Report on the Effects of Wright Group/McGraw-Hill's *Early Reading Intervention (ERI)*: A "Response to Intervention" Model of Service Delivery

By SKF Educational Services, LLC

Introduction

Wright Group/McGraw-Hill's ***Early Reading Intervention (ERI)*** is primarily a Tier 2 Response to Intervention (RtI) model of service delivery. The main goal of the program is to increase successful academic outcomes for all students, and most notably, for those who are struggling academically or behaviorally. RtI stems from the perspective that the traditional IQ-discrepancy formula fails to validly identify students who are learning disabled. It is conceptualized on a continuum that ranges in intensity in a tiered or phase format (Mastropieri & Scruggs, 2005). Typically, educators implement a three-tiered RtI model in which "instruction is layered over time in response to students' increasing needs" (Vaughn, 2003), but four-tiered models have been utilized in some districts across the nation (Tilly, 2003).

Tier 1 includes core curricula and instruction that are accessible to all students. Tier 2 targets the identified "at-risk" students who are struggling with the core academic curriculum. The importance of progress monitoring becomes readily apparent in Tier 2; students are monitored carefully and systematically over the course of the intervention period—anywhere from weekly, in most cases, to twice monthly. Intervention in Tier 3 is markedly more individualized with progress monitoring occurring more frequently. The duration of the intervention in Tier 3 is considerably longer, and may span months or perhaps, years. Students who fail to make adequate progress with Tier 3 intervention are often referred for special education evaluation to rule out other disabilities, such as a cognitive disability or emotional disturbance (Fuchs, & Fuchs, 2005).

Purpose of Study

The purpose of this study was to investigate the effects of *Early Reading Intervention* on the reading achievement of a select group of at-risk kindergarten through second-grade students. This study addresses two primary research questions:

1. What effect does the ERI program have on the reading achievement of selected at-risk students?
2. How does student participation in the ERI intervention program affect the school's decision to refer a student for special education evaluation?

Research Design

The single-subject research designs, as employed in this case, allows educators to investigate the process of change for a *particular* child, not the *average* child. Unlike most research designs used in education studies, this an experimental design, which drastically reduces the effects of extraneous factors that might otherwise interfere with the researcher's ability to attribute change in outcomes to the intervention (Horner, Carr, Halle, McGee, Odom, & Wolery, 2005). Most single-subject designs involve only one participant or a small group of participants (3 to 8) in a single study; the outcome variables are typically observations of a target behavior; and the

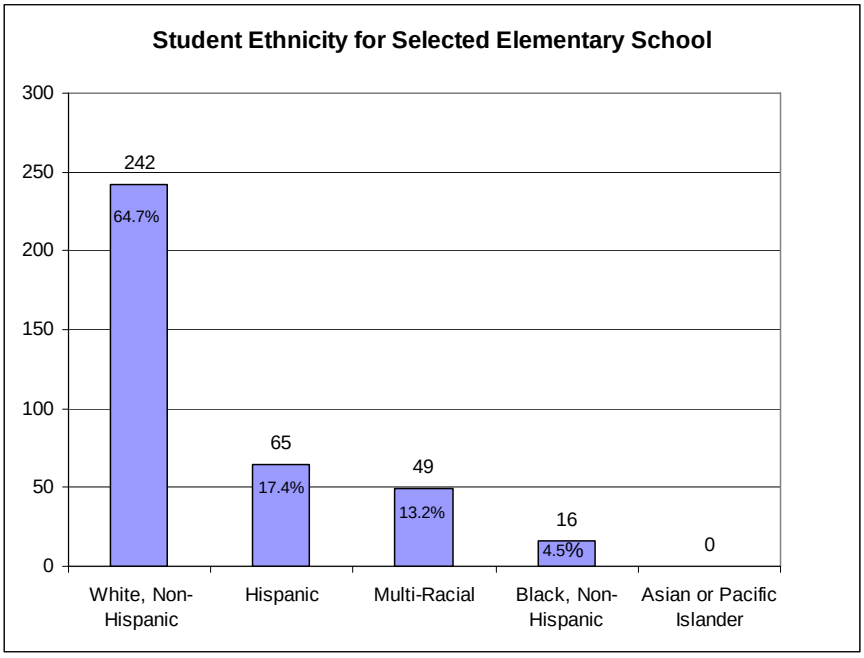
independent variable is a specified program or intervention procedure that is monitored throughout the investigation.

This study uses a multiple baseline over subjects design. Generally, multiple baseline designs contain the following elements: (a) repeated measurement of the outcome variable across at least two baselines; (b) staggered introduction of treatment across baselines; (c) immediate observed effects of the intervention with no observable effects in conditions in which the intervention has not been implemented. In the multiple-baseline-across-subjects design, the same intervention is "staggered" over time, and the same behavior monitored throughout the course of the study.

Sample

The site selected for this study is a small kindergarten through sixth-grade school located in northeastern Ohio. The average daily enrollment for the elementary school is 374 students; a sizeable percentage (70%) is characterized as economically disadvantaged. The percentage of students identified with disabilities approximates 24%, remarkably higher than the district as a (19.6%). Approximately 10% of the students are characterized as limited English proficient. Table 1 provides a breakdown of student ethnicity, in absolute numbers and by percentage of the student population.

Figure 1.



The school's failure to meet adequate yearly progress (AYP) goals and below "proficient" performance on state indicators prompted the school to adopt an RTI model of service delivery. The RTI model is being piloted in grades kindergarten through second. These students are administered benchmark assessments in reading three times per year (fall, winter, and spring); students who perform below an established criterion are considered "at-risk" and are targeted for intervention in increasing intensity. Given the number of students considered limited English proficient and the high rate of identification for special education services (24%), the building has placed heavy emphasis on increasing achievement in reading for students in the early grades.

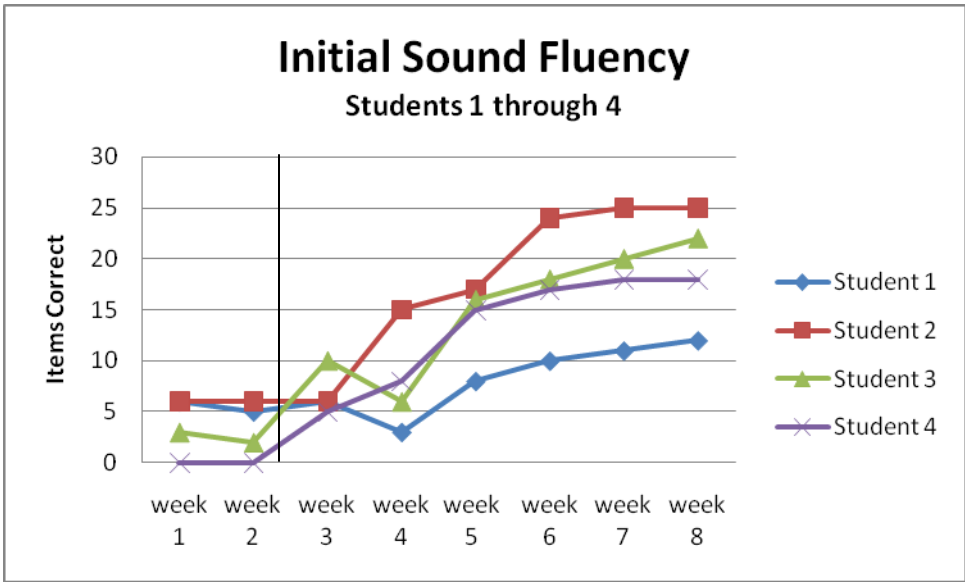
Eight kindergarten students, nine first graders, and fourteen second-graders were selected to participate in the study. Criteria for selection was performance on the fall administration of subtests of the Diagnostic Indicators of Basic Early Language Skills (DIBELS) [1], classroom performance, and teacher nominations.

The various subtests comprising the DIBELS are administered in a 'staggered' format, according to time of year and by grade level. Kindergarten students are administered the Initial Sound Fluency (ISF) subtest at the beginning and in the middle of the Kindergarten year. Phoneme Segmentation Fluency (PSF) and Nonsense Word Fluency (NWF) are administered initially in the in the middle of the Kindergarten year, through the beginning of the second grade year. Oral Reading Fluency (ORF) is administered initially in the middle of the first grade year, through the entire sixth grade year. For purposes of establishing a baseline (pre-program performance) and tracking progress, kindergarteners were administered the Initial Sound Fluency (ISF) subtest and the Phoneme Segmentation Fluency (PSF) subtest. First graders were administered the Nonsense Word Fluency (NWF) and Oral Reading Fluency (ORF) subtests, and second graders were administered the Oral Reading Fluency (ORF) subtest. For all students, baseline scores represent the median subtest score (out of three administrations of parallel assessments) per subtest area.

Kindergarten Results

The ERI program was implemented in kindergarten in late November of 2008. The baseline measurement consists of median scores from the ISF subtest and the PSF subtest of the DIBELS; one form of the ISF subtest was administered for the first baseline measurement and a parallel form used to collect the second set of baseline scores. Figures 2 and 3 reveal the performance for each of the eight selected kindergarten students for six weeks of program implementation.

Figure 2.



[1] DIBELS is a standardized, individually administered curriculum-based measure consisting of various short, one-minute reading assessments designed to evaluate a student's fluency on specific reading tasks (University of Oregon Center on Teaching and Learning).Test-retest reliabilities for oral reading fluency on elementary students ranged

from .92 to .97; alternate form reliability of different reading passages drawn from the same level ranged from .89 to .94 (Tindal, Marston, & Deno, 1983). Criterion-related validity studied in eight separate studies in the 1980's reported coefficients ranging from .52 to .91 (Good & Jefferson, 1998).

Figure 3.

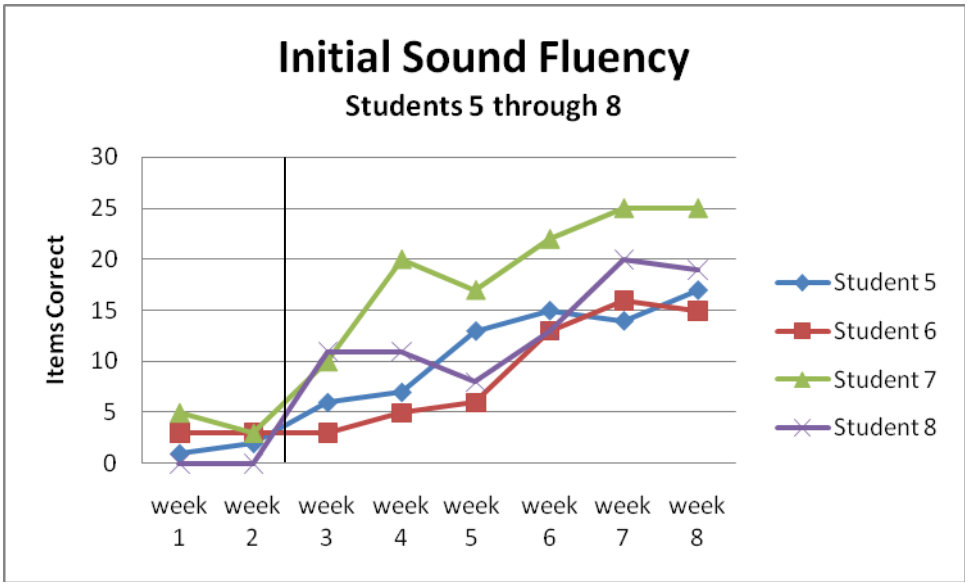


Table 1 presents the percentage of non-overlapping data (PND) for the kindergarteners receiving the ERI program. The PND is a commonly-used method for analyzing data in single-subject designs. It is calculated by first determining the number of data points in the intervention phase that exceeds the highest data point in the baseline phase. This value is divided by the total number of data points in the intervention phase, and multiplied by 100, yielding a percentage score. Values of 90% or higher reflect "highly effective" interventions; values of 70% to under 90% reflect "moderately effective" interventions; values from 50% to under 70% reflect "mild" or "questionably effective" interventions; and values below 50% reflect an "ineffective intervention" (Ma, 2006).

Table 1.

Percent of Non-Overlapping Data for Initial Sound Fluency

Student	*%*	*Category*
1	67	Mildly Effective
2	83	Moderately Effective
3	100	Highly Effective
4	100	Highly Effective
5	100	Highly Effective
6	83	Moderately Effective
7	100	Highly Effective
8	100	Highly Effective

Examination of the PND scores indicates the program resulted in a positive effect for the eight Kindergarten students participating in the ERI program, with 100% of the sample receiving some benefit. For five of these students (approximately 63%), the program is "highly effective." For two students (25%) the program is "moderately effective." For one student (approximately 13%), the program is 'mildly effective'. According to criteria set forth by DIBLES, at the end of the school year, none of the students were considered to exhibit a deficit on the ISF subtest. Six of the students were considered 'emerging' on the ISF subtest, and two of the students were considered 'established'.

Figures 4 and 5 reveal the results of the Phoneme Segmentation Fluency (PSF) subtest, which is initially administered to students in the middle of the Kindergarten year. The baseline PSF test was administered in late January, with progress monitoring probes administered every two weeks (February through the beginning of May).

Figure 4.

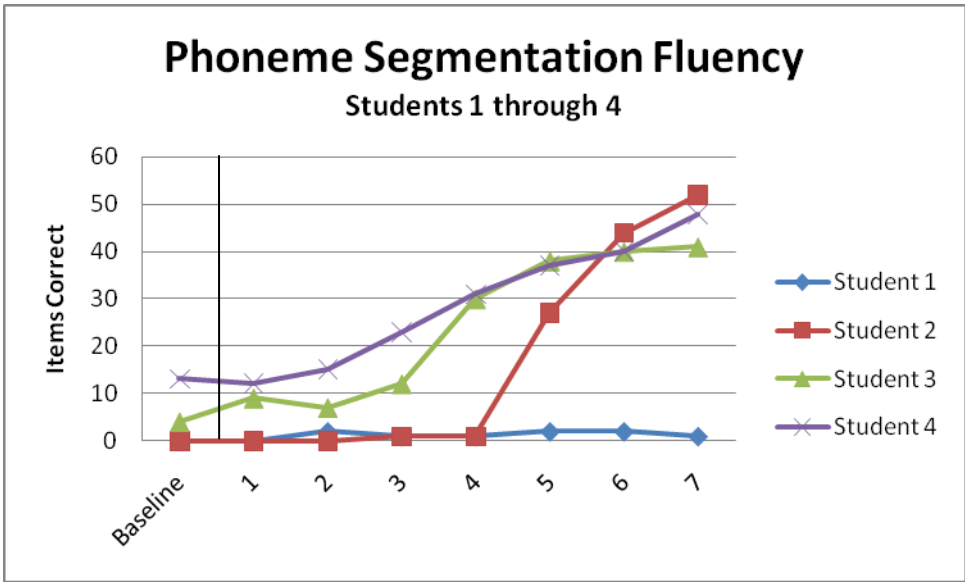


Figure 5.

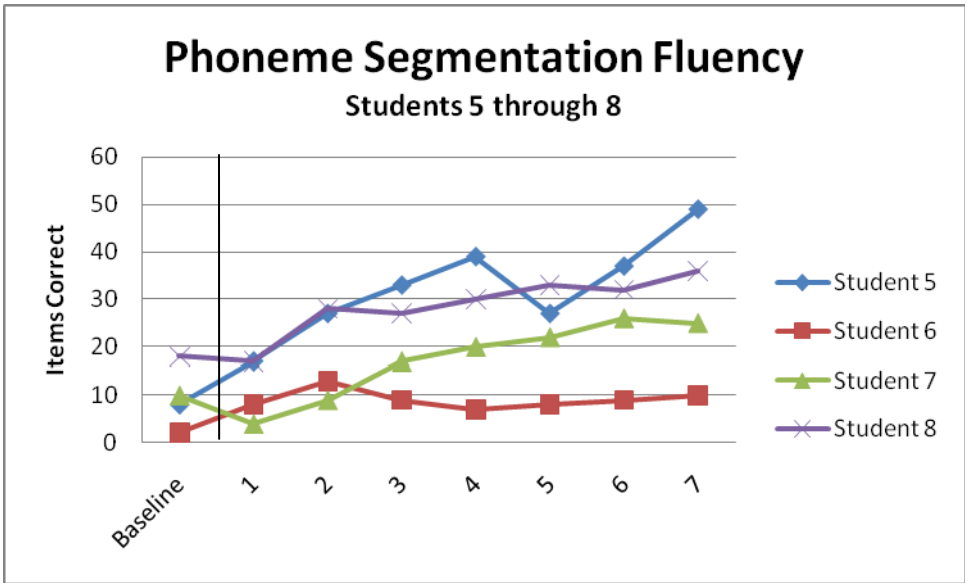


Table 2 presents the percentage of non-overlapping data (PND) and the respective categories on Phoneme Segmentation Fluency for the Kindergarteners receiving the ERI program.

Table 2.

Percent of Non-Overlapping Data for Phoneme Segmentation Fluency

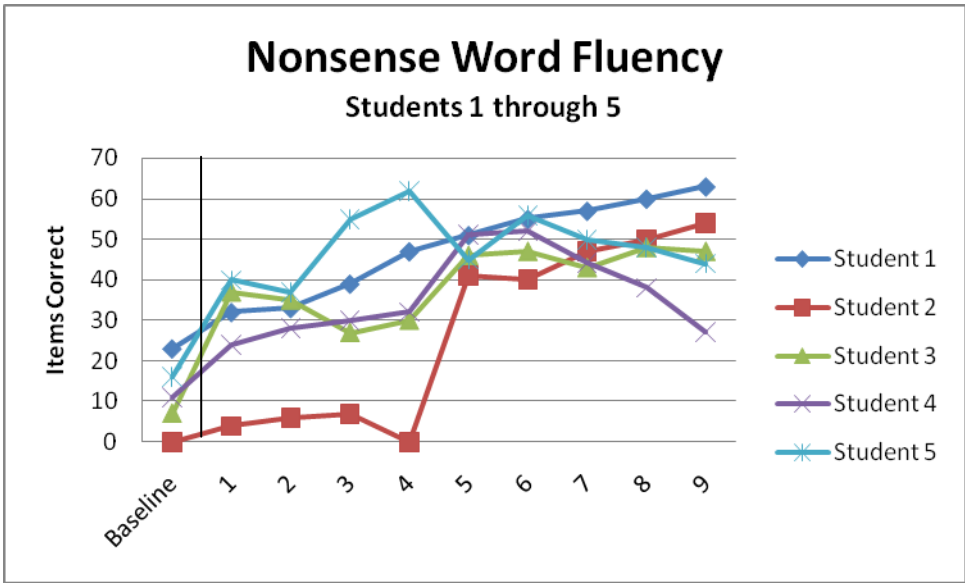
Student	*%*	*Category*
1	100	Highly Effective
2	100	Highly Effective
3	100	Highly Effective
4	86	Moderately Effective
5	100	Highly Effective
6	100	Highly Effective
7	71	Moderately Effective
8	86	Moderately Effective

Examination of the PND scores included in Table 2 indicates the program resulted in a positive effect on PSF for the eight Kindergarten students participating in the ERI program, with 100% of the sample receiving some benefit. For five of these students (approximately 63%), the program is "highly effective." For three students (38%) the program is "moderately effective." According to criteria set forth by DIBLES, at the end of the school year, one of the students was considered to exhibit a deficit on the PSF subtest. Two of the students were considered 'emerging' on the PSF subtest, and the remaining five students were considered 'established'.

First-Grade Results

Nine first-grade students were selected to participate in ERI based on their fall benchmark score on the Nonsense Word Fluency (NWF) subtest of the DIBELS, classroom performance, and teacher nomination. Students began using the program in January, 2009. Figures 6 and 7 provide each student's baseline score and bi-monthly progress monitoring probes from January through the beginning of May.

Figure 6.



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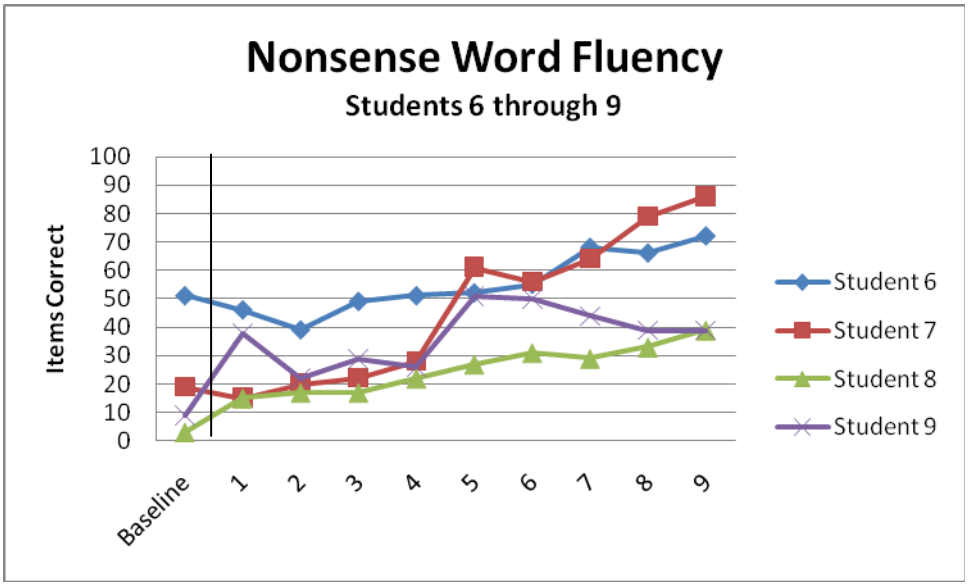

Table 3 presents the percentage of non-overlapping data (PND) for Nonsense Word Fluency for the first grade students receiving the ERI program.

Table 3.

Percent of Non-Overlapping Data for Nonsense Word Fluency

Student	*%*	*Category*
1	100	Highly Effective
2	100	Highly Effective
3	100	Highly Effective
4	100	Highly Effective
5	100	Highly Effective
6	50	Mildly Effective
7	89	Moderately Effective
8	100	Highly Effective
9	100	Highly Effective

Examination of the PND scores indicates the program resulted in a positive effect on NWF for the nine first-grade students participating in the ERI program, with 100% of the sample receiving some benefit. For seven of these students (approximately 78%), the program is "highly effective." One student (11%) experienced 'moderate' success, and one student (11%) experienced 'mild' success. According to criteria set forth by DIBLES, at the end of the school year, one of the students was considered to exhibit a deficit on the NWF subtest. Four of the students were considered 'emerging 'on the NWF subtest, and the remaining four students were considered 'established'.

Figures 8 and 9 present the findings using the Oral Reading Fluency (ORF) subtest to monitor progress over the intervention period.

Figure 8.

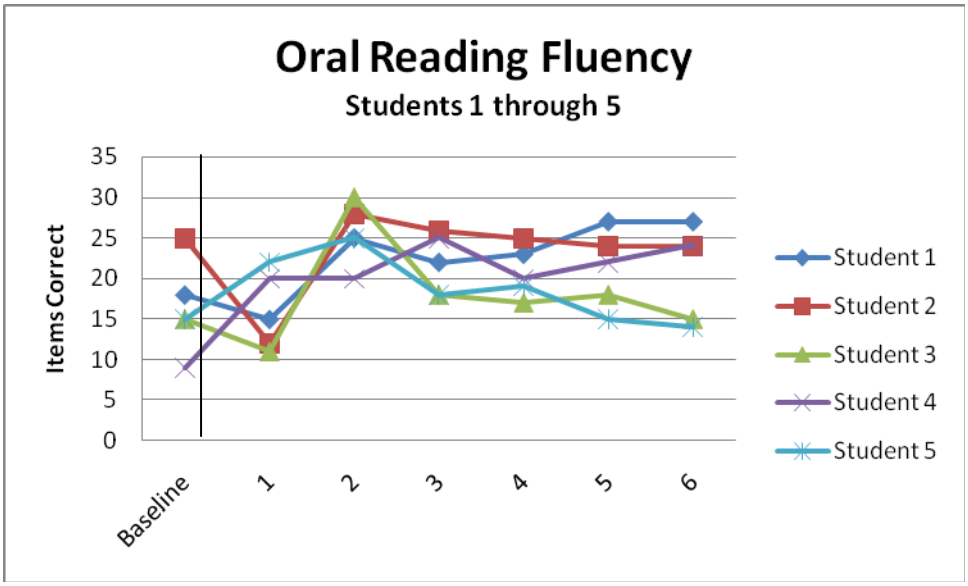

Figure 9.

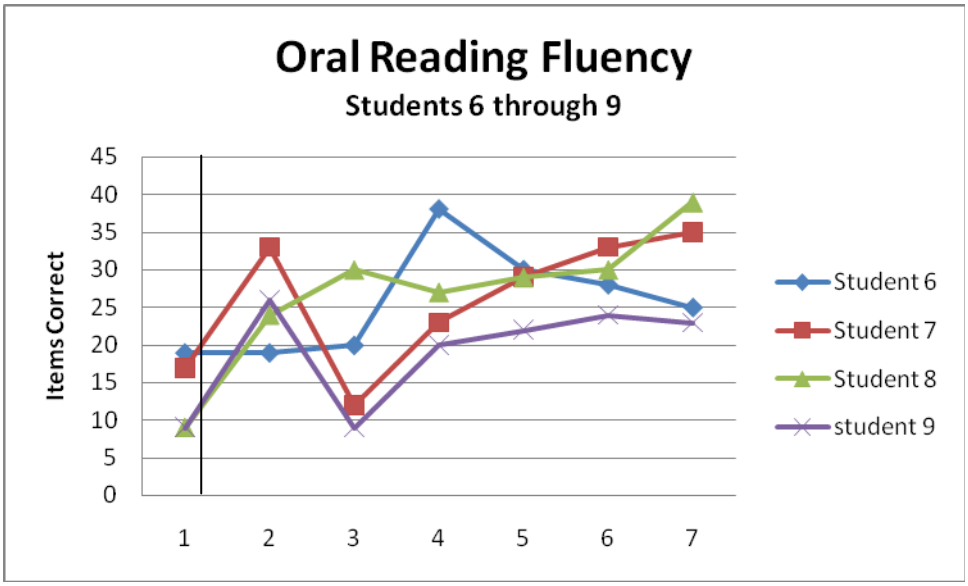

Table 4 presents the percentage of non-overlapping data (PND) on Oral Reading Fluency for the first grade students receiving the ERI program.

Table 4.

Percent of Non-Overlapping Data for Oral Reading Fluency

Student	*%*	*Category*
1	83	Moderately Effective
2	33	Ineffective
3	67	Mildly Effective
4	100	Highly Effective
5	67	Mildly Effective
6	83	Moderately Effective
7	83	Moderately Effective
8	100	Highly Effective
9	83	Moderately Effective

Examination of the PND scores indicates the program resulted in a positive effect on ORF for the nine first-grade students participating in the ERI program, with 89% of the sample receiving some benefit. For two of these students (approximately 22%), the program is "highly effective." Four students (44%) experienced 'moderate' success; two students (22%) experienced 'mild' success. One student (11%) did not experience significant success. According to criteria set forth by DIBLES, at the end of the school year, two students were considered to fall in the 'at-risk' range. The remaining seven students fell in the 'some risk' range.

Second-Grade Results

Fourteen second-grade students participated in the ERI program. For ease of interpretation, Figure 10, Figure 11, and Figure 12 lists each student's score on the fall benchmark assessment of the ORF subtest of the DIBELS, with eight weeks of progress monitoring during the intervention phase. Progress monitoring probes were administered every two weeks, or twice monthly.

Figure 10.

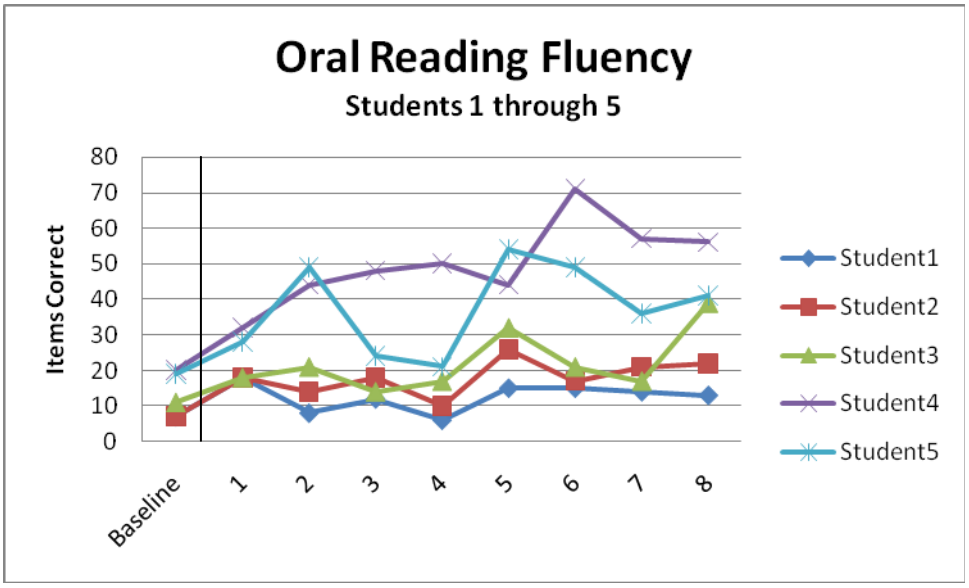

Figure 11.

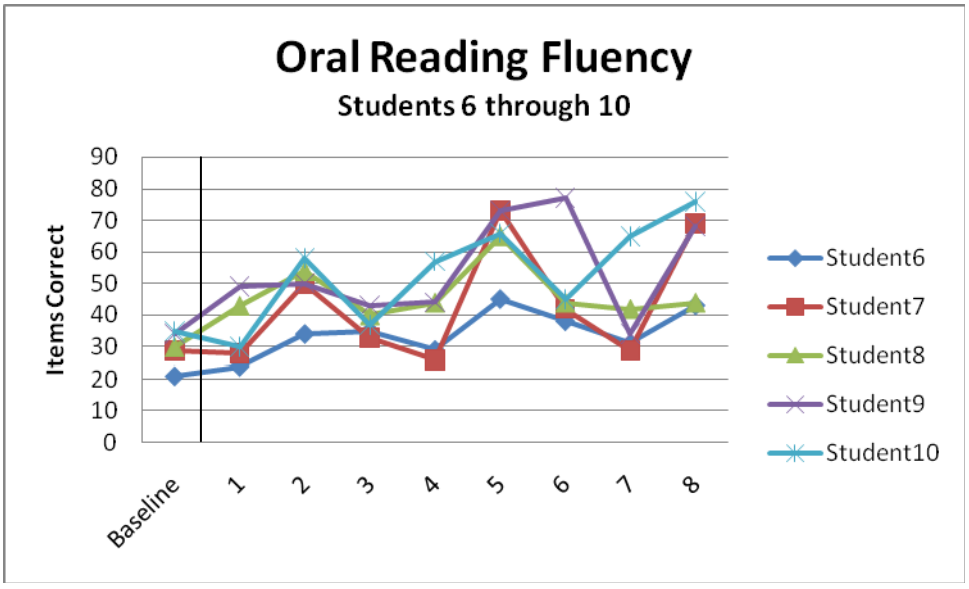

Figure 12.

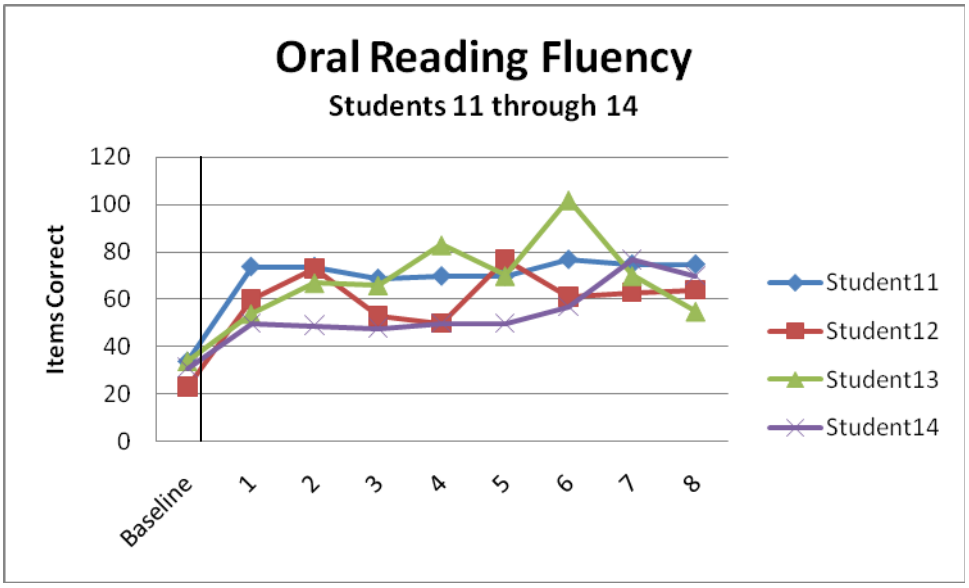

Table 5 presents the percentage of non-overlapping data (PND) on Oral Reading Fluency for the second grade students receiving the ERI program.

Table 5.

Percent of Non-Overlapping Data for Oral Reading Fluency

Student	*%*	*Category*
1	88	Moderately Effective
2	100	Highly Effective
3	100	Highly Effective
4	100	Highly Effective
5	100	Highly Effective
6	100	Highly Effective
7	63	Mildly Effective
8	100	Highly Effective
9	88	Moderately Effective
10	88	Moderately Effective
11	88	Moderately Effective
12	100	Highly Effective
13	100	Highly Effective
14	100	Highly Effective

Examination of the PND scores indicates the program resulted in a positive effect for the fourteen second-grade students participating in the ERI program, with 100% of the sample receiving some benefit. For nine of these students (approximately 64%), the program is "highly effective." Four students (29%) experienced 'moderate' success, and one student (7%) experienced 'mild' success. According to criteria set forth by DIBLES, at the end of the school year, eleven second-grade students remained in the 'at risk' category, and the remaining three second-grade students were in the 'some-risk' category.

Discussion

Results reveal that the *Early Reading Intervention* program demonstrates promise in increasing some elements of fluency important in the development of reading. Positive, strong results were found for increasing fluency in initial sounds (ISF), phoneme segmentation (PSF), and decoding nonsense words (NWF). The results for oral reading fluency (ORF) were somewhat disparate, with second grade students generally experiencing more success than first grade students. For example, 64% of the second grade students found *Early Reading Intervention* highly effective, compared to 22% of first grade students.

All Kindergarten students included in the sample exhibited increased fluency in their ability to identify and isolate sounds. None of the Kindergarten students fell in the 'deficient' category for ISF at the end of the benchmark period; one Kindergarten student fell in the 'deficient' category for PSF at the end of the benchmark period. This student continues to participate in Tier 2 services and will be monitored over the course of the upcoming school year. The remaining Kindergarten students were considered to have made good progress and were not referred for special education evaluation.

Generally, first grade students exhibited increased fluency in their ability to decode nonsense words, with 78% of the sample finding *Early Reading Intervention* highly effective. At the end of the benchmark period, eight out of nine students were considered 'emerging' or 'established', according to DIBELS criteria. One student fell in the 'deficient' category, and will remain in Tier 2 intervention during the course of the next school year. First grade students exhibited increased fluency for oral reading beyond that of baseline levels, but this finding was comparatively less strong. At the end of the benchmark period, two students remained in the 'at-risk' range, and seven students continued to exhibit 'some risk'. At the end of the year, all students were selected to participate in Tier 2 services during the upcoming school year.

Second grade students responded well to *Early Reading Intervention*, with about 64% of the sample finding the program highly effective for increasing oral reading fluency. Although many students (n=11) remained in the 'at-risk' category at the end of the benchmark period, these students made good progress and remained responsive to the program. Given this, it was decided to continue to provide Tier 2 services and monitor progress.

Overall, there is evidence to suggest that the *Early Reading Intervention* program is effective in increasing fluency skills needed for success in reading. Districts may wish to consider the program as a viable option if adopting the RTI model of service delivery.

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