Star Readers™

A Statistical Review of Pre- and Post-Assessments of Student Learning Collected From Star Readers Participants From 2016-2019

Review conducted by
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Executive Summary

Star Readers is a free, after-school, Orton-Gillingham based reading instruction program for Kindergarten and 1st grade students at Saratoga Elementary School in Lincoln, Nebraska. Students who need extra reading support are recruited by teachers to attend a 12-week session. Each student receives 24 hours of instruction. The program began in 2016 and completed its fourth year in 2019.

Assessment Data Collected from Kindergarteners & First Graders

At the beginning and end of each 12-week session, Kindergarteners were tested on first sound fluency, letter naming fluency, letter sound fluency, and phonemic segmentation fluency. In addition, a student's ability to sound out nonsense words using correct letter sounds was assessed; as well as the ability to distinguish the letters b and d; and to read high frequency words. First graders were tested on all the same measures as Kindergarteners with the exclusion of first sound fluency, at the beginning and end of each 12-week session. First graders were also assessed on oral reading fluency, which Kindergarteners did not complete.

Pre-and post-session data was collected using standardized measures. Each measure was chosen to determine if students were meeting learning objectives for increasing knowledge of letter names, letter sounds, sound manipulation, phonemic segmentation & blending, and high frequency word recognition. Students also learned how to differentiate b's and d's. At the end of each 12-week session, pre- and post-session data was analyzed to determine percentage gains for each measure. At the end of the school year, after two 12-week sessions were completed, that year's data was compiled to identify gains for that year.

Purpose of the University of Nebraska-Lincoln Statistical Review

After four years of data was accumulated, the University of Nebraska-Lincoln examined the Star Readers data collection methods, and re-analyzed the data to identify mean scores and effect sizes for each measure -- a standard methodology for reviewing data to identify gains in learning and to determine whether a program is effective.

Outcomes of the Statistical Review

The statistical review by the University of Nebraska-Lincoln highlighted the following facts about Star Readers:

- Star Readers is an effective after-school program for teaching Kindergarten and First Grade students beginning reading skills.

- Star Readers students demonstrated they can quickly learn and retain critical reading skills in their initial program session. The highest gains were achieved by students attending their first 12-week Star Readers session. Gains were also positive in subsequent sessions, but not as large.

- Since the Star Readers sample size was small, effect sizes were calculated in addition to gain scores. Star Readers data indicates medium to large effects across all the beginning reading skills. In other words, students made gains overall. This is very promising. Positive effect sizes ranged from .37 (small) to .81 (large)

The charts included show the effect sizes (gains) that Star Readers students made. The full review by the experts at University of Nebraska's Special Education and Communication Disorders is attached.

Effect Size of Star Readers Student Interventions 2016-2019

★ Large .80 - 1.00 ★ Medium .50 - .79 ★ Small .00 - .49

Star Readers Effect Size (i.e.,Gains) Ranges in Reading Skills

Star Readers Program

For the Star Readers program, we treated the data as coming from cohorts of the same study, in order to examine the overall effects over time. To do this, we combined databases to include every student and compared their growth in their first semester in the program. This allows us to see the overall effect of the program, regardless of the specific semester that students participated in the program.

In the data tables we provide the mean, mean gain and combined gain scores for each measure. In addition, we calculated Pretest to Posttest effect sizes to characterize the gain score a little further. Cohen (1988) provided the following guidelines for characterizing effect sizes:

0-.49 = small

0.50-.79 = medium

0.80-1.00 = large

Based on this, the effects of the Star Readers program are generally considered to be effective. There are large effects for letter naming fluency. There are medium effects for first sound fluency, letter sound fluency, oral reading fluency, oral reading fluency-accuracy, and high frequency words; and small effects for phoneme segmentation fluency, nonsense word fluency correct letter sounds, and nonsense word whole words read.

Another way to characterize these effects is by examining the growth of students in comparison to expected growth, based on the benchmarks of a normative sample dependent on grade level and semester. Benchmarks are available for the following DIBELsNext assessment subtests:

- first sound fluency
- phoneme segmentation fluency
- nonsense word correct letter sequence and whole word read
- oral reading fluency and accuracy

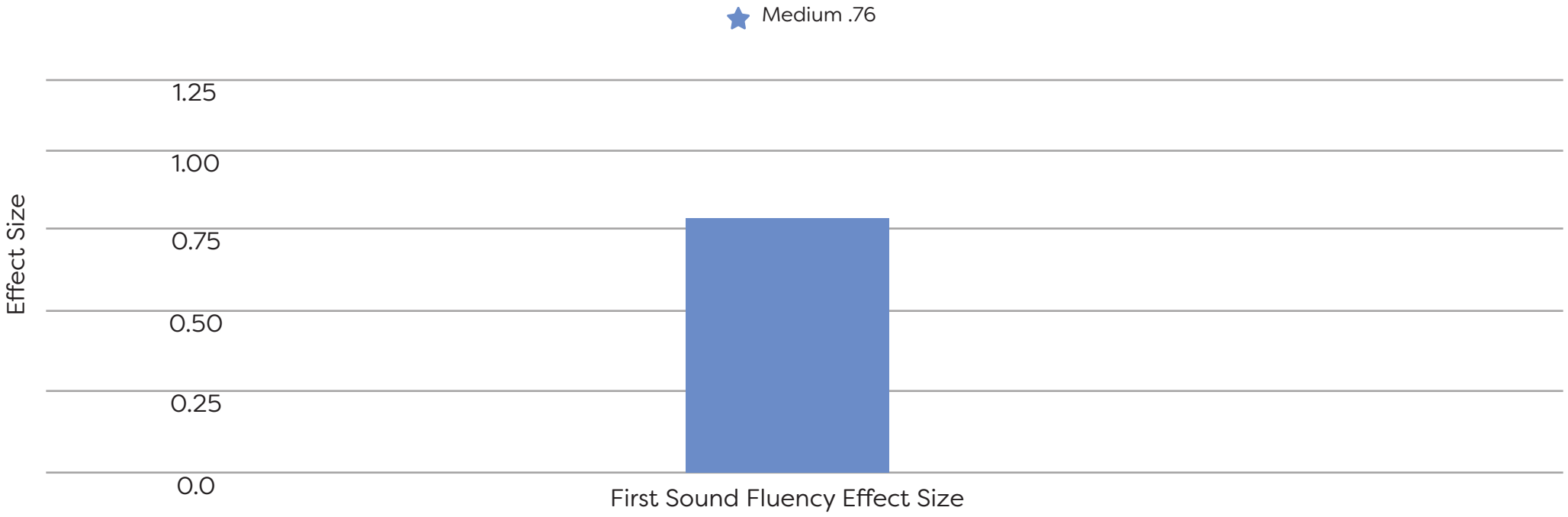
In cases where there are not norms available for specific subtests of DIBELsNext, we still wanted to examine some comparison. Therefore, we examined the benchmarks for DIBELs8 for the letter naming fluency subtest. These norms are slightly out of date, but do provide some evidence of average growth.

We compared the students to the benchmarks in two ways. First, we compare the average growth expected for students in the core support group benchmarks to the average growth of students in the Star Readers program.

Second, we looked at the number of students who increased or decreased their need for support. This analysis is on Page 16 in Table 10.

Chart 1

First Sound Fluency Effect Size (Kindergarten only)



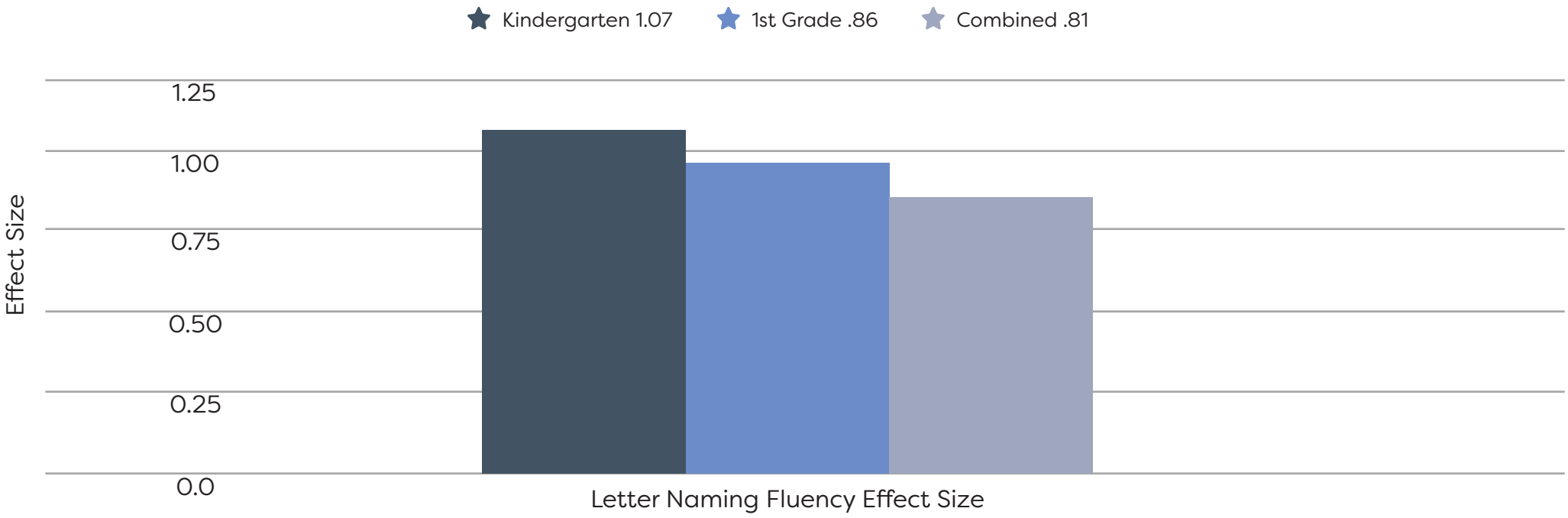
All the tables and charts show mean scores (i.e., Gain Scores) and effect sizes for Star Readers Measures.

Table 1

	Kindergarten Sem 1	Kindergarten Sem 2	Kindergarten Overall	First Grade Sem 1	First Grade Sem 2	First Grade Overall	Combined Gain Scores	Effect Size Overall
First Sound Fluency Score Range (0-60)							10.03	0.76
Mean Pretest	17.17	35.20	21.09	NA	NA	NA		
Mean Posttest	28.85	40.20	31.12	NA	NA	NA		
Mean Gain	10.94	5.00	9.65	NA	NA	NA		

Sem 1= first 12 week sessions; Sem 2= second 12 week sessions; Overall= two 12 week sessions

Letter Naming Fluency Effect Size



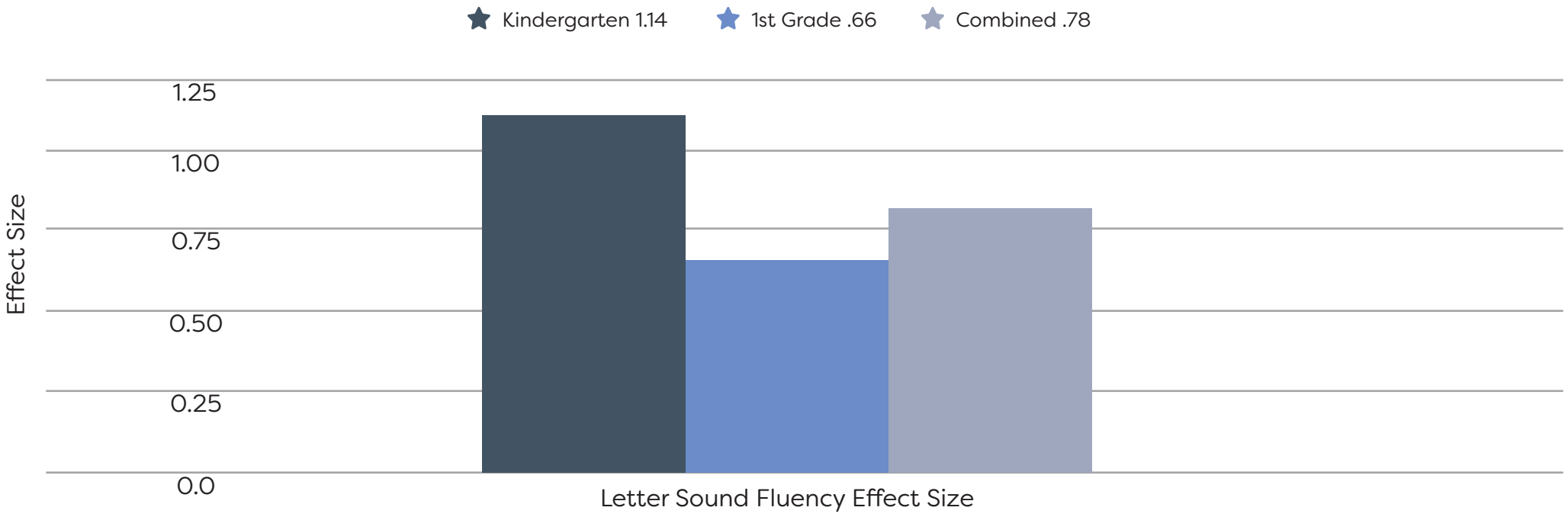
All the tables and charts show mean scores (i.e., Gain Scores) and effect sizes for Star Readers Measures.

Table 2

	Kindergarten Sem 1	**Kindergarten** Sem 2	**Kindergarten** Overall	**First Grade** Sem 1	**First Grade** Sem 2	**First Grade** Overall	**Combined Gain Scores**	**Effect Size Overall**
Letter Name Fluency Score Range (0-110)							14.29	0.81
Mean Pretest	32.90	28.73	31.42	43.90	45.80	44.28		
Mean Posttest	46.10	46.27	46.16	60.45	53.00	58.96		
Mean Gain	13.20	17.55	14.74	16.55	7.20	14.68		
Effect Size			1.07			0.86		

Sem 1= first 12 week sessions; Sem 2= second 12 week sessions; Overall= two 12 week sessions

Letter Sound Fluency Effect Size



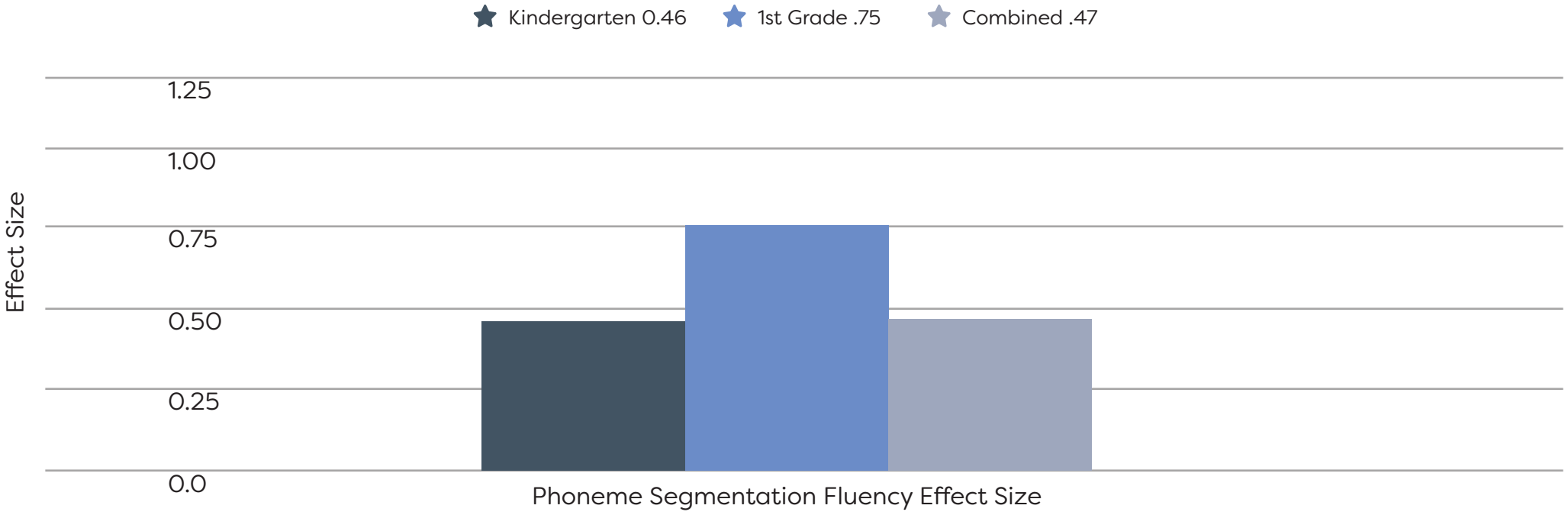
All the tables and charts show mean scores (i.e., Gain Scores) and effect sizes for Star Readers Measures.

Table 3

	Kindergarten Sem 1	**Kindergarten** Sem 2	**Kindergarten** Overall	**First Grade** Sem 1	**First Grade** Sem 2	**First Grade** Overall	**Combined Gain Scores**	**Effect Size Overall**
Letter Sound Fluency Score Range (0-110)							11.84	0.78
Mean Pretest	8.22	24.20	13.93	34.95	36.00	35.17		
Mean Posttest	23.75	33.60	27.03	47.42	41.80	46.25		
Mean Gain	14.94	9.40	12.96	12.47	5.80	11.08		
Effect Size			1.14			0.66		

Sem 1= first 12 week sessions; Sem 2= second 12 week sessions; Overall= two 12 week sessions

Phoneme Segmentation Fluency Effect Size



All the tables and charts show mean scores (i.e., Gain Scores) and effect sizes for Star Readers Measures.

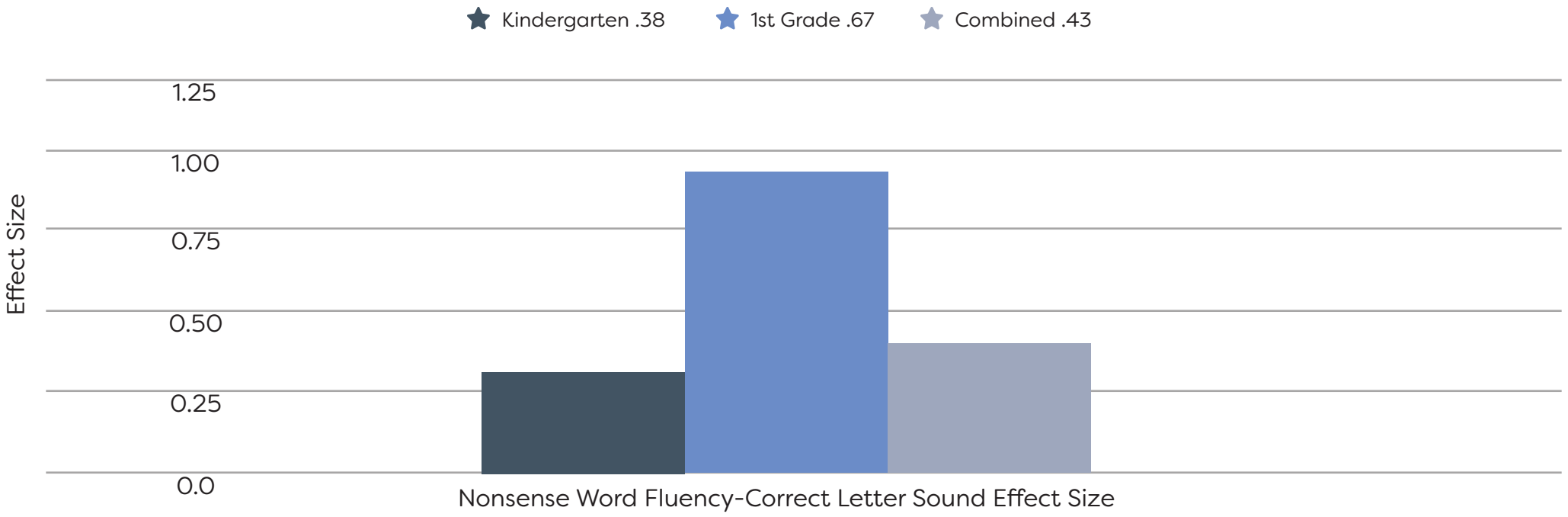
Table 4

	Kindergarten Sem 1	**Kindergarten** Sem 2	**Kindergarten** Overall	**First Grade** Sem 1	**First Grade** Sem 2	**First Grade** Overall	**Combined Gain Scores**	**Effect Size Overall**
Phoneme Segmentation Fluency Score Range (0-77)							7.46	0.47
Mean Pretest	16.27	27.80	21.76	34.47	41.80	36.14		
Mean Posttest	23.60	39.50	28.90	47.59	45.20	47.05		
Mean Gain	9.91	11.70	10.76	13.12	3.40	10.91		
Effect Size			0.46			0.75		

Sem 1= first 12 week sessions; Sem 2= second 12 week sessions; Overall= two 12 week sessions

Chart 5

Nonsense Word Fluency-Correct Letter Sound Effect Size



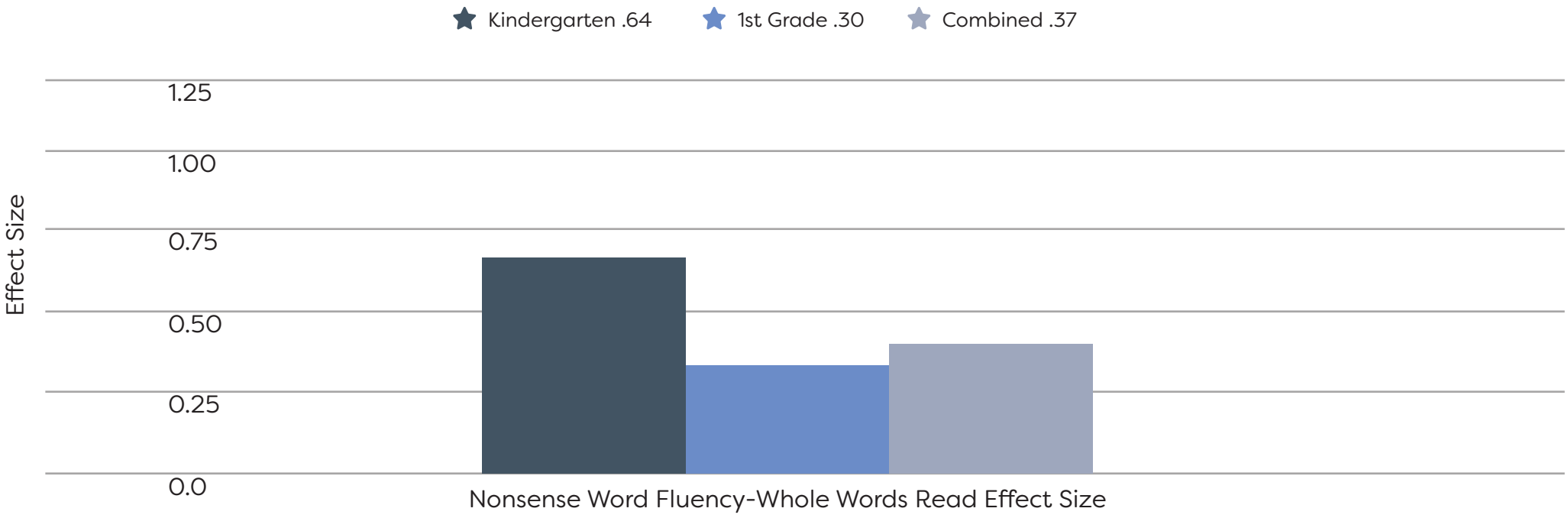
All the tables and charts show mean scores (i.e., Gain Scores) and effect sizes for Star Readers Measures.

Table 5

	Kindergarten Sem 1	**Kindergarten** Sem 2	**Kindergarten** Overall	**First Grade** Sem 1	**First Grade** Sem 2	**First Grade** Overall	**Combined Gain Scores**	**Effect Size Overall**
Nonsense Word Fluency* Score Range (0-143)							7.07	0.43
Mean Pretest	3.30	22.45	13.33	29.85	34.20	30.72		
Mean Posttest	12.94	25.00	17.68	44.25	40.40	43.48		
Mean Gain	12.20	2.55	7.14	14.40	6.20	12.76		
Effect Size			0.38			0.87		

Sem 1= first 12 week sessions; Sem 2= second 12 week sessions; Overall= two 12 week sessions
*Correct Letter Sound

Nonsense Word Fluency-Whole Words Read Effect Size



All the tables and charts show mean scores (i.e., Gain Scores) and effect sizes for Star Readers Measures.

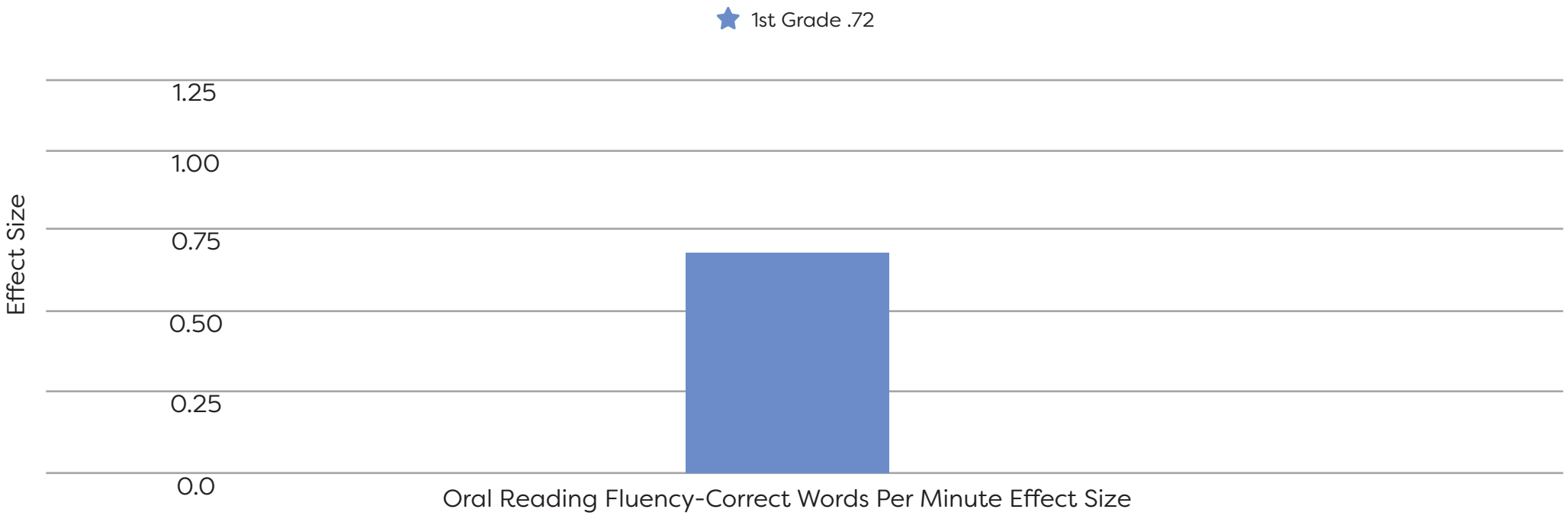
Table 6

	Kindergarten Sem 1	**Kindergarten** Sem 2	**Kindergarten** Overall	**First Grade** Sem 1	**First Grade** Sem 2	**First Grade** Overall	**Combined Gain Scores**	**Effect Size Overall**
Nonsense Word Fluency* Score Range (0-50)							.98	0.37
Mean Pretest	0.00	0.22	0.08	0.25	4.20	1.04		
Mean Posttest	1.31	0.89	1.16	1.60	3.20	1.92		
Mean Gain	1.31	0.67	1.08	1.35	-1.00	0.88		
Effect Size			0.64			0.30		

Sem 1= first 12 week sessions; Sem 2= second 12 week sessions; Overall= two 12 week sessions
*Whole Words Read

Chart 7

Oral Reading Fluency-Correct Words Per Minute Effect Size (1st Grade Only)



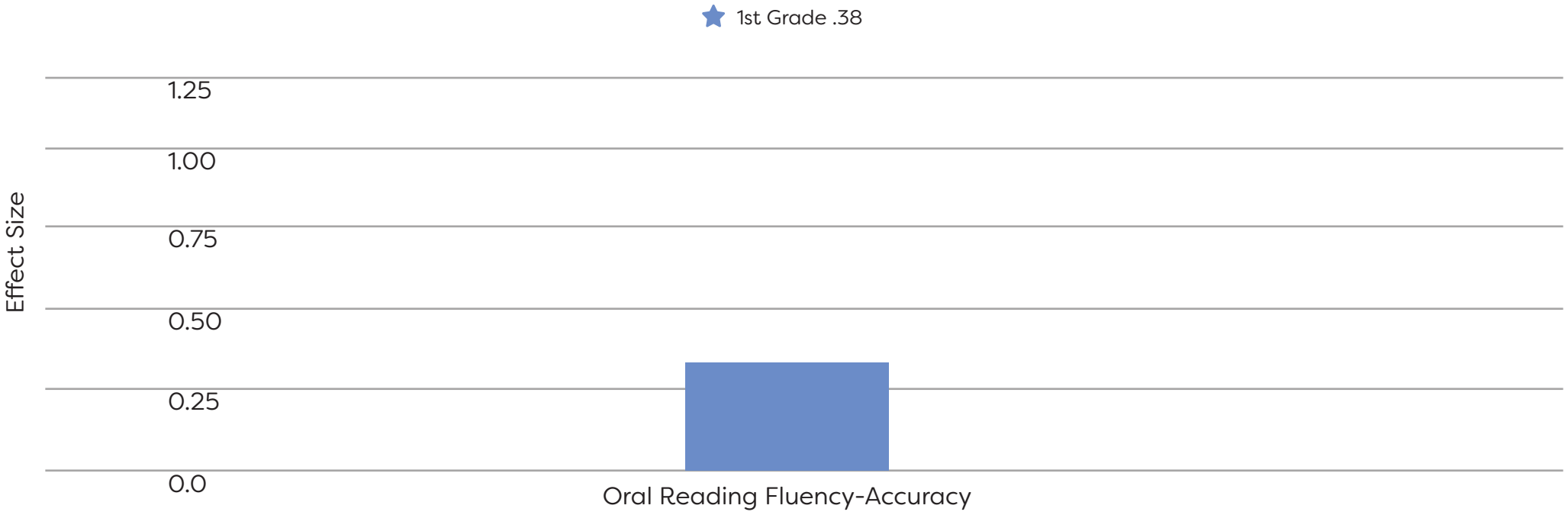
All the tables and charts show mean scores (i.e., Gain Scores) and effect sizes for Star Readers Measures.

Table 7

	Kindergarten Sem 1	**Kindergarten** Sem 2	**Kindergarten** Overall	**First Grade** Sem 1	**First Grade** Sem 2	**First Grade** Overall	**Combined Gain Scores**	**Effect Size Overall**
Oral Reading Fluency*							12.14	0.72
Mean Pretest	19.57	27.00	21.22	18.00	15.00	16.85		
Mean Posttest	30.29	57.50	36.33	30.88	20.60	26.92		
Mean Gain	10.71	30.50	15.11	12.88	5.60	10.08		
Effect Size			0.83			0.58		

Sem 1= first 12 week sessions; Sem 2= second 12 week sessions; Overall= two 12 week sessions
*Correct Words per Minute

Oral Reading Fluency-Accuracy (1st Grade Only) Effect Size



All the tables and charts show mean scores (i.e., Gain Scores) and effect sizes for Star Readers Measures.

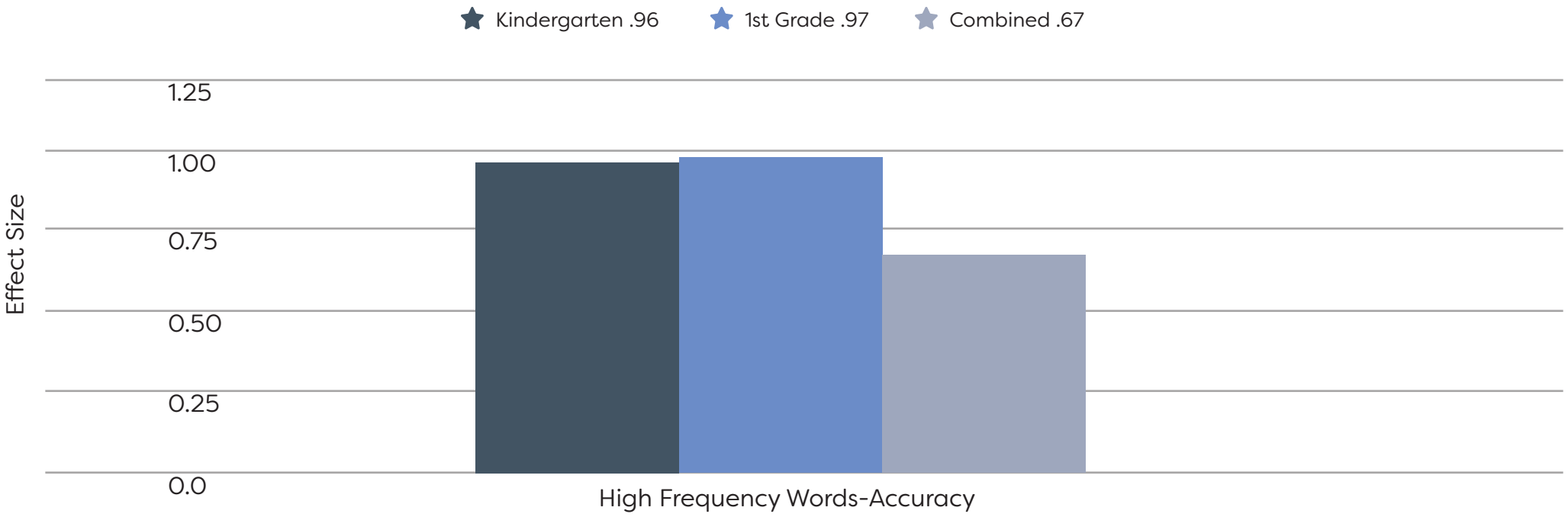
Table 8

	Kindergarten Sem 1	**Kindergarten** Sem 2	**Kindergarten** Overall	**First Grade** Sem 1	**First Grade** Sem 2	**First Grade** Overall	**Combined Gain Scores**	**Effect Size Overall**
Oral Reading Fluency-Accuracy							14.50	0.38
Mean Pretest	83.00	81.00	82.00	60.00	NA	60.00		
Mean Posttest	88.00	94.00	91.00	80.00	NA	80.00		
Mean Gain	5.00	13.00	9.00	20.00	NA	20.00		
Effect Size			0.19			0.39		

Sem 1= first 12 week sessions; Sem 2= second 12 week sessions; Overall= two 12 week sessions

Chart 9

High Frequency Words-Accuracy



All the tables and charts show mean scores (i.e., Gain Scores) and effect sizes for Star Readers Measures.

Table 9

	Kindergarten Sem 1	Kindergarten Sem 2	Kindergarten Overall	First Grade Sem 1	First Grade Sem 2	First Grade Overall	Combined Gain Scores	Effect Size Overall
High Frequency Words-Accuracy							17.42	0.67
Mean Pretest	27.53	21.90	25.53	16.23	23.00	18.11		
Mean Posttest	38.00	36.60	37.53	47.12	32.40	43.77		
Mean Gain	10.65	14.70	12.00	19.23	9.40	16.50		
Effect Size			0.96			0.97		

Sem 1= first 12 week sessions; Sem 2= second 12 week sessions; Overall= two 12 week sessions

Student Level Changes

Secondly, we identified the number of students who changed support levels, based on the score levels of the DIBELsNext. These levels Include:

- Core support-Student is above benchmark
- Strategic Support- Student is at benchmark
- Intensive Support-Student is below benchmark

For example, we counted the number of students who started the program in “intensive support,” but moved into “strategic support” or “core support.” In the table we provide the level change results for the measures that included identified benchmarks.

Table 10 *Student Level Changes Based on Score Levels*

	Number of Students			
DIBELs Subtest	**Decreased Level**	**Consistent Level**	**Increased One Level**	**Increased Two Levels**
First Sound Fluency	6	10	1	1
Letter Naming Fluency	2	29	15	7
Phoneme Segmentation Fluency	2	4	2	0
Nonsense Word-Correct Letter Sound	9	23	3	0
Nonsense Word-Whole Words Read	13	11	1	0
Oral Reading Fluency-Words Correct	2	19	0	0
Oral Reading Fluency-Accuracy	2	6	0	0

Message from Star Readers

We are extremely grateful to the University of Nebraska-Lincoln's Department of Special Education and Communication Disorders for lending us their extraordinary experts -- Dr. Michael Hebert and Dr. Pamela Bazis.

They provided countless hours of consultation, advice, along with a comprehensive review and analysis of the Star Readers program that helped us confirm both the validity and credibility of our assessment tools and data for the first four years of the program. In addition, they provided important advice about how to improve our assessment methodology that will help us in the future.

Star Readers' fifth year began during the 2019-20 school year. Unfortunately, we were interrupted in March 2020 by the COVID-19 pandemic and had to temporarily suspend the program. In September 2020, we begin a new 2020-21 school year and have resumed both the Star Readers program and our assessments.

Our deepest thanks to all of our many supporters, stakeholders, advisors, and the many donors--including foundations, corporations, and individuals--who made it possible for Star Readers to serve the youngest, and most vulnerable students in our community.

Sharon O'Neal
Star Readers Program Director
Lincoln, Nebraska
September 2020

For more information about Star Readers, or to donate to help young students get vital reading support, visit www.starreaders.org or email info@starreaders.org.

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