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CASE STUDY:

Evaluation of *Superkids* Reading Program

Prepared for:

Zaner-Bloser, Inc.

Columbus, Ohio

www.zaner-bloser.com

Jerry M. Jordan, Ph.D

jordanjm@uc.edu

Sarah Foster, M.A.

University of Cincinnati, Department of Communication

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Superkids is a comprehensive primary grades reading program developed by the Rowland Reading Foundation, recently acquired by Zaner-Bloser as their flagship reading program. During the 2014-2015 school year, an evaluation of the *Superkids* program was conducted using a case-study approach. That is, the program was fully implemented into all primary grade classrooms in one school and the children participating in the program were assessed in a comprehensive fashion in order to provide some insight into the effectiveness of the program. The overall design of the evaluation and the collection of data were managed by school personnel in collaboration with the Rowland Reading Foundation and Zaner-Bloser. Once the data was collected, Zaner-Bloser contracted with Saperstein Associates, in Columbus, Ohio and UCommunicate, a research center based in the department of Communication at the University of Cincinnati as a part of the University of Cincinnati Research Institute (www.ucri.org), to analyze the data and provide basic interpretation of that data. This report provides a comprehensive description of the data collected to assess the effectiveness of the *Superkids* program.

Background

Research demonstrates that reading is best taught to early readers. If students do not develop reading skills early, it will likely mean a lifelong struggle with reading and reading related tasks. Juel (1988) reported that students who struggle with reading at the end of first grade would be unlikely to improve their skills in later grades. Vaughn and Linan-Thompson (2003) found similar results when they concluded that students who have not learned to read by the end of second grade will likely have reading difficulties for the rest of their lives. In a study conducted by McNamara et al. (2011) researchers found that lower level readers continued to fall behind their peers. The achievement gap between proficient and struggling readers continued to widen. Additionally, poor reading skills are correlated with social problems. Research (AECF, 2012) indicates that children who do not read proficiently in the third grade account for 63% of those who do not graduate from high school. It is imperative that students develop the skills necessary to become strong readers early in their education.

In a 2003 study, Jordan et al. found that difficulty with math concepts could be reduced by developing more proficient readers. Many math skills require more than the ability to perform mathematic functions; they require students to read and interpret material before they are able to complete the problem. Hoff (2001) explained that new math curriculum is requiring "more reading and writing than students have ever been asked to do before" in an effort to be more representative of the math that students will be required to do in real life. Jordan et al. (2002) compared students who struggled in math with students who struggled with both reading and math. She found that students with only math difficulties were able to progress more quickly in their abilities than students

who struggled with both math and reading. It is essential that students are strong readers so they are not limited in their other academic classes.

Context

Robert W. Carbonaro (RWC) School is located in the Valley Stream 24 Union Free School District. It is one of three schools in the district, all of which service grades K through 6. As of the 2011 school year, there were 1,114 students enrolled in the district and 104.5 FTE classroom teachers. The student teacher ratio was 10.66 (National Center for Education Statistics). Of the students, 99 are ELL (English Language Learners), which is 9% of the total student population. This is comparable to the 8% of students who are ELL at RWC. One hundred fifty-nine are on IEPs (Individualized Education Plans), which is 14% of the total student population. This percentage is also comparable to the students with disabilities at RWC, who comprise 13% of the population.

The Village of Valley Stream, New York is located on Long Island. The population, as of 2013, was 37,659, which was a 4% increase from 2000. The median household income for Valley Stream in 2013 was $84,162, which had increased from $63,243 in 2000 and is well above the state average in 2013, which was $57,369. The RWC ethnic diversity is fairly representative of the town in which it resides. Valley Stream is 17% African American, 31% Hispanic or Latino, 14% Asian, 36% White, 1% Multiracial and .05% American Indian (Valley Stream, New York, citydata.com).

In the most recent state report card, 31% of RWC students are performing at proficient levels on the ELA (English Language Arts) assessment, which is representative of the overall state where 31% of the students are performing at proficient levels (Robert W Carbonaro School 3-8 ELA Assessments, data.nysed.gov). More students are performing at higher levels in math. Forty-six percent of RWC students are performing at proficient levels on the Math assessment compared with 36% statewide (Robert W Carbonaro School 3-8 Mathematics Assessments, data.nysed.gov).

Methods

Measures

All students in grades K through 2 were tested in reading and mathematics in a pretest/posttest fashion. That is, early in the fall students completed online the Measures of Academic Progress (MAP®) for reading and mathematics. They were tested again near the end of the academic year in the spring. The MAP® is a well-known and widely reported assessment of reading and mathematics ability (see NWEA.org). It is nationally normed and produces scores using Rausch Units (an RIT scale) which allow for comparison of students' progress over time across grade levels (see NWEA.org).

The MAP® testing also provided Lexile[1] scores, designed to help teachers match student reading level with appropriate levels of texts. Additionally, teachers assessed students to assign Fountas and Pinnell Guided Reading Level scores (see www.fountasandpinnellleveledbooks.com).

Procedures

Students completed the MAP® tests in their classrooms or in computer labs within their school. For the vast majority of students (160/165, 97%) pretesting in reading occurred between September 10, 2014 and September 18, 2014. Four students were tested on October 3, 2014. The pretesting for mathematics occurred between September 19 and October 1, 2014. The posttest for reading was administered between May 1, 2015 and May 20, 2015 with four children being tested after that on June 1, 2015. The posttest for mathematics was administered between May 15, 2015 and June 1, 2015.

[1] See www.nwea.org/files/resources/FAQ_Lexile.pdf for details of how scores are converted into Lexile form.

Results

Participants

Complete data was collected from a total of 164 students in grades K-2. Overall, for students on whom gender data was available, 70 (44%) were female and 87 (56%) were male. The sample was primarily White (97, 62%). A total of 32 students were Black (20%), 22 Asian (14%) with the remaining 4% either multi-racial or Pacific Islander. A total of 24 students (15%) were designated as English Language Learners with Limited English Proficiency. Fifty-four students (33%) qualified for Free or Reduced Price Lunch. The table below presents this descriptive data broken down by grade level.

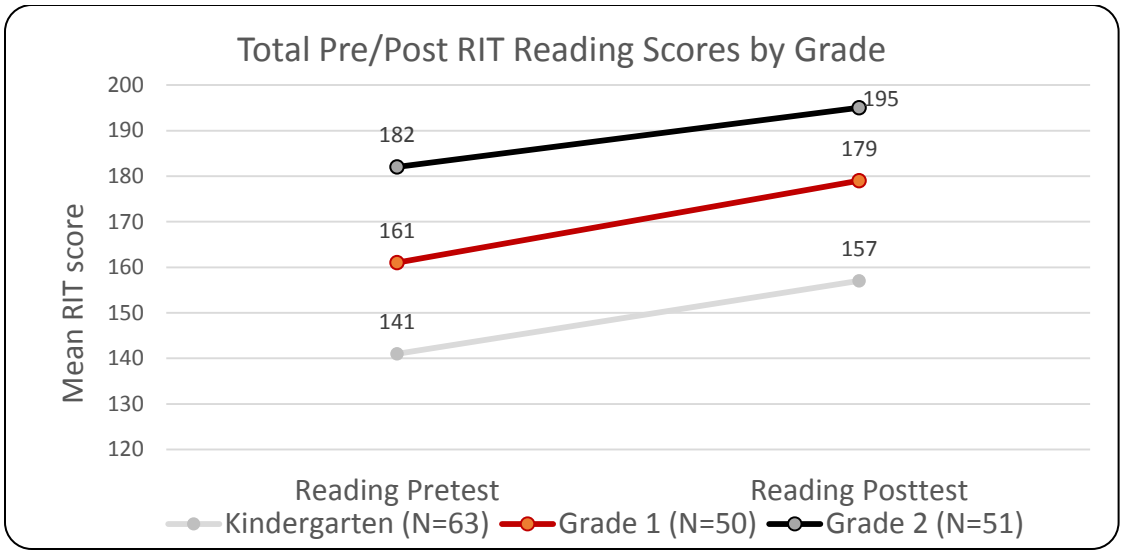
Participant Characteristics by Grade Level

Grade	Gender		Race/Ethnicity				ELL/LEP	FRL
Grade	**Female**	**Male**	**White**	**Black**	**Asian**	**Other**		
Kindergarten	23	36	37	7	10	5	9	19
	(39%)	(61%)	(63%)	(12%)	(17%)	(8%)	(14%)	(30%)
First Grade	22	26	28	16	4	0	7	17
	(46%)	(54%)	(59%)	(33%)	(8%)		(14%)	(34%)
Second Grade	25	25	32	9	8	1	8	8
	(50%	(50%)	(64%)	(18%)	(16%)	(2%)	(16%)	(16%)

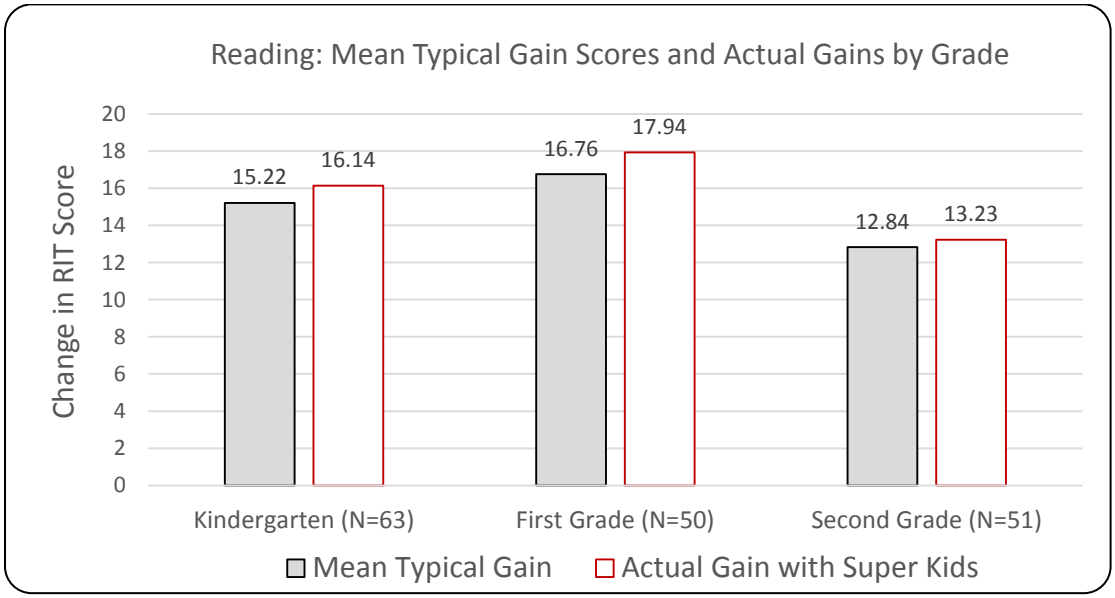
Primary Reading and Mathematics Scores

The primary assessment of program effectiveness was accomplished through the analysis of the fall and spring (pretest and posttest) MAP® RIT scores in both reading and mathematics. Analyses of Lexile and Fountas and Pinnell Guided Reading scores are reported in a separate section below.

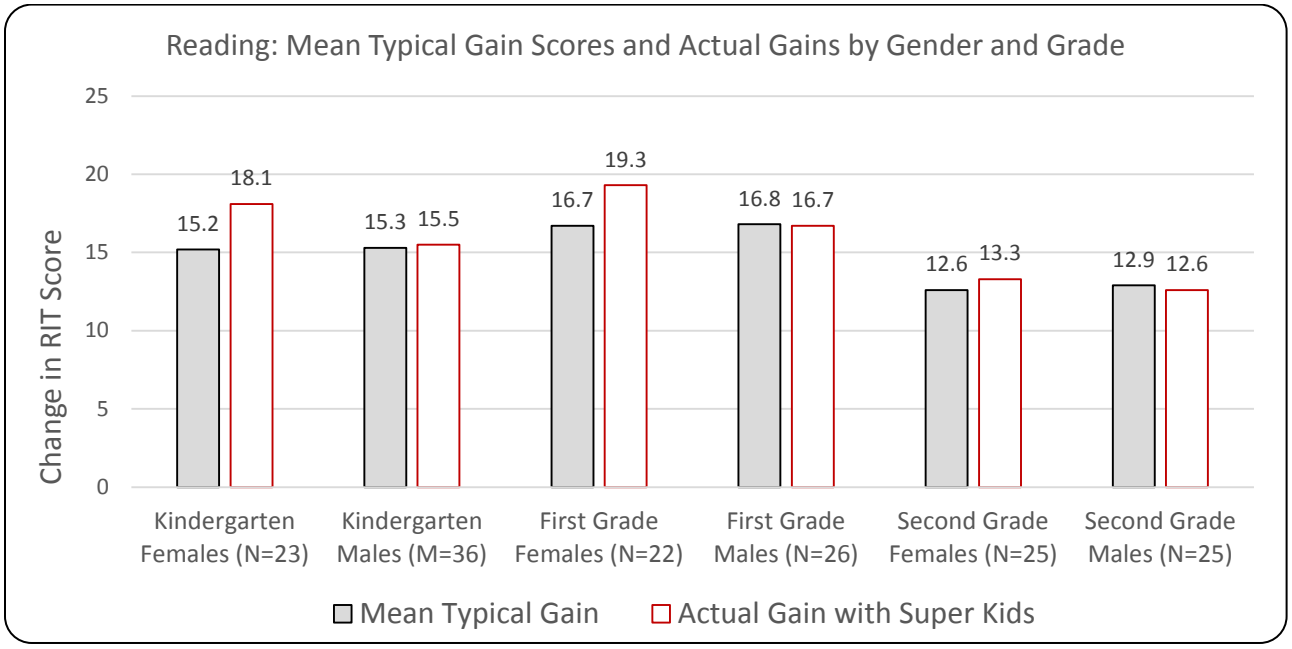
Reading. First, a comparison of students' pretest scores with posttest scores validated that the mean RIT reading scores increased for students at all three grade levels over the course of the school year (see chart below). A series of paired *t-tests* verified that students made significant gains over the course of the year at all three grade levels. For the kindergarten students, paired $t = 15.1$, $p. = .00$. For the first grade students, paired $t = 18.0$, $p. = .00$ and for the second grade students, paired $t = 13.9$, $p. = .00$.



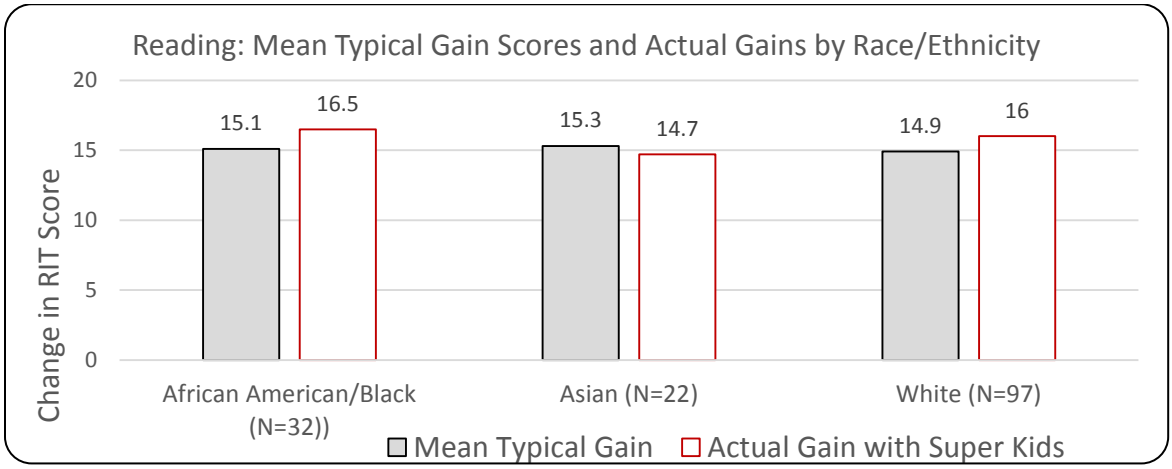
Standard MAP® reports routinely provide additional scores for each child based on the national norming data they collect. Specifically, they provide for each child a *typical growth* score based on that child's grade and pretest score. These scores help teachers know the amount of improvement a child might reasonably be expected to exhibit from the beginning of the year to the end. Gain scores for each student were calculated by simply subtracting their pretest RIT reading score from their posttest RIT reading score. The chart below displays a comparison of the *Superkids* actual gain scores with the gains identified for them as typical. The data show that the *Superkids* students at this school showed slightly larger gains then expected at all three grade levels. However, the associated series of paired *t-tests,* none of the differences in mean scores met conventional levels of statistical significance.



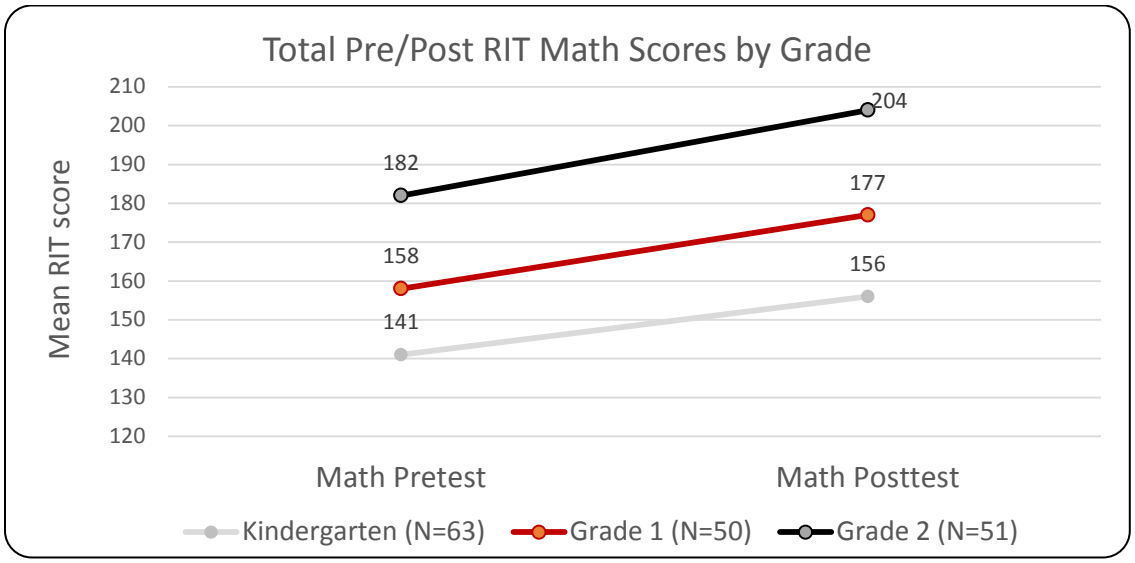
Examination of the RIT scores by gender within grades revealed a trend toward greater gains by female students than by male students. The chart below displays students' mean actual gain scores in comparison to those students' typical gains. At all three grade levels female students tended to score higher than the typical growth score assigned to them while males appeared to be more likely to score nearly at the expected point.



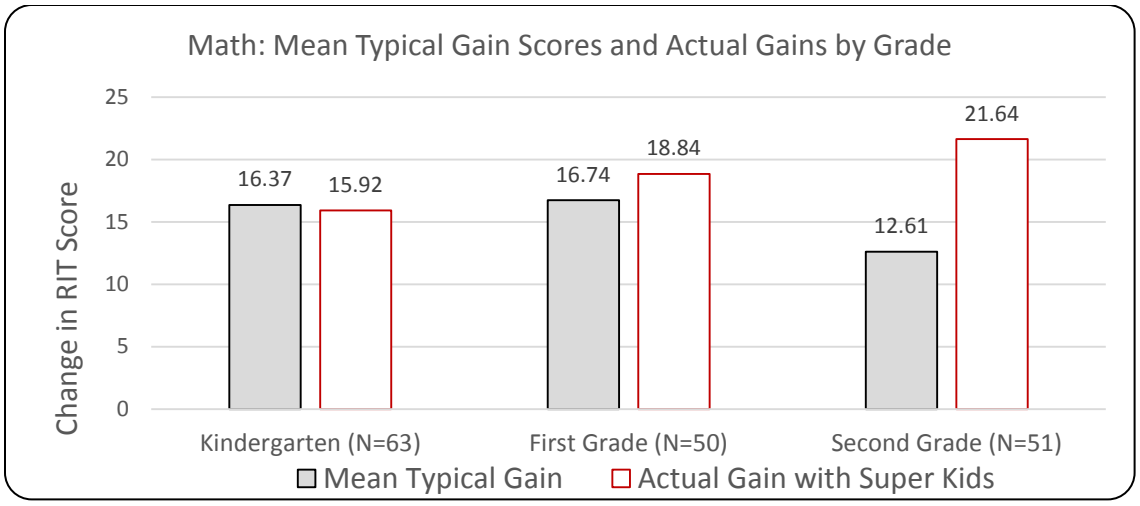
The student data was aggregated across grade levels and examined by race and ethnicity (see chart below). This data was aggregated to compensate for low N sizes within grades for the minority identities. Results showed that both African American and White students achieved average gains numerically larger than the means of their typical growth scores. Asian students actually exhibited gains slightly less than expected typical growth. However, once again significance testing in the form of paired *t-tests* revealed that none of the group differences met conventional levels of statistical significance.



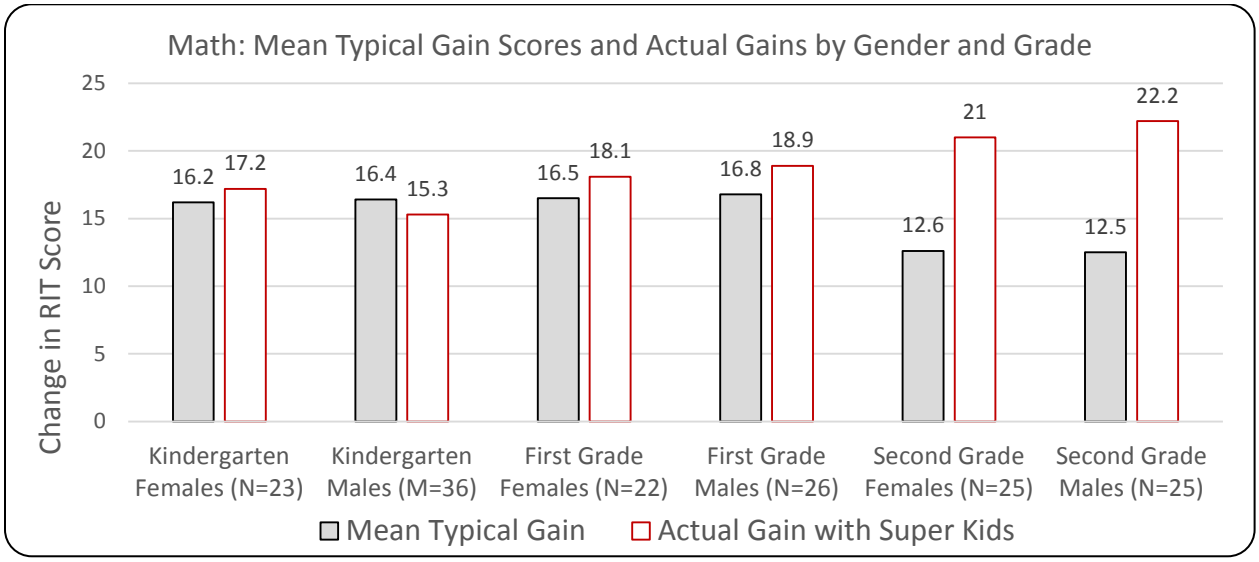
Mathematics. Analyses parallel to the analyses of the reading scores were performed on the data for mathematics. A comparison of students' pretest scores with posttest scores in mathematics validated that the mean RIT mathematics scores increased for students at all three grade levels over the course of the school year (see chart below). A series of paired *t-tests* verified that students made significant gains over the course of the year at all three grade levels. For the kindergarten students, paired $t = 13.7$, $p. = .00$. For the first grade students, paired $t = 18.8$, $p. = .00$ and for the second grade students, paired $t = 19.7$, $p. = .00$.



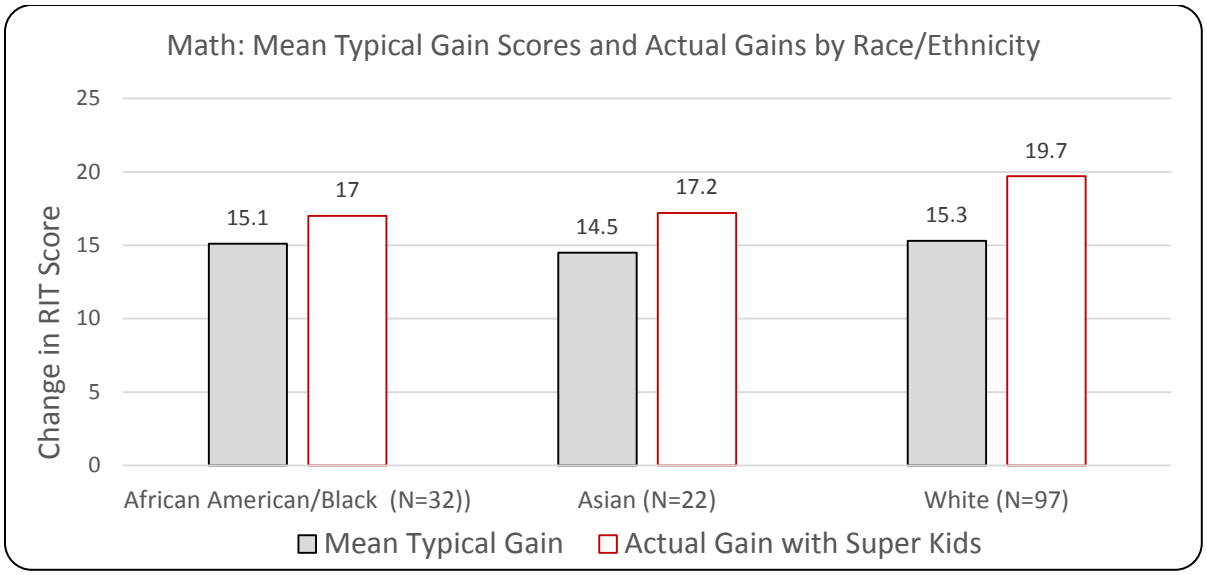
Standard MAP reports routinely provide additional scores for each child based on the national norming data they collect. Specifically, they provide for each child a *typical growth* score based on that child's grade and pretest score. These scores help teachers know the amount of improvement a child might reasonably be expected to exhibit from the beginning of the year to the end. Gain scores for each student was calculated by simply subtracting their pretest RIT mathematics score from their posttest RIT math score. The chart below displays a comparison of the *Superkids* actual gain scores in mathematics with the gains identified for them as typical. The data shows a mixed pattern of results by grade level. The mean scores for the actual student gains were very slightly lower than the mean expected gain. A follow-up paired *t-test* revealed that the difference in means was not statistically significant ($t = .34$, $p. = .71$). For the first graders, the mean for actual gains in mathematics was slightly larger than the expected gain. The paired *t-test* indicated that this difference was significant ($t = 2.2$, $p. = .03$). The data revealed a very large difference between the actual gains by the second grade students and the anticipated growth, with the *Superkids* students scoring an average of nearly 9 points higher than the expected growth mean. The paired *t-test* confirmed that this difference was significant ($t = 8.5$, $p. = .00$).



A more detailed examination of the RIT scores by gender and by grade revealed that the trend for larger than typical gains in the second grade occurred for both male and female students (see chart below). The trend for the kindergarten students to exhibit smaller than expected gains appeared to be attributable to smaller than expected gains by the male students.

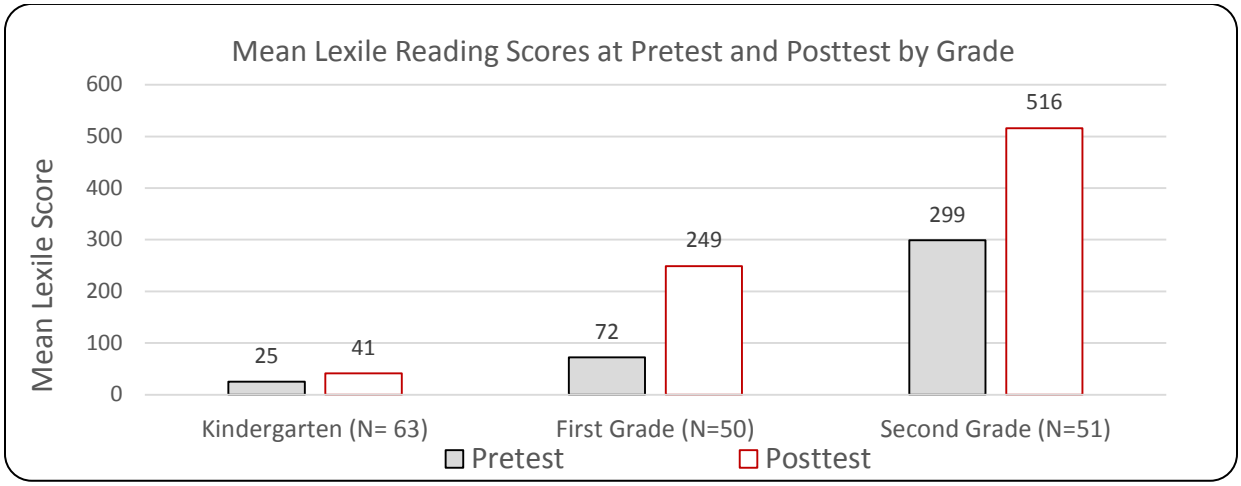


Once again, the student data was aggregated across grade levels and examined by race and ethnicity (see chart below). This data was aggregated to compensate for low N sizes within grades for the minority identities. Results showed that students of all race/ethnicities showed average gains numerically larger than the means of their typical growth scores. The paired *t*-tests for the Asian and Black students indicated that these differences did not meet conventional levels of statistical significance. For the Asian students, $t = 1.3$, $p = .21$. For the Black students, $t = 1.4$, $p. = .16$. The difference for the White students was statistically significant, $t = 5.3$, $p. = .00$.



Lexile and Guided Reading Level Scores

Lexile Scores. Lexile scores are one common classroom assessment used by teachers to match students with appropriate texts. The pretest and posttest Lexile scores of all children in this study were examined as one measure of student progress when using the *Superkids* program. The chart below displays the mean Lexile scores for all students at pretest and posttest.[2] Students at all grade levels show substantial gains in their Lexile level assignments from pretest to posttest. Perhaps the most interesting gains occurred at the second grade level where students showed an average increase of more than 200 points.



[2] In order to include all cases, students scoring at BR for their Lexile designation (beginning reader) were given numeric Lexile score of 25, the lowest Lexile possible.

Fountas and Pinnell Guided Reading Level Scores (GRL). Students' GRL designations were examined at pretest and at posttest to assess the extent to which the children may have progressed to reading more complex texts. At the point of the fall pretest none of the 63 kindergarten children tested performed at a level meeting the minimum level for a GRL score to be assigned. At posttest, 15 of the 63 (24%), were able to be assigned a GRL score. The table below displays the GRL data for the kindergarten children.

Kindergarten Students' Fountas and Pinnell GRL Scores at Pretest and Posttest

	Fountas and Pinnell GRL Score*							
	No Score Assigned	A	C	F	G	H	J	K
Pretest	63 (100%)	0	0	0	0	0	0	0
Posttest	48 (76%)	3 (5%)	2 (3%)	2 (3%)	1 (2%)	4 (6%)	1 (2%)	2 (3%)

*GRL level is not displayed if no child scored at that level

The data reveal that within the 24% of kindergarten children moving beyond the "beginning reader" stage, several moved to levels F to K, indicating they were ready to read texts at the first or second grade level. The table below displays the same data for the first grade children.

First Grade Students' Fountas and Pinnell GRL Scores at Pretest and Posttest

	Fountas and Pinnell GRL Score*										
	No Score Assigned	A-B	C-F	G-I	J	K-L	M-N	O-P	Q-R	S-T	U-V
Pretest	12 (24%)	18 (36%)	9 (22%)	5 (10%)	1 (2%)	2 (4%)	1 (2%)	0	0	0	0
Posttest	3 (6%)	3 (6%)	8 (16%)	8 (16%)	9 (18%)	0	11 (22%)	2 (4%)	3 (6%)	2 (4%)	1 (2%)

*For efficiency of presentation, GRL levels are grouped roughly equivalent to half-grade increments.

The GRL data for the second grade students indicates students making general progress toward reading more complex texts. A substantial number of students (16%) moved to levels at or above level O, usually associated with grades 3 and above.

The final data set, for the second grade students, is presented in the table below. The data again show the trend toward students moving into more complex texts. At this level, it is notable that, at pretest, the majority of the student (56%) were assessed at the level associated with the beginning of second grade, or below (Level J). Only one student remained at that level at posttest with 50% of the students actually being assessed at the levels normally associated with grades 7 and 8 (Levels W-Z).

Second Grade Students' Fountas and Pinnell GRL Scores at Pretest and Posttest

	Fountas and Pinnell GRL Score*												
	No Score Assigned	A-B	C-F	G-I	J	K-L	M-N	O-P	Q-R	S-T	U-V	W-X	Y-Z
Pre	4 (8%)	5 (10%)	8 (16%)	10 (20%)	1 (2%)	8 (16%)	4 (8%)	1 (2%)	0	0	7 (14%)	0	0
Post	0	0	1 (2%)	0	0	2 (4%)	9 (18%)	5 (10%)	1 (2%)	2 (4%)	1 (2%)	10 (20%)	15 (30%)

*For efficiency of presentation, GRL levels are grouped roughly equivalent to half-grade increments.

General Summary

This case-study evaluation of the *Superkids* reading program consisted of complete implementation of the *Superkids* program within all K-2 classrooms in the Robert W. Carbonaro School in Valley Stream, New York. Thorough assessment of all the K-2 children was designed to assess the effectiveness of *Superkids* in a comprehensive manner. All students took the MAP® tests of both reading and mathematics in a pretest/posttest manner. That is, they were tested first at the beginning of the school year and again in the spring as the school year ended. Thus student growth in reading and in mathematics could be assessed by comparing their MAP® reading and mathematics scores from the beginning of the year to their scores at the end of the year. Likewise, this testing allowed an examination of students' Lexile scores in reading from pretest to posttest to give teachers a familiar assessment of skill development. Finally, teachers within the school administered an assessment using the Fountas and Pinnell Guided Reading assessment. This allowed teachers to discern any growth in the level of text complexity appropriate for the students.

The primary analyses of the MAP® scores revealed consistent growth from pretest to posttest at all grade levels for all student groups. That is, the mean posttest scores for students at all three grade levels was significantly higher than the mean score at pretest. Thus there is fundamental evidence that using the *Superkids* program can help produce significant gains in reading abilities in primary grade children. More detailed analyses focused on gender subgroups revealed that both male and female students showed significant growth in reading, with female students showing slightly larger gains than males. Likewise, analyses focused on race/ethnicity revealed that White, Asian and African-American children all showed significant gains over the course of the year.

The MAP® reading test also provides, for each student, an estimate of typical expected growth for that student (based on their pretest score). Thus it was possible to compare students' actual growth over the school year with what might be expected as typical for each student. These analyses revealed that, across all grade levels, the mean actual gain scores for the *Superkids* students

was numerically higher than the mean typical growth scores assigned to these students. However, these numeric differences did not meet conventional levels for statistical significance.

The MAP® testing in mathematics also revealed significant growth from pretest to posttest for students across all three grade levels. For all grades, K-2, students' mean posttest score on the MAP® mathematics test was significantly higher than their mean pretest scores. Once again, analyses by gender and race/ethnicity confirmed that gains were relatively consistent across subgroups. The comparisons of the actual student gains with the expected typical gain scores in mathematics revealed gains for the *Superkids* students to be at expected levels for the kindergarten and first grade students. The gains for the second grade students were substantially, and significantly, higher than what was identified as typical.

The examination of the Lexile and GRL scores validated the expectation that the *Superkids* students would progress to being ready for more complex texts as the year went on. Students at all grade levels show substantial gains in their Lexile level assignments from pretest to posttest. Perhaps the most interesting gains occurred at the second grade level. At this grade level half of the students tested progressed to the GRL levels of W-Z. These levels are normally associated with grades 7-8.

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