

Analysis of AimswebPlus Subtest Performance for K-3 Students, Fall 2020

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Key Findings:

Student's composite scores mask important information about performance on subtests that assess specific foundational literacy skills.

Two areas where attention is needed to support student improvement: LNF in Kindergarten and ORF in first, second, and third grades.

Why and how we track K-3 student literacy performance

Reading proficiently by the end of third grade is critical to a student's future academic success.

Research has found that students who are not proficient readers by the end of third grade (when instruction transitions from “learning to read” to “reading to learn”) are four times more likely to drop out of high school. The lowest performers in third grade are at the greatest risk of dropping out: 23% of below-basic readers drop out or fail to finish high school on time, compared to 9% of third graders with basic reading skills and 4% of third graders who are proficient readers.¹

One of the Board of Education's Goals for the District is that 62% of third grade students will score proficient on the State ELA assessment by August 2026 (Goal 2).

As of Spring 2019, 32.5% of third-grade students received a score of proficient or advanced on the State administered English Language Arts (ELA) assessment (PSSA-ELA).² To track student progress more frequently than once per year, the School District has identified within-year “leading indicators.” In order to reach the 62% goal, there must be an increase in the percentage of students in grades K-3 – both **overall** (Leading Indicator 2.1) and by **student subgroup** (Leading Indicator

¹ Annie E. Casey Foundation (2013). *Early Warning Confirmed*. <http://www.aecf.org/m/resourcedoc/AECF-EarlyWarningConfirmed-2013.pdf>; Annie E. Casey Foundation (2012). *Double Jeopardy*. <https://www.aecf.org/resources/double-jeopardy/>

² Read more about the PSSA-ELA here:

<https://www.education.pa.gov/K-12/Assessment%20and%20Accountability/PSSA/Pages/default.aspx>

2.2E) - who score at or above grade-level on the District’s within-in year reading assessment (aimswebPlus; Table 1) each year. ³

The leading indicator of progress towards Goal 2 for the 2020-2021 school year is that by the Spring, 47% of students in grades K-3 will test at target (aimswebPlus Tier 1) on their composite aimswebPlus literacy assessment.

Box 1. What is a Composite Score?

Composite scores measure student performance on a combination of key skills that are critical to becoming a proficient reader. Composite scores are comprised of students’ individual subtest scores.

The District uses the aimswebPlus assessments to monitor K-3 literacy progress on the leading indicators. The aimswebPlus assessments are standards-based and vary by grade level (see Table 1). Students in each grade take multiple assessments, or “subtests”; each subtest measures a discrete early literacy skill that students must master in order to become proficient readers. Of all the subtests students take, some are required for students to receive a “composite score” (See Box 1 and additional information below). Based on their composite score, students are placed into a performance Tier that indicates their level of risk of not achieving proficiency in key literacy skills by the Spring of their current school year. Tier 1 indicates that students are testing “At Target” and are on track to read proficiently. Tier 2 indicates that students need strategic intervention to ensure progress towards proficiency. Tier 3 indicates that students require intensive intervention to make progress towards becoming a proficient reader.

In addition to Tier placement based on the composite score, it is critical to evaluate student performance on each of the assessments that comprise the composite.

While using composite scores and Tier placements are useful for tracking progress toward the District’s Target 2, they are not sufficient for making instructional decisions. To better determine what steps should be taken to improve the percentage of students in Tier 1 (“At Target”), we must also closely examine student performance on each of the composite’s subtests. This is important to help identify specific skill gaps that may need to be addressed to help students reach Tier 1.

³ For more about SDP’s Goals and Guardrails see: <https://www.philasd.org/schoolboard/goals-and-guardrails/> and <https://www.philasd.org/era/goals-and-guardrails/>

Research questions

In this brief we explore two research questions to better understand K-3 student performance on the aimswebPlus subtests:

1. How did students perform on the various subtests that make up the composite assessment for aimswebPlus?
2. What does subtest performance reveal about students' literacy skill levels? Where are students performing well, and where are potential areas of growth?

Understanding aimswebPlus composite performance

Students in kindergarten, second and third grade must take multiple subtests in order to receive a composite score. Only one test is required for first grade students to receive a composite score. The subtests that are required for composite scores in grades K-3 and were analyzed in this brief are found in Table 1, along with a short description of the skill that each subtest assesses.⁴

Table 1. aimswebPlus assessments that comprise composite scores by grade level

Grade Level	Subtest Name (Required for Composite Score)	Skill Assessed
Kindergarten	Letter Naming Fluency (LNF)	Number of upper-case and lower-case letters that students can identify in one minute.
	Letter Word Sounds Fluency (LWSF)	Number of sounds of letters, syllables, and words that students can identify in one minute.
First	Oral reading Fluency (ORF)	Number of words in a story that students read correctly in one minute.
Second and Third	Oral reading Fluency (ORF)	Number of words in a story that students read correctly in one minute.
	Reading Comprehension (RC)	Number of correct responses to multiple choice reading comprehension questions about six short passages.
	Vocabulary (VOC)	Number of correct responses to multiple choice questions about meanings of target words.

Note: Although second and third-grade students participate in the same subtests, the content and rigor of the tests differs based on grade-level standards.

Based on students' performance on each subtest and their National Percentile Ranks, students are placed into five performance groups (Table 2).⁵

⁴ AimswebPlus assessments were administered virtually in fall 2020-21 because schools were closed due to Covid-19 and all instruction was taking place online.

⁵ The five performance groups do not map onto the three performance Tier levels exactly. However, both are calculated using National Percentiles, and depending on how a student performs on the subtests that comprise the composite score used to determine a Tier

Table 2. Five possible performance groups based on aimswebPlus assessment

aimswebPlus Performance Group	Percentile Range
Well Above Average	90 to 100
Above Average	75 to 89
Average	26 to 74
Below Average	11 to 25
Well Below Average	1 to 10

Findings

How did students perform on the various subtests that make up the composite assessment for aimswebPlus?

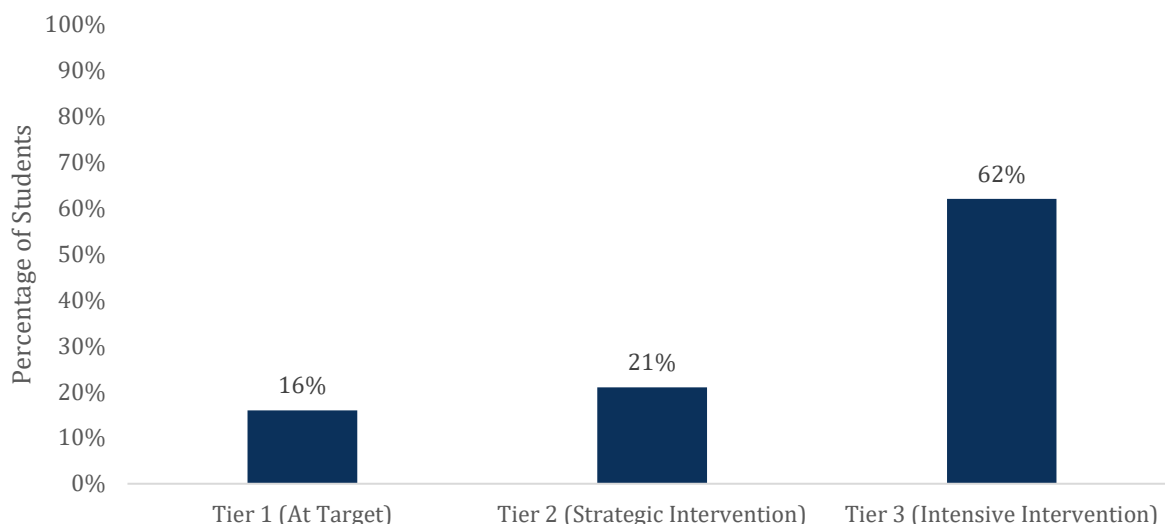
Kindergarten

Based on Fall composite scores, most Kindergarten students entered the school year requiring literacy intervention.

Of the 6,835 Kindergarten students who took the Fall 2020 aimswebPlus composite assessments (LNF and LWSF), 62% scored in Tier 3 and one-fifth (21%) scored in Tier 2 (Figure 1). This means that over 80% of Kindergarteners began the school year needing either strategic or intensive intervention to progress towards reading proficiency.

placement, students who fall into the “Below Average” or “Well Below Average” performance groups are likely to also be placed in Tiers 2 or 3. Thus, ensuring that students are performing well on all subtests is critical to their Tier placement.

Figure 1. Percentage of Kindergarten students placed in each Tier level based on their composite score in Fall 2020 (n= 6,835)



Source: data from Qlik L3_AIMSWEBSTAR [v1.0.0], data pulled on November 19, 2020

Nearly half of Kindergarten students scored either “Below Average” or “Well Below Average” on the individual subtests.

District-wide, nearly half (45%) of Kindergarten students scored “Well Below Average” on the fall LNF, which is equivalent to knowing eight or fewer upper and/or lower-case letters (Table 3; see Box 2 for the Kindergarten Subtest Scoring Guide). About one-fifth of Kindergarten students scored “Below Average” and just one-third of students scored in the Average range. This means that the majority of Kindergarten students are beginning the school year able to identify less than half of the letters of the alphabet correctly.

The LWSF subtest is designed so that Kindergarten students cannot score in the “Well Below Average” group on the fall assessment. Students who don’t know any letter sounds are placed in the 11th percentile and students who know one letter sound are placed in the 25th percentile. Thus, the 42% of Kindergarten students District-wide who scored in the “Below Average” group know only one letter sound. About half (47%) of Kindergarten students knew between two and 16 letter sounds (and fell into the “Average” group) in Fall 2020.

Box 2. Kindergarten Subtest Scoring Guide

	Assessment	
	LNF Number of letters named correctly	LWSF Number of letter sounds made correctly
Well Below Average (1-10%)	0-8	N/A
Below Average (11-25%)	9 -18	0-1
Average (26-74%)	19-43	2-16
Above Average (75%-89%)	44-53	17-25
Well Above Average (90-99%)	55+	27+

Table 3. **All District Kindergarteners** by Overall National Percentile Rank Baseline Performance Grouping

	Number of Students	Well Below Average (1-10%)	Below Average (11-25%)	Average (26-74%)	Above Average (75%-89%)	Well Above Average (90-99%)
LNF	6,879	45%	22%	29%	2%	1%
LWSF	6,836	-	42%	47%	7%	4%

Source: data from Qlik L3_AIMSWEBSTAR [v1.0.0], data pulled on November 18, 2020

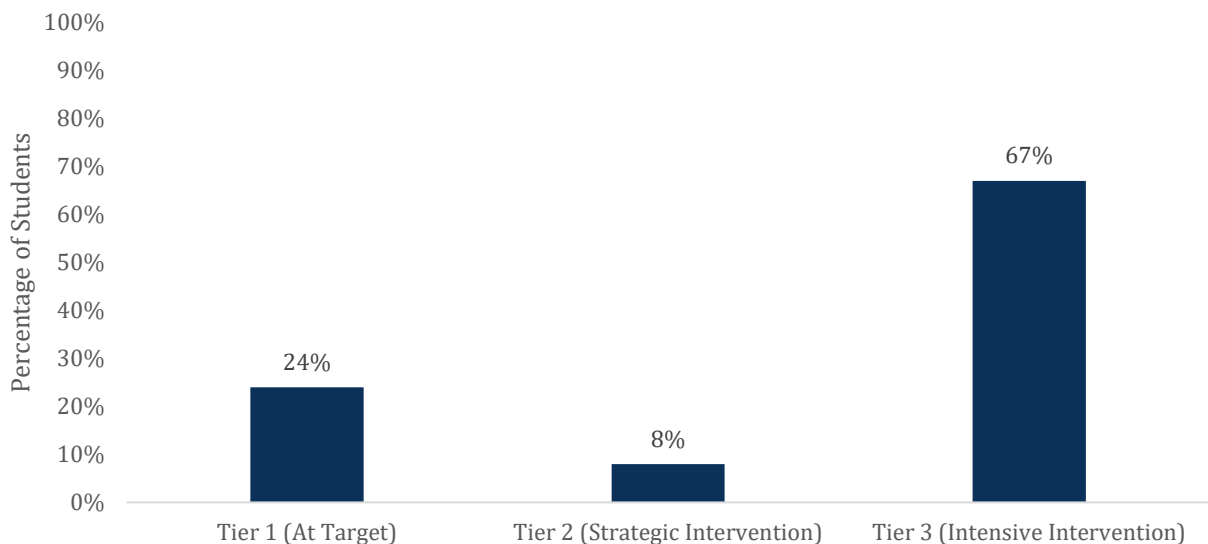
How to read this table: This table displays the percentage of Kindergarten students who tested into each performance group based on their national percentile rank on each of the subtests that are required for the composite assessment. For example, 22% of Kindergarten students tested between the 11th-25th national percentile (NPR) on the Letter Naming Fluency (LNF) assessment placing them in the “below average” performance group.

First Grade

Two-thirds of first-grade students needed intensive literacy intervention based on their Fall 2020 composite score.

Of the 8,880 first-grade students who took the Fall 2020 aimswebPlus composite assessment (ORF), about two-thirds (67%) scored in Tier 3 (Figure 2). About one-quarter (24%) scored in Tier 1.

Figure 2. Percentage of first-grade students placed in each Tier level based on their composite score n=8,880



Source: data from Qlik L3_AIMSWEBSTAR [v1.0.0], data pulled on November 18, 2020

Nearly three-fourths (72%) of first-grade students scored either “Below Average” or “Well Below Average” on the Fall 2020 subtest.

For first grade, students only need to take one assessment to receive a composite score (the Oral Reading Fluency subtest, or ORF). District-wide, 62% of first grade students scored “Well Below Average” on ORF, which is the equivalent of reading 11 or fewer words correctly per minute (Table 4; see Box 3 for the First Grade Subtest Scoring Guide). On average, students in the “Well Below Average” group read three words correctly per minute. By comparison, students who scored in the “Average” range (nearly one-fifth of all first graders) read 19-54 words per minute.

Box 3. First Grade Subtest Scoring Guide

	Assessment
	ORF
	Words read correctly per minute
Well Below Average (1-10%)	0-11
Below Average (11-25%)	12-18
Average (26-74%)	19-54
Above Average (75%-89%)	55-77
Well Above Average (90-99%)	78+

Table 4. All District First-Graders by Overall National Percentile Rank Baseline Performance Grouping

	Number of Students	Well Below Average (1-10%)	Below Average (11-25%)	Average (26-74%)	Above Average (75%-89%)	Well Above Average (90-99%)
ORF	8,880	62%	10%	19%	6%	4%

Source: data from Qlik L3_AIMSWEBSTAR [v1.0.0], data pulled on November 18, 2020

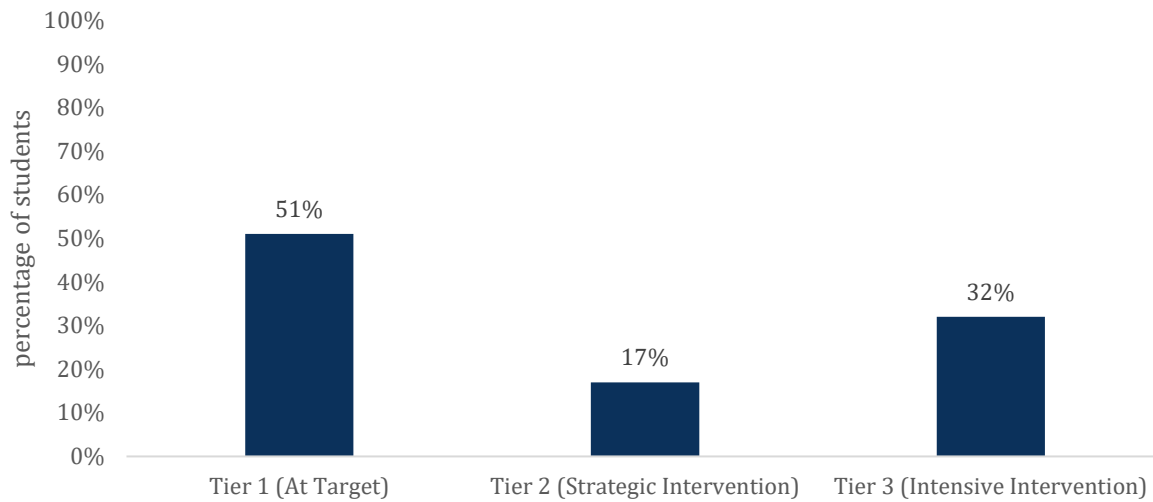
How to read this table: This table displays the percentage of first-grade students who tested into each performance group based on their national percentile rank on each of the subtests that are required for the composite assessment. For example, 10% of students tested between the 11th-25th national percentile (NPR) on the Oral Reading Fluency (ORF) assessment placing them in the “below average” performance group.

Second Grade

About half (51%) of second-grade students scored in Tier 1 based on their Fall composite score.

Of the 8,349 second-grade students who took the Fall 2020 aimswebPlus composite assessment (ORF, RC, and VOC) half (51%) scored in Tier 1 (Figure 3), which would indicate that these students do not require intervention to read at grade level. However, 49% of second-grade students do require either strategic or intensive intervention (17% and 32%, respectively).

Figure 3. Percentage of second-grade students placed in each Tier level based on their composite score in Fall 2020 (n=8,349)



Source: data from Qlik L3_AIMSWEBSTAR [v1.0.0], data pulled on November 18, 2020

Although 51% of second-grade students scored in Tier 1 on the composite, less than 10% of students scored “Above Average” or “Well Above Average” on one of the three subtests.

Although 51% of second-grade students scored in Tier 1 on the composite, there was some variation in how students scored on the individual subtests (Table 5). For example, while a combined 33% and 35% of second-grade students scored “Above Average” or “Well Above Average” on RC and VOC, respectively, only 9% of students scored “Above Average” or “Well Above Average” on ORF.

Table 5. All District Second-Graders by Overall National Percentile Rank Baseline Performance Grouping

	Number of Students	Well Below Average (1-10%)	Below Average (11-25%)	Average (26-74%)	Above Average (75%-89%)	Well Above Average (90-99%)
ORF	9,195	44%	15%	32%	6%	3%
RC	8,381	7%	20%	40%	15%	17%
VOC	8,381	20%	16%	29%	15%	20%

Source: data from Qlik L3_AIMSWEBSTAR [v1.0.0], data pulled on November 18, 2020

How to read this table: This table displays the percentage of second-grade students who tested into each performance group based on their national percentile rank on each of the subtests that are required for the composite assessment. For example, 16% of students tested between the 11th-25th national percentile (NPR) on the Vocabulary (VOC) assessment placing them in the “below average” performance group.

District-wide, 44% of second grade students scored “Well Below Average” on ORF, which is the equivalent of reading 20 or fewer words correctly per minute. On average, students in the “Well-Below Average” group read only seven words correctly per minute (Box 3). District-wide, 20% of second grade students scored “Well Below Average” on VOC, which is the equivalent of correctly identifying the meaning of five or fewer “target words” (out of 16).

Box 4. Second Grade Subtest Scoring Guide

	Assessment		
	Oral Reading Fluency (ORF) Words read correctly per minute	Reading Comprehension (RC) Questions answered correctly	Vocabulary (VOC) Questions answered correctly
Well Below Average (1-10%)	0-20	0-4	0-5
Below Average (11-25%)	21-45	5-7	6-7
Average (26-74%)	46-96	8-17	8-11
Above Average (75%-89%)	97-116	18-20	12-13
Well Above Average (90-99%)	117+	21-24	14-16

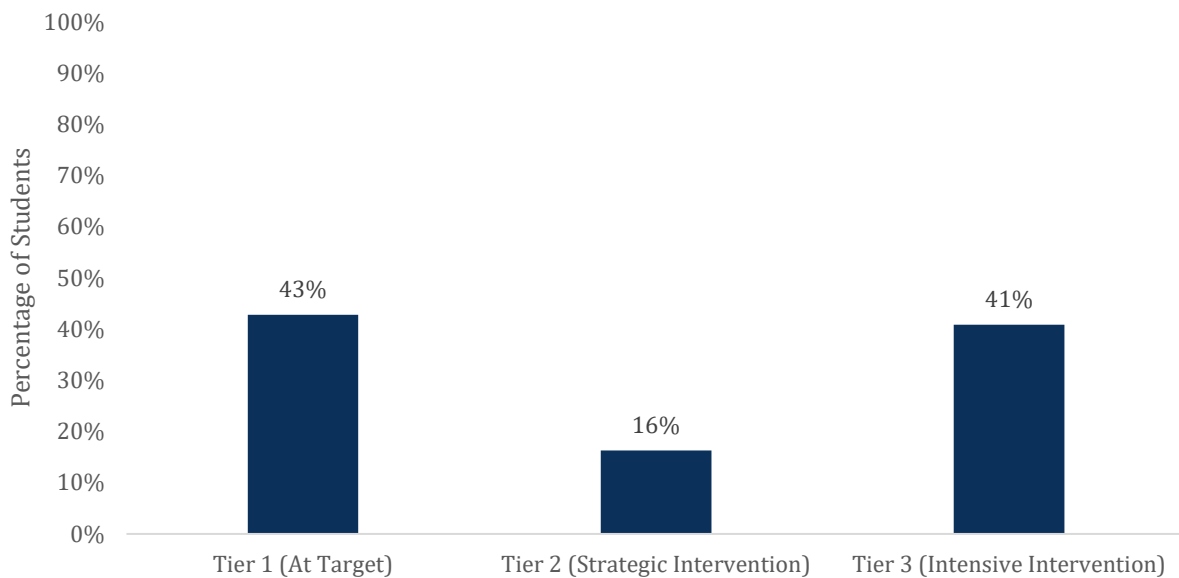
However, only 7% of second-grade students scored “Well Below Average” on Reading Comprehension, which is the equivalent of correctly answering four or fewer reading comprehension questions (out of 24). These subtest results reveal that ORF is a skill that many second-graders are still struggling to master.

Third Grade

About 40% of third-grade students scored in both Tiers 1 and 3, based on their Fall 2020 composite score.

Of the 8,536 third-grade students who took the Fall 2020 aimswebPlus composite assessment (ORF, RC, and VOC), roughly the same percentage scored in Tier 1 as in Tier 3 (43% and 41%, respectively; Figure 4).

Figure 4. Percentage of third-grade students placed in each Tier level based on their composite score in Fall 2020 (n = 8,536)



Source: data from Qlik L3_AIMSWEBSTAR [v1.0.0], data pulled on November 18, 2020

Between 8% and 27% of third-grade students scored either “Above Average” or “Well Above Average” on the three subtests.

Similar to the performance of second-grade students, there was significant variation in the subtest scores of third-grade students (Table 6). A larger percentage (41%) of third-grade students scored “Well Below Average” on the ORF than on RC (15%) or VOC (22%). A score of “Well Below Average” on ORF is the equivalent of reading 44 or fewer words correctly per minute. Conversely, a smaller percentage of students scored “Above Average” or “Well Above Average” on ORF (8%), compared to RC (20%) and VOC (27%).

Table 6. All District Third Graders by Overall National Percentile Rank Baseline Performance Grouping

	Number of Students	Well Below Average (1-10%)	Below Average (11-25%)	Average (26-74%)	Above Average (75%-89%)	Well Above Average (90-99%)
ORF	9,250	41%	17%	33%	6%	2%
RC	8,602	15%	27%	39%	11%	9%
VOC	8,602	22%	14%	37%	9%	18%

Source: data from Qlik L3_AIMSWEBSTAR [v1.0.0], data pulled on November 18, 2020

How to read this table: This table displays the percentage of third-grade students who tested into each performance group based on their national percentile rank on each of the subtests that are required for the composite assessment. For example, 14% of students tested between the 11th-25th national percentile (NPR) on the Vocabulary (VOC) assessment placing them in the “below average” performance group.

Despite students scoring relatively better on RC and VOC, about one-third of third-grade students scored Below Average or Well Below Average on both. A combined total of 42% of third-grade students scored “Below Average” or “Well Below Average,” which means they answered no more than 8 questions correctly out of 24. Thirty-six percent of students scored either “Below Average” or “Well Below Average” on VOC, which is the equivalent of correctly identifying the meaning of nine or fewer “target words” (out of 22).

Box 5. Third Grade Subtest Scoring Guide

	Assessment		
	ORF Words read correctly per minute	Reading Comp Questions answered correctly	VOC Questions answered correctly
Well Below Average (1-10%)	0-44	1-5	0-7
Below Average (11-25%)	45-67	6-8	8-9
Average (26-74%)	69-118	9-17	10-15
Above Average (75%-89%)	119-141	18-20	16-17
Well Above Average (90-99%)	142+	21-24	18-22

Conclusions

Students’ composite scores mask important information about performance on specific foundational literacy skills.

Because composite scores combine the results of multiple subtests (except for first grade), each of which measure a discrete foundational literacy skill, the composite score often masks areas in which students may need extra support or intervention. For this reason, it is important to consider both the composite scores AND the individual subtest scores. Doing so will allow teachers and administrators to deliver the appropriate instruction to move students closer to proficiency.

This subtest analysis revealed two areas where attention is needed to support student improvement: LNF in Kindergarten and ORF in first, second, and third grades.

Sixty-two percent of Kindergarten students scored in Tier 3 on the composite, and 67% scored either “Below Average” or “Well Below Average” on the LNF subtest. In second grade, although 51% of second-grade students scored in Tier 1 according to the composite score, only 9% of students scored “Above Average” or “Well Above Average” on ORF. In order for more students to reach proficiency, more attention may need to be paid to students’ oral reading fluency skills.