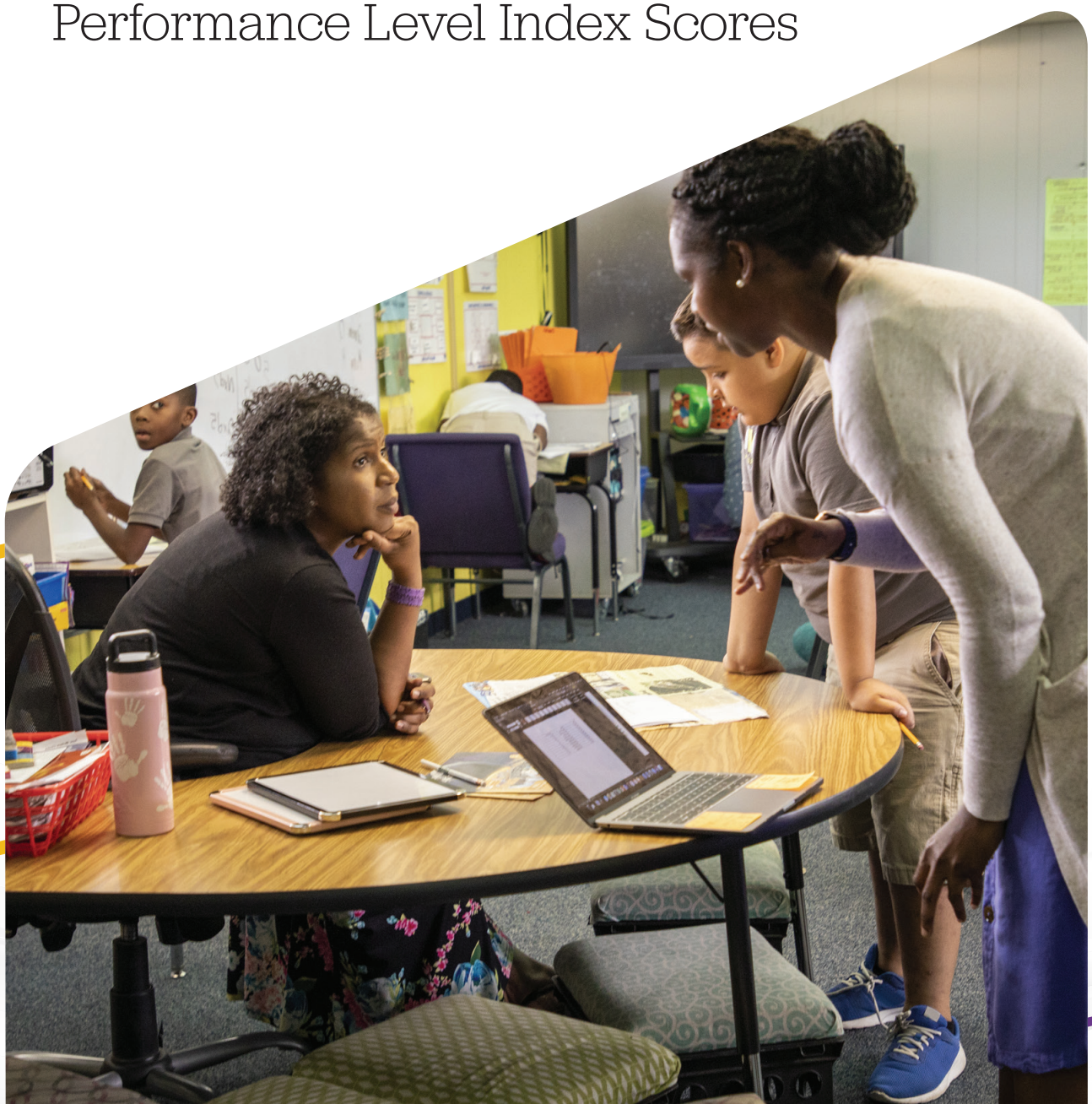
Ferguson Institute
A Case Study from Everett Public Schools

i-Ready®

Data-Informed Decision-Making

Closing the Achievement Gap Using Performance Level Index Scores



Introduction

Education research findings have offered many insights into factors that contribute to the achievement, or opportunity, gap and how to close it using an evidence-based approach. For example, research shows that schools that successfully close the achievement gap tend to use research and data to improve their practice. For the purposes of this paper, the achievement gap refers to the gap between the performance of any student or student group and the benchmark for grade-level proficiency as well as any gaps in performance among various student groups.

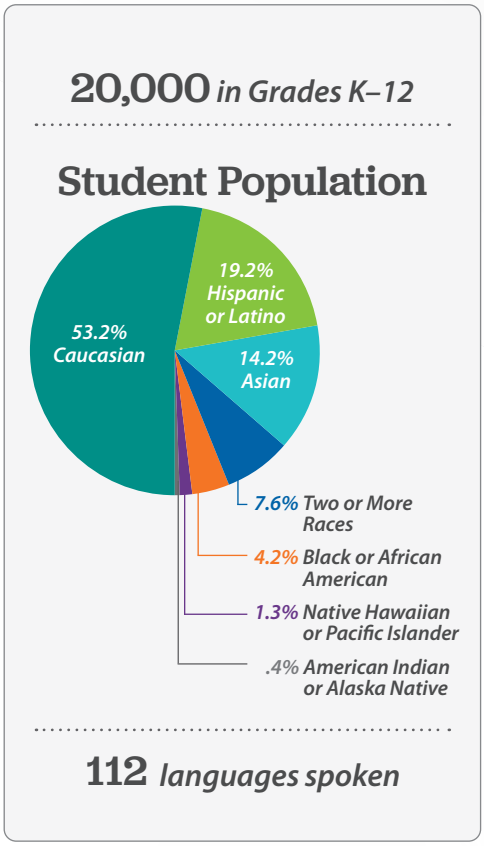
In this case study, Everett Public Schools in Washington State models an effective way to use student performance data to identify and close achievement gaps in a school or district environment. Educators can leverage Everett's experiences to gain practical advice on how to establish or enhance data-driven practices to support each and every student on their path to grade-level proficiency. The following approach to establishing an improvement index in order to help close the achievement gap was presented to educators in June 2019 at the Ferguson Institute by Catherine Matthews of Everett Public Schools. To learn more about the Ferguson Institute, please visit CurriculumAssociates.com/Ferguson.

Catherine Matthews at the 2019 Ferguson Institute

Everett Public Schools

Everett Public Schools is located in the North Puget Sound region, about 25 miles north of Seattle, Washington. Everett serves approximately 20,000 students in Grades K–12 in 26 schools across the district. More than half (53.2%) of Everett's student population is Caucasian, 19.2% of students are Hispanic or Latino, 14.2% of students are Asian, 7.6% of students are two or more races, 4.2% are Black or African American, 1.3% are Pacific Islander, and .4% are American Indian or Alaska Native. Everett's students speak 112 languages, the most common of which is Spanish.

The district staff members in Everett are loyal to their mission "to inspire, educate, and prepare each student to achieve high standards, contribute to our community, and thrive in a global society." While Everett has consistently outperformed the state average on the Smarter Balanced Assessment (SBA) since 2015, their district's overall average proficiency rates have ranged from 55% to 75% proficient on the 2018 SBA, varying by grade and subject area (retrieved from EverettSD.org/Page/18017), and hidden within their overall proficiency rates are achievement gaps among certain student populations. In service of their mission, Everett's school and district leaders are focused on closing these gaps and ensuring that all students are on grade level or on track to being on grade level within an appropriate amount of time. With this goal in mind, Everett has developed a remarkable way of leveraging data to make informed decisions everywhere, from the classroom to the boardroom. Catherine Matthews, Director of Assessment and Research at Everett, recently sat down with Curriculum Associates to describe the district's unique approach to using data to improve decision-making with the students' best interest at front of mind.



The Challenge: Finding the Right Metric

In education, as in other sectors, often what gets measured gets improved. The most commonly reported metrics on state summative exams are scale scores and performance against a set of standards or achievement/performance levels defined by the state department of education. These metrics can be useful for tracking trends over time and for identifying any achievement gaps within a district population. Everett began using the SBA for Mathematics and English Language Arts (ELA)/Literacy as their annual accountability measure in spring 2015. As a result of mining copious amounts of SBA data since then, district leaders identified several persistent—and therefore worrisome—achievement gaps between subgroups for Mathematics and ELA/Literacy scores.

When the superintendent asked the staff if they were successfully closing the achievement gap, Matthews gave this question her full attention. Like most school districts, Everett has a rich data repository. But while there is no shortage of data, Matthews knew there was a lack of precise understanding on a large scale of how each and every one of the district's 20,000 students are doing. Any district administrator interested in closing the achievement gap can sympathize with that being a large number of students to keep track of! Like most districts, Everett leadership was in the habit of examining two key data points: first, students' average scale scores, and second, the percentage of students who were proficient. Likewise, Everett commonly disaggregated these two data points by groups such as students with disabilities, students receiving Free and Reduced-Price Lunch, and race/ethnicity. While these two data points (scale score and proficiency rates) help district and school administrators identify achievement gaps and trends over time, Matthews realized that on their own these two metrics did not tell the full story of student performance for her district. If the goal was to get all students to grade level, then she needed to measure and show this to the superintendent and her colleagues in a way that went beyond proficiency rates and mean scale scores alone.

The Solution: An Index Score That Translates from the Boardroom to the Classroom

Defining the Problem: No Easy Way to Examine the Achievement Gap

Striving to help all students reach grade-level proficiency is paramount for educators in Everett and beyond. As expectations increase year after year, students must continue to demonstrate growth along the way to proficiency. "I thought about how we try and close our achievement gap," Matthews considered. "Usually, we look at a dichotomous question of do we meet standards or not. But, when we look at just the percentage of students who are proficient, we don't know if the gap between, for example low-income and non-low-income students being proficient, comes down to low-income students being a scale score point shy of proficiency or 200 scale score points below the proficiency cut score. Similarly, we don't know if the non-low-income students were just a scale score point or two above proficiency or further along toward Level 4" (personal communication, May 31, 2019). Challenged with this lack of granularity in her own district's data, Matthews sought to quantify the difference in mean scores by performance level and how far into the performance level range students were.

Matthews knew that comparing both proficiency rates and mean SBA scale scores was providing valuable information about the performance of students in different subgroups beyond the binary measure of proficiency rate alone. From examining the spring 2018 data at a high level, Matthews knew that 50.9% of low-income students in Grade 3 were proficient on the SBA for Mathematics compared with 80.4% of non-low-income students in Grade 3. Looking at the mean scale score for low-income students in Grade 3 compared with their non-low-income peers provided Matthews with another powerful layer of information: the gap on the SBA for Mathematics was 64 scale score points. (See Figure 1.)

The SBA reports four achievement levels for Grades 3–8 and 10 on Mathematics and ELA/Literacy (Levels 1–4). Level 3 is considered the threshold for on-grade level proficiency. However, because the SBA scale varies with grade level and does not have equally sized scale score ranges by level, understanding where these mean scale scores place students within performance band levels simply by looking at the data alone is not easy. Using Figure 1, it is difficult to determine at a glance whether low-income students' and non-low-income students' average scale scores place them into SBA Level 1, 2, 3, or 4. Most educators have not memorized the scale score ranges for each performance level and subject, so the scale scores in isolation are not that useful.

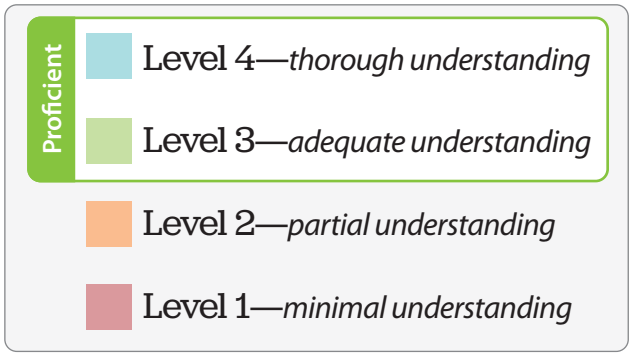


Figure 1: Comparing Mean SBA Mathematics Scale Scores by Grade and Year

Mean scale scores provide more information about the performance of students in different subgroups than the binary measure of proficiency. As shown below, the gap between low-income students and their non-low-income peers in Grade 3 in 2015 on the SBA for Mathematics was 66 scale score points. The mean scale score for low-income students was 2420, while the mean scale score for their non-low-income peers was 2486. Because the SBA scale varies with grade level, does not have equal size ranges by achievement level, and has changed over time, it is not easy to understand where these mean scale scores fall within levels. For example, it is not easy to determine merely by looking at the number if the two scale scores both fall in Level 3 or if one falls in Level 2 and the other in Level 3. This is important because it indicates a relative level of proficiency for students in the subgroup.

Mean Scale Scores in Math for Grade 3 in 2015

Using the Right Data to Solve the Right Problem: An Index Score

Matthews said she believes the index score reconceptualizes the achievement gap in a way that more easily tells the story about students who may need to make a year-and-a-half of growth over multiple years in order to attain the state standard of proficiency for school leaders and for teachers.

In order to ascertain how close an under-performing group's average scale score is to proficiency, and likewise see more precisely where a higher performing group is relative to proficiency, Matthews devised an index score to quantify relative levels of proficiency for students within any group or subgroup. Taking an index approach allowed Matthews and her team to aggregate multiple measures (scale score plus proficiency) into a summary score to measure relative levels of proficiency within grades and subgroups across the district. Matthews said she believes the index score reconceptualizes the achievement gap in a way that more easily tells the story about students who may need to make a year-and-a-half of growth over multiple years in order to attain the state standard of proficiency.

"The SBA index score provides a more instructive view of the gap between subgroups," said Matthews (personal communication, May 31, 2019). "The index is a conversion of individual scale scores based on where the score falls within the achievement level. Unlike comparing mean scale scores, the SBA index score allows district staff to see where the average scale score lands a group within a performance level band and importantly, whether the score is on the low, middle, or high end of the range. Thus, the index score provides more insight into whether students are not only closing the achievement gap, but also illustrates how close to standard students are in one, simple view."

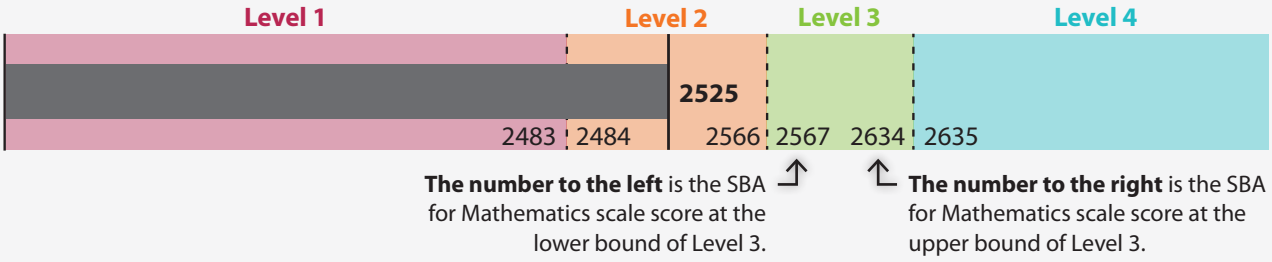
In order to calculate the index score, Matthews developed the following formula:

$$\text{Achievement Level} + \left(\frac{\text{Scale Score} - \text{Lowest Scale Score for Achievement Level}}{\text{Range of Level}}\right) = \text{Index Score}$$

For example, if you wanted to calculate the index score for a Grade 7 student who scored a 2525 on the SBA for Mathematics, you would first locate their score within the SBA achievement level scale score ranges (SmarterBalanced.org/Assessments/Scores). In this case, a Grade 7 student with a score of 2525 is in achievement Level 2, which has a scale score range of 2484 to 2566 (82 scale score points). Next, you will need to plug the actual scale score (2525), the achievement level's scale score range (82), the lower bound of the achievement level's scale score range (2484), and the numeric achievement level (2) into the formula as outlined below:

$$2 + \left(\frac{2525 - 2484}{82}\right) = \text{Index Score of } 2.5$$

Intuitively, an index score of 2.5 makes sense because 2525 is exactly halfway between the lower bound (2484) and the upper bound (2566) of the scale score range for the Grade 7 SBA for Mathematics achievement Level 2.

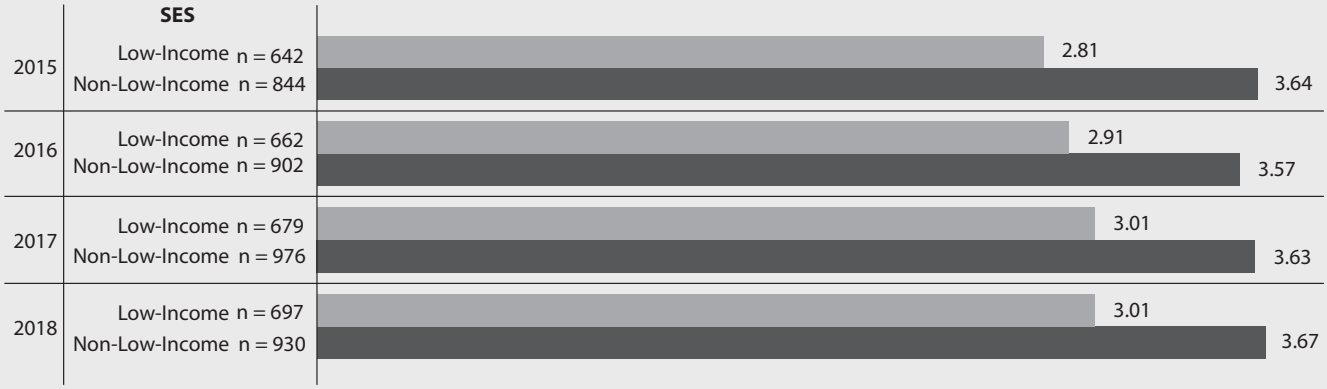


Now look at Figure 2, which displays the SBA index scores for low-income and non-low-income Grade 3 students. In 2015, non-low-income Grade 3 students have an SBA index score of 3.64, which is to say that they are at 64% of the range between Level 3 and Level 4. We can also see that the low-income Grade 3 students' SBA index score in 2015 is 2.81, or 81% of the range from Level 2 to Level 3. With this view, we can now see and more readily understand where students are performing on the path toward proficiency. Comparing the SBA index scores year over year, we can also see how low-income students successfully reached proficiency by 2018 with an SBA index score of 3.01. But while the gap is shrinking, it still remains.

Figure 2: SBA Mathematics Index Score

The SBA index score provides a more instructive view of the gap between subgroups. The index is a conversion of individual scale scores based on where the score falls within the achievement level. The mean of SBA index scores for low-income students is 2.81, or 81% of the range from Level 1 to Level 2. The mean SBA index score for non-low-income students is 3.64, or 64% of the range between Level 3 and Level 4. Unlike comparing mean scale scores, we can now see where these two groups fall in levels—Level 1 versus Level 2—which will tell us about the level of proficiency. It also tells us whether the score is on the low, middle, or high end of the range. Low-income students are at 2.81, which is approaching the standard of Level 3. Non-low-income students are about two-thirds of the way between Level 3 and Level 4 at 3.64.

Index Score in Mathematics for Grade 3 by Year



Matthews has also devised ways to compare the SBA index score across all student ethnicity groups the district tracks in alignment with the Every Student Succeeds Act (ESSA) Washington State plan. Matthews and her team use the chart below to look for SBA index scores increasing year over year and ultimately surpassing a 3.0 for all student ethnicity groups, which is equivalent to grade-level proficiency. With a user-friendly dashboard, administrators can toggle between the district-level view and a school-level view (see Figure 3 on the next page). They can drill down to a particular school and grade to identify where they might be stagnating and then, importantly, as Matthews emphasizes: "We can do something about it" (personal communication, May 31, 2019).

Figure 3: SBA ELA/Literacy Index Scores by Ethnicity for Grade 3

	Asian	Black or African American	Hispanic or Latino	Native Hawaiian or Pacific Islander	Two or More Races	White	All
2015	3.70	3.05	2.90	2.56	3.42	3.42	3.32
2016	3.67	2.98	2.85	2.47	3.21	3.37	3.26
2017	3.62	2.85	2.88	2.51	3.36	3.36	3.27
2018	3.68	3.35	3.01	2.53	3.33	3.46	3.37

Educators in Everett have access to a user-friendly dashboard where they can view the district-level index scores by ethnicity as shown above, as well as drill down to see the school-level index scores by ethnicity. From there, they can drill down further to see the grade-level index scores by ethnicity within each school.

Using the Data

Figure 4: SBA ELA Index Score Difference for Grade 3

	Asian	Black or African American	Hispanic or Latino	Native Hawaiian or Pacific Islander	Two or More Races	White
2015	.37	-.27	-.42	-.76	.09	.10
2016	.40	-.28	-.41	-.80	-.05	.10
2017	.35	-.42	-.39	-.76	.10	.09
2018	.32	-.02	-.35	-.83	-.04	.09

Everett's approach to data is "all hands on deck." Matthews's team makes extensive data sets available to school building leaders, and the school leaders regularly develop and present an action plan back to the school board and cabinet stating their metrics, what actions they took, and what actions they will take. Working hand-in-hand with a common, transparent set of data helps school and district leaders make important instructional decisions that ultimately benefit their students.

Perhaps one of the most important data visualizations that Matthews has created is depicted in Figure 4. As we have learned, students with an SBA index score of 3.0 is equivalent to Level 3, or proficient. To visually show where student groups are making progress, Matthews isolated the ***difference in SBA index scores*** to depict where student groups are performing at Level 3 or higher ***and*** are closing the achievement gap. For example, Black or African-American students who were in Grade 3 had an index score of 3.05 in 2015 and an index score of 3.35 in 2018. Moreover, we can see how Black or African-American students in Grade 3 are in fact closing the gap and are extremely close to proficiency as evidenced by their SBA index score difference decrease from -.27 (or .27 index score points away from Level 3) on the SBA for ELA/Literacy in 2015 to -.02 (or .02 index score points away from Level 3) on the SBA for ELA/Literacy in 2018. This data view helps Matthews answer the superintendent's question of whether they are successfully closing the achievement gap. Importantly, this accelerated growth among Black or African-American students in Grade 3 may not have been possible without Everett leadership first shining a light on where a gap existed so it could be addressed in each Grade 3 student's school and classroom year over year.

Using the same approach as with their district-level data, Matthews can drill down to individual student performance and share that with classroom teachers (see Figure 5 on the next page). Just as with the above district-level group example, the scale score for each student is converted to an index score based on their scale score range for their current grade level and year of test. For a classroom teacher, students' SBA index scores can help shine a light on which students need targeted intervention in order to meet strategic goals. The SBA index scores can also show where students' learning is being accelerated.

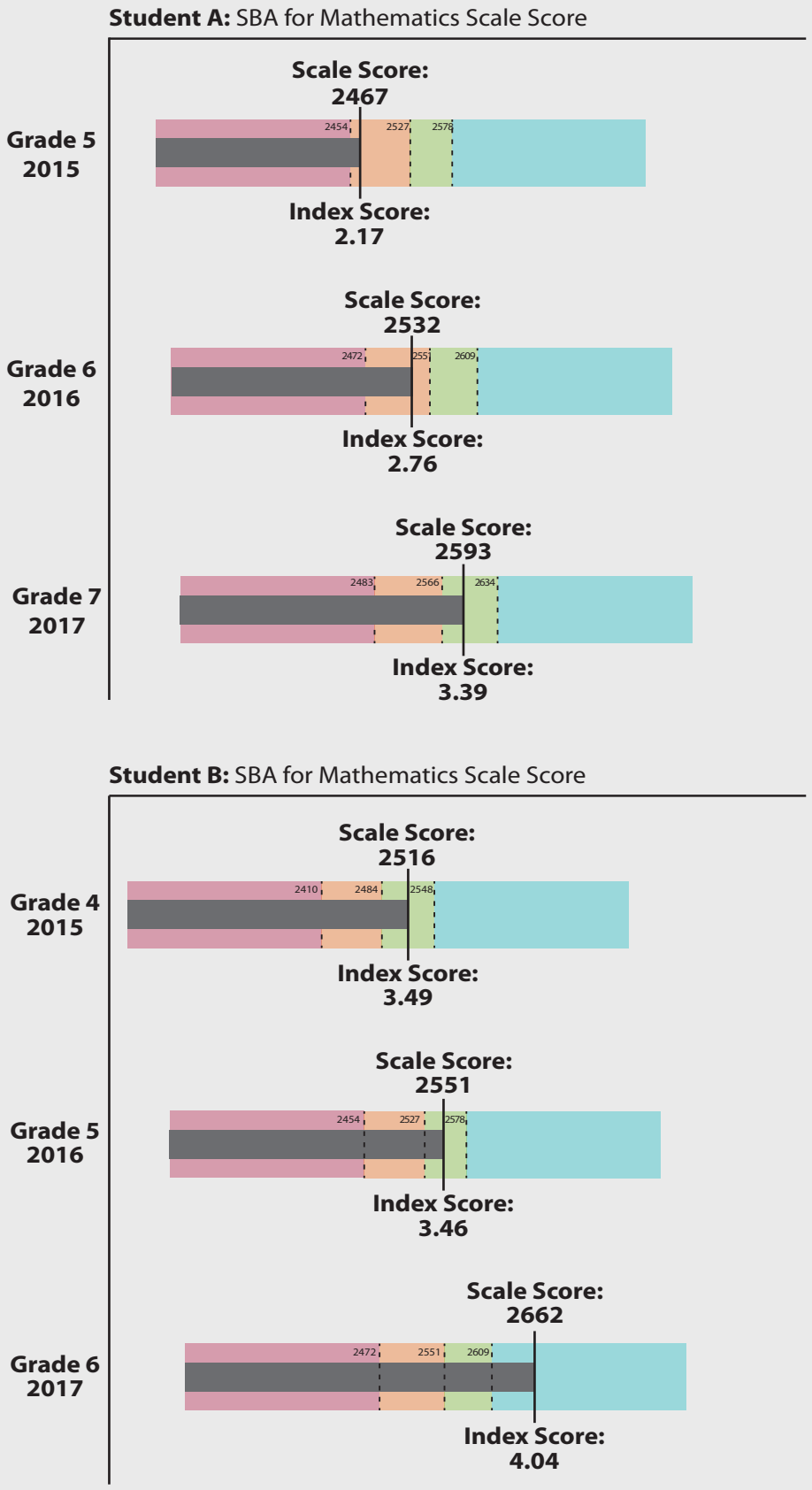
Using Figure 5, find Student A. In 2015, she earned a 2467 scale score on the Grade 5 SBA for Mathematics, which is a Level 2 score. Student A has an index score of 2.17, which is 17% of the range of Level 2. The following year in 2016, she earned a 2532 scale score, which is still a Level 2 score, but her index score improved to 2.76, which is 76% of the range of Level 2. Between Grades 5 and 6, Student A's performance improved, and she got closer to meeting the standard, but she hasn't met her grade-level standard yet. In Grade 7, Student A earned a 2593 scale score, which places her into on-grade level proficiency (Level 3). Her index score is 3.39, or 39% of the distance between Level 3 and Level 4.

In contrast, Student B increased his scale score from 2516 in Grade 4 in 2015 to 2551 in Grade 5 in 2016. However, even though he was on grade level at Level 3, he did not improve his performance between Grade 4 and Grade 5 as his index score decreased from 3.49 to 3.46. In 2017, Student B did improve his scale score to 2662, which placed him into Level 4 with an index score of 4.04.

Key

- Level 4—thorough understanding
- Level 3—adequate understanding
- Level 2—partial understanding
- Level 1—minimal understanding

Figure 5: Student Performance Using the SBA Index Score



> *i-Ready* for us is about filling the gaps. We get this rich report that tells us the gaps the student needs to fill in.

Connecting Data to Instruction

"Rigorous instruction aligned to the standards matters," Matthews emphasized. "*i-Ready* for us is about filling the gaps. We get this rich report that tells us the gaps the student needs to fill in. Unless you fill in the gaps, your student won't be able to access the learning when the teacher is ready to teach it. And unless you have some way to fill the gap in by yourself, which is hard for a teacher with 24 students at varying levels in his or her classroom, then you need a personalized learning path" (personal communication, May 31, 2019).

Matthews recognizes that it might take two to three academic school years for students to move from below grade level into grade-level proficiency. Looking at the index scores helps Matthews and her team of dedicated educators see where they need to focus instructional efforts in the short and longer term. For those students who did not get any closer to proficiency based on their most recent test, Matthews and her colleagues ask themselves, "What is it going to take? With only 180 days—even with a great teacher—it will take figuring out what the gaps are: what did this student miss that is preventing him from accessing on-grade level instruction? A personalized learning path is gap-filling. That is how we get students to standard" (personal communication, May 31, 2019). Matthews and her team mine the district's data patterns over time across all subject areas, student groups, grades, and schools. They also look for the positives when they see a jump in an SBA index score. When they see, for example, an SBA index score increase of .5 for a particular student, grade, or group, they will celebrate the advance. When they see a decrease in an SBA index score, the team will turn to *i-Ready Instruction*'s online learning modules and teacher resources to further support the student in skills and knowledge development.

Summary

From the classroom to the boardroom, educators in Everett are taking an "all-hands-on-deck," data-informed approach to improving instruction and ultimately student outcomes. The district staff members truly believe that each student has the ability to learn and achieve at high standards. By making data more approachable and easier to understand, Matthews helped empower her staff to interpret SBA performance data at a glance and turn it into action. These actions include identifying which students need support, allocating appropriate resources, and providing highly engaging classroom instruction aligned to standards, including the use of *i-Ready Instruction* every day. Educators in Everett aspire for all students to be on grade level, but recognize that it can sometimes take two or three years for a student to catch up. Leveraging SBA index data allows them to identify where students are accelerating and where students need more support. School leaders were able to improve achievement gaps with a simplified approach to viewing them. Taking the index approach together as a team has helped Everett close up some of their achievement gaps over the past three years. You can learn more online about Everett's successes at EverettSD.org/Curriculum-Assessment.

Acknowledgements

Thank you to Catherine Matthews for her dedication to reducing the achievement gap in her district, which led her to develop this unique and informative SBA index approach. Matthews presented her approach to an audience of educators during Curriculum Associates' first Ferguson Institute in June 2019. For other educators who would like to use a similar approach in their district, please use the suggested citation crediting Matthews below.

Suggested Citation

Matthews, C. (2019). *Closing the equity gap—A new way of looking at data*. Presented at the Frank Ferguson Institute of Curriculum Associates. Cambridge, MA.

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In a single program, *i-Ready* integrates powerful assessments and insights with effective and engaging instruction in Mathematics and Reading to address a student's individual needs. To learn more about *i-Ready*, visit i-Ready.com/Tour.

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