



Implementation of Effective Intervention

*An Empirical Study to Evaluate the Efficacy
of Fountas & Pinnell's Leveled Literacy Intervention System (LLI)*

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Executive Summary

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Implementation of Effective Intervention

An Empirical Study to Evaluate the Efficacy of Fountas & Pinnell's Leveled Literacy Intervention System (LLI)

EXECUTIVE SUMMARY

THIS REPORT SUMMARIZES evaluation results for an efficacy study of the Leveled Literacy Intervention system (LLI) implemented in Tift County Schools (TCS) in Georgia and the Enlarged City School District of Middletown (ECSDM) in New York during the 2009-2010 school year. Developed by Fountas & Pinnell (2009) and published by Heinemann, LLI is a short-term, small-group, supplemental literacy intervention system designed for students in kindergarten through second grade (K-2) who struggle with literacy. The goal of the program is to provide intensive support to help these early learners quickly achieve grade-level competency.

Both school districts evaluated in this study adopted the targeted, small-group implementation model of LLI in their schools with support from Heinemann consultants providing LLI professional development. This report focuses on the implementation and impact of this model during the first full school year of the program in these schools.

RESEARCH QUESTIONS

The purpose of this study was threefold: (1) to determine the efficacy of the Leveled Literacy Intervention system (LLI) in increasing reading achievement for K-2 students; (2) to examine the implementation fidelity of LLI; and (3) to determine perceptions of the LLI program according to relevant stakeholders. This study focused on two U.S. school districts and comprised 427 K-2 students who were matched demographically and randomly assigned to treatment and control groups. This evaluation used a mixed-methods design to address the following key research questions:

1. **What progress in literacy do students who receive LLI make compared to students who receive only regular classroom literacy instruction?**
2. **Was LLI implemented with fidelity to the developers' program model?**
3. **What were LLI teachers' perceptions of LLI and its impact on their students' literacy?**

PARTICIPANTS

Five elementary schools in TCS in Tifton, GA, and four elementary schools in ECSDM in Middletown, NY, volunteered to participate in the study. TCS is a rural school district located approximately 181 miles south of Atlanta, GA, that served 7,551 students during the 2008-2009 school year. Most of the schools in TCS are small and serve primarily White and African American populations (48.0% and 35.0%, respectively), with more than half of students (65.0%) identified as “economically disadvantaged” by the Georgia Department of Education. Twenty-one K-2 teachers trained in LLI and 209 K-2 students eligible for LLI in TCS participated in this study.

ECSDM is a suburban school district located approximately 72 miles northwest of New York City, NY, that served 6,764 students during the 2008-2009 school year. The size of the schools in ECSDM ranges from 435 to 2,048 students. This district serves primarily Hispanic and African American populations (46.0% and 27.0%, respectively), with more than half of students (64.0%) identified as “economically disadvantaged” by the New York Department of Education. Seven K-2 teachers trained in LLI and 218 K-2 students eligible for LLI in ECSDM participated in this study.

METHODS

The present study of the LLI system employed a randomized controlled trial, mixed-methods design, which includes both quantitative and qualitative data and allows students to be randomly selected for the treatment (i.e., LLI in the first semester) or control (i.e., LLI in the second semester, if needed) condition. A matched-pair design was also utilized to ensure equivalency between treatment and control groups, and pre-post comparisons of student achievement in literacy were conducted. In addition, assessments of fidelity of LLI implementation included both independent observations and feedback from teachers and independent on-site researchers, and yielded both observational and self-reported survey data.

Multiple instruments were utilized in the evaluation, including two measures of reading achievement for evaluating students’ progress in literacy; one observational tool for assessing teachers’ LLI instructional practices; and two teacher surveys and focus groups to obtain teachers’ and on-site researchers’ feedback on LLI.

PROCEDURE

The current study extended from March 2009 through June 2010. In the spring of 2009, three CREP researchers were responsible for ensuring that the districts understood and agreed to participate in the study while implementing LLI as intended by the developers. CREP researchers provided on-site orientation to the project and trained school coordinators and on-site researchers in each district to assist with data collection. At the beginning of the 2009-2010 school year, each district provided CREP with a list of first and second grade students that they had identified as eligible for LLI using their own selection criteria and whose parents had provided consent to participate in the study. Pre-testing of these students with the LLI Benchmarks and DIBELS began during the first three weeks of school. Subsequently, CREP conducted the randomization of the matched pairs of first and second graders based on demographic characteristics (i.e., gender, ethnicity, ELL status, special education status, and free/reduced lunch status) and pre-test LLI benchmark scores of instructional reading level. Students in the treatment group were then placed in LLI groups by LLI teachers, and the planned 90 days of LLI instruction for first and second graders began. Control group students did not receive LLI until the first and second grade evaluation period ended, and neither treatment nor control students received any additional pull-out literacy interventions during the study period.

Once at the beginning of the program and once at the end, on-site researchers used the LLIOT to conduct random observations of each first and second grade LLI group. Post-tests with the LLI Benchmarks and DIBELS for the first and second grade students were completed at the conclusion of LLI in February for TCS and March for ECSDM. The LLI teachers and first and second grade classroom teachers with students in the study also completed an online survey regarding LLI or the school’s core literacy program, as applicable, at this time. After CREP researchers conducted mid-year follow-up visits in each district, the entire procedure was repeated for kindergarten students, who began LLI in February (TCS) and April (ECSDM) and concluded in May (TCS) and June (ECSDM). Finally, CREP researchers visited each district at the end of the school year to address any remaining issues related to the study and to conduct structured focus groups with LLI teachers and on-site researchers.

RESULTS

Student Achievement: Fountas & Pinnell LLI Benchmarks and DIBELS

KINDERGARTEN LLI Benchmarks

On average after 38 days of LLI instruction, kindergartners who received LLI achieved a mean gain of 1.56 benchmark levels as compared to 0.78 benchmark levels for kindergartners who did not receive LLI. Also, kindergartners in LLI started, on average, below grade level in benchmark testing (i.e., pre-A = 0) but finished at a level between A and B, whereas their counterparts in the control group started near pre-A and finished around Level A. Thus, kindergartners in LLI finished the school year close to grade level in literacy (i.e., end-of-year kindergarten grade level goal = Level B). Also of note, English Language Learner (ELL), African American, and Hispanic students in LLI exceeded those in the control group. ELL students in LLI achieved a mean gain of about 1 benchmark level ($M = 0.98$) compared to a $\frac{1}{2}$ benchmark level ($M = 0.50$) for ELL students not in LLI. African American LLI students also gained about $1\frac{1}{2}$ benchmark levels ($M = 1.44$) while those in the control group only gained less than a benchmark level ($M = 0.78$). Finally, Hispanic students in LLI made the most gains—almost 2 benchmark levels ($M = 1.76$)—versus their counterparts in the control group who gained less than a benchmark level ($M = 0.70$). Also, all three subgroups finished closer to grade level (i.e., Level B) than their counterparts who finished around Level A or below.

KINDERGARTEN DIBELS

Overall, fewer significant gains were seen with the DIBELS outcomes. However, kindergartners in LLI significantly exceeded those who were not in LLI on nonsense word fluency (NWF) ($M = 10.64\%$ and $M = 6.88\%$, respectively). Also, for phoneme segmentation fluency (PSF), ELL students in the treatment group ($M = 46.72\%$) outperformed ELL students in the control group ($M = 23.96\%$), as well as non-ELL students in both the treatment and control groups ($M = 23.24\%$ and 24.24% , respectively). Thus, kindergartners who participated in LLI showed more significant gains on subtests of the DIBELS as compared to those who did not have LLI.

1ST GRADE LLI Benchmarks

On average after 73 days of LLI instruction, 1st graders who received LLI achieved a mean gain of 4.46 benchmark levels as compared to 2.63 benchmark levels for 1st graders who did not receive LLI. Also, 1st graders in LLI generally started below grade level in benchmark testing (i.e., A = 1) but finished at a level between E and F, whereas their counterparts in the control group started near Level A and finished around Level D. Thus, 1st graders in LLI finished their LLI sessions at the grade level mid-year goal in literacy (i.e., mid-year grade level goal for 1st grade = Levels E/F), while the control group students were still slightly behind. Also of note, African American and Hispanic students in LLI exceeded those in the control group. African American LLI students made the most gains—they gained about $5\frac{1}{2}$ benchmark levels ($M = 5.20$) while those in the control group only gained about $2\frac{1}{2}$ benchmark levels ($M = 2.60$). Finally, Hispanic students in LLI also made significant gains—about 4 benchmark levels ($M = 4.18$)—versus their counterparts in the control group who gained about $2\frac{1}{2}$ benchmark levels ($M = 2.57$). Also, both subgroups finished at the grade level goal (i.e., Level E/F) compared to their counterparts in the control group who finished close to Level D. Of importance to note, the finding for African American 1st graders in LLI appears particularly robust and educationally significant. These LLI students finished the highest out of all subgroups as well as the aggregate—close to Level G—versus all others who finished between Levels C to F.

1ST GRADE DIBELS

Overall, similar significant differences between treatment and control groups were seen with the 1st grade DIBELS outcomes. 1st graders in LLI significantly exceeded those who were not in LLI on nonsense word fluency (NWF) ($M = 22.0\%$ and $M = 17.00\%$, respectively). Also, for NWF, Hispanic students in the treatment group ($M = 19.0\%$) outperformed their counterparts in the control group ($M = 17.0\%$). Additionally, 1st graders who received LLI performed better than their counterparts on Oral Reading Fluency (ORF) ($M = 17.0\%$ and $M = 11.0\%$, respectively), as well as on Letter Naming Fluency (LNF) ($M = 17.0\%$ and $M = 11.0\%$, respectively). Thus, 1st graders who participated in LLI showed more significant gains on subtests of the DIBELS as compared to those who did not have LLI.

2ND GRADE LLI Benchmarks

On average after 73 days of LLI instruction, 2nd graders who received LLI achieved a mean gain of 4.64 benchmark levels as compared to 2.99 benchmark levels for 2nd graders who did not receive LLI. Also, 2nd graders in LLI started, on average, below grade level in benchmark testing (i.e., E = 5) but finished at Level J, whereas their counterparts in the control group started closer to Level F but only finished around Level I. Thus, 2nd graders in LLI finished the school year close to the grade level mid-year goal in literacy (i.e., mid-year grade level goal for 2nd grade = Level J/K). Also of note, a robust overall effect was found for students with a special education designation who received LLI. These students in the treatment group started around Level C and finished close to Level H, while their counterparts in the control group started at Level D and finished around Level F. Also, regarding ethnicity subgroups, White students in LLI finished above their counterparts in the control group, gaining about 5 benchmark levels compared to about 3 benchmark levels in the control group. Additionally, African American and Hispanic students in LLI exceeded their counterparts in the control group. Of particular educational significance, African American LLI students finished at the highest level compared to all others—just above Level I; however, this was closely followed by the Hispanic LLI students who also finished slightly above Level I on average. The African American students in the treatment group gained about 4½ benchmark levels ($M = 4.46$), while those in the control group only gained about 2½ benchmark levels ($M = 2.67$). Finally, Hispanic students in LLI gained more than African American students in LLI ($M = 4.53$ and $M = 4.46$, respectively), while Hispanic students in the control group only gained about 3 benchmark levels.

2ND GRADE DIBELS

Overall, no significant differences were found between treatment and control groups for 2nd grade on either DIBELS subtest that was administered as intended for 2nd graders (i.e., Nonsense Word Fluency and Oral Reading Fluency). While unexpected, this result may simply indicate that the 2nd grade DIBELS measures were not sufficiently in alignment with the 2nd grade LLI curriculum or benchmarks to detect small effects, or changes, in DIBELS scores. However, it is also plausible that the lack of an overall effect may be

due to district-level differences in these scores. One district appears to have made significant gains on the 2nd grade DIBELS tests compared to the other, but taken together, no overall effects were able to be seen (i.e., a wash-out effect from averaging across both districts' scores).

Observations: Leveled Literacy Observation Tool (LLIOT)

The results from the LLIOT revealed that 5 of the 10 LLI lesson components were rated “Acceptable” or “Excellent” over 90% of the time, indicating a high level of program implementation fidelity across both districts. The highest rated lesson components (i.e., those demonstrating the highest degree of implementation fidelity) included phonics/word work, reading a new book, and rereading. The lowest rated lesson components (i.e., those demonstrating the lowest degree of implementation fidelity) included classroom and home connections. Teachers were also rated highly on their use of literacy instructional strategies, such as modeling and encouraging fluent oral reading and appropriate reading strategies and assisting students in problem-solving. Further, in the majority of observed lessons, instructional materials were readily available; the lesson was well-organized; and students were engaged and attentive. Additionally, the majority of observed groups had 3 students and lasted approximately 30 minutes, which was consistent with program design. Overall, observers perceived that the lesson was delivered as designed 96.3% of the time.

The LLIOT was conducted at both the beginning and the end of LLI for each of the observed groups in order to measure changes in program implementation over time. For the 25 observed kindergarten groups, there were no significant differences on any of the 3 LLIOT subscales (Quality of LLI Implementation, Literacy Instructional Strategies, and Learning Environment) from the first observation to the second. For both the 25 observed first grade groups and the 33 observed second grade groups, only scores on the Learning Environment subscale improved significantly from pre-test to post-test. For each subscale at each grade level, the average rating was between “Acceptable” and “Excellent” at both time points.

Teacher Surveys: LLITQ & CTLIQ

Overall, on the Leveled Literacy Intervention Teacher Questionnaire (LLITQ), LLI teachers were most likely to agree that they understood the goals and implementation procedures for LLI, that LLI positively impacts student literacy achievement, and that their districts and other teachers within their schools were supportive of LLI. LLI teachers also reported a positive impact of LLI on their reading instruction, particularly their understanding of the role of comprehension and phonics/phonemic awareness in the reading process and the relationship of leveled texts to successful reading. LLI teachers were least likely to agree that the parents of their LLI students participated in home literacy activities with their children, that their schools had sufficient faculty and staff to provide LLI to all students who needed it, and that LLI helped their students with special needs and ELL students. All of the surveyed teachers agreed that their school should continue the LLI program.

In terms of the regular classroom literacy instruction provided to both treatment and control students in the study, results from the Classroom Teacher Literacy Instruction Questionnaire (CTLIQ) revealed that the K-2 classroom teachers were most likely to provide individual or small-group reading instruction, integrate vocabulary and comprehension into their literacy instruction, and utilize high-quality literature to read to students and engage them in interactive discussions about the text. Teachers were least likely to report utilizing whole-class reading instruction and assigning home literacy activities for students to complete with parents. Overall, the classroom teachers were most likely to agree that they understood the goals of their literacy program, that it was aligned with state and district reading/language arts standards, and that their faculty, staff, and administration believed that all students could learn to read and write. Similar to the LLI teachers, classroom teachers were least likely to agree that the parents of their students participated in home literacy activities with their children, that their schools had sufficient faculty and staff to fully implement their literacy program, and that their literacy program helped their students with special needs and ELL students. The majority of surveyed teachers agreed that their school should continue their current literacy program.



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“...I believe that children that struggle would give up hope in the realm of reading without the LLI program.”

— PARTICIPATING CLASSROOM TEACHER

“The texts are well written and really support struggling readers. The print and layout of the book is excellent!”

— PARTICIPATING LLI TEACHER

“The LLI program has the methodology, framework and materials to address the needs of students who are at risk of academic failure. I have seen significant improvement in all of my students. One of my special education students has advanced eight reading levels in just six months!” — PARTICIPATING LLI TEACHER

“LLI makes a difference in the reading process of struggling readers. The small group instruction helps reinforce strategies taught that may have been missed due to inability to focus in a large classroom environment. Most students make progress while in the program and continue to make progress after the program.” — PARTICIPATING LLI TEACHER

“For years we have wanted some type of supplemental instruction for our at-risk readers. The books included in the LLI system support these types of readers. The size of the print, controlled vocabulary, and comprehension components are excellent. My students were so excited to see their new book each day. The series books were excellent to support fluency and build meaning for these children. Reading was often so disjointed with the book selection that when they saw a familiar character they felt like they could grab the book and read it. I have taught children in the lower grades for 30 years and since Reading Recovery and LLI I feel that I am truly a ‘reading teacher!’” — PARTICIPATING LLI TEACHER



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Focus Groups

Structured focus groups conducted with the LLI teachers in the study revealed that most of the LLI teachers liked LLI and felt that it was beneficial to their students. Some teachers felt that the program needed more work, and others felt that school-level variables (e.g., support, time, materials) needed improvement in order to implement LLI correctly. LLI teachers reported that the most frequently encountered logistical issue when implementing LLI was time and/or scheduling of LLI groups to coordinate with classroom teachers' schedules and complete lessons during the designated 30-minute timeframe. In terms of program strengths, LLI teachers most frequently identified the instructional materials, particularly the books and take-home books. LLI teachers also liked the program design (e.g., group size, lesson layout, guided format of lessons). When asked about areas of improvement for LLI, LLI teachers most frequently mentioned an inability to adequately complete a lesson in 30 minutes, an inconsistency of program materials (e.g., the lesson did not “match” the written materials), and the fact that the program was too fast-paced for their lower-level students. LLI teachers also discussed problems with using the new online LLI Data Management System, including slowness and missing data, and recommended on-site training and additional resources for how to use the system.

Structured focus groups were also conducted with on-site researchers who completed the DIBELS assessments and LLIOT observations for the study. Based on their observations of LLI lessons, on-site researchers described the LLI teachers' group management skills as a strength of the LLI implementation during the current study. On-site researchers were also impressed with the well-organized, adaptable nature of the program and its ability to build student confidence. When asked about areas of improvement for LLI, on-site researchers most frequently mentioned the length of the Reading Records, the difficulty of completing a lesson in 30 minutes, and the fact that the program was too fast-paced for slower learners. Overall, the on-site researchers in the focus groups were positively supportive of LLI, but they did caution that the program's effectiveness could be affected by the teacher's experience and level of LLI training.

CONCLUSION

1. What progress in literacy do students who receive LLI make compared to students who receive only regular classroom literacy instruction?

Across the three grade levels, the current study found that LLI positively impacts K-2 student literacy achievement in rural and suburban settings. Further, we determined that LLI is effective with ELL students, students with a special education designation, and minority students in both rural and suburban settings. Finally, the current study showed that LLI is effective with economically disadvantaged children in both rural and suburban settings.

This study found robust effects on the LLI Benchmarks across all grade levels for students who received LLI. Across the three grade levels, students in LLI achieved between 1 ½ benchmark levels up to almost 5 ½ benchmark levels, while students who did not receive LLI achieved between less than 1 benchmark level to 3 benchmark levels.

Further, these effects were particularly strong for various subgroups (e.g, ethnicity, special education or ELL status) within each grade level. For kindergarten, significant effects were found, compared to the control group, for African American students, Hispanic students, and ELL students on the LLI Benchmarks, with all three subgroups finishing closer to grade level (i.e., Level B) than their counterparts who finished at or below Level A. First grade African American and Hispanic students in the treatment group also showed more gains than their counterparts in the control group. In second grade, strong, educationally meaningful effects were found for African American and Hispanic LLI students. Second grade African American LLI students finished at the highest level overall, closely followed by the Hispanic LLI students.

Additionally, effects found with the DIBELS measures of reading fluency provided corroboration of the results with the LLI Benchmarks. In kindergarten, students in LLI showed significant gains on subtests of the DIBELS as compared to those who did not have LLI. In particular, for phoneme segmentation fluency, ELL students in the treatment group outperformed ELL students in the control group, as well as non-ELL students in both the treatment

and control groups. In 1st grade, LLI students significantly exceeded the control group on 3 of 4 subtests: nonsense word fluency, letter naming fluency, and oral reading fluency. Finally, on the nonsense word fluency subtest, 1st grade Hispanic students in the treatment group outperformed their counterparts in the control group.

Taken together, all of the student achievement results provide strong evidence that students who are eligible for and participate in LLI make significant progress in literacy compared to students who are eligible to receive LLI and only receive regular classroom literacy instruction.

2. Was LLI implemented with fidelity to the developers' program model?

Across all observations, the observation results from the current study suggest that LLI was implemented with a high degree of fidelity to program design across both districts. The majority of lesson components received high fidelity ratings in most of the observations that were conducted. Additionally, observation results revealed that program implementation was consistent across the year, with high fidelity scores received at both time points when the observations were conducted. Finally, although students received, on average, less than the program model's recommended number of instructional days, students in all three grade levels made significant progress in their literacy achievement. This finding suggests that LLI can still be effective during a relatively short timeframe, which may be valuable to districts with a large number of students to serve or limited time in which to implement early literacy interventions.

3. What were LLI teachers' perceptions of LLI and its impact on their students' literacy?

Overall, the LLI teachers in the current study supported LLI and believed that it had a positive impact on their students' literacy achievement and attitudes toward literacy. LLI teachers indicated that they had a good understanding of the program; received support in implementing LLI from their district, school administration, and other school staff; and perceived a positive impact of LLI on their reading instruction. LLI teachers were particularly impressed with the program's leveled texts as well as

the small-group format and guided lesson structure; however, many LLI teachers felt that the lessons could not be completed in 30 minutes, that the program was too fast-paced for their lower-level students, and that there were some inconsistencies in the program materials. Finally, in addition to the LLI teachers, a small number of classroom teachers with students in the current study provided feedback on their perceptions of the LLI program. Most of these teachers were positive about the program and noticed that their students' literacy in the classroom improved after receiving LLI, with one classroom teacher even commenting, "...I believe that children that struggle would give up hope in the realm of reading without the LLI program."

Altogether, the results from this evaluation allow us to conclude that LLI positively impacts students' literacy skills. These results also suggest that continued implementation of LLI would be beneficial in both Tift County Schools and the Enlarged City School District of Middletown. While the long-term impacts of LLI have yet to be determined, the positive results found in this evaluation suggest that additional benefits may be seen with the continuation of LLI.

Based on the results of this evaluation, the researchers have identified several factors that may contribute to a more successful implementation of LLI at the district and school levels. It is recommended that all staff – including building principals, central office supervisory staff, and regular classroom teachers – should receive professional development to familiarize them with LLI procedures and implementation. Administrative buy-in and support, as well as regular classroom teacher involvement and collaboration with LLI teachers, is particularly important to a smooth and successful implementation. Likewise, it is suggested that LLI teachers receive ongoing professional development with at least one refresher training to supplement and resolve any district-specific issues. Finally, it is recommended that schools should begin kindergarten instruction in LLI as early in the year as possible in order to provide the recommended amount of instruction (i.e., 14 weeks) for kindergarten students.



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