Reading Horizons Discovery: Beaufort County Schools

ESSA Level III Study (2022-23)

Prepared for:
Reading Horizons

Prepared by LearnPlatform by Instructure:
Mary Styers, Ph.D., Director of Research
Ashley Hunt, Ph.D., Senior Researcher

August 2023

Executive Summary

Reading Horizons contracted with LearnPlatform by Instructure, a third-party edtech research company, to examine the relationship between teacher implementation of Reading Horizons Discovery (RHD) and learning outcomes. LearnPlatform by Instructure designed the study to satisfy Level III requirements *(Promising Evidence)* according to the Every Student Succeeds Act (ESSA).

Study Sample and Measures

This study took place in seven elementary schools in Beaufort County Schools in North Carolina during the 2022–23 school year. Analyses included 83 educators and 1,242 students from kindergarten through third grade. Researchers used mCLASS assessment scores (i.e., DIBELS Composite, phonemic awareness, letter sounds, decoding) as the student achievement outcome. Researchers used fall 2022 and spring 2023 teacher surveys and classroom observations to investigate program implementation. Analyses included descriptive statistics, partial correlations, regressions, and multilevel models. Researchers examined RHD implementation data and the relationships between program implementation, teacher professional learning and knowledge, and student literacy outcomes.

Implementation

Implementation survey results were available for a subset of 34 teachers. Sixty-two percent of teachers reported using RHD for more than 90 minutes of weekly instruction. Additionally, 62% reported using all the Daily Core 4 practices (i.e., skill review, explicit instruction, guided practice, skill transfer) in a typical day. Furthermore, two-thirds of teachers used Whole Class Transfer Cards, Student Transfer Cards, and Little Books to supplement their instruction at least 2-3 times per week. Student Practice Pages and Handouts were used more regularly than the lesson planner or slide deck.

Classroom observations were available for 83 teachers. The average teacher observation score was 2.56 (SD = 0.85) on a scale from one (“Emerging” instruction) to four (“Empowering” instruction). Nearly one-third of teachers (31%) had observation scores at or above a three (“Engaging” instruction).

Findings

Teacher Findings. Overall, 85% of teachers participated in an initial Reading Horizons-facilitated training and 68% participated in one or more coaching days. Most teachers (50%) also used self-paced training resources.

At the conclusion of the study, 82% of teachers described their literacy instruction as v*ery effective* or e*xtremely effective*. Additionally, teachers’ perceptions of their students’ ability to decode, analyze, write and recognize words was greater for teachers who used more of the Daily Core 4 on a typical day. This relationship was statistically significant.

Student Findings. Researchers conducted a series of partial correlations while controlling for student disability status and fall mCLASS achievement to investigate the relationship between teacher participation in RHD professional learning and student literacy outcomes in spring 2023. Overall, participation in RHD-facilitated professional learning was statistically significant in kindergarten and second grades, such that teachers who completed more RHD-facilitated professional learning had higher spring mCLASS achievement. Similar relationships were found for self-paced professional learning in kindergarten classrooms, such that greater participation in self-paced professional learning was associated with greater mCLASS achievement in kindergarten, greater phonemic awareness in first grade and greater decoding in second grade.

Finally, researchers conducted a final set of regressions and multilevel models examining whether differences in RHD implementation predicted student outcomes. Kindergarten students with teachers who reported completing all the Daily Core 4 had lower spring DIBELS composite scores compared to teachers who used fewer of the practices daily. By contrast, second grade students with teachers who reported completing all Daily Core 4 practices had higher DIBELS composite, letter sounds, and decoding performance compared to teachers who used fewer of the practices on a typical day. No other group differences were statistically significant.

Finally, when examining teacher observation performance, there was one statistically significant difference in student outcomes based on observation scores. In kindergarten only, teachers who had an observation score of 3 or higher had students with statistically significantly higher spring phonemic awareness scores. No other group differences were statistically significant.

Conclusions

This study provides results to satisfy ESSA evidence requirements for Level III *(Promising Evidence)* given the study design and positive, statistically significant findings.

ESSA Level III Study Key Takeaways

Most educators reported using RHD with fidelity.

- 62% reported using the program for more than 90 minutes each week
- 62% reported using all Daily Core 4 practices daily
- Classroom observations suggested some disagreement with educator reports: 31% of educators had an observation score at or above 3.

Professional learning was well-attended and had a positive influence on student outcomes.

- 85% of educators participated in an initial training and 50% used various self-paced training resources.
- In kindergarten and second grade classrooms, educator participation in more Reading Horizons-facilitated professional learning was related to higher spring 2023 mCLASS achievement.
- Similar relationships were present in kindergarten, first and second grades for educators who completed more self-paced professional learning.

Regular implementation of the Daily Core 4 practices had mixed effects.

- Overall, educators who reported using more of the Daily Core 4 reported being more effective at teaching their students to decode, analyze, write and recognize words.
- Second grade educators who used all the Daily Core 4 in a typical day had higher spring 2023 mCLASS achievement compared to teachers with lower usage.
- However, kindergarten teachers who used all the Daily Core 4 regularly had lower spring 2023 mCLASS achievement compared to teachers with lower usage.

Differences in teacher observation performance did not predict mCLASS achievement overall.

- Kindergarten teachers with an observation score of 3 or higher had higher spring 2023 phonemic awareness compared to teachers with lower observation scores.

TABLE OF CONTENTS

Introduction

Reading Horizons contracted with LearnPlatform by Instructure, a third-party edtech research company, to examine the relationship between teacher usage of Reading Horizons Discovery (RHD) and learning outcomes. LearnPlatform by Instructure designed the study to satisfy Level III requirements (*Promising Evidence*) according to the Every Student Succeeds Act (ESSA).

Reading Horizons recognizes that teachers struggle with providing instruction for beginning and struggling readers. Reading Horizons professional learning and instructional materials prepare teachers to provide foundational literacy instruction using a combination of direct instruction and software that uses a multi-sensory approach (see logic model in Appendix A; Hunt, Cavanaugh, & Long, 2022).

In addition to characterizing program implementation and context in Beaufort County Schools classrooms during the 2022–23 school year, the present study addressed the following research questions:

Teacher Knowledge

1. To what extent did teachers engage with professional learning?
2. Was implementation of RHD associated with teacher-reported effectiveness of literacy instruction?

Student Outcomes

3. Was teacher engagement with professional learning associated with student literacy outcomes?
4. Was implementation of RHD associated with student literacy outcomes?

This report details the study design and methods, implementation, findings, conclusions, and recommended next steps.

Study Design and Methods

This section of the report briefly describes the study participants, measures, and analysis methods. Additional information on the study design, demographics, and measures are included in Appendix B.

Participants

Study participants were from a rural locale in the southeastern United States with a student population that is 44% White, 31% Black or African American, 18% Hispanic or Latino, and 7% Two or More Races. Approximately 47% of families are low-income.

The treatment-only sample included 83 kindergarten through third grade teachers, instructional coaches, and reading specialists. Outcome analyses included 1,242 students from seven elementary schools.

Measures

Researchers used a teacher survey and classroom observation rubric to assess implementation of RHD. Educators completed the survey in fall 2022 and spring 2023 on their participation in Reading Horizons professional learning and implementation. Reading Horizons staff conducted classroom observations in fall 2022 and spring 2023. The classroom observations were guided by a rubric to assess teachers on their effective communication, instructional routines, questioning and monitoring, feedback, and lesson pacing on a scale from one ("Emerging" instruction) to four ("Empowering" instruction).

Researchers used the mCLASS standardized assessment as the student literacy achievement outcome, which included subscale and composite scores. Specifically, the phonemic segmentation fluency, nonsense word fluency: correct letter sounds, nonsense word fluency: words recoded correctly, and composite scores were used.

Study Procedures and Timeline

This study occurred during the 2022–23 school year, which was the district's third year of implementing RHD. Teachers participated in professional learning and used RHD for the duration of the school year.

Reading Horizons led the survey administration and classroom observations that took place in fall 2022 and spring 2023. Students completed the mCLASS assessment three times over the course of the year (fall, winter, and spring). Researchers only used fall and spring assessment scores for the present study.

Program Implementation

The results and charts below highlight RHD use during the 2022–23 school year based on the fall and spring teacher surveys and classroom observations.

What was the implementation context?

Beaufort County Schools is a rural, public school district in North Carolina, serving 5,926 students in prekindergarten through 12th grade. The population is 65% White, 24% Black or African American, 8% Hispanic or Latino and 2% Two or More Races. Approximately 26% of families are low income and 78% of households have Broadband Internet (NCES, 2021; NCES, 2022).

To what extent did teachers implement RHD with fidelity?

The primary indicators of implementation fidelity were whether teachers reported using RHD for 90 minutes or more weekly, whether teachers reported using all Daily Core 4 on a typical day, and whether observation scores were at or above 3 (on a scale of 1 to 4; see Appendix for additional details; Table 1).

Teacher-reported implementation indicator	Percentage of teachers
Used RHD for 90+ minutes of instruction weekly (*n* = 21)	**62%**
Implemented all Daily Core 4 practices in a typical day (*n* = 21)	**62%**
Observation score at or above 3 (*n* = 26)	**31%**

Table 1. Summary of RHD implementation indicators from survey and classroom observations

Implementation indicators from teacher survey. Overall, most teachers reported using RHD materials for instruction and student activities for at least 90 minutes per week (62%, *n* = 21; Figure 1).

Sixty-two percent of teachers reported using Reading Horizons materials for instruction and student activities for at least 91 minutes per week.

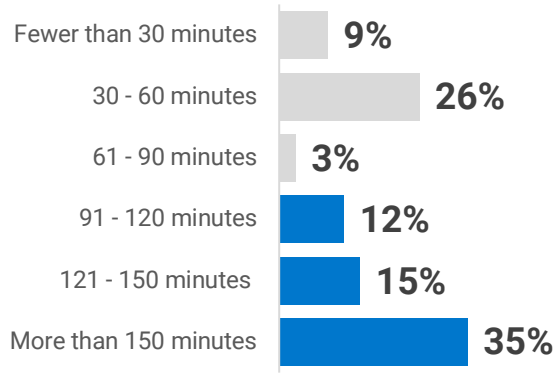

Figure 1. Range of RHD instructional materials per week (n = 34)

The RHD program includes a daily Core 4 set of practices: skill review, explicit instruction, guided practice/dictation, and skill transfer. Almost two-thirds of teachers (62%, n = 21) reported using all Core 4 practices daily, while 32% (*n* = 11) reported using three Core 4 daily. Explicit instruction and guided practice were the most integrated Core 4 practices (Figure 2).

By spring 2023, 97% of Reading Horizons teachers reported using explicit instruction and guided practice daily.

Figure 2. Implementation of Daily Core 4 practices (n = 34)

Classroom observation results. Reading Horizons' observers reported on teacher implementation using a standardized rubric (see Appendix B). Observers assigned a score between 1 and 4 describing the extent to which teachers used effective communication, instructional routines, questioning and monitoring, feedback, and lesson pacing. Results for each domain were then combined to compute an average observation score for each teacher (*M* = 2.56, *SD* = 0.85, *n* = 83).

Additional implementation survey results. Teachers reported how frequently they implemented four additional RHD practices. The most reported practice was use of small groups to provide reinforcement or enrichment based on student needs, nearly half of teachers (47%, n = 16) reported using daily. Strategic assignment of software lessons based on student needs was least common, with 50% of respondents (*n* = 17) reporting that they never used this practice in their classrooms (Figure 3).

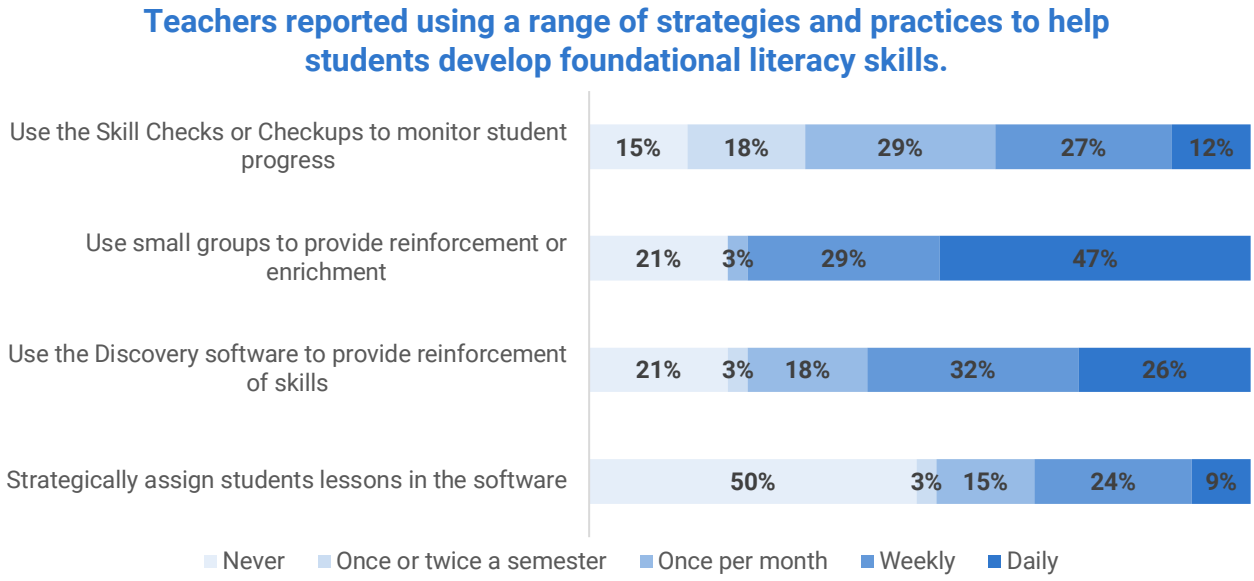

Figure 3. Frequency of instructional strategy and Discovery software usage (n = 34)

Teachers also reported how frequently they used Whole Class and Student Transfer Cards and Little Books. Whole Class Transfer Cards were the most popular of the three resources, with 82% of teachers (*n* = 28) reporting use in their classroom at least 2-3 times a week. Additionally, 71% of teachers (*n* = 24) used Little Books and 68% of teachers (*n* = 23) used Student Transfer Cards at least 2-3 times per week (Figure 4).

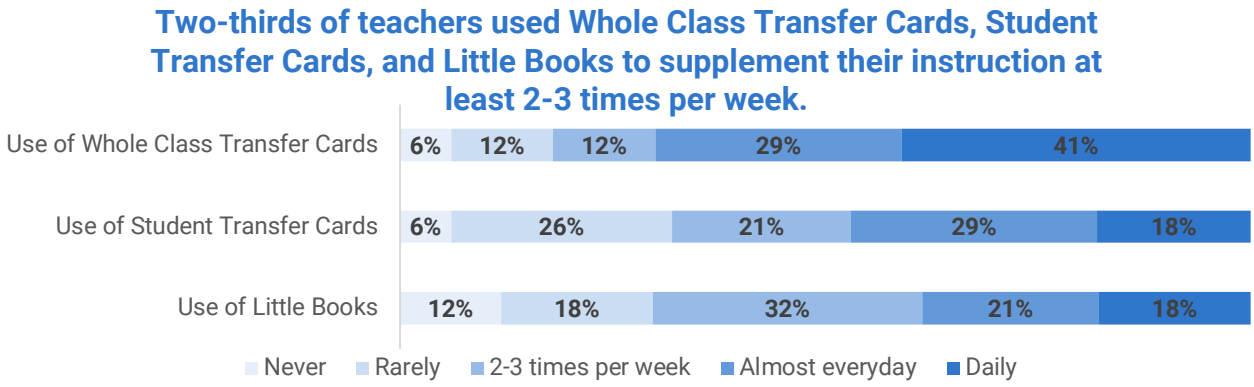

Figure 4. Frequency of Whole Class Transfer Cards, Student Transfer Cards, and Little Books usage (n = 34)

Teachers also reported on their use of Accelerate resources, which included a lesson planner, slide decks, and practice pages. Use of the lesson planner and slide decks was relatively infrequent, with more than half of teachers reporting that they never or rarely used those resources. However, practice pages were more popular among teachers, most (71%, *n* = 24) reporting that they were used at least 2-3 times per week (Figure 5).

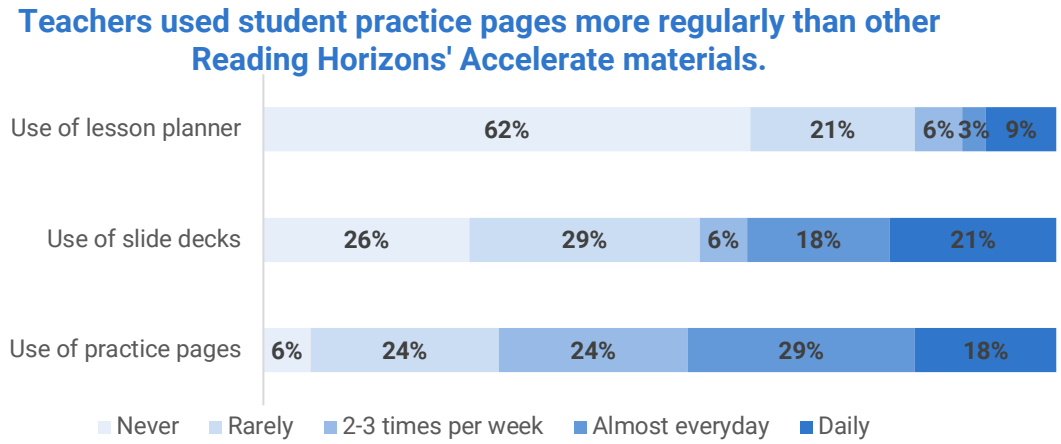

Figure 5. Frequency of Reading Horizons Accelerate materials use (n = 34)

Teacher Knowledge

To answer the research questions about whether RHD professional learning and implementation were associated with teacher knowledge, researchers conducted pairwise correlations. The following sections detail the findings for the treatment-only, correlative design. Researchers report statistically significant findings at the $p < .05$ level. Statistically significant findings are marked with an asterisk and green (positive correlation) or red (negative correlation) in graphs. Findings that are not statistically significant are marked grey.

To what extent did teachers engage with professional learning?

Researchers examined how many different professional learning supports educators used during the 2022–23 school year. The most common support reported was initial training from a Reading Horizons facilitator, reported by 85% (*n* = 29) of educators. The next most used supports, participation in Reading Horizons coaching and teacher completion of online training modules, were reported by 68% and 62% of educators respectively (*n* = 23 and 21). The least common support was software training (47%, *n* = 16; Figure 6).

Over half of teachers completed the initial training with a RHD-facilitator and/or participated in one or more coaching days. Most teachers also used self-paced training resources.

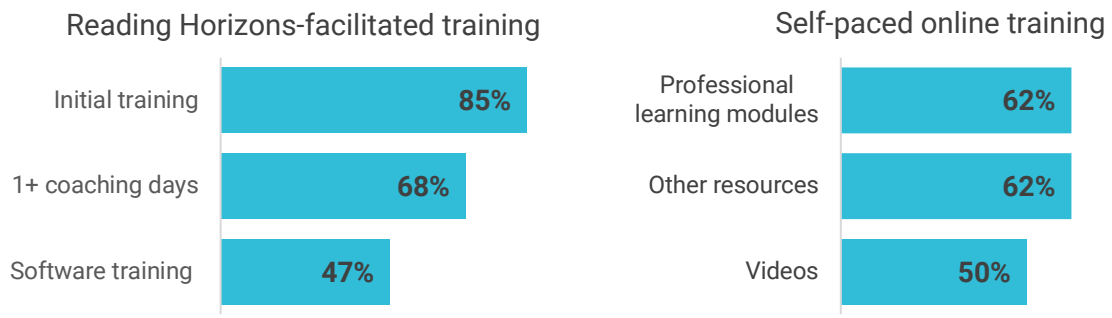

Figure 6. Teacher engagement with Reading Horizons professional learning (n = 34)

Was implementation of RHD associated with teacher-reported effectiveness of literacy instruction?

Researchers examined teacher perception of the effectiveness of their literacy instruction by computing an average of responses to eight related survey items that ranged from 1 (“not at all effective) to 4 (“extremely effective”). The mean effectiveness score was 3.08 (*SD* = 0.57), indicating that most teachers felt very to extremely effective as literacy educators.

Relationship between implementation and effectiveness. Researchers examined whether implementation of RHD was related to greater teacher-reported effectiveness of literacy instruction using correlations. RHD implementation was not significantly associated with teacher perceptions of instructional effectiveness in developing students' phonemic awareness (Figure 7). However, daily use of Core 4 practices was positively, significantly associated with teacher perception of instructional effectiveness in teaching word decoding and recognition ($p < .05$; Figure 8). Associations between weekly minutes and classroom observation scores of 3 or more were not statistically significantly associated with teachers reported effectiveness in teaching phonemic awareness or decoding.

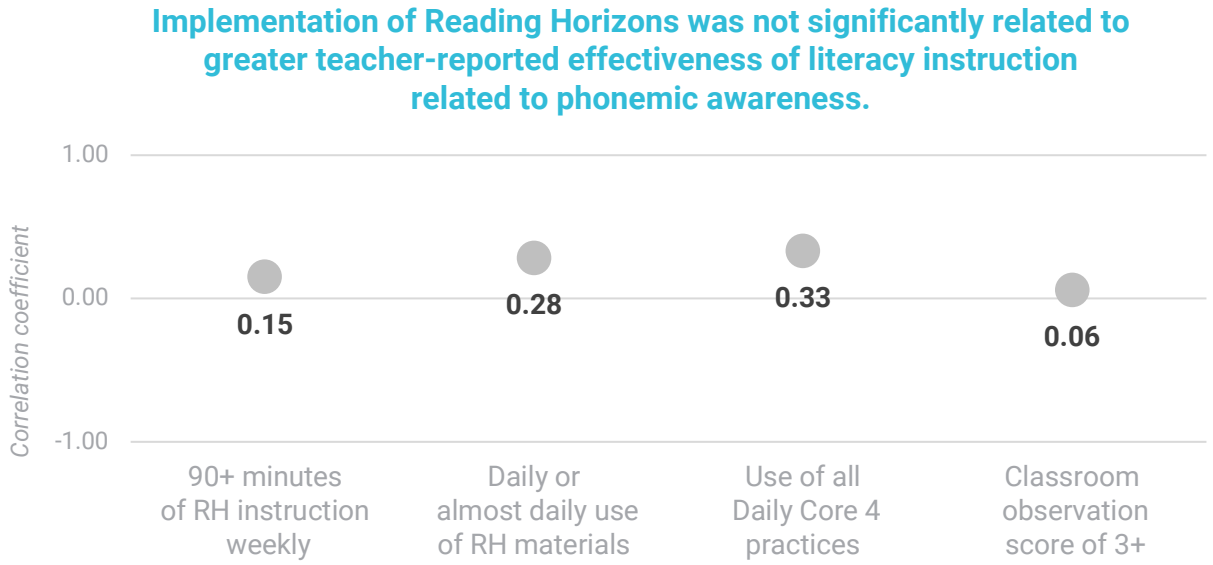

Figure 7. Correlations between implementation of RHD and perceived effectiveness of phonemic awareness instruction (n = 34)

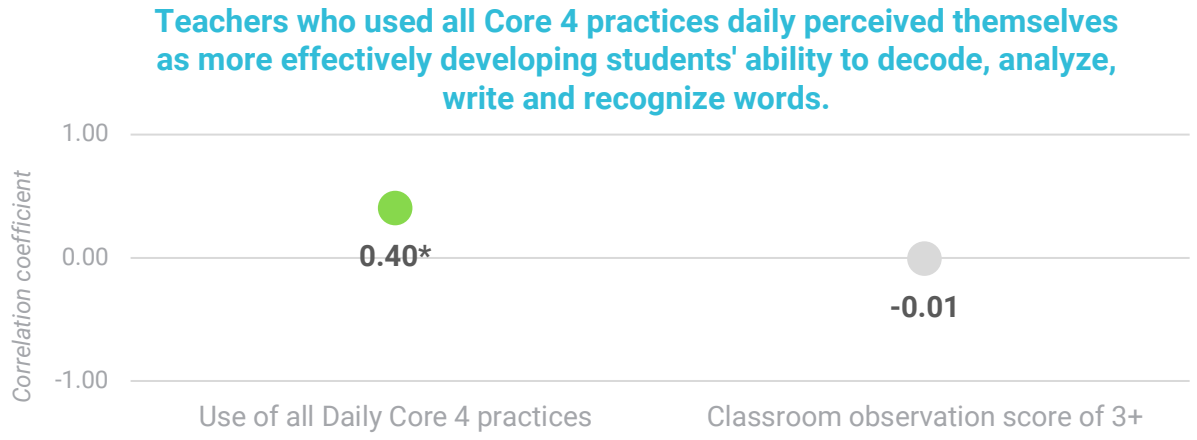

Figure 8. Correlations between implementation of RHD and perceived effectiveness of word decoding and recognition instruction (n = 34)

Student Outcomes

The following section details the association between RHD professional learning, implementation, and student literacy outcomes. Researchers conducted a series of partial correlations while controlling for disability status and fall mCLASS achievement to investigate the relationship between teacher participation in RHD professional learning opportunities and student outcomes. Statistically significant findings are reported at the $p < .05$ level and are marked green (positive correlation) or red (negative correlation) in correlation coefficient graphs. Findings that are not statistically significant are marked grey.

Was teacher participation in Reading Horizons professional learning associated with student literacy outcomes?

Participation in RHD-facilitated professional learning was statistically significant in kindergarten and second grade ($p < .05$), such that students in classrooms where teachers completed more Reading Horizons-facilitated professional learning had higher DIBELS Composite, phonemic awareness, letter sounds and decoding scores (Figure 9, Table 2).

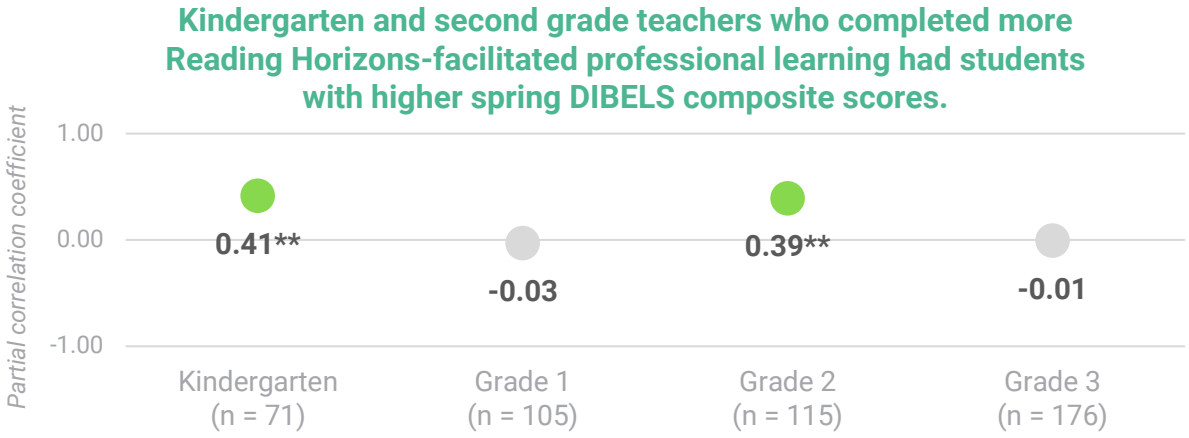

Figure 9. Partial correlations between RHD-facilitated PL and student spring 2023 DIBELS composite scores

The relationship between Reading Horizons-facilitated professional learning participation and mCLASS student achievement was not statistically significant in first or third grades (Figure 9, Table 2).

Table 2. Partial correlations between Reading Horizons-facilitated professional learning participation and student spring 2023 mCLASS subscale performance

mCLASS subscales	Kindergarten (*n* = 71)	Grade 1 (*n* = 105)	Grade 2 (*n* = 115)	Grade 3 (*n* = 176)
Phonemic awareness (PSF)	**0.38****	0.12	na	na
Letter sounds (NWF)	**0.40****	-0.05	**0.30****	-0.13
Decoding (NWF)	**0.35***	-0.08	**0.29****	-0.12

Note. *$p < .05$. **$p < .01$.
na = Not applicable. Grade 2 and 3 students did not complete the Phonemic Awareness (PSF) subscale in fall 2022 or spring 2023.

Self-paced professional learning. Participation in online self-paced RHD professional learning was statistically significant in kindergarten, first and second grades ($p < .05$). In kindergarten, students in classrooms where teachers completed more RHD self-paced online professional development had higher spring DIBELS Composite, Phonemic Awareness, Letter Sounds and Decoding scores ($p < .05$; Figure 10, Table 3). In first and second grade, teacher participation in more self-paced online professional development was related to higher Phonemic Awareness (Grade 1, $p < .01$) and Decoding scores (Grade 2, $p < .01$; Figure 10, Table 3). No other relationships were statistically significant, including for third grade students.

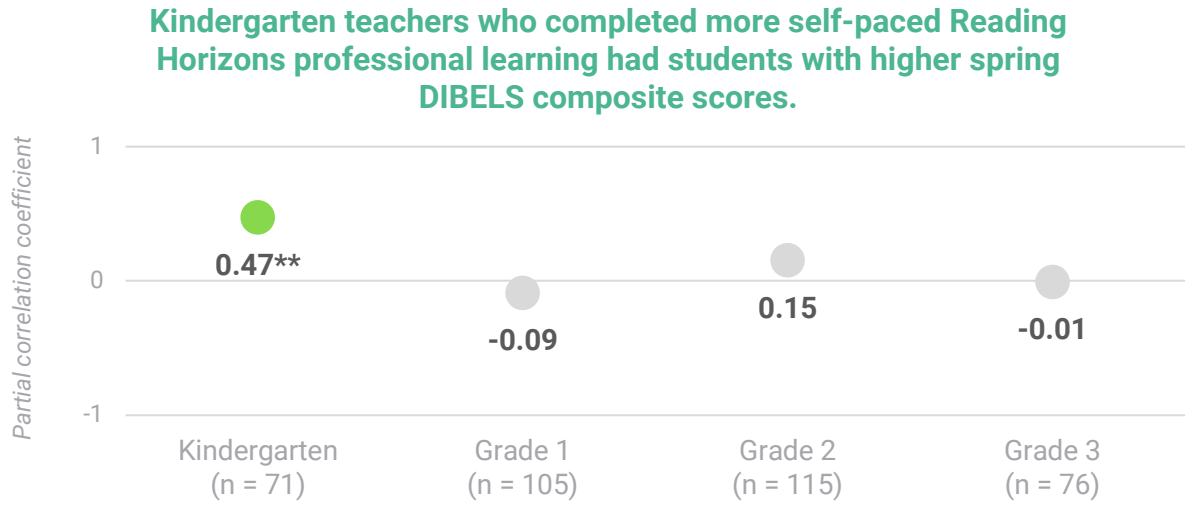

Figure 10. Partial correlations between self-paced RHD PL and student spring 2023 DIBELS composite scores

Table 3. Partial correlations between self-paced RHD training and student spring 2023 mCLASS subscale performance

mCLASS subscales	Kindergarten (*n* = 71)	Grade 1 (*n* = 105)	Grade 2 (*n* = 115)	Grade 3 (*n* = 76)
Phonemic awareness (PSF)	**0.57****	**0.29****	na	na
Letter sounds (NWF)	**0.41****	-0.10	0.13	-0.13
Decoding (NWF)	**0.35***	-0.18	**0.25****	-0.12

Note. *$p < .05$. **$p < .01$.
na = Not applicable. Grade 2 and 3 students did not complete the Phonemic Awareness (PSF) subscale in fall 2022 or spring 2023.

Was implementation of Reading Horizons Discovery associated with student literacy outcomes?

While controlling for disability status and fall mCLASS achievement, researchers conducted regressions and multilevel models to investigate whether implementation of RHD was associated with student outcomes based on two indicators: whether teachers used all Daily Core 4 practices in a typical day and whether a teacher's classroom observation score was at or above 3.

Daily Core 4 implementation. Researchers conducted regressions examining whether teachers who used all Core 4 Practices daily had higher student spring mCLASS achievement compared to teachers who used fewer Core 4 practices daily. In kindergarten, teachers who regularly completed all Daily Core 4 activities had statistically significantly lower spring DIBELS Composite scores ($p < .01$, Figure 11) compared to teachers who completed three or fewer Core 4 activities.[1]

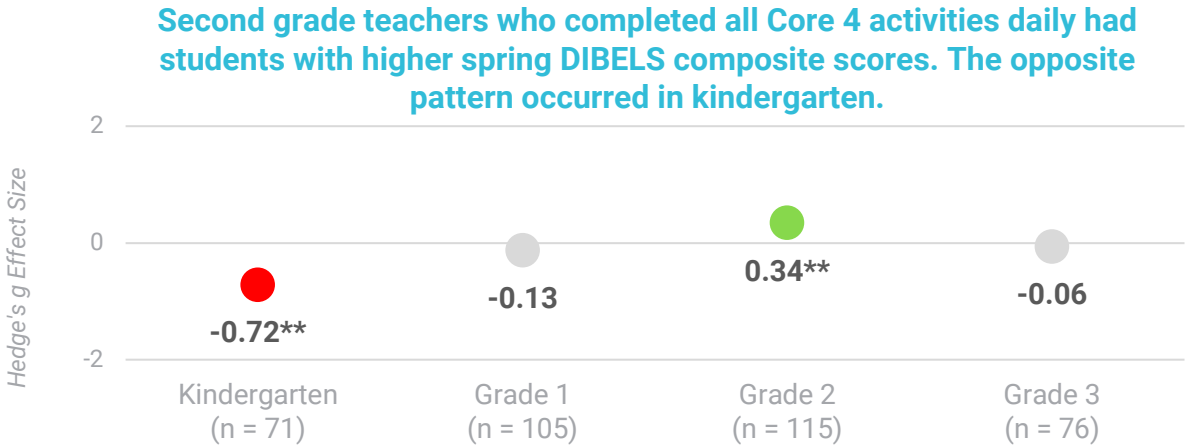

Figure 11. Effect sizes from regressions examining mean differences in students' spring 2023 DIBELS composite scores between teachers who used all Core 4 practices daily vs. teachers who used three or fewer Core 4 practices daily

[1] Readers should interpret this result with caution as there were only 16 comparison students compared to 61 treatment students in kindergarten.

In second grade, teachers who regularly completed all Core 4 activities daily had statistically significantly higher spring DIBELS composite, letter sounds, and decoding scores compared to teachers who completed fewer Core 4 activities ($p < .01$, Figure 11, Table 4). There were no mean differences in DIBELS composite scores by Daily Core 4 implementation in first or third grades (Figure 11).

Table 4. Effect sizes from regressions examining mean differences in spring 2023 mCLASS subscale performance between teachers who used all Core 4 practices daily vs. teachers who used three or fewer Core 4 practices daily

mCLASS subscales	Kindergarten (*n* = 71)	Grade 1 (*n* = 105)	Grade 2 (*n* = 115)	Grade 3 (*n* = 76)
Phonemic awareness (PSF)	-0.26	0.11	na	na
Letter sounds (NWF)	na	-0.13	**0.28***	-0.01
Decoding (NWF)	na	-0.16	**0.29***	-0.03

Note. *$p < .05$. **$p < .01$.
na = Not applicable. Grade 2 and 3 students did not complete the Phonemic Awareness (PSF) subscale in fall 2022 or spring 2023. In kindergarten, Letter Sounds and Decoding regression models did not run due to collinearity.

Classroom observation score. Researchers conducted multilevel models examining whether students in classrooms where teachers had a high or medium observation score compared to teachers with low observation scores. Level of observations scores were constructed through k-means to identify three distinct groups. Third grade classrooms did not have enough students in the high observation score groups to analyze.

The model controlled for fall mCLASS achievement, free-reduced lunch status, EL status, and SPED status as covariates (Figure 12). Kindergarten through 3rd grade students in classrooms with high observation scores did not perform better on their end-of-year mCLASS composite compared to classrooms with low observation scores.

End-of-year mCLASS composite scores did not vary by observation score for students in kindergarten through grade 3.

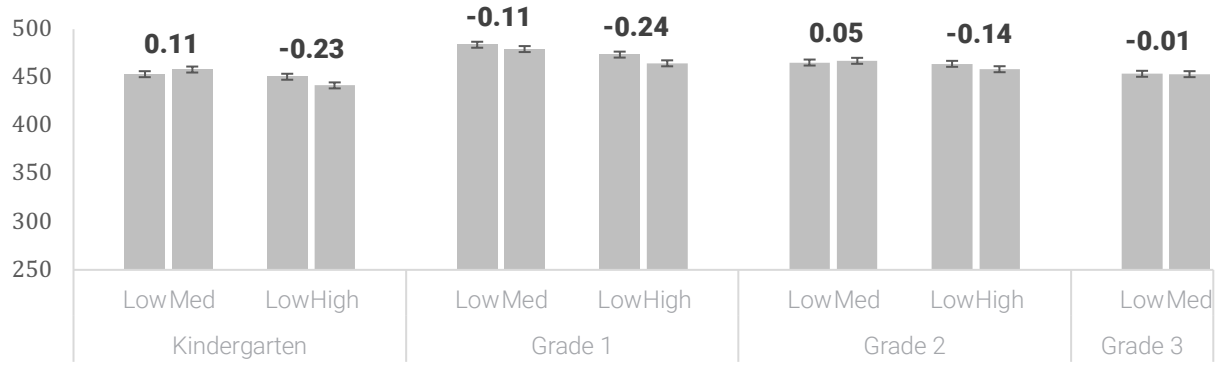

Figure 12. Grade differences in spring mCLASS performance between teachers who had a medium or high observation score compared to teachers with low observation scores.

Analyses found one statistically significant difference in student achievement based on observation score. In kindergarten, teachers with a score of 3 or higher had students with statistically significantly higher spring phonemic awareness (PSF) scores compared to teachers with lower observation scores ($p < .05$, Table 5). No other grade levels or scores were statistically different, indicating students had comparable spring mCLASS achievement across classrooms with differing observation performance (Table 5).

Table 5. Effect sizes from multilevel models examining mean differences in students' spring 2023 mCLASS scores between teachers with an average observation score of 3 or higher compared to 2 or lower

mCLASS subscales	Kindergarten (*n* = 231)	Grade 1 (*n* = 258)	Grade 2 (*n* = 307)	Grade 3 (*n* = 375)
Phonemic awareness (PSF)	**0.62***	0.22	na	na
Letter sounds (NWF)	0.16	0.12	0.06	0.34
Decoding (NWF)	0.35	0.03	0.01	0.26

Note. *$p < .05$. **$p < .01$.
na = Not applicable. Grade 2 and 3 students did not complete the Phonemic Awareness (PSF) subscale in fall 2022 or spring 2023.

Limitations & Future Research

The current study offers promising results about the influence of RHD that should be explored and replicated with continued studies. Researchers could address current study limitations in future research and evaluation efforts as outlined below:

- Rural setting. This study included participants from a rural locale in the southeastern United States with a student population that is 44% White, 31% Black or African American, 18% Hispanic or Latino, and 7% Two or More Races. Approximately 47% of families are low-income. Consequently, these findings may generalize to similar contexts but not others.
    - *Suggestion:* Future studies could examine the impact of RHD on different student populations in different locales across the country.
- Limited survey participation. This study included a subset of participants who completed the teacher survey (i.e., 41% of teachers that implemented RHD during the 2022-23 school year completed a survey about their implementation), which may not reflect views of all RHD teachers in the county.
    - *Suggestion:* Future efforts could involve revising the survey administration plan to maximize response rates and offer incentives for survey completion.
- Potential misalignment in implementation measures. The teacher survey and RHD observations had conflicting results, indicating that they may be measuring differing aspects of RHD implementation.
    - *Suggestion:* Future studies could investigate correlations between different implementation measures and explore potential revisions to items and protocols.
- Lack of comparison group. Results from the current study indicate that, based on certain indicators, quality implementation of RHD was associated with improved student outcomes. However, since all students and educators in the study were RHD users, the study cannot make claims about the efficacy of RHD compared to other programs or approaches.
    - *Suggestion:* Future studies could leverage program pilots or other implementation contexts where outcomes for students using RHD can be compared to similar students using other literacy interventions.

Conclusions

Given positive outcome findings, this study provides results to satisfy ESSA evidence requirements for Level III (Promising Evidence). Specifically, this study met the following criteria for Level III:

- ✓ Correlational study
- ✓ Proper design and implementation
- ✓ Statistical controls through covariates
- ✓ At least one statistically significant, positive correlation with statistical controls for selection bias

References

Every Student Succeeds Act, Pub. L. No. 114-95 (2015). https://www.govinfo.gov/app/details/PLAW-114publ95.

Hedges, L. V. (1981). Distribution theory for Glass's estimator of effect size and related estimators. *Journal of Educational Statistics, 6*(2), 107-128.

Hunt, A., Cavanaugh, S.A., & Henschel, M. (2022). Reading Horizons Logic Model: ESSA Level IV Report.

NCES (2021). ACS-ED District Demographic Dashboard 2017-21. Retrieved from https://nces.ed.gov/Programs/Edge/ACSDashboard/3700330

NCES (2022). CCD Common Core of Data. Retrieved from https://nces.ed.gov/ccd/districtsearch/district_detail.asp?Search=1&details=1&InstName=beaufort&DistrictType=1&DistrictType=2&DistrictType=3&DistrictType=4&DistrictType=5&DistrictType=6&DistrictType=7&DistrictType=8&DistrictType=9&NumOfStudentsRange=more&NumOfSchoolsRange=more&ID2=3700330

United States Department of Education (2016). Non-Regulatory Guidance: Using Evidence to Strengthen Education Investments. https://www2.ed.gov/policy/elsec/leg/essa/guidanceuseseinvestment.pdf.

Appendix A. Reading Horizons Logic Model