

CASE STUDY

# Effectiveness for Striving Students in Grades 1–4

Saraland City Schools, Saraland, Alabama



## SPIRE Intensive Reading Intervention for Beginning Readers and Striving Readers

SPIRE is a reading intervention program founded on the Orton-Gillingham Approach to reading instruction. The structure of the Orton-Gillingham Approach utilizes neuroscientific research to capitalize on the power of sequential exercises that produce a summative learning advantage.<sup>1</sup> Its multi-sensory activities are critical for striving readers and learners demonstrating symptoms of dyslexia.

The SPIRE curriculum is comprehensive, intensive, and integrates phonological awareness, phonics, spelling, fluency, vocabulary, comprehension, and handwriting instruction. Depending on the specific needs students have, the program is designed to be administered in small group settings and includes one-on-one applications.

SPIRE curriculum consists of eight levels of progressively complex content beginning with a Placement Test. The Placement Test identifies the most appropriate SPIRE starting level for students. Students are subsequently grouped according to level placement. SPIRE is then administered to bring beginning readers and striving readers to full literacy upon completion of Level 8. Optimal results are obtained when instruction occurs for 60 minutes per day, 5 days per week.

### Demonstrated Reading Improvement with SPIRE

**73%**

Grade 1

**100%**

Grade 2

**96%**

Grade 3

**94%**

Grade 4

<sup>1</sup> Eden, G.F., and Moats, L. "The Role of Neuroscience in the Remediation of Students With Dyslexia." *Nature Neuroscience*, Vol. 5, 2002, pp.1080–1084.

In 2015, the Alabama State Board of Education adopted dyslexia amendments to the Alabama Administrative Code. The amendments included defining dyslexia as a “learning challenge that is neurological in origin.” The amendments require that students showing signs of dyslexia receive early access to intervention and instruction within the classroom before the onset of dyslexia as a “learning disability.” SPIRE was selected to help address the requirements of the Alabama Administrative Code at Saraland Elementary School in Saraland City Schools, Alabama.

Saraland Elementary School students in second through fourth grade were administered the STAR Reading Assessment, and students in first grade were administered the STAR Early Literacy Assessment. The effectiveness of SPIRE curriculum at Saraland Elementary School was demonstrated through the results of these STAR Assessments.<sup>2</sup>

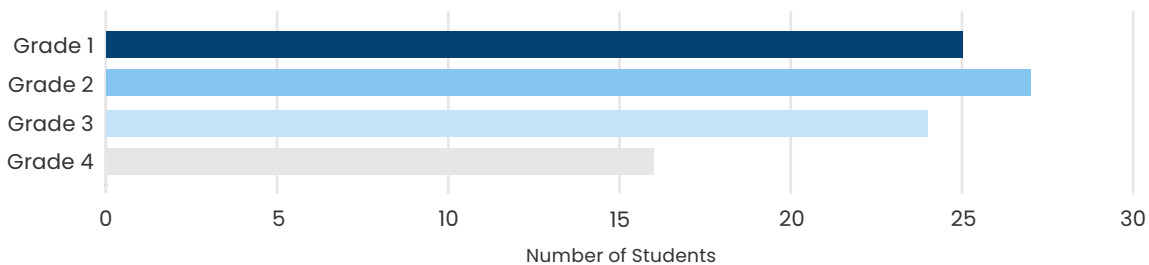
## Methodology

In August 2016, Saraland Elementary School students in second through fourth grade were administered the STAR Reading Assessment and students in first grade were administered the STAR Early Literacy Assessment as a universal dyslexia screener. Students scoring in the bottom tenth percentile among each grade level were then screened for dyslexic characteristics.

Screening measures assessed oral reading accuracy, nonsense word fluency, sight word fluency, and spelling. Students who were below average on three out of four screening measures were identified as candidates for SPIRE. In addition, students who were Tier Three in the previous school year were administered the SPIRE Placement Test to determine if they would benefit from its multisensory instruction. The STAR Reading and Early Literacy Assessments were administered a second time in March and April of 2017.

A total of 93 students participated in SPIRE and completed both the Fall 2016 and Spring 2017 STAR Assessments. There were 26 participants in first grade, 27 participants in second grade, 24 participants in third grade, and 16 participants in fourth grade. See Figure below for details. First grade students, starting with Sounds Sensible or SPIRE Level 1, received instruction 5 days per week for 30 minutes. Students in grades 2–4 received SPIRE instruction a minimum of twice per week for 30–45 minutes.

Number of Students Who Completed the STAR Assessments in Fall 2016 and Spring 2017



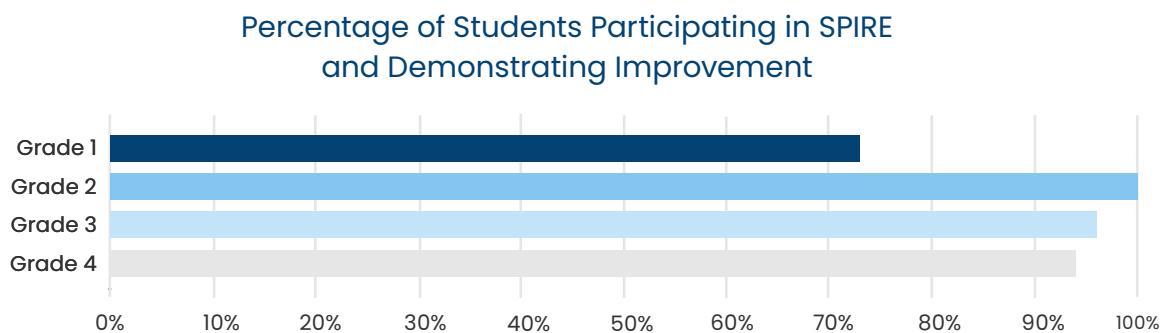
<sup>2</sup> <https://www.renaissance.com/products/assessment/star-360/star-early-literacy-skills/>

# Findings

## Demonstration of Improvement in Student Reading Ability

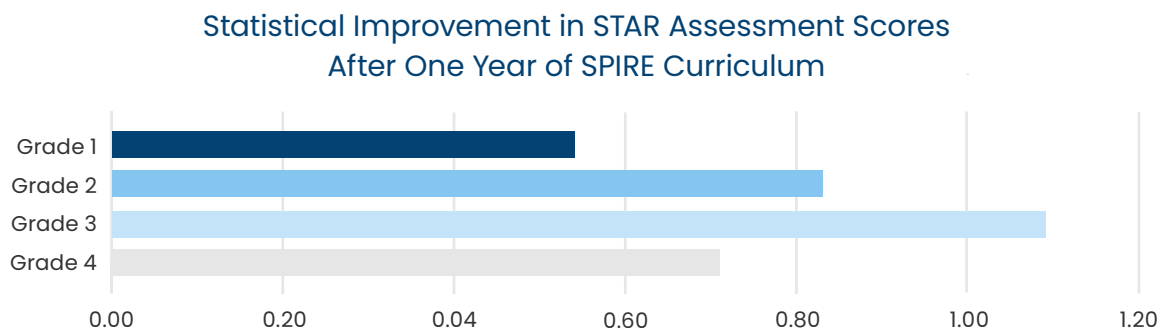
Pre- and post-test scores on the STAR Assessments were compared in order to determine student improvement in reading ability. Overall, 90% of all students tested demonstrated improvement after completing one year of SPIRE curriculum.

The Figure below illustrates the percentage of students at each grade level who scored higher on the STAR Assessments administered in Spring 2017. The proportion of students demonstrating growth at each grade level ranged from 73% in the first grade to greater than 90% in the third and fourth grades. 100% of the students tested in second grade demonstrated improvement on the STAR Reading Assessment in Spring 2017



## Statistically Significant Improvement in Student Reading Ability

A comparison of the student scores on the Fall 2016 and Spring 2017 STAR Reading Assessments demonstrated statistically significant improvements for all grade levels. Gains on the assessment ranged from 0.5, demonstrated by students in the first grade, to 1.1, demonstrated by students in the third grade. See Figure below for details.



Statistical comparison of Fall and Spring STAR Scores for each grade using paired t-test demonstrated statistically significant gains for all grades: Grade 1:  $t[21] = 5.45, p < .001$ ; Grade 2:  $t[26] = 9.06, p < .001$ ; Grade 3:  $t[22] = 6.96, p < .001$ ; Grade 4:  $t[15] = 6.96, p < .001$ .

## Gains in Comparison with a Proxy Control Group

The implementation of SPIRE at Saraland Elementary School did not provide a control group. However, for Saraland Elementary School, we identified a proxy control group to help estimate whether students would improve without the SPIRE curriculum. This measure was achieved by examining the Fall 2016 STAR Reading Assessment scores of the students in the next grade level for grades 2 and 3.

For example, to estimate the statistical improvements of students completing the second grade without SPIRE participation, the Fall STAR Assessment scores of students beginning third grade (i.e., 1.7) were examined. Comparison of the Fall second- and third-grade STAR Assessment scores, 1.5 and 1.7 respectively, would suggest that one might expect a statistical improvement of 0.2 if students were unaided in their reading development.

As the total gains of the second-grade students at Saraland Elementary School were 0.8 on the STAR assessment, the estimated gains attributed to SPIRE would be 0.6. That is, the total statistical gain of 0.8 minus the unaided gain of 0.2 results in an estimated net gain of 0.6 for students participating in SPIRE curriculum. An analysis of the gains of third-grade students' STAR scores at Saraland Elementary School also conclude that a 0.5 statistical gain is attributable to participation in SPIRE Curriculum. (See Figure below.)

Grade Level	STAR EL Fall Score Mean	STAR EL Spring Score Mean	Total gains	Est. Unaided Gain*	Est. Gain SPIRE**
1	1.1	1.6	0.5	-	-
2	1.5	2.04	0.8	0.2	0.6
3	1.7	2.8	1.1	0.6	0.5
4	2.3	3.0	0.7	-	-

\*The unaided gain is determined by comparing the Fall STAR scores of students at a grade level with the Fall scores of the students at the next grade level.

\*\*Estimated gain from SPIRE is much higher than unaided gain.

## Conclusions

- ▶ The majority of Saraland Elementary School students receiving SPIRE instruction demonstrated improvement on the STAR Reading Assessments. More than 90% of first-grade through fourth-grade students exhibited increased scores on the STAR Assessments after completing one year of SPIRE curriculum.
- ▶ For students participating in SPIRE, a comparison of STAR Reading Assessment scores before and after showed statistically significant gains in reading proficiency for first through fourth grades.
- ▶ Overall statistical gains ranged from 0.5 in first-grade scores to 1.1 in third-grade scores.
- ▶ Examining the Fall 2016 reading scores of the next-grade-level-up students as a proxy control group demonstrated that SPIRE facilitated an average incremental gain of 0.5–0.6 on the STAR Assessments. This growth is much higher than what would be expected in groups of students with no formal intervention.

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