to randomly assign students to groups or to control for teacher effects. However, within each classroom, small-group instruction was conducted by three or more adults: the teacher, paraprofessionals, a resource specialist and, occasionally, the literacy coach. The groups were rotated among the adults so that all children worked with each of the adults in the classroom for some period of time, alleviating the problem of teacher effect. Another limitation is the lack of a control group, making it impossible to be absolutely certain that students would not have made the same progress without the intervention. Given previous years' proficiency rates, individual student gains, and teacher perceptions, however, we are reasonably confident that the intervention positively affected student gains in reading.

It is also not possible to say which of the strategies was most effective in promoting students' literacy proficiency; however, that was not the aim of the study. Our goal was to take already proven strategies and implement them in a manner that fit the needs of our particular school, but with enough integrity that they would strengthen the outcomes of our reading instruction. This practical approach could provide valuable information for other schools trying to create and maintain powerful reading programs.

Future Directions and Implications for Practice

This study demonstrates the ability of teachers to implement research-based instruction in a powerful and effective manner. We believe that much of the success of this model was due to the fact that the school staff helped create the intervention and that sustained and adequate support was provided when implementing it. Not only did we identify and implement best practices for students, we used the suggestions from the literature in terms of sustaining those practices (Gersten & Dimino, 2001). The opportunity for teachers to meet collaboratively to discuss the challenges in using the model made it possible for them to add the newly learned information and concepts to their professional repertoire. Coaching from an experienced colleague also supported fidelity of implementation, as teachers could ask for assistance in fine-tuning instruction and managing the demands of running several reading groups. Attending to local context and treating teachers as partners in intervention rather than as providers of it may result in better sustained practices and more successful outcomes.

This study appears to corroborate the use of *resistance to intervention* (RTI), a model designed to reduce the reliance on a discrepancy between IQ and achievement to qualify students for special education services (Elliott

& Fuchs, 1997; Vaughn & Fuchs, 2003). Three of the four students in the sample who did not reach grade-level proficiency were eligible for special education services. Early intervention programs hold the promise of preventing some reading disabilities, while ameliorating the effects of such difficulties for others. Moreover, programs such as these may make it possible to access special education services both earlier and with more assurance that the students identified do indeed require specialized services to make academic gains. As the use of RTI models expands, teachers will be called upon to monitor their students more closely and to provide targeted instruction for their struggling students. Teachers and administrators will have to be creative about how they schedule their instructional day to ensure that intervention is done systematically.

The study also raises several questions. Approximately 20% of the students participating in this study were English language learners. It would be instructive to examine their reading progress as they transition to English in the third grade. Does their acquisition of English differ from that of students who do not receive intensive instruction? Another study might also examine interventions with different levels of intensity for different groups. Is it possible to make the same gains with fewer personnel? Can students who come to first grade with adequate skills make as much progress working independently on structured literacy activities while the teacher allocates intensive instruction to those who need it the most? If similar results could be obtained using fewer resources, early intervention programs may be more widely implemented.

Finally, it is critical to follow the progress of the children who participated in this study to see if they maintain the reading gains they made during first grade. A follow-up study should describe the kinds of instruction that the children receive in second grade as well as their ability to achieve in reading at the second-grade level. Over the last several years, research has made it increasingly clear that if children have not learned to read proficiently by the age of 8, they will struggle with their reading skills throughout their lives (O'Shaughnessy, Lane, Gresham, & Beebe-Frankenberger, 2003). Focusing the requisite financial and personnel resources on early reading intervention for at-risk students may be our best hope for preventing unnecessary reading failure.

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