

# ***READING MASTERY EFFICACY RESEARCH CASE STUDY***

## **Executive Summary**

### **Summary of Findings**

This study investigated the effects of *Reading Mastery* on student achievement in reading as a function of the fidelity of the implementation of the program at three schools, housed within one district in the state of Mississippi. The results of this study suggest that *Reading Mastery* improves K-2 reading performance and that fidelity of implementation impacts success. However, limitations of this study mean that the effect cannot be directly attributed to the use of the program.

### **Study Structure**

#### **Participants**

- Kindergarten: 180; Grade 1: 204; Grade 2: 22
- Majority African American (92%)
- Slightly skewed male population (55% boys, 45% girls)
- Special education 12%
- Small ESL population (1%)
- All students eligible to receive free/reduced lunch

#### **Measures**

- NWEA Measures of Student Progress (MAP)
- STAR Early Literacy and STAR Reading measures.

### **Results**

#### **Impact on Test Scores**

During this study students made significant gains in their respective MAP and STAR scores from fall to spring. In line with expectations, younger students made greater gains than older.

- NWEA MAP: Overall 43% of students met or exceeded the NWEA growth expectation after participating in *Reading Mastery* for one year. Of these, Kindergarten students increased their score by 28 units; first-graders by 25 units; while second graders increased their score by 20 MAP units.
- STAR: Kindergarten and first-grade students exceeded the STAR growth expectation and additionally increased their relative standing to peers by 10 percentile units in the case of Kindergarten, and 5 percentile units in the case of first-grade.

The impact of *Reading Mastery* also varied between schools and it appears that those students who attended schools that implemented the program with greater fidelity exhibited greater gains than students who attended schools that implemented the program with less fidelity.

*This document contains information, data and/or analysis (collectively, "Information") that is confidential and proprietary to McGraw-Hill Education (the "Company"). The Information is intended solely for internal access and use by Company employees and may not be disclosed or distributed, in whole or in part, to any outside party, except that with the written authorization of a Business Unit President or the Company's Legal Department, information may be disclosed to partners, vendors, contractors or consultants of the Company to the extent they are contractually obligated to maintain the confidentiality of such information. All employees are reminded of their obligations under the McGraw-Hill Education Code of Business Ethics, which apply both during and after their employment with the Company, to maintain the confidentiality of commercially sensitive or proprietary information relating to the Company that comes into their possession.*

---

## Teacher Perceptions

In addition to the use of test scores to evaluate student performance, teachers at the three schools were surveyed about their opinion of the *Reading Mastery* program.

- About two-thirds of the 27 teachers who responded to the survey indicated that *Reading Mastery* was extremely or moderately effective for students. The majority of those teachers who indicated that the program was mildly effective or not effective were staff at School C (the school that implemented the program with the lowest fidelity).
- When asked whether *Reading Mastery* met their needs as a teacher, 41% responded completely or mostly (all of whom were teachers at the school that implemented *Reading Mastery* with the highest fidelity). Of the remaining 59% of respondents, 41% responded somewhat and 19% of respondents indicated that *Reading Mastery* didn't meet their needs.
- Feedback from teachers suggests that some were dissatisfied with the programs lack of writing and hands-on activities and failure to address the grade-level standards for reading.

## Study Limitations

From the perspective of demonstrating the efficacy of the *Reading Mastery* program the results of this study are promising. However, because the study did not incorporate a comparison group, the positive impact on student performance can only be indirectly attributed to *Reading Mastery*; a causal relationship was not proven. Additionally, a longitudinal study that tracks student growth in reading over several years would be helpful.

## Conclusion

Overall evidence from assessments indicates that students using *Reading Mastery Signature Edition* showed promising growth, especially in schools that implemented the program with stronger fidelity. While not all students met the benchmark scores for the assessments, they did make reading gains, especially at the lower grade levels. Teacher opinion about the program was mixed. Future studies incorporating a comparison group are needed to establish a causal relationship.

## Additional Detail

### Site and Participants

The study was conducted in three magnet schools in a single district in Mississippi, between fall 2014 and spring 2016. During the 2014-2015 school year *Reading Mastery* was introduced with varying degrees of fidelity. During the following year schools continued to implement the program with stronger overall implementation. They also benefitted from increased coaching and support.

Participants included 613 students housed in 29 classrooms and participating students were divided approximately evenly between the three schools (labeled A-C in this study) and approximately evenly between K, 1, and 2.

### Research Design

This study represents a single group, pretest-posttest design. Attempts to recruit a control group were unsuccessful so the threats to internal validity could not be mitigated. (In response, study results should be treated with caution.)

The three schools were also scored on a scale of 1-10 in terms of the fidelity of their implementation of *Reading Mastery*. School A was rated 8.25, school B was rated 7 and School C was rated 6.75.

Participating teachers were also surveyed about their experience of the *Reading Mastery* program.

### Student Performance Measures

- **NWEA Measures of Academic Progress (MAP)** - scaled scores based on the Rasch Unit scale.
- **STAR Early Literacy and STAR Reading** - computer-adaptive assessments that, like the NWEA MAP use vertically aligned scales. STAR Early Literacy assesses proficiency with early reading skills, while STAR Reading is focused on reading comprehension. The STAR Early Literacy assessment represents the stages of literacy by range of score. Students with scaled scores between 300-487 are considered 'early emergent readers'; between 488-674 are considered, 'late emergent readers'; between 675-774 are 'transitional readers'; and between 775 - 900 are considered probable readers.

## Student Performance: MAP Results

- There was a statistically significant difference in student scores between the fall and spring 2016 administration of the MAP.

### *Student Performance on Fall and Spring Administration of the MAP*

Grade	n	Fall Mean	Fall SD	Spring Mean	Spring SD	Gain Mean	Gain SD	Effect Size** <i>d</i>
K	159	136.35	9.68	151.44	12.38	<b>15.09*</b>	10.14	1.48
1	183	153.75	10.28	166.93	12.49	<b>13.18*</b>	8.92	1.55
2	214	166.80	13.16	179.45	13.04	<b>12.65*</b>	10.70	1.18
All Students	556	122.02	16.74	167.32	16.66	<b>15.96*</b>	10.02	1.59

\*Statistically significant,  $p < .01$

\*\*Computed using Cohen's *d*

- MAP gain scores were greater in the lower grades, which aligns with expectations.

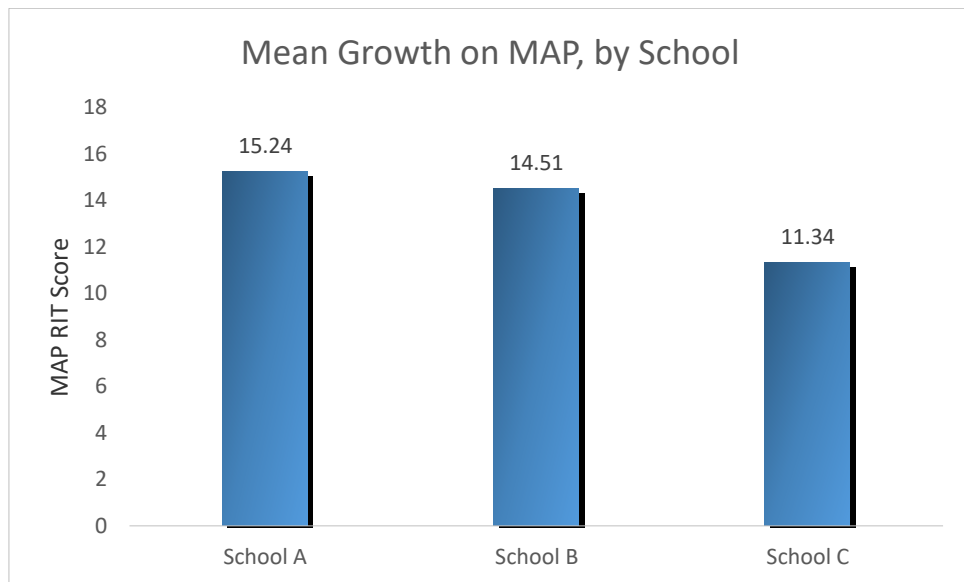
### *Mean MAP RIT Yearly Gain Scores*

Grade	n	School A Gain	n	School B Gain	n	School C Gain	n	All Schools	NWEA Growth Expectation*
K	47	16.90	54	14.62	58	14.06	159	15.09	17.1
1	58	14.60	64	14.89	68	10.03	183	13.18	16.8
2	55	14.49	68	14.07	91	10.48	214	12.65	14.0
Total	160	15.24	186	14.51	210	11.34	556	13.53	15.96**

\*Growth norms reported from the NWEA 2015 RIT Scale Norms Study

\*\*Averaged from growth norm values for Kindergarten, 1<sup>st</sup> grade, and 2<sup>nd</sup> grade

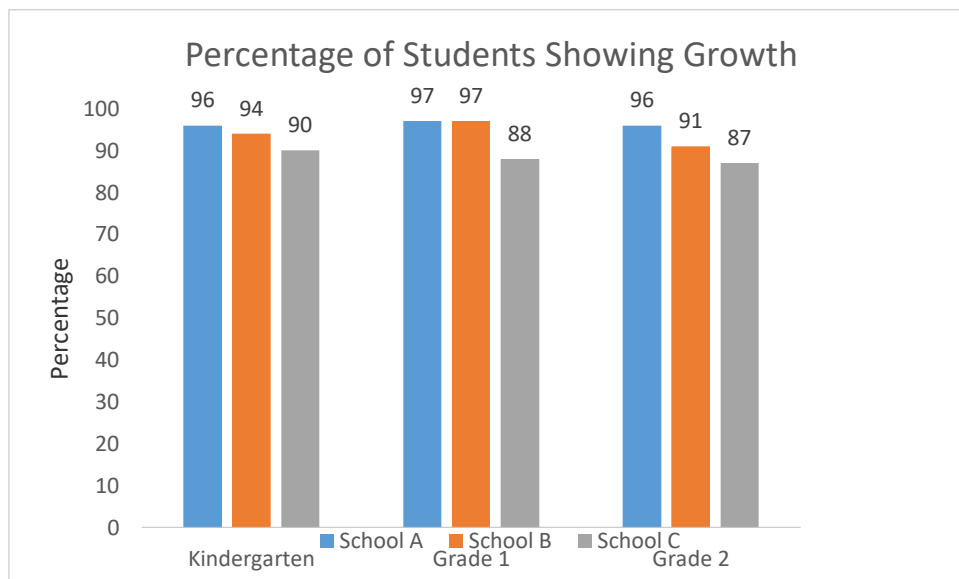
3. The average gain for students who attended School A, where program implementation was strongest, were higher than the average gain for students attending School C, where implementation was relatively weaker.



Note: Difference in mean growth between School A and School C statistically significant,  $p = .031$ .

*Figure 2. Mean Growth on MAP by School*

4. The majority of students showed MAP gains.



*Figure 7. Percentage of Students Showing Growth on MAP, Fall to Spring*

*This document contains information, data and/or analysis (collectively, "Information") that is confidential and proprietary to McGraw-Hill Education (the "Company"). The Information is intended solely for internal access and use by Company employees and may not be disclosed or distributed, in whole or in part, to any outside party, except that with the written authorization of a Business Unit President or the Company's Legal Department, information may be disclosed to partners, vendors, contractors or consultants of the Company to the extent they are contractually obligated to maintain the confidentiality of such information. All employees are reminded of their obligations under the McGraw-Hill Education Code of Business Ethics, which apply both during and after their employment with the Company, to maintain the confidentiality of commercially sensitive or proprietary information relating to the Company that comes into their possession.*

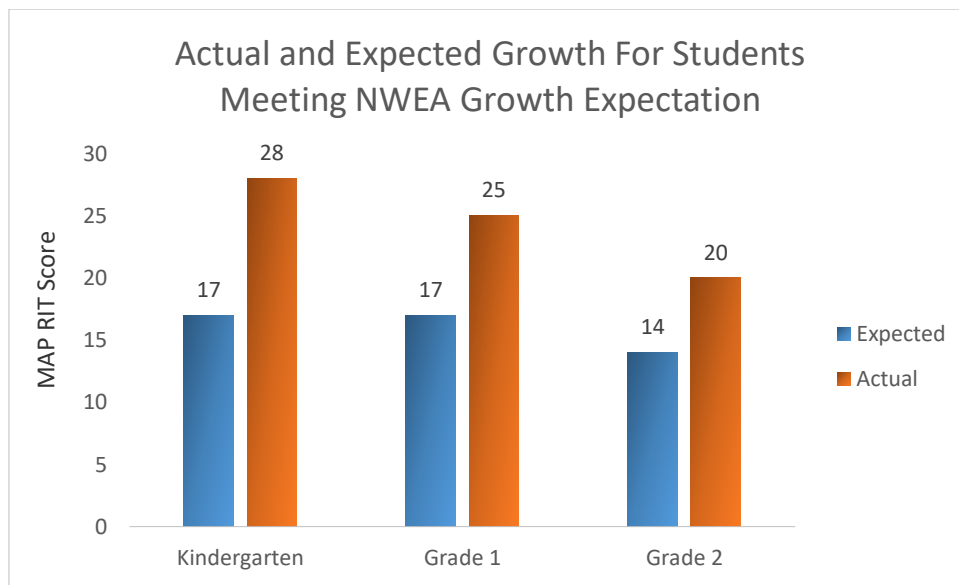
5. Between 49% and 35% of students met or exceeded the NWEA growth expectations for the MAP.

*Percentage of Students Meeting or Exceeding NWEA Growth Expectation\**

Grade	n	School A %	n	School B %	n	School C %	n	All Schools %
K	25	53.2	22	40.7	25	43.1	72	45.3
1	24	41.4	33	51.6	16	26.2	73	39.9
2	25	45.5	36	52.9	33	36.3	94	43.9
Total	74	46.2	91	48.9	74	35.2	239	42.9

\*Growth norms reported from the NWEA 2015 RIT Scale Norms Study

6. Of those students who met or exceeded the NWEA growth expectations for the MAP, the average gain was 20 MAP points across all grades.



*Figure 8. Mean Growth for Students Meeting NWEA Growth Expectation, Fall to Spring*

7. Over a longer two-year period (2014-2016) MAP scores also changed significantly over time.

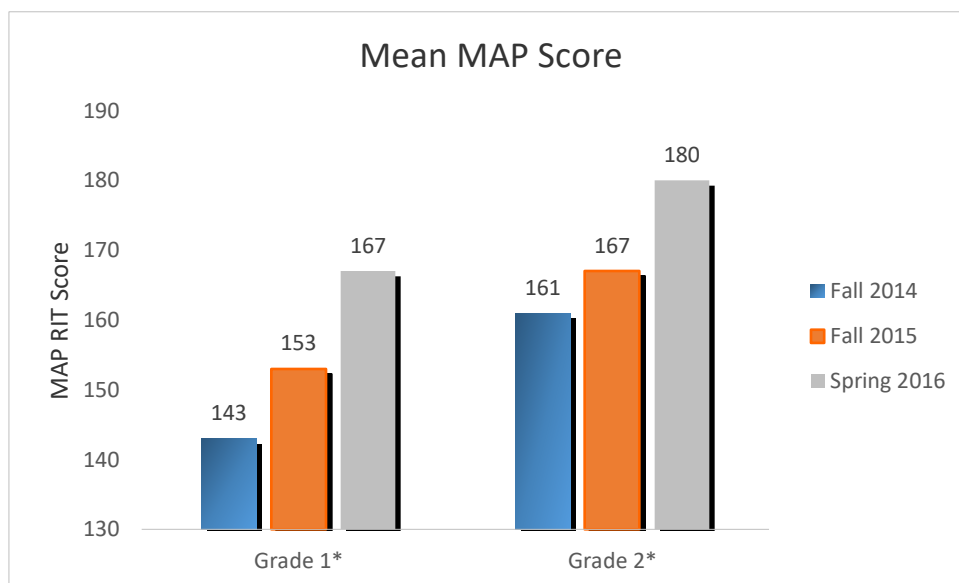


Figure 9. Mean MAP Scores Fall 2014, Fall 2015, and Spring 2016 Administrations

### Student Performance: STAR Results

1. There was a statistically significant difference in student scores between the fall and spring administration of the STAR Assessment.

#### *Mean Fall, Spring, and Gain MAP Score, By Grade Level*

Grade	n	Year 1 Gain	Year 2 Gain	Total Gain	Difference Significant?	p
1	166	9.60	13.10	22.70	Yes	.003
2	199	5.36	12.81	18.17	Yes	.000
Total	365	7.29	12.94	20.23	Yes	.000

*This document contains information, data and/or analysis (collectively, "Information") that is confidential and proprietary to McGraw-Hill Education (the "Company"). The Information is intended solely for internal access and use by Company employees and may not be disclosed or distributed, in whole or in part, to any outside party, except that with the written authorization of a Business Unit President or the Company's Legal Department, information may be disclosed to partners, vendors, contractors or consultants of the Company to the extent they are contractually obligated to maintain the confidentiality of such information. All employees are reminded of their obligations under the McGraw-Hill Education Code of Business Ethics, which apply both during and after their employment with the Company, to maintain the confidentiality of commercially sensitive or proprietary information relating to the Company that comes into their possession.*

2. STAR gain scores were greater in the lower grades, which aligns with expectations.

*Student Performance on Fall and Spring Administration of the STAR*

Grade	n	Fall Mean	Fall SD	Spring Mean	Spring SD	Gain Mean	Gain SD	Effect Size** <i>d</i>
K	166	475.50	91.87	652.88	111.69	177.38*	87.55	2.02
1	179	589.18	93.54	742.28	81.33	153.10*	83.21	1.83
2	216	158.37	93.84	263.77	106.59	105.39*	70.14	1.50

\*Statistically significant,  $p < .01$

\*\*Computed using Cohen's  $d$

3. There was no strong evidence that fidelity of implementation had a strong influence on student performance in the STAR assessments.
4. Students demonstrated progress against the STAR literacy classifications

Table 11

*Distribution of Students on STAR by Literacy Classification*

Grade	Classification	<u>Fall STAR</u>		<u>Spring STAR</u>	
		n	%ile	n	%ile
KG	Early Emergent Reader	101	60.8	13	7.8
	Late Emergent Reader	62	37.3	73	44.0
	Transitional Reader	2	1.2	53	31.9
	Probable Reader	1	0.6	27	16.3
1	Early Emergent Reader	26	14.5	2	1.1
	Late Emergent Reader	119	66.5	35	19.6
	Transitional Reader	29	16.2	67	37.4
	Probable Reader	5	2.8	75	41.9

## Teacher Survey

1. Around a third of teachers indicated that they would definitely or probably use *Reading Mastery* again during the following year.
2. 22% of respondents responded that they might use it, probably would not use it or definitely wouldn't use the program. All teachers who responded Definitely Not, were based at School C (the institution the implemented *Reading Mastery* with the lowest level of fidelity).

*This document contains information, data and/or analysis (collectively, "information") that is confidential and proprietary to McGraw-Hill Education (the "Company"). The information is intended solely for internal access and use by Company employees and may not be disclosed or distributed, in whole or in part, to any outside party, except that with the written authorization of a Business Unit President or the Company's Legal Department, information may be disclosed to partners, vendors, contractors or consultants of the Company to the extent they are contractually obligated to maintain the confidentiality of such information. All employees are reminded of their obligations under the McGraw-Hill Education Code of Business Ethics, which apply both during and after their employment with the Company, to maintain the confidentiality of commercially sensitive or proprietary information relating to the Company that comes into their possession.*

- 
3. The most commonly reported criticism of *Reading Mastery* was the perceived lack of grade level standards: about 40% of respondents indicated that the program lacked rigor and didn't address the grade level standards for reading. Specifically many teachers reported that the program lacked writing activities, while others reported that they felt that *Reading Mastery* lacked hands-on activities