The Effects of Read Naturally on Grade 3 Reading: A Study in the Minneapolis Public Schools

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Introduction

The link between fluency training and comprehension skills is well documented (see Pinnell et. al., 1995; Snow et.al, 1998; Adams, M., J. 1998; Strecker, S., et. al.). In the National Assessment of Educational Progress (NAEP) study in 1995, Gay Pinnell and her colleagues documented the large degree of disfluency in students across the nation and the relative neglect of fluency building programs to address this problem. The Pinnell study a close relationship between reading fluency and measures of reading comprehension. Clearly, students who are low in fluency may have great difficulty in getting meaning from text (Langenberg, et. al, 2000). The National Research Council report, Preventing Reading Difficulties in Young Children (Snow, Burns, & Griffin, 1998) states:

> "Because the ability to obtain meaning from print depends so strongly on the development of word recognition accuracy and reading fluency, both should be regularly assessed in the classroom, permitting timely and effective instructional response when difficulty or delay is apparent." (p.7)

This research base provides the rationale for evaluating proven fluency building programs in Minneapolis Public Schools where many different supplemental services provided throughout the district have yet to be evaluated.

During the 2003-04 school year, Minneapolis Public Schools embarked on program evaluations of the most frequently used supplemental reading programs. A survey of all 60 Elementary schools found three programs to be most frequently used for supplemental intervention. These three programs were Accelerated Reader®, Read 180®, and Read Naturally®. Read Naturally is a program designed to develop fluent reading in Elementary and Middle School students. The program was begun by a Minneapolis Public Schools teacher1 and was been implemented and studied at Hale Elementary School. Key components of the program include reading aloud with a fluent model, repeated reading of passages at individual student reading levels, literal and inferential comprehension questions, and continuous progress self-monitoring using charts and graphs.

The current study reports out findings from grade 3 students who participated in an efficacy study of Read Naturally during the 2003-04 school year. These analyses are part of a larger study and paper presented to the Council of Great City Schools Conference (Heistad, 2005).

[1] Candyce Ihnot was a teacher in Minneapolis Public Schools at Hale Elementary who developed the READ NATURALLY program as an outgrowth of her Master's Degree on effective reading strategies.

Methods

Four schools volunteered to participate in the Read Naturally (RN) program evaluation. Three of these students had third grade students. Two of these schools used the Read Naturally Master's Edition (cassettes and blackline masters), and one school used the Software Edition. Two schools proposed a "pull out" program for supplemental reading support within the regular school day while the two other schools proposed after school programs. None of these schools were required to provide supplemental services under the provisions of the No Child Left Behind Act. Rather, these programs were supported through Compensatory Education Funds provided by the State of Minnesota.

One supervising teacher in each of the four schools was trained in the appropriate procedures by a RN certified instructor. This training included initial assessment of student level of instruction using curriculum-based measurement procedures, placement procedures, use of comprehension assessments and strategies, student goal setting, and progress monitoring procedures.

Students were selected for inclusion in the RN supplemental services based on school team and parent recommendations. Students selected were generally considered to not be "on course" to be proficient on MN Comprehensive Assessments given in the Spring of Grade 3. All students received RN in addition to their regular classroom instruction. The 22 students in this study received RN interventions throughout the 2003-04 School Year.

Program

The first section of Read Naturally instruction involves a student choosing a story from his/her individual instructional level and making a prediction. The student then writes what s/he already knows about the subject of the story. Next, the student takes a "cold timing" on the passage where s/he reads for one minute and records difficult words. The student then graphs the number of words read correctly per minute.

During the next component of instruction the student reads along with prerecorded audio of a fluent reader on the same passage three consecutive times, with each reading slightly faster than the previous reading. The student then reads the story independently without audio support. The student sets the timer for one minute for each reading and practices the passage several times until the predetermined rate (i.e. words read correctly) is reached.

The final part of the process occurs once the target fluency is reached. The student then answers multiple choice and constructed response questions that pertain to the story. Passages at each grade level include non-fiction themes. The questions tap inferential and literal passage comprehension. After answering the questions, the student retells the story in writing. The entire process is monitored by the instructor with corrective feedback and guided practice provided as needed.

Subjects

Students were selected for inclusion in the RN supplemental services based on school team and parent recommendations. Students selected were not considered to be "on course" to be proficient on MN Comprehensive Assessments given in the Spring of Grade 3. A total of 22 third grade students received RN interventions throughout the 2003-04 school year and had both pretest and posttest scores. Student characteristics of the RN intervention groups are displayed in Table 1.

Table 1. Demographic Characteristics of Read Naturally Students vs. Minneapolis District Totals (Percentage of Students by Category)

	School 1	School 2	School 3	Grade 3 Total	District Total (grade 3)
Total Number of Students	16	3	3	22	3765
Male	50%	0%	33%	41%	52%
Special Education	6%	0%	0%	4%	14%
English Language Learner (ELL)	6%	33%	33%	35%	25%
Free or Reduced Price Lunch	44%	67%	67%	50%	61%
African American	25%	67%	67%	36%	44%
American Indian	19%	0%	0%	14%	4%
White American	56%	33%	0%	22%	25%
Hispanic American	0%	0%	33%	39%	14%

Test Instruments

Reading achievement in this study was assessed using three types of reading assessment. The first assessment given to all students was the Northwest Achievement Levels Tests (NALT). The NALT reading assessment is a standardized paper and pencil test that is given to all Minneapolis Public School (MPS) students in grades 2-7 in the spring of the year. It is an adaptive assessment where each student receives a level (i.e. form) of the test appropriate to his or her reading achievement level as determined by prior assessment. Estimates of the appropriate level are made from prior year NALT or state tests for students enrolled in MPS the previous year. Students new to the district take a short "locator" assessment to place them in the correct level of assessment. All items in the NALT are multiple-choice and are chosen from a large item bank by expert reading teachers to match the state standards in vocabulary, inferential, or literal comprehension standards. NALT raw scores are converted to scale scores using Rasch Model IRT scaling procedures. Traditional norms with means, standards errors, and reliability and validity coefficients are published by the Northwest Evaluation Association (NWEA).2 In addition Minneapolis Public Schools has conducted its own validity studies. In a 1999 study concurrent validity of NALT reading with the Minnesota Comprehensive Assessment (MCA) test of reading in grade 3 (n= 3,785) was .87.

The second assessment instrument given to all students in grade 3 was the Minnesota Comprehensive Assessments (MCA). MCA assessments are required by Federal No Child Left Behind (NCLB) adequate yearly progress (AYP) provisions. The reading assessment includes multiple choice and constructed response items designed to tap comprehension and vocabulary skills. MCAs are designed to assess the full range of reading achievement from below grade level to well above grade level. The state of Minnesota has minimum competency exams for graduation requirements. These assessments were designed to measure the "high standards" comparable to the National Assessment of Educational Progress (NAEP) standards. Evidence of technical adequacy of the MCAs is available at the Minnesota Department of Education website (http://education.state.mn.us/html/intro_dist_mca_tech.htm).

The third assessment instrument given to only Read Naturally (RN) students was the Reading Fluency Monitor® developed by Read Naturally, Inc. The Reading Fluency Monitor is an efficient, valid, and reliable way for teachers to measure a student's reading fluency skills. A student reads aloud from three one minute grade-level passages for one minute each. The average number of words read correctly in one minute on three grade-level passages is the total score. Reliabilities for grades 3-5 reported in the technical manual were .97 to .98 for the three passages at each grade level. Validity coefficients were also very high. Correlations with the Minnesota Comprehensive reading assessment was .84 for grade 3.3 The correlations with the NALT reading assessment was .93 for grade 3.4 Predictive validity with the Stanford-9 reading assessment (one year later in grade 4) was .75.

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[2] Northwest Evaluation Association 1999 Norms Technical manual.

[3] Correlations were calculated on 24 and 37 students in grade 3 and 5 in Minneapolis Public Schools during the 2002-03 school year.

[4] Correlations were calculated on 23, 34, and 32 students respectively in grades 3,4,5 in Minneapolis Public Schools during the 2002-03 school year.

The high reliability and validity of oral reading passages in the Reading Fluency Monitor is consistent with large scale studies of curriculum based measures of oral reading.

Data Collection

Achievement data for this study were collected using standardized procedures which insured accuracy and independence of outcome from program staff. MCAs and NALTs were administered by test proctors under the supervision of highly trained test coordinators. Passages were administered and scored by well trained testers who were independent of the interventions. All demographic variables used in the matching of treatment and control students were obtained from the district student information system.

Experimental Design

Schools involved in the Read Naturally supplemental services were not on the No Child Left Behind (NCLB) list of schools failing to make adequate progress (AYP) in 2003. Students matched were chosen only from schools in Minneapolis within the same AYP status. That is, no schools that were forced to provide school choice busing or supplemental service provided students to the matched sample control group.
Each student receiving Read Naturally services was matched with a student not receiving Read Naturally (RN) services. Students were matched first on NALT pretest score from spring of 2003 (i.e. matches needed to be within 3 scale score points of the target student) followed by the following demographic factors:

1) Grade
2) English Language Learner status
3) Special Education status
4) Free or reduced price lunch
5) Racial/Ethnic category
6) Home Language
7) Sex

The entire file of third grade students in the district was used to match students. This file was sorted hierarchically by the 7 variables noted above. The best match for each student was typically the case immediately prior to or following the student receiving RN services. If matches were identical for the preceding and following case, student birth date was used to break the tie.

Perfect matches of RN and control students were accomplished for 18 (82%) of the pairs, 3 (14%) pairs were matched on 7 of 8 variables, and 1 pair (4%) was matched on 6 of 8 variables. NALT reading gains and MCA 2004 post-tests for RN vs. Control were analyzed with dependent t-tests.

NALT Results

Analysis of 2003 NALT reading scores found that the matching of pretest scores was done successfully. Mean scale scores and standard deviations for the 2003 pretest were as follows:

Table 2. Northwest Achievement Levels Test 2003 Reading Scale Score for Read Naturally Students and Control Students

Group	N	NALT Mean SS	NALT St. Dev.
Read Naturally	22	178.4	9.81
Matched Control	22	178.5	9.78

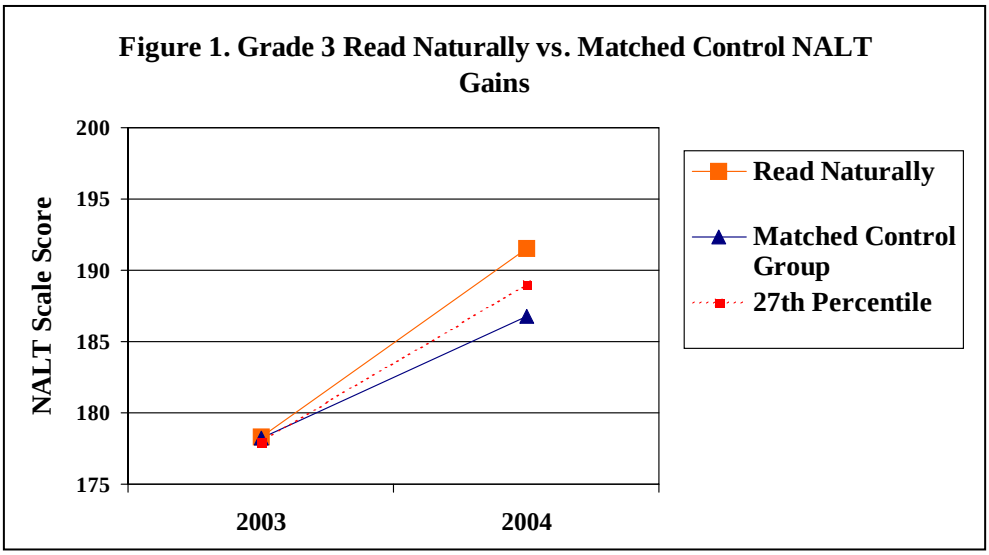
Table 3. Paired Samples Descriptive Statistics on NALT 2004 Scale Scores for Read Naturally and Control Students

Group	Mean	N	Std. Deviation	Std. Error Mean
Matched Control	187.732	22	10.1822	2.1709
Read Naturally	192.296	22	10.5102	2.2408

Table 4. Paired Samples t-Test Results on NALT 2004 Scale Scores for RN and Control Students

	Paired Differences					t	df	Sig. (2 tail)
	Mean	Std. Dev.	Std. Error Mean	95% CI Lower	95% CI Upper			
Control Group – Read Naturally	-4.5636	8.7142	1.8579	-8.427	-.6999	-2.456	21	.023

The results in table 4 show that Read Naturally students made an average of 2.5 scale score points greater gain on the Northwest Achievement Levels Test (NALT) than students matched on pretest, poverty, ELL and Special Education services, gender, racial/ethnic category and home language. The effect size for this difference was (4.56/8.71)= .52 standard deviation units.



NALT 2003 to 2004 Reading Scale Score mean gains for Read Naturally and Matched Control group are depicted in figures 1. The NALT user norm percentile equivalent to the pretest scale is shown for reference. The pretest score of 178 in Grade 2 is equivalent to the NALT reading spring norm 27th percentile. The 27th percentile on NALT reading in Grade 3 is a scale score of 189.

MCA Results

Similar analyses were performed on the 2004 Minnesota Comprehensive Assessments (MCA). All students with MCA test scores in grade 3 were entered into dependent t-test analyses. Descriptive statistics are presented in table 5 below for 22 pairs of Reading Natural vs. Matched Comparison students.

Table 5. Paired Samples Descriptive Statistics (MCA 2004 Grade 3)

Group	Mean	N	Std. Deviation	Std. Error Mean
Matched Control	1331.3636	22	139.77177	29.799
Read Naturally	1363.1818	22	162.08130	34.555

Table 6. Paired Samples t-Test (MCA 2004 Grades 3 and 5)

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% CI Lower	95% CI Upper			
Matched Control – Read Naturally	-31.81818	131.35326	28.0046	-90.057	26.4206	-1.136	21	.269

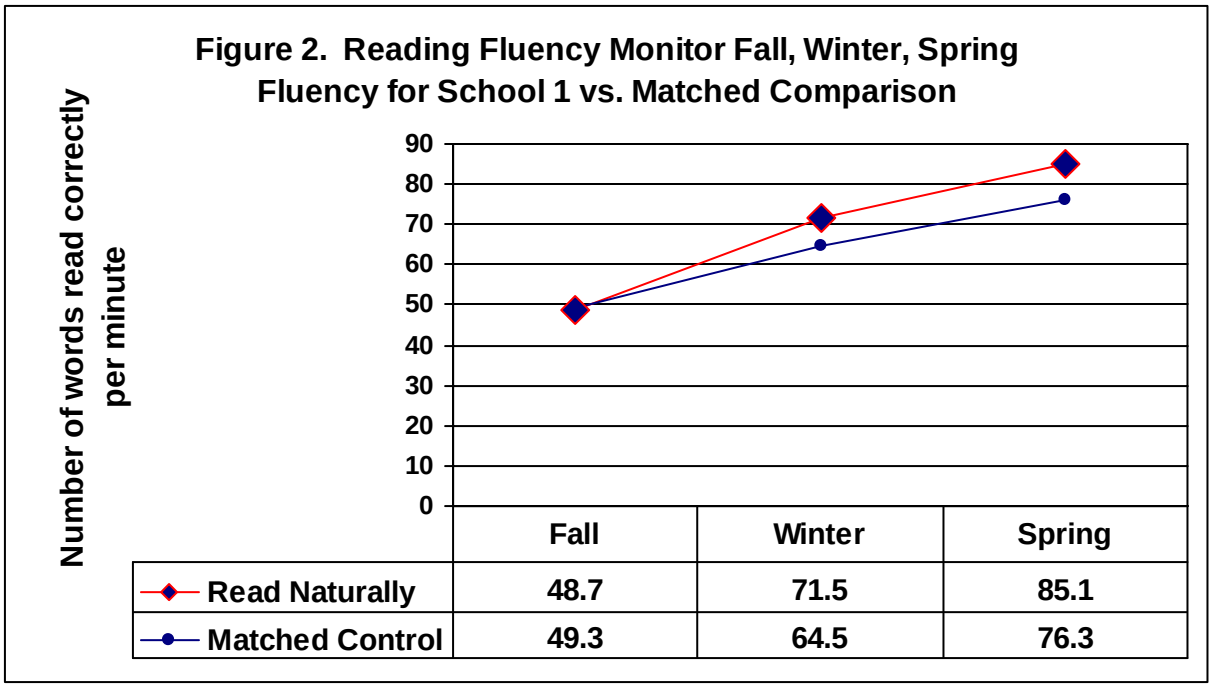
Students in the Read Naturally (RN) supplemental services intervention scored higher than matched sample students on the Minnesota Comprehensive Assessments of Reading in Grades 3 but the difference was not statistically significant. On average, matched control students score 31.8 scale score points lower on the MCAs than RN students. The effect size for this difference was (31.8/131.35)= .24 standard deviation units.

Reading Fluency Monitor (RFM) Results

Standard Reading Fluency Monitor (RFM) passages were administered fall, winter and spring to all students receiving supplemental RN. Students from each RN school were matched with students from the Read Natural growth norm sample.

The growth norm sample included approximately 100 students per grade from Minnesota, Texas, California, Texas, Virginia, Michigan, Iowa and Pennsylvania. Since poverty status was not available for all students in the growth norms, matching was done on fall reading fluency, gender, ethnic and grade level only.

Figure 2 presents the data for 20 grade 3 students in School 1 compared to 20 matched students from RFM third grade growth norms.



Analysis of the difference in spring oral reading rates using a dependent t-test found that the students from School 1 averaged significantly greater words read correctly at the end of the year [t(19)= 2.42; p= .03] than the matched comparison students. The effect size for a difference of 8.8 words per minute in the spring was (8.8/15.537) = .57 standard deviation units.

School 1 had overall attendance at supplemental reading sessions of 96% and received positive evaluations of treatment fidelity from the independent assessor hired by Read Naturally to administer the RFM and observe implementation strengths and weaknesses.

Discussion

The results of a year long supplemental intervention using Read Naturally with grade 3 students found the students receiving the intervention improved significantly in overall reading proficiently as measured by Northwest Achievement Levels Tests. Matched comparison groups used in this study controlled for prior achievement and student demographic characteristics.

In this study increases in oral reading fluency were correlated with increased vocabulary and comprehension as measured by the NALT tests. Yet it is possible that other factors outside of the Read Naturally interventions caused the increase in these test scores. In this small sample study it is possible that the schools and teachers that volunteered for this study were more successful in their instruction even before the implementation of Read Naturally. In order to fully control for these possible teacher effects a larger study with random assignment of students to RN and Control interventions is needed.

Clearly the results of this small scale study in Minneapolis Public Schools indicates that students in the Read Naturally year long study increased reading test scores on the NALT and RFM significantly more than control students matched on initial test scores and student demographic characteristics. Increases in the Minnesota Comprehensive Assessments in Grade 3 were also higher for Read Naturally students, but these differences were not statistically significant. Further research in Minneapolis and other sites across the country should investigate the value-added contribution of Read Naturally interventions over and above typical daily instruction while controlling for teacher effects.

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