

Research Results

Science of Reading Professional Learning Course for Alaska Leaders

Study profile

Location

Alaska

Evaluation period:

2023–2024 and 2024–2025
school years

Study conducted by:

HMH and NWEA

Outcome measures:

- Quizzes administered after each of the eight modules
- 10-item course assessment (pretest and posttest)
- Teacher Knowledge of Early Literacy Skills (TKELS) assessment
- End-of-course feedback survey

Implementation:

Six cohorts of leaders completed eight modules across fall, winter, spring, and summer terms. 134 participants from 35 Alaska school districts and educational organizations completed pretest and posttest assessments.

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The study

In response to growing emphasis on evidence-based literacy instruction, NWEA® delivered a Science of Reading (SOR) for Leaders course in Alaska during the 2023–2024 and 2024–2025 school years. The course was designed to provide school and district leaders with the foundational knowledge and instructional leadership skills needed to support the implementation of science of reading practices across their schools and districts. This Research Results paper summarizes implementation, participation, and learning outcomes across six cohorts of leaders.

Although educator-facing science of reading professional learning has expanded rapidly over the past several years, comparatively little structured learning has been available to instructional leaders including principals, assistant principals, district curriculum directors, and other administrators who set instructional priorities and observe classroom practice. The NWEA SOR course was developed to address that gap by combining the substantive content educators receive with leadership-specific guidance on what to look for during classroom observations and how to support teachers in shifting instructional practice.

Course overview

The course is anchored in evidence-based literacy frameworks, including the Simple View of Reading, integrating word recognition and language comprehension as the two essential strands of skilled reading. Across eight modules, content is built sequentially from foundational concepts through targeted instructional practices and intervention selection. Each cohort completed a virtual orientation followed by eight live sessions, with asynchronous learning (e.g., readings, application activities, and reflection) occurring between sessions. Participants who completed all course requirements were eligible to earn university credit through a partner institution.

The course emphasized two throughlines that distinguished it from teacher-facing professional learning. First, each module provided explicit guidance on classroom “look-fors”: observable indicators leaders could use during walkthroughs to determine whether instructional practices reflected the science of reading. Second, breakout sessions during live meetings created space for leaders to problem-solve real implementation challenges with peers, including how to coach teachers, sequence rollout across grade levels, and align resources with student needs.

Table 1. Module sequence

Module	Topic
0	Orientation
1	Introduction: What is the Science of Reading?
2	Understanding How Students Learn to Read
3	Early Word Recognition
4	Late Word Recognition
5	Growing Vocabulary with Complex Text
6	Cultivating Comprehension and Knowledge
7	Supporting Diverse Learners
8	Identifying Aligned Literacy Interventions

Implementation

Across the two years of the project, six cohorts of school and district leaders participated in the course. Recruitment was statewide, and participants represented districts across Alaska. Course completion required attendance at all live sessions, completion of all module quizzes, and submission of the pretest and posttest course assessments.

Participants represented 35 unique Alaska school districts and educational organizations spanning every region of the state, including urban districts, Southeast island and coastal communities, and rural and remote districts serving primarily Alaska Native communities. The Anchorage School District had the largest number of participants (n = 21), followed by Bering Strait (n = 11) and Fairbanks North Star (n = 7); a complete list of participating districts appears in the Appendix.

Table 2. Participation by year

Year	Cohorts	Districts	Course Completers	Earned University Credit
2023–2024	4	34	114	54
2024–2025	2	6	20	12
Total (unique)	6	35	134	66

Note. Course completers met all course requirements, including pretest and posttest. The total district count reflects the 35 unique Alaska school districts and educational organizations represented across both years; five of the six FY25 districts had also participated during FY24, resulting in 35 unique districts across the two-year initiative. A subset of completers chose to pursue university credit, which required additional coursework and assignments beyond the core course requirements.

Measures

Three quantitative measures and one qualitative measure were used to evaluate participant outcomes.

Module quizzes

Short formative assessments were administered after each of the eight modules. Quizzes were used both to confirm participants’ engagement with module content and as a low-stakes opportunity for leaders to check their understanding before applying concepts in their schools.

Course assessment

A 10-item multiple-choice assessment focused on literacy instruction and instructional leadership was administered before participants began Module 1 (pretest) and again after they completed Module 8 (posttest). The assessment was developed by NWEA researchers to align with course content.

Teacher Knowledge of Early Literacy Skills (TKELS)

TKELS is a validated 31-item survey of foundational literacy knowledge. Although originally designed for use with classroom teachers, TKELS provides a well-established benchmark of the knowledge base the science of reading aims to build. It was administered as a pretest at the start of the course and a posttest at the end, allowing changes in participant knowledge to be measured over time.

End-of-course feedback survey

At the conclusion of each cohort, participants completed an open-ended feedback survey capturing their perceptions of the course, its applicability to their leadership practice, and recommendations for improvement.

Results

Participants demonstrated significant gains across both summative measures and consistently strong performance on module quizzes. Among the 134 school and district leaders who completed both pretest and posttest assessments across six cohorts, the average gain on the course assessment was 2.02 points (out of 10), and the average gain on TKELS was 8.36 points (out of 31). Both gains were statistically significant and reflect very large effect sizes (Cohen's $d = 1.15$ on the course assessment and $d = 1.51$ on TKELS, where $d > 0.80$ is conventionally considered a large effect). Module quiz performance averaged above 85% across all eight modules in both years.

The pattern of improvement was nearly universal across participants. On TKELS, 94% of leaders increased their score from pretest to posttest, 2% remained at the same score, and 4% declined. On the course assessment, 80% of leaders improved, 15% remained at the same score, and 5% declined (most participants who did not improve on the course assessment had already scored at or near ceiling at pretest). Together, these results indicate that the course produced consistent learning gains for nearly every leader who completed it, not only on average.

Pretest to posttest gains

Both measures showed substantial improvement from pretest to posttest. Across all participants, the average course assessment score rose from 73% to 93% correct, and the average TKELS score rose from 54% to 81% correct. These gains were observed in every cohort.

Table 3. Average pretest and posttest percent correct across combined cohorts

	Pretest	Posttest	Percent gain
Course Assessment	73%	93%	+20 pts
TKELS	54%	81%	+27 pts

Note. Course assessment is scored out of 10 items. TKELS is scored out of 31 items. Percentages reflect the share of items answered correctly.

When examined separately by year, the average gains in the 2023–2024 cohorts were 2.0 points on the course assessment and 8.6 points on TKELS, while the 2024–2025 cohorts gained 2.1 points on the course assessment and 6.9 points on TKELS. Although 2023-2024 and 2024-2025 gains differed slightly in magnitude, both years demonstrated statistically and practically significant improvements.

The 10-item course assessment showed a substantial ceiling effect at posttest: 48% of participants achieved a perfect score of 10, and 79% scored 9 or 10. This compression of the upper end of the scale means the 2.02-point average gain understates the magnitude of the underlying learning effect, because many participants could not register additional improvement beyond the test's measurement range. The 31-item TKELS, by contrast, demonstrated substantially less ceiling compression than the course assessment and therefore provided a more sensitive indicator of growth.

Cohort-level comparisons

Paired-samples t -tests were conducted within each of the six cohorts to test whether posttest scores significantly exceeded pretest scores on both the course assessment and TKELS. As shown in Table 4, every cohort demonstrated statistically significant gains on both measures (all $p < 0.01$), indicating that the course produced reliable learning across distinct groups of leaders enrolled in different terms and years.

Table 4. Cohort-level paired *t*-tests, pretest to posttest

Cohort	n	TKELS <i>t</i> -statistic	TKELS <i>p</i> -value	Course assessment <i>t</i> -statistic	Course assessment <i>p</i> -value
1: Fall 2023–2024	34	–9.55	< 0.001	–8.62	< 0.001
2: Winter 2023–2024	35	–8.88	< 0.001	–5.35	< 0.001
3: Spring 2023–2024	23	–5.76	< 0.001	–5.56	< 0.001
4: Summer 2023–2024	22	–10.81	< 0.001	–5.21	< 0.001
5: Fall 2024–2025	9	–4.70	< 0.01	–4.50	< 0.01
6: Winter 2024–2025	11	–3.67	< 0.01	–3.82	< 0.01

Note. All *t*-statistics reflect paired-samples tests with negative values because they are calculated as pretest minus posttest. All cohorts achieved $p < 0.01$ on both measures.

Linear mixed model

To test whether learning gains differed by cohort, a linear mixed model was fit to the TKELS pretest and posttest data with Cohort, Time, and the Cohort $\times$ Time interaction as fixed effects. The model showed no significant differences between cohorts ($p = 0.40$), a highly significant effect of Time from pretest to posttest ($p < 0.0001$), and a non-significant Cohort $\times$ Time interaction ($p = 0.095$). In other words, there was no statistically significant evidence that cohorts differed in baseline TKELS scores, all six gained significantly, and the size of the gain did not vary meaningfully across cohorts.

Table 5. Linear mixed model results: TKELS pretest to posttest

Effect	Num DF	Den DF	F	Pr > F
Cohort	5	128.20	1.03	0.40
Time	1	128.30	317.55	< 0.0001
Cohort x Time	5	128.30	1.92	0.095

Note. Fixed effects included Cohort, Time (pretest vs. posttest), and the Cohort $\times$ Time interaction. The significant Time effect indicates pretest-to-posttest growth across all cohorts.

Score improvement by role

Participants represented three role categories: school administrators ($n = 96$; principals and assistant principals), district administrators ($n = 24$; curriculum directors, central-office leaders), and other instructional leaders ($n = 14$; literacy specialists, instructional coaches, school improvement coordinators, and administrative interns). All three groups demonstrated meaningful gains on both measures. School administrators showed the largest average gains (+2.2 points on the course assessment, +8.7 on TKELS), followed by district administrators (+1.6 and +7.5) and other instructional leaders (+1.6 and +6.7). The pattern suggests that the SOR PL course supports a range of literacy leadership roles. School administrators, who tend to have the most direct day-to-day proximity to classroom instruction, showed the largest increases in foundational literacy knowledge. Differences across role groups were not formally tested for statistical significance.

Table 6. Average pretest-to-posttest score gains by role

Role	Course Assessment Gain	TKELS Gain
School Administrators (n = 96)	+2.2	+8.7
District Administrators (n = 24)	+1.6	+7.5
Other Instructional Leaders (n = 14)	+1.6	+6.7

Note. School administrators include principals and assistant principals. District administrators include curriculum directors, instructional coaches, and central-office leaders. Other instructional leaders include literacy specialists, school improvement coordinators, and administrative interns. Differences between role groups were not formally tested for statistical significance.

Participant feedback

End-of-course feedback was overwhelmingly positive. Among survey respondents, 100% indicated they would recommend the course to other instructional leaders. Three themes emerged consistently across cohorts.

Deepened understanding of literacy instruction

Participants reported that the SOR PL course gave them a substantively stronger understanding of how students learn to read and what evidence-based instruction looks like in practice. Many described the experience as filling a gap in their preparation to become education leaders. It gave them knowledge they realized they needed in order to make informed decisions about curriculum, intervention, and observation. Leaders frequently mentioned feeling more confident in identifying high-quality instruction during classroom walkthroughs, particularly regarding foundational skills.

Stronger instructional leadership

Beyond personal knowledge gains, participants emphasized the course's effect on their leadership practice. Several said they were now better equipped to bridge the gap between research and pedagogy and foster a more proactive and informed approach to coaching teachers. Rather than relying on general instructional leadership frameworks, participants reported being able to ground feedback to teachers in specific, research-aligned practices and to advocate within their districts for instructional decisions consistent with the science of reading.

Appreciation for practical tools and peer collaboration

Participants consistently highlighted two structural features of the course. The first was access to practical tools, including observation guides and module resources, they could implement directly in their schools. The second was the collaborative breakout structure included in the live sessions, which allowed leaders to problem-solve with peers facing similar implementation challenges. Several participants noted that the cross-district professional network the course produced was as valuable as the content itself, and that peer learning built their capacity in ways individual study could not.

Participant recommendations

Although feedback was overwhelmingly positive, participants offered several recommendations for refining the course in future iterations:

- Streamline the volume of preread materials, focusing assigned readings on the highest-leverage texts.
- Adjust live session timing to better accommodate the schedules of leaders across Alaska's many time zones and school configurations.

- Tailor selected examples and application activities to the diverse range of school types represented—including small rural schools, schools serving Alaska Native communities, and large district central offices.
- Increase coaching engagement opportunities between live sessions to support the application of concepts in participants' specific contexts.

Exploratory findings: Asynchronous course

Building on the blended SOR PL course for leaders, NWEA developed a fully asynchronous, self-paced version to broaden access for educators across Alaska's many remote and rural communities, where scheduling live synchronous sessions can be difficult. The asynchronous format covers the same science of reading content and is open to a wider range of educators including classroom teachers and other instructional staff who shape literacy practice in their schools.

The Alaska Department of Education & Early Development (DEED) offered the asynchronous course between August 2025 and April 2026. Of 62 educators who enrolled, the completion rate was 29% (18 of 62 enrolled participants). The enrolled population was predominantly classroom teachers (38 teachers, plus 4 special education teachers), alongside a mix of school and district leaders (3 principals, 1 assistant principal, 1 instructional coach, 1 director/coordinator) and other roles (substitute teachers, retired teachers, a speech-language pathologist, administrative support, and instructional staff).

Posttest performance

Participants who completed the asynchronous course demonstrated strong mastery of course content. On the combined end-of-course assessment (which integrated the TKELS and course assessment into a single score), completers scored an average of 93% on their first attempt, with every completer scoring 81% or higher, and approximately one-third earning a perfect score of 100%. The full distribution of posttest scores is shown in Table 7.

Table 7. Asynchronous course posttest score distribution

Percent Score (%)	Participants (n)
100	7
97	3
94	2
90	1
87	2
84	3
81	2

Note. Scores reflect a combined assessment (TKELS and course assessment items) reported as a single percentage, completed on participants' first attempt. Pretest scores were not available for the asynchronous course; as a result, growth from pretest to posttest could not be calculated for this group. These results describe posttest attainment rather than measured change and should be interpreted as preliminary.

Interpreting the asynchronous results

Because pretest scores were unavailable, the asynchronous results cannot be used to estimate learning gains in the way the blended-course results can, and the two groups differ in both composition (primarily teachers rather than leaders) and assessment scale. The asynchronous findings are therefore best understood as an early, promising signal: educators who completed the self-paced course finished with a strong command of science of reading content. Taken together with the rigorous blended-course results, they indicate that the course content can be delivered effectively across multiple formats and to a broader audience of educators. Future research that captures matched pretest and posttest scores for the asynchronous course would allow a rigorous test of learning gains in this format.

Conclusion

Across two years, six cohorts, 35 unique Alaska school districts, and 134 school and district leaders, the Science of Reading for Leaders course produced consistent, statistically significant gains in foundational literacy knowledge and instructional leadership knowledge. Effect sizes on both measures were very large by conventional standards (Cohen's $d = 1.51$ for TKELS and $d = 1.15$ for the course assessment), and 94% of participants increased their TKELS score from pretest to posttest. The linear mixed model demonstrated that these gains were robust across cohorts and not driven by any single group. The qualitative feedback aligned closely with the quantitative results: leaders reported feeling more knowledgeable, more confident, and better prepared to support evidence-based literacy instruction in their schools.

These findings suggest that targeted, leadership-specific science of reading professional learning fills a meaningful gap in the effort to align instruction with evidence. Knowledgeable instructional leaders are well positioned to support shifts in classroom practice, and the model evaluated here (eight modules combining live sessions, asynchronous learning, peer collaboration, and explicit observation guidance) is a promising approach for improving leaders' knowledge. The course's extension into a fully asynchronous format, with early evidence of strong content mastery among a broader audience of classroom teachers, further demonstrates that the content can reach educators across Alaska's diverse and remote communities. Continued refinement based on participant feedback, paired with future research linking leader learning to changes in classroom instruction and student outcomes, will further strengthen the contribution of this work to literacy improvement efforts in Alaska and beyond.

Appendix: Participating districts

The following 35 Alaska school districts and educational organizations were represented among course participants across the 2023–2024 and 2024–2025 school years. Numbers in parentheses indicate the count of participants from each entity who enrolled in the course.

Alaska Gateway School District (5)	King's Christian School Alaska (1)
Aleutians East Borough School District (2)	Kuspuk School District (2)
Anchorage School District (21)	Lake and Peninsula Borough School District (4)
Annette Island School District (1)	Lower Kuskokwim School District (6)
Bering Strait School District (11)	Lower Yukon School District (1)
Chugach School District (1)	Mat-Su Borough School District (5)
Craig City School District (1)	Nome Public Schools (2)
Delta-Greely School District (3)	North Slope Borough School District (3)
Denali Borough School District (2)	Northwest Arctic Borough School District (3)
Dillingham City School District (3)	SERRC (1)
Fairbanks North Star Borough School District (7)	Sitka School District (1)
Galena City School District (5)	Southeast Island School District (1)
Hydaburg City School District (1)	Southwest Region School District (6)
Juneau Borough School District (2)	Susitna Elementary (1)
Kake City School District (1)	University of Alaska (2)
Kashunamiut School District (2)	Wrangell Public School District (1)
Kenai Peninsula Borough School District (6)	Yukon Flats School District (3)
Ketchikan Gateway Borough School District (5)	



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