

**Exploring Nonfiction: Results of a
Product Field Test in Elementary Schools
within a Large Urban School District**

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Introduction

This report presents results of a field test of Exploring Nonfiction (ENF), a supplemental reading program designed for children in grades K-6. Developed by Teacher Created Materials (TCM), the program emphasizes the teaching of 12 nonfiction reading skills and strategies: Main Ideas/Supporting Details, Summarizing/Paraphrasing, Developing Vocabulary, Prior Knowledge/Making Connections, Author's Point of View, Structural Patterns, Using Text Organizers, Using Parts of the Book, Making Inferences, Setting the Purpose, Questioning, and Visualizing. Program materials include nonfiction reading cards, overhead transparencies, a teacher Resources Notebook, a Lesson Plan Notebook, and a CD-ROM.

The primary purpose of the field test was three-fold (1) to demonstrate the effectiveness of ENF in teaching nonfiction reading skills; (2) to explore whether children also gain reading skills not specifically taught by the program; and (3) to assess teacher satisfaction with the quality and effectiveness of the program.

Methods

Study Participants and Design

The ENF field test was designed to determine whether elementary school children in classrooms that receive ENF supplemental reading instruction show significantly greater gains in nonfiction and other reading skills than comparable children in classrooms that only receive the school's regular reading program. The field test was conducted within a large, ethnically diverse, urban school district with an enrollment of more than 200,000 students, nearly half of which are enrolled in elementary schools. The racial composition of the district is approximately 65 percent African-American, 15 percent White, 15 percent Hispanic, and five percent Asian. Two elementary schools from the district were invited and agreed to participate in the field test during the 2003-04 school year. Both schools are ethnically diverse with high concentrations of non-White minority children.

The field test was conducted in 26 classrooms, 19 classrooms in one school and 7 classrooms in the second school. At each grade level (K-5) there was an Experimental Group consisting of one or more classrooms that were taught with the ENF program and a Control Group of comparable classrooms that did not receive the program. A breakdown of the number of children who participated in the field test at each school by grade level and by which group they were in (i.e., Experimental vs. Control) is given in Table 1:

Table 1. ENF Field Test Design

School	Group	Grade Level						Total
		K	1	2	3	4	5	
A	Experimental	36	26	62	60	36	62	282
	Control	19	28	32	61	45	59	244
B	Experimental	16	19	0	30	0	27	92
	Control	36	19	0	30	0	25	110
Total	Experimental	52	45	62	90	36	89	374
	Control	55	47	32	91	45	84	354
Grand Total		107	92	94	181	81	173	728

Of the 26 field test classrooms, 13 were Experimental with 374 children and 13 were Control with 354 children. The principals of each school in consultation with teachers decided the assignment of teachers to Experimental and Control groups. The field test did not include Grade 2 or Grade 4 classrooms in School B. All children were pre-tested and post-tested in order to assess ENF program effects on children’s reading achievement.

Measures and Data Collection

Children in both Experimental and Control groups were assessed by two reading tests: the ENF Program Reading Test (PRT) and the Gates-MacGinitie Reading Test (GM).

The PRT is a 30 minute, grade-level specific reading test devised by TCM to measure program-specific reading skills. The test was administered by an independent TCM-hired proctor who read a card containing nonfiction content while students followed along silently with a printed version of the card. The children then answered a series of multiple choice questions which varied in number from 14 to 20 depending on the grade level. The PRT was given in fall as a pre-test and then again approximately seven months later in spring as a post-test.

The GM is a standardized reading test that provides a general assessment of reading achievement in children’s reading vocabulary and comprehension. Although the GM is not specifically a measure of vocabulary and comprehension in a non-fiction reading context, it was chosen as an outcome measure for this study because vocabulary development and improved reading comprehension are two of the main objectives of the ENF program. The GM is a school district-mandated given in Grade 4 and Grade 5 and used by teachers for diagnosing reading difficulties and monitoring children’s reading progress during the school year.

At the end of the field test Experimental Group teachers completed a brief questionnaire and were interviewed to assess their level of satisfaction with the quality and effectiveness of the materials and to determine how effective they were in meeting the expectations for implementing the program. Control Group teachers were interviewed to determine the extent that their classrooms functioned as ‘untreated control groups’

throughout the field test. If teachers in Control Group classrooms also provided supplemental reading instruction on a regular basis, then this would potentially have a significant bearing on the results of the field test.

Data Analysis

Paired comparison t-tests were used to determine the significance of the difference between pretest and posttest mean scores (gains) separately for Experimental and Control groups on both the PRT and GM reading tests. Residual or regressed gain scores were used in assessing ENG program effects (i.e., whether children in Experimental Group classrooms made more improvement in reading than children in Control Group classrooms). These scores were generated by using regression analysis. Post-test scores were regressed on pre-test scores to obtain predicted post-test scores, which were then subtracted from actual post-test scores to remove the effect of the pretest from the posttest. A t-test was then used to test the significance of differences between Experimental and Control group means of these scores. Analysis of covariance was used in testing for program effects where a statistically significant difference between the Experimental Group and the Control group was found on pretest measures.

Results

Analysis of Program Effects on Reading

Results from the PRT and GM reading tests were analyzed to determine the presence of program effects on children’s reading achievement.

ENF Program Reading Test (PRT). Table 2 below shows PRT pretest and posttest mean scores, the differences between pretest and posttest means, and the probability values associated with the observed differences.

Table 2. ENF Program Reading Test Results

Kindergarten: Whole Group Test						
School	Group	N	Mean		Difference	Probability
			Pretest	Posttest		
A	Experimental	36	2.64	3.64	1.00	0.01
	Control	38	2.95	3.58	0.63	0.04
B	Experimental	16	3.63	3.94	0.31	ns
	Control	17	3.71	3.35	-0.36	ns
Kindergarten: Individual Test						
School	Group	N	Mean		Difference	Probability
			Pretest	Posttest		
A	Experimental	36	2.33	2.83	0.50	0.02
	Control	37	2.11	2.92	0.81	0.01
B	Experimental	16	2.50	4.50	2.00	0.01
	Control	17	3.18	3.82	0.64	ns

Grade 1 Group Test						
School	Group	N	Mean		Difference	Probability
			Pretest	Posttest		
A	Experimental	22	7.18	10.68	3.50	0.01
	Control	22	5.05	9.18	4.13	0.01
B	Experimental	12	5.92	9.33	3.41	0.01
	Control	14	6.71	8.71	2.00	0.01
Grade 2 Group Test						
School	Group	N	Mean		Difference	Probability
			Pretest	Posttest		
A	Experimental	39	5.92	7.74	1.82	0.01
	Control	22	5.59	6.82	1.23	0.01
Grade 3 Group Test						
School	Group	N	Mean		Difference	Probability
			Pretest	Posttest		
A	Experimental	44	8.95	10.21	1.26	0.05
	Control	43	9.26	9.60	0.34	ns
B	Experimental	21	8.62	9.95	1.33	0.10
	Control	24	10.54	9.63	-0.91	ns
Grade 4 Group Test						
School	Group	N	Mean		Difference	Probability
			Pretest	Posttest		
A	Experimental	28	7.82	9.25	1.43	0.01
	Control	29	7.76	8.59	0.83	ns
Grade 5 Group Test						
School	Group	N	Mean		Difference	Probability
			Pretest	Posttest		
A	Experimental	55	7.76	9.31	1.55	0.01
	Control	29	7.24	9.34	2.10	0.01
B	Experimental	14	10.21	12.64	2.43	0.01
	Control	13	8.31	9.38	1.07	ns

ns=not significant

In School A all children regardless of group (i.e., Experimental vs. Control) improved their PRT reading scores, although some gains were not statistically significant. Experimental Group gains were statistically significant at all grade levels. Control Group gains were significant in Kindergarten, Grade 1 and Grade 5, but not in Grade 2, Grade 3, and Grade 4. In Grade 1 statistically significant group differences were found on pretest mean scores ($t=2.76$, $p<.01$). Using analysis of covariance on gain scores adjusting for this initial group difference revealed an ENF program effect ($t=1.93$, $p<.06$), just slightly short of the conventional level of statistical probability ($p<.05$) used by researchers to say with confidence that an effect of this size is present. The overall pattern of findings in School A suggests, however, that children in ENF classrooms tended to make greater improvement on the PRT compared with children in regular classrooms.

Referring again to Table 2, the Experimental Group in School B made significant reading improvement on both the PRT Kindergarten Individual Test and the Kindergarten Group Test. Similar results were also found in Grade 1 and Grade 5. In Grade 3 the Experimental Group also improved their reading scores but the gain was not as strong ($p < .10$). The Control Group also achieved significant gains in reading but only in Grade 1. Analysis of residual scores showed that Experimental Group gains were significantly greater than those of the Control Group in Grade K on both the Whole Group Test ($t = 2.02, p < .05$) and the Individual Test ($t = 3.03, p < .01$), and in Grade 5 ($t = 3.17, p < .01$). In Grade 3 the analysis of covariance was used to adjust for statistically significant pretest group differences on mean scores. The results of this analysis produced similar ENF program effects ($t = 1.54, p < .13$) although somewhat weaker than those found in Grade 1. In general, findings at School B indicate a strong tendency for children in ENF classrooms to outperform children in regular classrooms on the PRT.

Gates MacGinitie Reading Test (GM). Field test results based on analysis of the Gates MacGinitie Reading Test are reported in Table 3:

Table 3. ENF Gates MacGinitie Reading Test Results

Grade 4						
School	Group	N	Mean		Difference	Probability
			Pretest	Posttest		
A	Experimental	29	3.77	4.62	0.85	0.01
	Control	31	4.31	5.00	0.68	0.01
Grade 5						
School	Group	N	Mean		Difference	Probability
			Pretest	Posttest		
A	Experimental	59	4.24	5.14	0.90	0.01
	Control	26	4.43	5.08	0.65	0.01
B	Experimental	19	5.25	6.74	1.49	0.01
	Control	25	4.86	5.66	0.80	0.01

Experimental and Control groups at both School A and School B made highly significant reading gains ($p < .01$) on the Gates MacGinitie Reading Test. Program effects demonstrating superior gains in ENF classrooms compared with regular classrooms were found in Grade 4 at School B ($t = 1.60, p < .11$) and in Grade 5 at School A ($t = 2.00, p < .05$) and School B ($t = 1.94, p < .06$). These effects were present at or near statistical significance levels of $p < .05$.

Teacher Satisfaction and Implementation of the ENF Program

Most ENF classroom teachers who completed the Teacher Implementation Questionnaire ($N = 8$) used the program at least two days a week for about 30-60 minutes each day. Therefore, during the field test most children received approximately one to two hours of instruction per week. Teacher rated the quality of program materials highly. All but one teacher rated the nonfiction reading cards, overhead transparencies, Teacher

Resource Notebook, Lesson Plan Notebook , and the CD-ROM as either “Excellent” or “Very Good.” One teacher rated the Teacher Resource Notebook as “Fair.”

All teachers felt that children liked the program “very much” or “some.” Teachers were asked to indicate on a four-point rating scale (A Great Deal; Some; Only a Little, None) how much improvement students made during the school year in reading skills specifically taught by the program:

- Main ideas/Supporting details
- Summarizing/Paraphrasing
- Developing vocabulary
- Prior knowledge/Making connections
- Author’s point of view
- Structural patterns
- Using text organizers
- Using parts of the book
- Making inferences
- Setting the purpose
- Questioning
- Visualizing

All teachers reported that children made either “a great deal” or “some” improvement in three skills: Main ideas, Developing vocabulary, and Prior knowledge/Making connections. A majority of teachers (at least five) reported that children made “a great deal” or “some” improvement in five skills: Summarizing/Paraphrasing, Structural patterns, Using parts of the book, Making inferences, and Setting the purpose. A few (two or three) reported reading improvement in the remaining four skills: Author’s point of view, Using text organizers, Questioning, and Visualizing.

Conclusions

The field test of the TCM Exploring Non-Fiction supplemental instructional program revealed a pattern of findings that indicates the potential effectiveness of the product in fostering reading achievement among elementary school children at several grade levels. This conclusion is supported by quantitative results from two reading tests, one specifically developed to measure program-specific, non-fiction reading skills and the other from a standardized reading test that measures general vocabulary development and comprehension skills. The overall favorable results found in this study for the ENF product also tend to be confirmed by subjective teacher reports on the level of reading attainment achieved by the children in their classrooms.

ENF program effects (i.e., where gains in reading achievement were greater among children in ENF classrooms compared with regular classrooms) were potentially demonstrated in Grade K, Grade 1, Grade 4, and Grade 5. The effect was most pronounced in Grade 5 since ENF classrooms advanced more than did Control Group

classrooms at both schools on the PRT and, most notably, at School B on both the PRT and GM reading tests.

Field test results also show that ENF classrooms made consistently greater achievement gains (i.e., pretest to posttest differences) on 12 of 15 comparisons with Control Group classrooms. Of these comparisons, five were statistically significant at the .10 or lower level. No ENF classroom did significantly worse than a regular classroom on any reading measure.

Finally, focus group interviews with Control Group teachers revealed limited and/or periodic use of alternative non-fiction, supplemental materials to support regular instruction in reading. However, it did not appear that teachers were using these materials to teach the specific reading skills emphasized in the ENF program. Therefore, the results of this study appear to be a valid indication of the potential efficacy of ENF for elementary school children across most grade levels even if children receive reading instruction using supplementary materials developed by other publishers.