Performance of K-3 Students who Received Support from a Reading Specialist in 2019-20

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Summary of Key Findings

- Reading Specialists served about 1,600 students at 38 schools. Nearly all of these students required intensive intervention according to their fall aimswebPlus assessment.

- Kindergarten students saw the highest increase in average national percentile rank (NPR) between the fall and winter aimswebPlus assessments.

- Kindergarteners and first-graders who worked with a Reading Specialist had the highest aimswebPlus Rate of Improvement (ROI) from fall to winter.

Introduction

In 2019-20, the School District of Philadelphia (SDP) placed certified Reading Specialists in 38 schools.[1] Reading Specialists were primarily responsible for providing additional support to K-3 students reading below grade level. Typically, Reading Specialists taught daily small-group lessons to address student deficits in reading, writing, phonics, and word study.

Due to the COVID-19 pandemic, school buildings closed and SDP transitioned to digital learning in March 2020. Although Reading Specialists continued to support their students virtually, spring student assessment data was not collected. Thus, this brief summarizes the performance of students who received support from a Reading Specialist *before* the transition to digital learning and support, from October 2019 (fall) to February 2020 (winter). [2]

Research Questions

1. Who received support from a Reading Specialist from October 2019 to February 2020 and with what frequency?

2. Did students who received support from a Reading Specialist from October 2019 to February 2020 demonstrate improved literacy outcomes based on changes in aimswebPlus performance between fall and winter?

3. Did student performance improvements from October 2019 to February 2020 differ by school?

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[1] See Appendix A for a list of the 38 schools that received support from a Reading Specialist in 2019-20.
[2] The month of September is often spent evaluating student needs and small group interventions begin in October. With the transition to online learning beginning mid-March, the last in-person learning was recorded as the end of February to have a full month of data collected.

Methods

About AimswebPlus

During the 2019-20 school year, SDP used aimswebPlus, a universal early literacy screening, benchmarking, and progress-monitoring tool from Pearson, to assess literacy proficiency for all K-5 students. In grades K-3, teachers score students' performance on each aimswebPlus assessment according to the number of cues students correctly identify in 60 seconds. Each grade level is administered one core assessment (in addition to other standardized measures) each fall, winter, and spring[3]:

Core Assessments

- Kindergarten: **Letter Naming Fluency (LNF)** measures letter identification.

- First grade: **Nonsense Word Fluency (NWF)** measures phonemic awareness.

- Second- and third-grade: **Oral Reading Fluency (ORF)** measures oral reading fluency.

Key Data Points

For each of these three assessments, we looked closely at the following key data points related to student performance between fall and winter:

- **National Percentile Rank (NPR):** A norm-referenced measure that compares a student's score with a national reference of scores of students in the same grade who were tested on the same content during the same timeframe. NPR is useful for understanding a student's reading ability compared to other students in the same grade nationally. Based on the number of correct responses, each student is assigned a percentile rank from 0-99 during each administration window.

- **Tier**: Based on the number of correct responses on their core assessment, students are placed into Tier 1, 2, or 3. 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 proficient in reading.

- **Rate of Improvement (ROI):** A student's rate of improvement is calculated based on the number of correct responses a student increased per week between assessment periods (i.e., the difference between the number of correct responses in the winter and the number of correct responses in the fall, divided by the number of weeks between the fall and winter assessments).

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[3] Due to the COVID-19 pandemic, the spring administration of aimswebPlus assessments was cancelled in 2019-20. Winter assessment scores are used to analyze growth between fall and winter of the 2019-20 school year.

Analytic Sample

Reading Specialists recorded the number of students they served and the approximate number of hours they worked with each student in monthly dosage logs. SDP's Office of Research and Evaluation (ORE) collected these monthly logs to identify students who met in person with a Reading Specialist from October 2019 to February 2020, and we matched these students to SDP enrollment data.

Students had to meet the following criteria in order to be included in the analytic sample:

- Served by a Reading Specialist, accordingly to dosage logs;

- Have a valid enrollment record;

- Be enrolled in SDP on or before Oct 1, 2019; and

- Be enrolled in SDP for 90 days or more.

Of the 1,592 K-3 students who saw Reading Specialists from October 2019 to February 2020, 1,458 met the sample criteria listed above (Table 1). ORE used this sample to analyze the dosage and characteristics of students who received support from Reading Specialist.

Table 1. Number of SDP students served by Reading Specialists, by grade and enrollment duration

Data Source	Kindergarten	1st Grade	2nd Grade	3rd Grade	Overall
Reported in dosage logs with enrollment data	261	564	450	316	1,592
Met all sample criteria	235	514	419	290	1,458

Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0]. Data pulled on January 21, 2021.

Analyzing Student Outcomes

To analyze changes in the performance of students who saw a Reading Specialist in 2019-20, ORE examined changes in students' performance on aimswebPlus assessments between fall and winter.[4] In addition to the criteria above, which students needed to meet to be included in the dosage analysis, students also needed both a fall and winter aimswebPlus score to be included in the outcome analysis. Of the 1,458 students who met the criteria for the dosage analysis, 1,430 (98%) had both fall and winter aimswebPlus data (Table 2).

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[4] Due to the COVID-19 pandemic, the spring administration of aimswebPlus assessments was cancelled in 2019-20. Winter assessment scores are used to analyze growth between fall and winter of the 2019-20 school year.

Table 2. Number of SDP students served by a Reading Specialist, by grade and availability of assessment data

	Kindergarten	1st Grade	2nd Grade	3rd Grade	Overall
Number of students with fall and winter aimswebPlus data	229	500	414	287	1,430

Source: Data from Qlik L3_AIMSWEBSTAR [v1.0.0]. Data pulled on January 15, 2021.

Reference Group

ORE created a reference group to contextualize the outcomes of the K-3 students who received support from a Reading Specialist. The reference group was comprised of K-3 students who are enrolled in the same schools but *did not* receive support from a Reading Specialist. For more information about the reference group, please see Appendix B.

Findings

Question 1: Who received support from a Reading Specialist from October 2019 to February 2020 and with what frequency?

The majority of K-3 students who saw a Reading Specialist were Black/African American (79%) as well as economically disadvantaged[5] (88%, Table 3). Few students were designated as English Learners (ELs) or students with an individualized education plan (IEP) (2% and 6%, respectively).

Table 3. Reading Specialists mostly served economically disadvantaged and Black/African American students

	Kindergarten (n=235)	1st Grade (n=514)	2nd Grade (n=419)	3rd Grade (n=290)	Overall (n=1,458)
% Female	52%	50%	50%	57%	52%
% Black/African American	79%	78%	79%	80%	79%
% Hispanic/Latinx	16%	20%	17%	14%	17%
% White	3%	1%	1%	2%	2%
% Other*	3%	1%	2%	4%	3%
% English Learners	1%	2%	2%	3%	2%
% Students with IEP	4%	6%	7%	7%	6%
% Economically Disadvantaged	89%	88%	87%	88%	88%

Note: *Other* includes Asian, American Indian/Native American, Multi-Racial, and Pacific Islander.
Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0]. Data pulled on January 21, 2021.

The majority (84%) of K-3 students who received support from a Reading Specialist scored in Tier 3 (Intensive Intervention) on the baseline (fall) aimswebPlus assessments (Table 4). Kindergarten and second grade had the highest percentages of students categorized as Tier 3 (93% and 92%, respectively).

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[5] "Economically Disadvantaged" refers to students who are participating in SNAP, TANF, or other social service programs, or whose eligibility for one of these programs is automatic and not subject to verification.

Table 4. The majority of SDP students who received support from a Reading Specialist were in Tier 3 based on their fall aimswebPlus assessment

Fall aimswebPlus Tier	Kindergarten (n=229)	1st Grade (n=500)	2nd Grade (n=414)	3rd Grade (n=287)	Overall (n=1,430)
% Tier 1 aimswebPlus (At Target)	1%	13%	2%	1%	6%
% Tier 2 aimswebPlus (Strategic Intervention)	7%	17%	7%	9%	11%
% Tier 3 aimswebPlus (Intensive Intervention)	93%	69%	92%	90%	84%

Source: Data from Qlik L3_AIMSWEBSTAR [v1.0.0]. Data pulled January 15, 2021.

Half (50%) of K-3 students in our sample received support from a Reading Specialist for five months between October 2019 and February 2020 (Table 5). Reading Specialists spent the most time with third-grade students (74% received services for four or five months) and the least amount of time with Kindergarten students (43% received services for one or two months).

Table 5. On average, between October 2019 and February 2020, Reading Specialists spent the greatest number of months with students in second and third grade

	Number of Months Students Received RS Services				
	1	2	3	4	5
Kindergarten **(n=235)**	15%	28%	18%	11%	27%
1st Grade **(n=514)**	10%	9%	12%	16%	54%
2nd Grade **(n=419)**	9%	6%	13%	12%	61%
3rd Grade **(n=290)**	8%	8%	10%	18%	56%
Overall **(n=1,458)**	10%	11%	13%	14%	50%

Source: Authors' analysis of dosage data recorded by Reading Specialists.

Approximately 70% of K-3 students in our sample received between 10.5 and 40 hours of support from a Reading Specialist between October 2019 and February 2020 (Table 6). A little less than half (40%) of Kindergarten students in our sample saw a Reading Specialist for fewer than 10 hours.

Table 6. Reading Specialists spent the greatest number of hours with students in second and third grade

|	Number of Hours Served					
	1-10	10.5-20	20.5-30	30.5-40	40.5-50	50.5+
Kindergarten **(n=235)**	40%	26%	23%	9%	2%	0%
1st Grade **(n=514)**	18%	26%	25%	21%	9%	0%
2nd Grade **(n=419)**	15%	23%	28%	20%	13%	1%
3rd Grade **(n=290)**	14%	22%	31%	23%	7%	2%
Overall **(n=1,458)**	20%	24%	27%	19%	9%	1%

Source: Authors' analysis of dosage data recorded by Reading Specialists.

Question 2: Did students who received support from a Reading Specialist demonstrate improved literacy outcomes based on changes in aimswebPlus performance (fall to winter)?

Overall, K-3 students who received support from a Reading Specialist scored in the 11th percentile in the fall and the 18th percentile in the winter (+7 percentage points, Figure 1). Kindergarten students who received support from a Reading Specialist demonstrated the most NPR growth from fall to winter (+14 percentiles; Figure 1). Second- and third-grade students who received support from a Reading Specialist experienced the least growth in NPRs over time – only 3 percentage points from fall to winter.

For more detail on the change in NPR performance of students in the reference group, please see Appendix B, Figure 1B.

Figure 1. For K-3 students in the analytic sample, the Average National Percentile Rank was in the 11th percentile for the fall and in the 18th percentile for the winter (n=1,430)
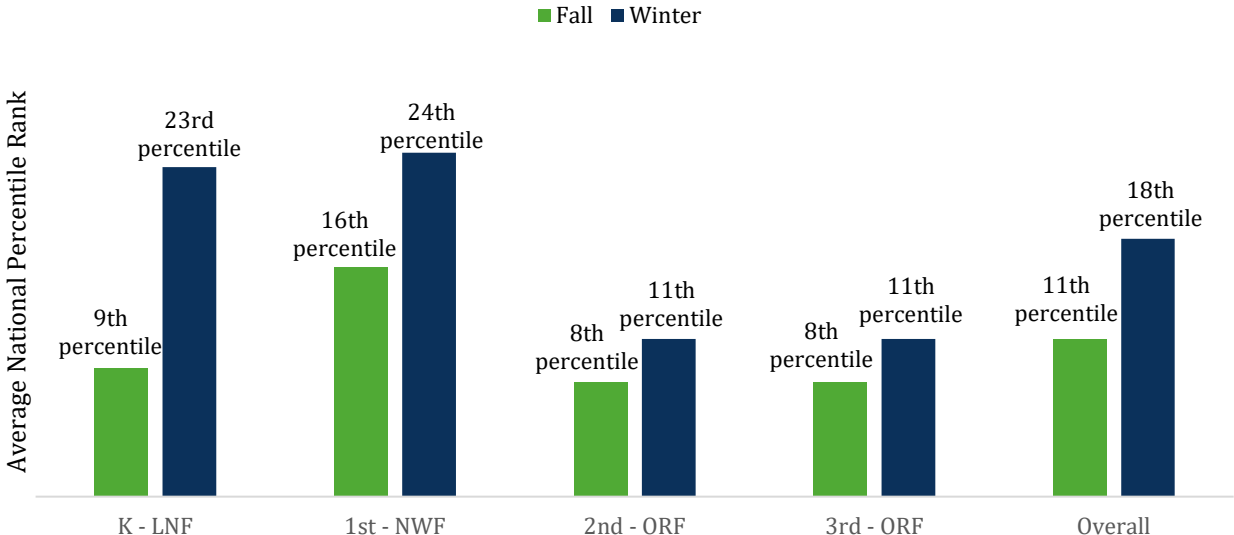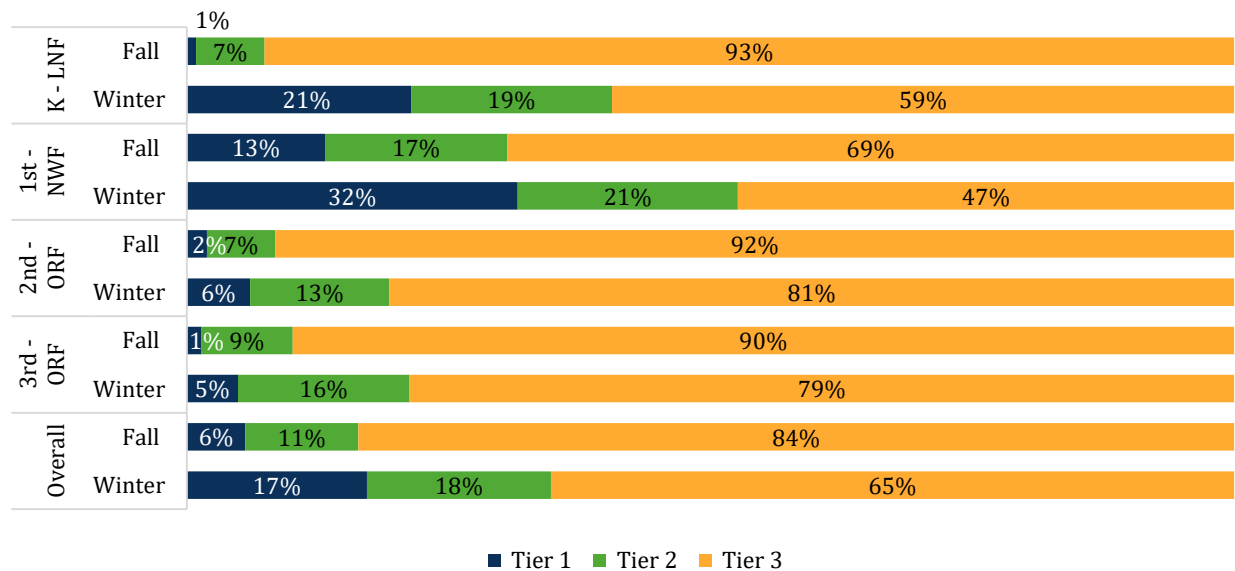

Source: Data from Qlik L3_AIMSWEBSTAR [v1.0.0]. Data pulled January 15, 2021.

An average of 84% of K-3 students who received support from a Reading Specialist needed Tier 3 intervention in the fall, which decreased to 65% in the winter (Figure 2). The percentage of students in need of Tier 3 intervention decreased most for kindergarten students. An average of 93% of kindergarten students needed Tier 3 intervention in the fall, which decreased to 59% in the winter (Figure 2).

For more details on the change in tiers of students in the reference group, please see Appendix B, Figure 2B.

Figure 2. For K-3 students in the analytic sample, 84% of students needed Tier 3 intervention in the fall, and 65% of students needed Tier 3 intervention in the winter (n=1,430)

		Tier 1	Tier 2	Tier 3
K - LNF	Fall	1%	7%	93%
	Winter	21%	19%	59%
1st - NWF	Fall	13%	17%	69%
	Winter	32%	21%	47%
2nd - ORF	Fall	2%	7%	92%
	Winter	6%	13%	81%
3rd - ORF	Fall	1%	9%	90%
	Winter	5%	16%	79%
Overall	Fall	6%	11%	84%
	Winter	17%	18%	65%

■ Tier 1   ■ Tier 2   ■ Tier 3

Source: Data from Qlik L3_AIMSWEBSTAR [v1.0.0]. Data pulled January 15, 2021.

For K-3 students who received support from a Reading Specialist, the overall average Rate of Improvement (ROI) was 1.12; this means that, on average, students' raw scores increased at a rate of 1.12 points per week between the fall and winter aimswebPlus assessments (Figure 3). First-grade students had the highest average ROI (1.31) from fall to winter, followed by kindergarten students (1.28; see Figure 3). Second-grade students who received support from a Reading Specialist had the lowest ROI from fall to winter (0.77).

For more details on the average ROI of students in the reference group, please see Appendix B, Figure 3B.

Figure 3. For K-3 students in the analytic sample, the average Rate of Improvement (ROI) between the fall and winter aimswebPlus Assessments was 1.12 (n=1,430)

	ROI
K - LNF	1.28
1st - NWF	1.31
2nd - ORF	0.77
3rd - ORF	1.18
Overall	1.12

Source: Data from Qlik L3_AIMSWEBSTAR [v1.0.0]. Data pulled January 15, 2021.

Question 3: Did student performance improvements differ by school?

While the average rate of improvement (ROI) of all K-3 students who received support from a Reading Specialist was 1.12 (Figure 3), there were school-level differences in the performance of students who saw Reading Specialists that ranged from an ROI of 0.50 to 1.87 (Table 7).

Table 7. School-level average ROI from fall to winter for K-3 students receiving support from a Reading Specialist

ROI Range (average increase in raw score each week)	Number of Schools	Number of Students
1.20 – 1.87	14	579
1.00 – 1.19	10	399
0.70 – 0.99	8	270
0.50 – 0.69	6	182

Source: Data from Qlik L3_AIMSWEBSTAR [v1.0.0]. Data pulled January 15, 2021.

Conclusion

Between October 2019 and February 2020, Reading Specialists served about 1,600 K-3 students at 38 schools. Approximately 84% of those students required intensive intervention according to their fall aimswebPlus assessment results. Around 50% of all K-3 students who were served by a Reading Specialist spent the entire five-month period between October and February receiving support from a Reading Specialist, and 7% of K-3 students received between 10.5 and 40 hours of support.

All K-3 students who received support from a Reading Specialist saw an increase on their aimswebPlus performance between fall and winter. Kindergarten students saw the largest increase between their fall and winter assessments. An average of 93% of kindergarten students required "Intensive Intervention" in the fall, which decreased by 34 percentage points to 59% in the winter. Kindergarteners and first-grade students who worked with a Reading Specialist had the highest Rate of Improvement (ROI) on the aimswebPlus assessments from fall to winter. First-grade students had an average ROI (1.31) from fall to winter, followed by kindergarten students (1.28). AimswebPlus performance of K-3 students did differ across schools.

Appendix A: Schools with a Reading Specialist 2019-20

Ethel Allen School	Hon. Luis Munoz-Marin
Add B. Anderson	John Marshall
John Barry	Thurgood Marshall
James G. Blaine	Delaplaine McDaniel School
Rudolph Blankenburg	Morton McMichael
William C. Bryant	Gen. George C. Meade
Julia de Burgos	S. Weir Mitchell
Jay Cooke	Andrew J. Morrison
Tanner Duckrey School	Thomas G. Morton
Paul L. Dunbar	Joseph Pennell
Lewis Elkin School	James Rhoads School
Edward Gideon	Rhodes Elementary School
Avery D. Harrington School	Roosevelt Elementary School
Edward Heston School	Isaac A. Sheppard
Julia Ward Howe Academic Plus	Philip H. Sheridan
General Philip Kearny	Allen M. Stearne
Kenderton Elementary	Edward T. Steel
Henry C. Lea	Bayard Taylor
Alain Locke	Potter-Thomas School

Appendix B: Reference Group

ORE created a reference group to contextualize the outcomes of the K-3 students who received support from a Reading Specialist. The reference group is an aggregated sample comprised of **all** K-3 students who were enrolled in the same schools but **did not** receive support from a Reading Specialist. **The reference group is not a control group,**[6] but it provides additional context about the performance of other K-3 students on the same metrics as the K-3 students who received support from a Reading Specialist. See Appendix B for a demographic descriptive about the reference group. See Appendix C for student outcome data from the reference group.

The reference group was comprised of K-3 students who:

- Attended an SDP school with a Reading Specialist (Appendix A);

- Had a valid enrollment record;

- Were enrolled in SDP on or before Oct 1, 2019;

- Were enrolled in SDP for 90 days or more;

- Had both fall and winter aimswebPlus core assessment data; and

- Were classified as Tier 2 or 3 based on their fall aimswebPlus core assessment scores.

Table B1. Reference group student sample

	Kindergarten	**1st Grade**	**2nd Grade**	**3rd Grade**	**Overall**
Students with 90 days of attendance and enrolled on or before Oct 1, 2019	1,740	1,641	1,679	1,759	6,819
Students with aimswebPlus Data from Fall and Winter	1,112	711	938	922	3,683

Source: Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0]. Data pulled on January 21, 2021.

Table B2. Reference group demographics

	Kindergarten (n=1,112)	1st Grade (n=711)	2nd Grade (n=938)	3rd Grade (n=922)	Overall (n=3,683)
% Female	49%	45%	49%	48%	48%
% Black/African American	63%	61%	61%	66%	63%
% Hispanic/Latino	33%	35%	36%	30%	33%
% White	2%	1%	1%	1%	1%
% Other*	2%	3%	2%	3%	3%
% English Learners	11%	12%	14%	15%	13%

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[6] The aimswebPlus outcomes of the reference group are not meant to be directly compared to the outcomes of the students in the analytic sample. Because this isn't a randomized controlled experiment (i.e., all students who are eligible to receive services from a Reading Specialist do), there is no "control" group. Students in the analytic sample were **selected** to receive services based on teacher recommendations and are thus likely to differ from students in the reference group. No conclusions can be or should be made based on the outcomes of the reference group.

	Kindergarten (n=1,112)	1st Grade (n=711)	2nd Grade (n=938)	3rd Grade (n=922)	Overall (n=3,683)
% Students with IEP	10%	17%	21%	25%	18%
% Economically Disadvantaged	91%	91%	89%	89%	90%

Note: *Other* includes Asian, American Indian/Native American, Multi-Racial, and Pacific Islander.
**Source:** Data from Qlik RL-Total Student Enrollment Yearly [v1.0.0]. Data pulled January 21, 2021.

Table B3. Reference group aimswebPlus Tier placement

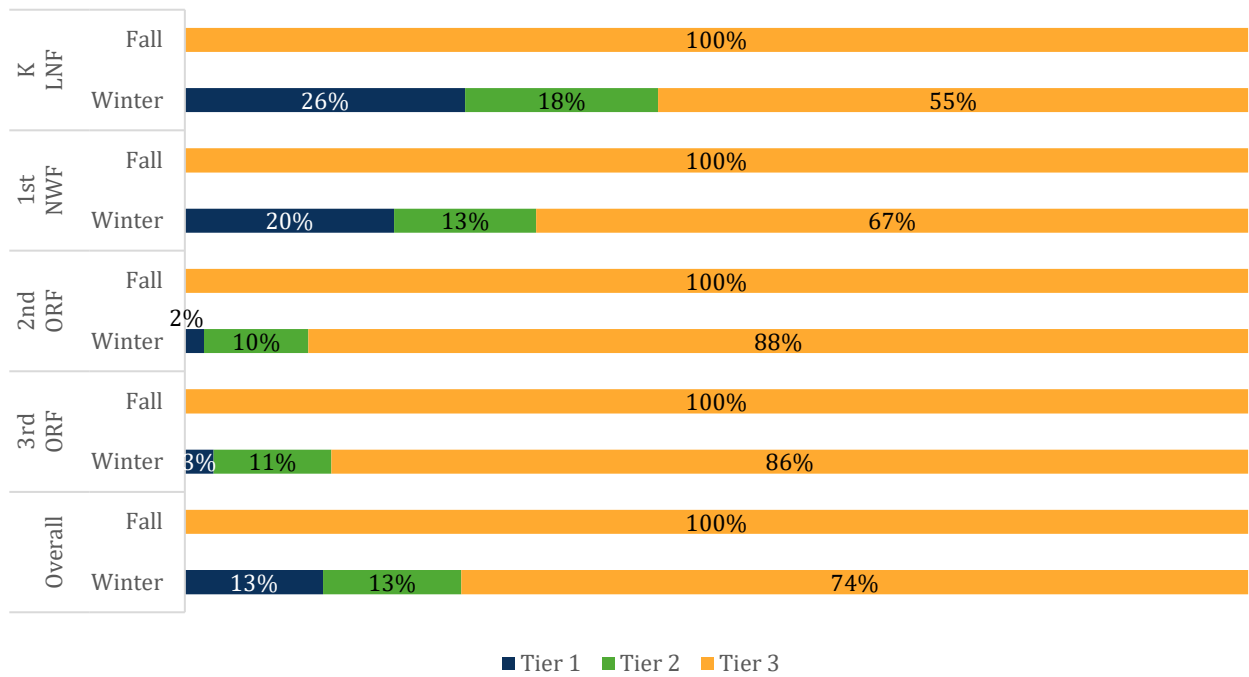| **Fall aimswebPlus Tier**	Kindergarten (n=1,112)	1st Grade (n=711)	2nd Grade (n=938)	3rd Grade (n=922)	Overall (n=3,683)
% Tier 1 aimswebPlus (At Target)	-	-	-	-	-
% Tier 2 aimswebPlus (Strategic Intervention)	-	-	-	-	-
% Tier 3 aimswebPlus (Intensive Intervention)	100%	100%	100%	100%	100%

Source: Data from Qlik L3_AIMSWEBSTAR [v1.0.0]. Data pulled January 15, 2021.

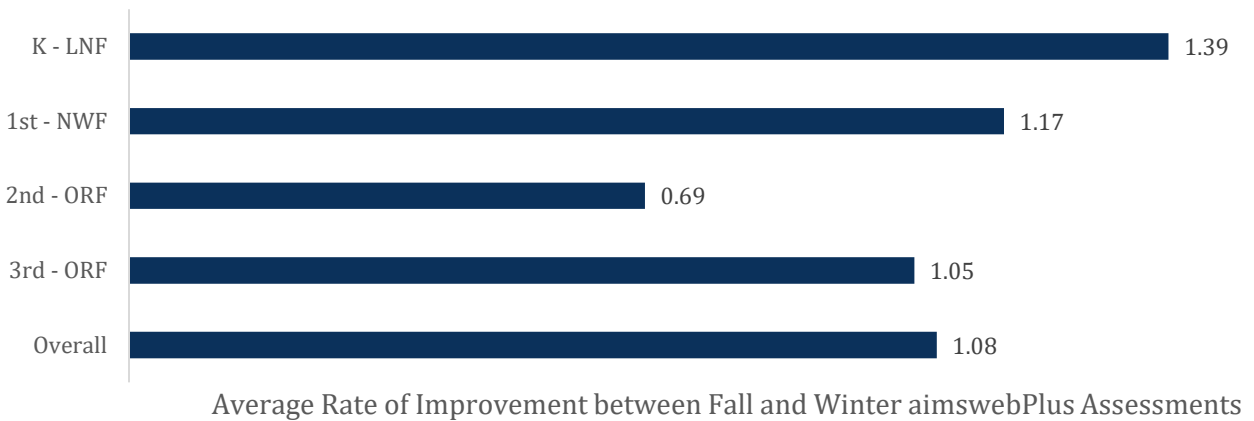Figure B1. Reference group by Average National Percentile Rank (n=3,683)
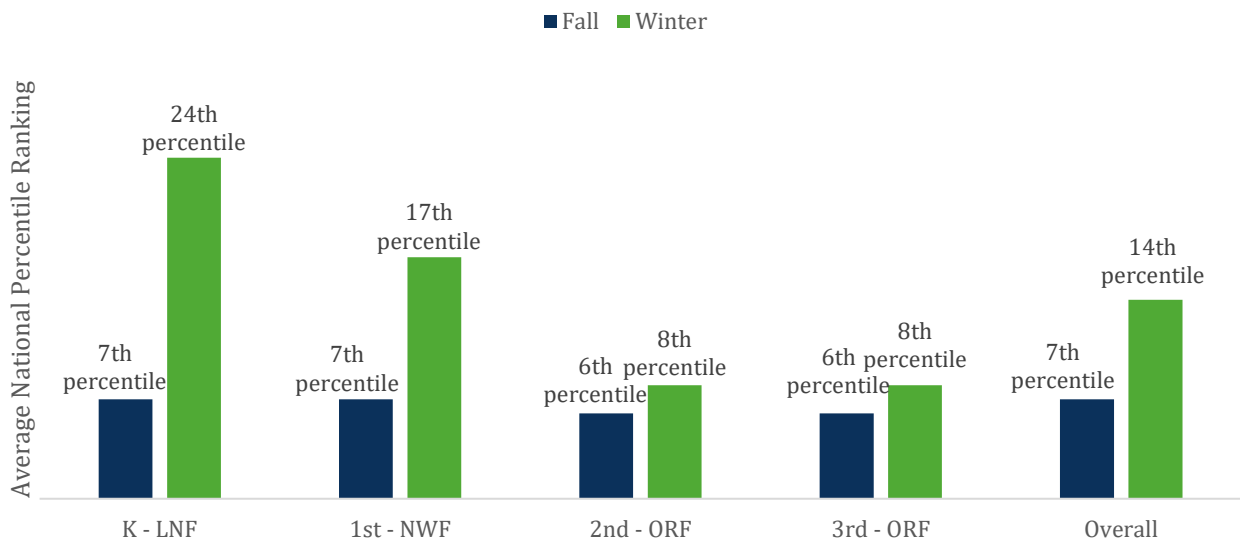
Source: Data from Qlik L3_AIMSWEBSTAR [v1.0.0]. Data pulled January 15, 2021.

Figure B2. Reference group aimswebPlus Tier placement (n=3,683)

		Tier 1	Tier 2	Tier 3
K LNF	Fall			100%
	Winter	26%	18%	55%
1st NWF	Fall			100%
	Winter	20%	13%	67%
2nd ORF	Fall			100%
	Winter	2%	10%	88%
3rd ORF	Fall			100%
	Winter	3%	11%	86%
Overall	Fall			100%
	Winter	13%	13%	74%

■ Tier 1 ■ Tier 2 ■ Tier 3

Source: Data from Qlik L3_AIMSWEBSTAR [v1.0.0]. Data pulled January 15, 2021.

Figure B3. Reference group by average ROI (n=3,683)

K - LNF	1.39
1st - NWF	1.17
2nd - ORF	0.69
3rd - ORF	1.05
Overall	1.08

Average Rate of Improvement between Fall and Winter aimswebPlus Assessments

Source: Data from Qlik L3_AIMSWEBSTAR [v1.0.0]. Data pulled January 15, 2021.