Secret Stories® RCT Study:
First Grade, Arkansas

Study Summary

The case study teacher implemented Secret Stories® in their grade 1 classroom in rural Arkansas in the fall of 2021. Of the 4 grade 1 classrooms in the school, only the case study teacher was using Secret Stories®. The other 3 classes served as control groups. Between the treatment class and the three control classes, there were 73 students total. Results were compared based on both BAS® (1.00) and NWEA MAP® (.48) assessments after 1 year of school instruction. **This study showed a mean overall effect size of .74, indicating strong**
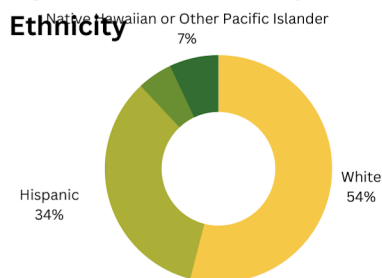
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Despite starting significantly behind the control groups in reading ability, the treatment class outperformed all 3 control classes on both the MAP® and BAS® assessments by the end of the year. According to the BAS® assessment, the treatment class had 90% of students reading on or above grade level and only 1 student reading below grade level. Comparatively, the 3 control classrooms had less than 50% of students reading on grade level, with a combined total of 46 students reading below grade level.

Product Description

Secret Stories® is a multisensory, neuroscience based approach to fast-tracking phonics skills for reading that can be used alongside any reading or phonics curriculum. Rooted in the science of reading and aligned with early brain development, Secret Stories® uses familiar schemas to help children make sense of the sounds letters make together, along with embedded mnemonic images to help them remember for independent reading and writing.
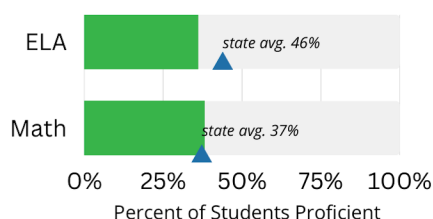
Figure 1: Enrollment by Ethnicity

Native Hawaiian or Other Pacific Islander 7%
White 54%
Hispanic 34%

Source: nces.ed.gov

Figure 2: District Summary Ratings

ELA — state avg. 46%
Math — state avg. 37%

0%   25%   50%   75%   100%
Percent of Students Proficient

School Setting

This school has a majority Caucasian population with a large Hispanic (34%) representation. This school is a low-performance school, with only 38% of students meeting grade-level expectations in reading and 70% of students qualifying for free or subsidized lunches. On average there are 18 students per teacher. In figure 1: can be seen the student demographics and school results on the Aspire test for grades 3-10.

Academics Ratings for School: 6/10

Test scores at this school are about the same as the state average, though still below the top-performing schools in the state. Because test scores in some states are so low, many students at this school may not be performing at grade level.

Methodology

This study uses both the BAS® test (a reading benchmark assessment by Fountas and Pinnell®) and the MAP® test (an adaptive reading assessment by Northwest Evaluation Association). The MAP® measures foundational knowledge, including decoding abilities. Within the original context of this study, the treatment group started at a large disadvantage, as the students started at a lower average reading level than the control groups by a mean effect size of .38. This is problematic because it automatically biases the results in favor of the control group. To mitigate this problem, an additional control group was made for both assessments by matching pre-test scores between students and then randomly choosing students for the control group. By making this additional group, the researchers matched the student scores so that both groups started at the same learning point. Moreover, randomly selecting students decreased the odds of an individual teacher dictating the results of the control group.

At the start of the year, the Secret Stories® group started with much lower reading scores than the other three classrooms. To account for this difference, a group of students was created by randomly selecting students from each of the three control groups to make the fourth group. All effect sizes were calculated using Hedge's g. Initially, there were 21 students in the treatment group, two of which were recent immigrants to the country who spoke no English. One of the two students did not begin school until January. While the control groups also had ELL students, none of their ELL students were were newly immigrated and spoke no English. Due to this discrepancy between the control groups and the treatment group, these two students were excluded.

To ensure the validity of the results we tabulated all pre-test data into the below charts. All groups were statistically similar.
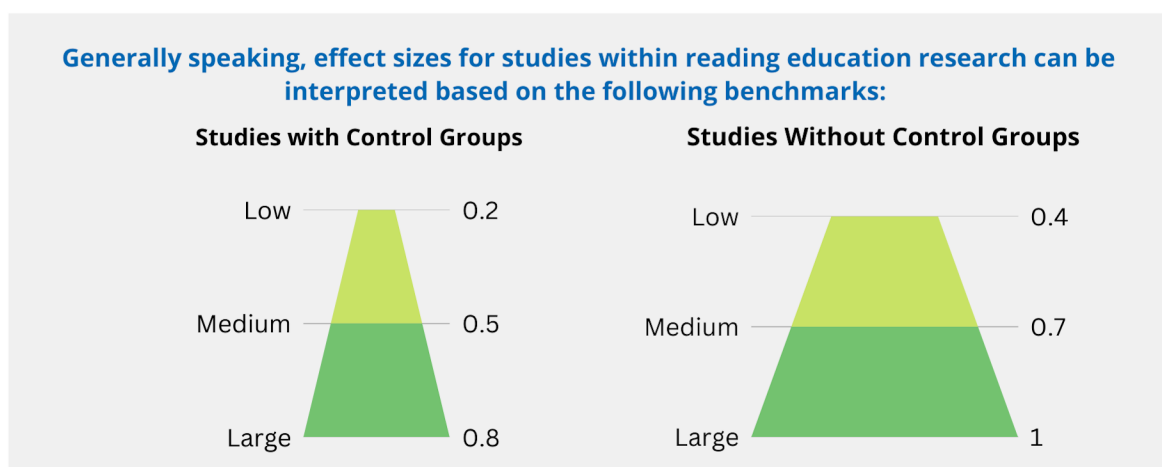
Generally speaking, effect sizes for studies within reading education research can be interpreted based on the following benchmarks:

Studies with Control Groups	Studies Without Control Groups
Low — 0.2	Low — 0.4
Medium — 0.5	Medium — 0.7
Large — 0.8	Large — 1

Table 1: **Pre-Test Scores**

Pre-Test	BAS® Mean (SD)	MAP® Mean (SD)	N	BAS® Effect Size (Hedge's g)	MAP® Effect Size (Hedge's g)
Treatment	2.1 (1.08)	155.7 (8.11)	19 (BAS) 19 (MAP)		
Control 1	2.57 (1.51)	154.8 (12.95)	7 (BAS) 10 (MAP)	-.35	.08
Control 2	2.76 (1.01)	154.16 (14.92	15 (BAS) 19 (MAP)	-.62	.12
Control 3	2.29 (1.4)	154.6 (14.05)	17 (BAS) 20 (MAP)	-.67	.09

As can be seen by the above pre-test scores for the assessment, pre-test scores were not equivalent for the BAS® assessment. As the control groups started off far ahead of the treatment group. For example, control group 2 started off ahead of the treatment group, with a mean effect size of .63. As previously mentioned to mitigate this problem, a 4th group was created by matching pretest scores between students and then randomly selecting control students. The results can be seen below on the following page.

Table 2: **Randomized Pre-Test Scores**

| Pre-Test	BAS® Mean (SD) (N=19)	MAP® Mean (SD) (N=19)	BAS® Effect Size (Hedge's g)	MAP® Effect Size (Hedge's g)
Treatment Group For Random Comparison	2.1 (1.08)	155.7 (8.11)	Null	.05
Randomized Control Group	2.1 (1.04)	154.83 (8.8)	Null	.10

Table 3: **Post-Test Results**

Post Test	BAS® Mean (SD)	MAP® Mean (SD)	N	BAS® Effect Size	MAP® Effect Size
Treatment	9.47 (2.76)	170.76 (9.98)	19		
Control 1	6.3 (3.33)	166.8 (15.92)	10	1.07	.32
Control 2	6.52 (3.35)	162.2 (16.16)	22	.96	.62
Control 3	6.8 (3.36)	169.65 (16.43)	20	.86	.08
Randomized Control Group	6.57 (3.02)	165.38 (12.20)	BAS = 19 MAP = 19	1.0	.48

Key Findings

On the MAP® assessment the treatment group outperformed all of the comparison groups by moderate amounts; however, the p value was significantly greater than .05. The largest effect was found when comparing the treatment group with the randomly equated control group. On the BAS® assessment, the treatment group outperformed all comparison groups and the randomly equated control group by a large effect size. Indeed a mean effect size of .97 was found for the BAS® assessment, indicating a strong effect on BAS® outcomes.

Figure 3: **Effect Sizes by Group**
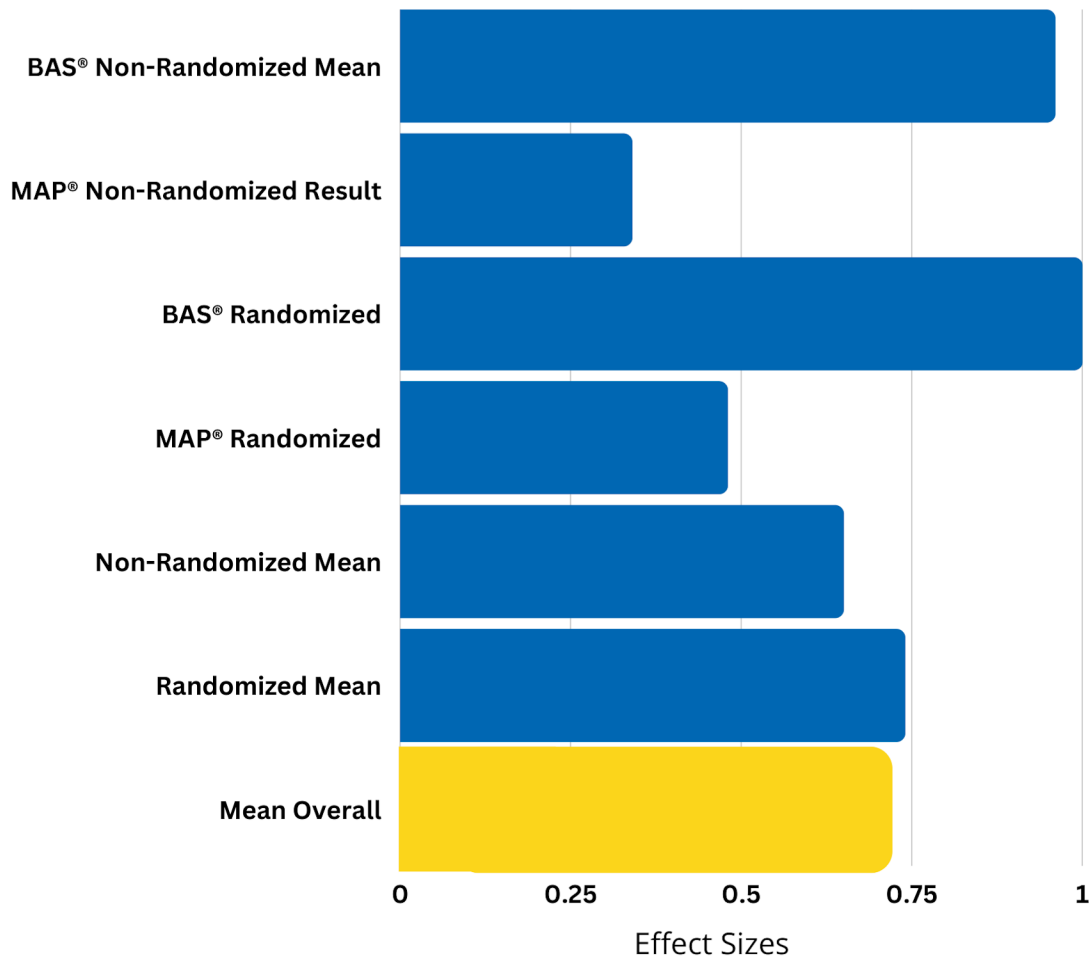
Key Findings

Despite the fact that the treatment group started off significantly behind the control groups in reading ability, they surpassed the control groups by high effect size for the BAS® assessment and by a moderate effect size on the MAP® assessment. Once groups were randomly equated for pretest scores, the effect size went down slightly for the BAS® assessment and up substantially for the MAP® assessment.

By the end of the year, according to the BAS® assessment, the treatment class had only 1 student reading below grade level, with 90% of students reading on or above grade level. Comparatively, the three control classrooms had less than 50% of students reading on grade level, with a total of 46 students reading below grade level. Within the treatment group, students ranged from level I to level M on the BAS® assessment, compared to the control group where students ranged from A to J. This study shows that the students in the treatment group started grade 2 in a much stronger position than those in the comparison groups.

Figure 4: Comparison of Students On/Above and Below Grade Level in Secret Stories® Class vs. Non-Secret Stories® Classes
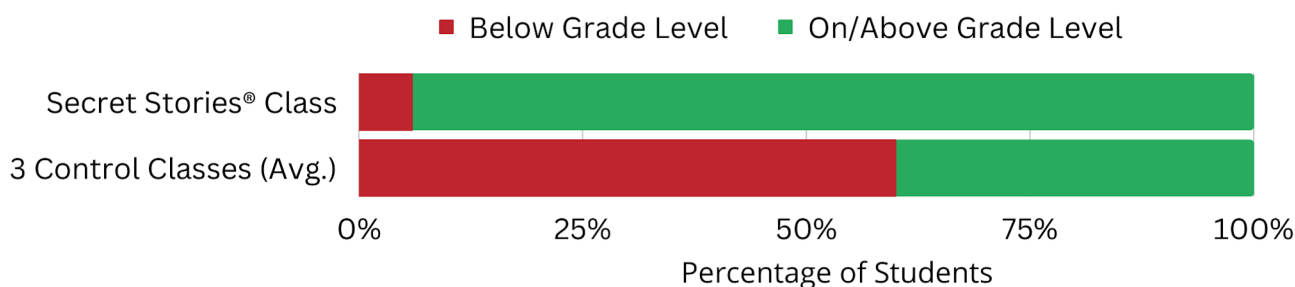
Conclusion

Despite starting significantly behind the control groups in reading ability, the treatment class outperformed all 3 control classes on both the MAP® and BAS® assessments by the end of the year. According to the BAS® assessment, the treatment class had 90% of students reading on or above grade level and only 1 student reading below grade level. Comparatively, the 3 control classrooms had less than 50% of students reading on grade level, with a combined total of 46 students reading below grade level. Results of this study suggest that Secret Stories® can significantly improve instructional outcomes in reading.

Ethics Agreement

This case study was written by an independent firm on behalf of Secret Stories®, under a contractual agreement that all results would be published, regardless of outcomes and that no data would be withheld from said firm. All data and methods were independently checked by a third party education research firm not associated with Secret Stories® or the writers of this report.

Independent Verification

Learning Experience Design (LXD) Research & Consulting
a division of Charles River Media Group, LLC

This case study was written by an independent analyst on behalf of Secret Stories who verified the results.
All reports were also independently reviewed by Learning Experience Design Research, a third-party education research firm.