Title: A Randomized Controlled Trial of a Response-to-Intervention (RTI) Tier 2 Literacy Program: Leveled Literacy Intervention (LLI)

Author(s): Dr. Carolyn Ransford-Kaldon, Dr. E. Sutton Flynt, & Cristin Ross, M.S.

Abstract Body

Background

Research suggests that children with poor early reading skills continue to struggle with reading and writing in the later grades and are more likely to drop out of school (Alexander, Entwisle, & Horsey, 1997; Juel, 1988; Tabors, Snow, & Dickinson, 2001). However, there is evidence that quality early intervention programs can prevent the development of long-term reading deficiencies (Heibert & Taylor, 1994; Wanzek & Vaughn, 2007). Previous studies of the Leveled Literacy Intervention (LLI) by Harrison, Peterman, Grehan, Ross, Dexter, and Inan (2008) and Peterman, Grehan, Ross, Gallagher, and Dexter (2009) showed that K-2 students enrolled in LLI made significant gains on the Gates-MacGinitie Reading Test, with 25 to 44% of students reading at or above average by the end of the program. The current study expanded on these findings by utilizing a multi-site, randomized controlled trial design to examine whether students in LLI achieved greater gains than students receiving classroom instruction alone.

Purpose and Research Questions

The purpose of this study was twofold: (1) to determine the efficacy of the Leveled Literacy Intervention program (LLI) in increasing reading achievement for K-2 students and (2) to examine LLI program implementation fidelity. This study evaluated LLI in two U.S. school districts and used a mixed-method design to address the following key research questions: "what progress in literacy do students who receive LLI make compared to students who receive only regular classroom literacy instruction?"and "was LLI implemented with fidelity to the developers' program model?"

Setting

Five elementary schools in the Tift County School District (TCS) in Tifton, Georgia, and four elementary schools in the Enlarged City School District of Middletown (ECSDM) in Middletown, New York, volunteered to participate in the study.[†] TCS is a rural school district in a small town located approximately 181 miles south of Atlanta, GA. ECSDM is a suburban school district in a small city approximately 72 miles northwest of New York City, NY. Table 1 summarizes the demographic characteristics of each district. (Please insert Table 1 here.)

Participants

A total of 28 LLI teachers and 125 classroom teachers across both districts participated in this study. Tables 2 and 3 summarize the demographic characteristics of the LLI and classroom teachers in the study. (Please insert Tables 2 & 3 here.) Across the 5 participating schools in Tift County and the 4 participating schools in Middletown, there were a total of 427 students who participated in this study. Of these students, 146 were in kindergarten, 130 were in first grade, and 151 were in second grade. Table 4 summarizes the demographic characteristics of the participating K-2 LLI students for each district. (Please insert Table 4 here.)

Leveled Literacy Intervention (LLI)

LLI is a short-term, small-group, supplemental literacy intervention system designed for students in grades K-2 who struggle with reading and writing. Students in the study who received LLI met in groups of three for daily 30-minute lessons for 18 weeks. The goal of the program is to provide intensive support to help these early learners quickly achieve grade-level competency. The LLI program has its roots in the theoretical and empirical work of Marie Clay (1991) and of Fountas and Pinnell (1996, 2006), and its lesson design draws from empirical research on reading acquisition and reading difficulties, language learning, and student motivation (e.g.,

---

[†] Georgia and New York were chosen because both states have a fairly extensive literacy assessment system.

Armbruster, Lehr, & Osborn, 2001; National Institute of Child Health and Human Development, 2001a; National Institute of Child Health and Human Development, 2001b). The program emphasizes systematic and explicit instruction in phonological awareness, phonics, fluency, comprehension, and the expansion of oral language skills, including vocabulary. LLI also follows a predictable sequence of fast-paced lessons, based around a series of "leveled" texts (i.e., texts of progressing difficulty), to keep students engaged as well as links to the classroom instruction and the home environment. Ongoing formative student assessments are also a key component of the program to inform teachers' instructional decisions.

Research Design

The research design for this multi-site, mixed-method study employed a randomized controlled trial design, with matched-pairs randomized to condition, in order to examine student literacy achievement. Fidelity of program implementation, measured by random observations of LLI groups, was also a key factor of this evaluation. The participating districts agreed to a strict implementation plan of the program and no other supplemental literacy instruction.

Data Collection and Analysis

The current study utilized two measures of reading achievement for evaluating students' progress in literacy: the Fountas & Pinnell Benchmark Assessment System (i.e., LLI Benchmarks) and the Dynamic Indicators of Basic Early Literacy Skills (DIBELS). LLI Benchmarks were individually administered, with students scored on an A-Z gradient of text difficulty. These scores were then used to determine the students' placement in LLI groups and to provide a proximal pre/post indicator of literacy achievement. DIBELS consists of seven short fluency measures, administered as applicable to students' grade level. In this evaluation, DIBELS was used as a broader pre/post indicator of literacy achievement to corroborate the benchmark scores.

The Leveled Literacy Intervention Observation Tool (LLIOT), containing 20 items, was used to evaluate LLI implementation fidelity using a 4-point scale that ranges from 0 (Not Observed) to 3 (Excellent). On-site researchers (e.g., local-area retired teachers) were trained to conduct the DIBELS and the LLIOT, while the LLI teachers administered the LLI Benchmarks. Table 5 summarizes the time points for collecting each instrument. (Please insert Table 5 here.)

Analyses

For the matched-pairs randomization, LLI-eligible students were matched on demographic characteristics (i.e., gender, ethnicity, ELL status, special education status, and free/reduced lunch status) and pre-LLI benchmark scores, then randomly assigned to treatment and control groups. Treatment students were placed into LLI groups, while control group students did not receive LLI or any additional literacy intervention until this study ended.

Preliminary analyses examined the normality of the data, measures of central tendency, and correlations to provide descriptive results and identify potential covariates. Substantive analyses then employed a series of repeated-measures ANOVA's by grade level and outcome, controlling for pretest reading level on the benchmarks. For the LLIOT implementation measure, independent t-tests were conducted to examine levels of implementation across the study.

Results

Student Achievement

Kindergarten LLI Benchmarks. Results revealed a significant between-group difference for overall group membership (i.e., treatment or control group), $F(1, 144) = 23.74$, $p < .001$, $\eta^2 = 0.14$. Students receiving LLI exceeded students in the control group by 1 benchmark level (M = 1.76 [level B] and M=1.04 [level A]). LLI student gains were also significant for Hispanic,

African American, and ELL subgroups, F (1, 48) = 16.22, p < .001, η^2 = 0.25; F (1, 51) = 6.69, p < .05, η = 0.12; and F (1, 41) = 6.68, p < .05, η^2 = 0.24, respectively. (Please insert Table 6 here)

Kindergarten DIBELS. On the DIBELS measure of Nonsense Word Fluency (NWF), statistically significant differences were observed favoring treatment students. As shown in **Error! Reference source not found.**, such differences were observed for treatment students in the aggregate (F(1, 139) = 5.39, p < .05, η = 0.04), as well for treatment students who were classified as ELL (F(1, 21) = 4.90, p < .05, η^2 = 0.19. (Please insert Table 7 here)

First Grade LLI Benchmarks. A significant between-group difference for overall group membership also emerged for first grade LLI students versus control students, F (1, 128) = 31.74, p < .001, η^2 = 0.20. LLI students exceeded the control group by 2 benchmark levels (M = 5.83 [level F] and M = 3.95 [level D], respectively), and LLI student gains were also significant for African American and Hispanic subgroups, F (1, 33) = 22.44, p < .001, η^2 = 0.40 and F (1, 54) = 10.02, p < .01, η^2 = 0.17, respectively. (Please insert Table 8 here)

First Grade DIBELS. Results revealed that the treatment group significantly exceeded the control group on: nonsense word fluency, F (1, 128) = 8.24, p < .01, η^2 = 0.06 (M = 0.22 and 0.17, respectively); letter naming, F (1, 128) = 4.14, p < .05, η^2 = 0.03 (M = 0.47 and 0.42, respectively); and oral reading fluency, F (1, 128) = 4.85, p < .05, η^2 = 0.04 (M = 0.14 and 0.11, respectively). (Please insert Tables 9, 10, and 11 here)

Second Grade LLI Benchmarks. For second grade students, results revealed a significant difference between treatment and control gains, F (1, 149) = 22.58, p < .001, η^2 = 0.13. Treatment gains exceeded control gains by 1 benchmark level, (M = 10.00 [level J] and M = 8.96 [level I], respectively). LLI student gains were also significant for Special Education, African American, and Hispanic subgroups, F (1, 12) = 10.82, p < .01, η^2 = 0.47; F (1, 52) = 10.46 p < .01, η^2 = 0.17; and F (1, 50) = 4.38, p < .05, η^2 = 0.08, respectively. (Please insert Table 12 here)

Second Grade DIBELS. No significant difference overall or by subgroup was found between treatment and control on either subtest: nonsense word or oral reading fluency.

Fidelity of LLI Implementation

Implementation Observations: LLIOT. Descriptive statistics and independent *t*-test results for each of the three LLIOT subscales for across all groups are presented in Table 13. There were no significant differences between the pre-test and the post-test observations for kindergarten LLI groups, and in first and second grade, on two of the subscales: "Quality of LLI Implementation" and "Literacy Instructional Strategies". However, scores on the "Learning Environment" scale did significantly improve from pre-test to post-test for first grade (t(48) = 2.22, p < 0.05) and second grade (t(49) = 2.47, p < 0.05), which may have been due to increased familiarity with the curriculum. The average rating was between "Acceptable" and "Excellent" for each subscale at both time points. (Please insert Table 13 here.)

Conclusions

The findings of this evaluation indicate that LLI combined with regular classroom instruction can positively impact student literacy achievement to a greater degree than classroom instruction alone for K-2 students who are struggling with reading and writing. ELL and special education students can also benefit from the LLI program, some with strong, educationally significant effects. Robust effects were found on the LLI Benchmarks across all grade levels for students who received LLI. Students in LLI achieved between 1½ benchmark levels up to almost 5 ½ benchmark levels while students who did not receive LLI achieved between less than 1 benchmark level up to about 3 benchmark levels. Students in LLI also finished on par with grade-level goals. Further, because the majority of students in the study were economically

disadvantaged, the findings indicate that the LLI program is effective with this high-risk population. However, the current study is limited in generalizability to rural and suburban populations, as well as those economically disadvantaged.

The efficacy of the LLI program has important implications for schools and districts with limited resources and time available for early reading interventions. LLI's short-term, small-group format allows a greater number of struggling students to achieve grade-level competency within a shorter period of time. LLI's success with early learners also demonstrates its potential for reducing the development of chronic, long-term reading deficiencies and academic problems. Given the positive potential of the LLI program, future research is warranted in this area. Specifically, additional studies should be conducted in urban areas, and longitudinal tracking should be utilized to determine the long-term impact of LLI on students' literacy development.

Appendix A. References

Alexander, K. L., Entwisle, D. R., & Horsey, C. S. (1997). From first grade forward: Early foundations of high school dropout. *Sociology of Education*, *70*(2), 87-107.

Armbruster, B. B., Lehr, F., & Osborn, J. (2001). *Put reading first: The research building blocks for teaching children to read: Kindergarten through grade 1*. Jessup, MD: National Institute for Literacy.

Clay, M. (1991). *Becoming literate: The construction of inner control*. Aukland: Heinemann.

Fountas, I. C., & Pinnell, G. S. (1996). *Guided reading: Good first teaching for all children*. Portsmouth, NH: Heinemann.

Fountas, I. C., & Pinnell, G. S. (2006). *Teaching for comprehending and fluency: Thinking, talking, and writing about reading, K-8*. Portsmouth, NH: Heinemann.

Harrison, L., Peterman, R., Grehan, A., Ross, S., Dexter, E., & Inan, F. (2008, March). *Evaluation of the Leveled Literacy Intervention: Year 1*. Paper presented at the annual meeting of the American Educational Research Association, New York.

Hiebert, E. H., & Taylor, B. M. (Eds.). (1994). *Getting reading right from the start*. Boston: Allyn & Bacon.

Juel, C. (1988). Learning to read and write: A longitudinal study of 54 children from first through fourth grades. *Journal of Educational Psychology, 80*, 437-447.

National Institute of Child Health and Human Development. (2001a). *Report of the National Reading Panel. Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups*. Washington, DC: National Institutes of Health.

National Institute of Child Health and Human Development. (2001b). *Report of the National Reading Panel. Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. Washington, DC: National Institutes of Health.

Peterman, R., Grehan, A., Ross, S., Gallagher, B., & Dexter, E. (2009, April). *An evaluation of the Leveled Literacy Intervention program: A small-group intervention for students in K-2*. Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA.

Tabors, P. O., Snow, C. E., & Dickinson, D. K. (2001). Homes and schools together: Supporting language and literacy development. In D. K. Dickinson & P. O. Tabors (Eds.), *Beginning literacy with language: Young children learning at home and school* (pp. 313-334). Baltimore: Brookes.

Wanzek, J., & Vaughn, S. (2007). Research-based implications from extensive early reading interventions. *School Psychology Review, 36*(4), 541-561.

Appendix B. Tables and Figures

Table 1: Demographic Overview of Tift County and Enlarged City School District of Middletown (PreK-12)

School District	Grade Levels	School Wide Population		Student Population						
		Students	Teachers	% Asian	% African American	% Hispanic	% White	% Economically Disadvantaged	% Students with Disabilities	% English Language Learners
Tift	PK-12	7551	552	1.0	35.0	13.0	48.0	65.0	11.0	8.0
Middletown	PK-12	6764	478	2.0	27.0	46.0	25.0	64.0	6.9	12.0

Note: Demographic information for Tift County obtained from 2008-09 School Report Card and
http://nces.ed.gov/ccd/districtsearch/district_detail.asp?Search=1&details=+&InstName=tift&State=13&DistrictType=1&DistrictType=2&DistrictType=3&DistrictType=4&DistrictType=5&DistrictType=6&DistrictType=7&NumOfStudentsRange=more&NumOfSchoolsRange=more&ID2=1304980
Demographic information for Middletown City obtained from 2008-09 School Report and
http://nces.ed.gov/ccd/districtsearch/district_detail.asp?Search=1&City=+middletown&State=36&DistrictType=1&DistrictType=2&DistrictType=3&DistrictType=4&DistrictType=5&DistrictType=6&DistrictType=7&NumOfStudentsRange=more&NumOfSchoolsRange=more&ID2=3619320&details=

Table 2: Demographic Characteristics of Participating LLI Teachers (n = 28)

Item	Percent Responded
Years of teaching experience at current school	
5 years or less	15.9
6-10 years	40.9
11 or more years	43.2
Years of teaching experience at any school	
5 years or less	6.8
6-10 years	18.2
11 or more years	75.0
Highest level of education completed	
Bachelor's Degree	34.1
Master's Degree	31.8
Master's plus 30 hours, Education Specialist, or Doctoral Degree	34.1
Ethnicity	
Asian or Pacific Islander, American Indian or Alaskan Native, or Multi-racial/other	0.0
African-American/ Black	2.3
Hispanic	0.0
White, not of Hispanic origin	97.7
Gender	
Male	0.0
Female	100.0
Age Group	
29 years or less	4.5
30-39 years	22.7
40-49 years	29.5
50-59 years	31.8
60 years or older	11.4
Teacher certification level	
Paraprofessional	0.0
Alternative certificate	0.0
Initial/apprentice certificate	4.5
Regular/professional certificate	95.5

Table 3. Demographic Characteristics of Participating K-2 Classroom Teachers (n = 89)

Item	Percent Responded
Which grade level do you teach? (Mark all that apply)	
K	31.5
1	36.0
2	32.6
Years of teaching experience at current school	
5 years or less	32.6
6-10 years	34.8
11 or more years	32.6
Years of teaching experience at any school	
5 years or less	21.3
6-10 years	24.7
11 or more years	52.8
Highest level of education completed	
Bachelor's Degree	24.7
Master's Degree	60.7
Master's plus 30 hours, Education Specialist, or Doctoral Degree	13.4
Ethnicity	
Asian or Pacific Islander, American Indian or Alaskan Native, or Multi-racial/other	1.1
African-American/ Black	1.1
Hispanic	1.1
White, not of Hispanic origin	94.4
Gender	
Male	3.4
Female	96.6
Age Group	
29 years or less	18.0
30-39 years	38.2
40-49 years	20.2
50-59 years	19.1
60 years or older	4.5
Teacher certification level	
Paraprofessional	0.0
Alternative certificate	0.0
Initial/apprentice certificate	1.1
Regular/professional certificate	98.9

Table 4: Demographic Overview of Participating Students (n = 427)

Schools	Grade Levels	Students	% African American	% Hispanic	% White	% Other/Mixed Ethnicity	% Economically Disadvantaged	% ELL	% SpEd
Tift	K-2	209	39.0	31.0	29.0	1.0	89.0	24.0	12.0
Middletown	K-2	218	28.0	43.0	28.0	1.0	80.0	3.0*	5.0*

Note: Demographic information obtained from each school district's records; ELL = English Language Learners; SpEd = special education
*Middletown limited the number of ELL students and students with special education status who could participate in the study due to sheltered classrooms.

Table 5: Data Collection Summary

Type of Measure	Instrument	Timeline	Number Collected	Description
Student Achievement Measures	• LLI Benchmarks • DIBELS	August–October 2009 February/March 2010 May/June 2010	• 130 1st and 151 2nd grade pre/post-test LLI Benchmarks • 130 1st and 151 2nd grade pre/post-test DIBELS • 146 K pre/post-test LLI Benchmarks • 146 K pre/post-test DIBELS	• LLI benchmark and DIBELS testing for 1st and 2nd graders in both treatment and control groups was conducted as a pre-test in fall 2009 and as a post-test in winter 2010. • These same assessments were administered for kindergartners in both treatment and control groups as a pre-test in winter 2010 and as a post-test in spring 2010.
Observations	• LLIOT	October/November 2009 January/February 2010 March/April 2010 April/May 2010	• 110 1st and 2nd grade LLIOT's • 50 K LLIOT's	• Trained on-site researchers observed all 1st and 2nd grade LLI groups twice in fall 2009/winter 2010. • These same researchers also observed all K LLI groups twice in spring 2010. Each observation lasted 30-45 minutes.

Table 6: Summary of Mixed ANOVA Results for Kindergarten LLI Benchmarks

Group/ Subgroup	Control Condition					Treatment Condition					F		η^2
		LLI Benchmark Pretest		LLI Benchmark Posttest			LLI Benchmark Pretest		LLI Benchmark Posttest				
	n	M	SD	M	SD	n	M	SD	M	SD			
Aggregate	70	0.26	0.53	1.04	1.00	76	0.20	0.46	1.76	0.89	23.74	***	0.14
SPED	4	0.00	0.00	0.75	0.96	10	0.30	0.67	1.80	0.79	1.71		0.13
ELL	12	0.25	0.45	0.75	0.97	11	0.27	0.47	1.82	1.25	6.68	*	0.24
African American	24	0.29	0.55	1.08	0.83	29	0.28	0.59	1.72	0.75	6.69	*	0.12
Hispanic/ Latino	24	0.13	0.34	0.83	1.05	26	0.12	0.33	1.88	0.91	16.22	***	0.25
White/ Not Hispanic	21	0.38	0.67	1.29	1.10	20	0.20	0.41	1.60	1.05	2.20		0.05

***$p < .001$. **$p < .01$. *$p < .05$.

2011 SREE Conference Abstract Template   B-3

Table 7. Kindergarten DIBELS Nonsense Word Fluency scores: % Correct

Group/ Subgroup	Control Condition					Treatment Condition					F		η^2
		NWF Pretest % correct		NWF Posttest % correct			NWF Pretest % correct		NWF Posttest % correct				
	n	M	SD	M	SD	n	M	SD	M	SD			
Aggregate	70	3.33	4.16	6.88	6.54	71	4.24	4.89	10.64	8.30	5.97	*	0.04
SPED	4	3.47	4.43	2.60	2.68	10	5.42	5.39	10.35	8.34	1.55		0.11
ELL	12	2.43	2.94	8.91	7.58	11	2.97	3.36	15.21	7.51	4.90	*	0.19
African American	24	3.41	4.06	6.89	5.69	27	3.78	4.74	10.47	7.75	3.66		0.07
Hispanic/ Latino	24	2.69	3.13	6.39	7.04	24	4.37	4.48	11.60	8.46	2.17		0.05
White/ Not Hispanic	21	4.13	5.26	7.51	7.22	19	4.13	5.18	9.25	9.10	0.68		0.02

***$p < .001$. **$p < .01$. *$p < .05$.

Table 8. Summary of Mixed ANOVA Results for 1st Grade LLI Benchmarks

Group/ Subgroup	Control Condition					Treatment Condition					F		η^2
		LLI Benchmark Pretest		LLI Benchmark Posttest			LLI Benchmark Pretest		LLI Benchmark Posttest				
	n	M	SD	M	SD	n	M	SD	M	SD			
Aggregate	65	1.32	1.03	3.95	2.37	65	1.37	1.18	5.83	2.27	31.74	***	0.20
SPED	3	1.33	0.58	2.67	0.58	4	1.00	1.41	4.25	3.30	2.76		0.36
ELL	10	1.40	0.97	5.00	2.21	3	1.33	0.58	5.33	1.53	0.13		0.01
African American	20	1.25	0.91	3.85	2.50	15	1.40	0.99	6.60	1.24	22.44	***	0.40
Hispanic/ Latino	28	1.11	0.88	3.68	2.13	28	1.11	1.07	5.29	2.42	10.02	**	0.17
White/ Not Hispanic	17	1.76	1.30	4.53	2.62	20	1.60	1.43	6.00	2.66	5.90	*	0.14

***$p < .001$. **$p < .01$. *$p < .05$.

Table 9. 1st grade DIBELS Nonsense Word Fluency: % correct

Table 9. 1st grade DIBELS Nonsense Word Fluency: % correct

Group/ Subgroup	Control Condition					Treatment Condition					F		η^2
		NWF Pretest % Correct		NWF Posttest % Correct			NWF Pretest % Correct		NWF Posttest % Correct				
	n	M	SD	M	SD	n	M	SD	M	SD			
Aggregate	65	0.10	0.07	0.17	0.09	65	0.11	0.07	0.22	0.11	8.24	**	0.06
SPED	3	0.08	0.05	0.26	0.11	4	0.11	0.05	0.16	0.09	4.93		0.52
ELL	10	0.09	0.06	0.21	0.07	3	0.07	0.07	0.17	0.10	0.14		0.01
African American	20	0.13	0.08	0.17	0.11	15	0.12	0.04	0.20	0.08	1.83		0.06
Hispanic/ Latino	28	0.09	0.06	0.17	0.09	28	0.07	0.05	0.19	0.08	4.11	*	0.07
White/ Not Hispanic	17	0.10	0.07	0.19	0.09	20	0.13	0.09	0.28	0.14	2.16		0.06

***p < .001. **p < .01. *p < .05.

Table 10. 1st grade DIBELS Oral Reading Fluency: % correct

Table 10. 1st grade DIBELS Oral Reading Fluency: % correct

Group/ Subgroup	Control Condition					Treatment Condition					F		η^2
		ORF Pretest % Correct		ORF Posttest % Correct			ORF Pretest % Correct		ORF Posttest % Correct				
	N	M	SD	M	SD	n	M	SD	M	SD			
Aggregate	65	0.04	0.04	0.11	0.10	65	0.04	0.03	0.14	0.10	4.85	*	0.04
SPED	3	0.03	0.02	0.08	0.03	4	0.04	0.02	0.11	0.03	1.54		0.24
ELL	10	0.06	0.07	0.20	0.13	3	0.04	0.03	0.13	0.06	0.70		0.06
African American	20	0.04	0.02	0.12	0.10	15	0.05	0.03	0.13	0.05	0.00		0.00
Hispanic/ Latino	28	0.03	0.04	0.11	0.11	28	0.03	0.03	0.12	0.10	0.38		0.01
White/ Not Hispanic	17	0.04	0.04	0.10	0.09	20	0.04	0.03	0.18	0.12	8.70	**	0.20

***p < .001. **p < .01. *p < .05.

Table 11. 1st grade DIBELS Letter Naming Fluency: % correct

Group/ Subgroup		Control Condition					Treatment Condition				F		η'
		LNF Pretest % Correct		LNF Posttest % Correct			LNF Pretest % Correct		LNF Posttest % Correct				
	N	M	SD	M	SD	n	M	SD	M	SD			
Aggregate	65	0.31	0.13	0.42	0.19	65	0.30	0.15	0.47	0.17	4.14	*	0.03
SPED	3	0.29	0.10	0.42	0.16	4	0.21	0.12	0.28	0.04	0.36		0.07
ELL	10	0.32	0.10	0.51	0.18	3	0.27	0.11	0.28	0.10	7.78	*	0.41
African American	20	0.37	0.12	0.44	0.20	15	0.34	0.16	0.45	0.18	0.53		0.02
Hispanic/ Latino	28	0.28	0.12	0.40	0.19	28	0.27	0.15	0.41	0.15	0.42		0.01
White/ Not Hispanic	17	0.28	0.13	0.43	0.18	20	0.33	0.13	0.56	0.16	3.25		0.09

***p < .001. **p < .01. *p < .05.

Table 12. Summary of Mixed ANOVA Results for 2nd Grade LLI Benchmarks

Group/ Subgroup		Control Condition					Treatment Condition				F		η'
		LLI Benchmark Pretest		LLI Benchmark Posttest			LLI Benchmark Pretest		LLI Benchmark Posttest				
	n	M	SD	M	SD	n	M	SD	M	SD			
Aggregate	70	5.97	2.58	8.96	2.89	81	5.36	2.34	10.00	2.44	22.58	***	0.13
SPED	9	4.00	2.45	5.78	2.77	5	3.40	2.97	8.80	3.63	10.82	**	0.47
ELL	10	5.80	2.39	8.40	3.03	11	5.18	1.99	8.82	2.75	0.80		0.04
African American	24	6.33	2.62	9.00	3.43	30	5.67	2.12	10.13	2.56	10.46	**	0.17
Hispanic/ Latino	22	5.41	2.48	8.64	2.63	30	5.50	2.54	10.03	2.65	4.38	*	0.08
White/ Not Hispanic	21	6.38	2.62	9.52	2.38	21	4.71	2.31	9.76	2.02	7.71	**	0.16

***p < .001. **p < .01. *p < .05.

Table 13: Independent T-Test Results for LLIOT Subscales by Grade Level

LLIOT Subscale	Pre-Test		Post-Test				
	M	*SD*	*M*	*SD*	*t*	*p*	*d*
Kindergarten (n = 25)							
Quality of LLI Implementation	2.26	0.77	2.11	0.46	0.81	0.422	-0.23
Literacy Instructional Strategies	2.79	0.32	2.83	0.27	-0.40	0.692	0.12
Learning Environment	2.75	0.34	2.77	0.34	-0.18	0.860	0.05
First Grade (n = 25)							
Quality of LLI Implementation	2.02	0.61	2.03	0.56	0.05	0.962	0.02
Literacy Instructional Strategies	2.44	0.49	2.62	0.41	1.41	0.165	0.41
Learning Environment	2.62	0.33	2.81	0.27	2.22*	0.031	0.64
Second Grade (n = 33)							
Quality of LLI Implementation	2.12	0.60	2.29	0.41	1.35	0.183	0.34
Literacy Instructional Strategies	2.29	0.84	2.57	0.58	1.61	0.113	0.39
Learning Environment	2.46	0.53	2.72	0.30	2.47*	0.017	0.61

*Statistically significant at $p < 0.05$