



Middle School Mathematics Curriculum Implementation

Findings from the Second Year of a Three-Year Study of the District's Middle School Math Curriculum Adoption

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Abstract:

In 2018, the School Board approved a \$2 million investment in enVisionmath2.0 ("enVision"), a textbook and associated materials for students learning math content for grades 6-8. Research & Evaluation (R&E) is partnering with Curriculum, Assessment & Instruction (CAI) in a three-year review of enVision implementation. These findings are from 2019-20, which is Year 2 of the study, and focus on successes and challenges in the second year of implementation of the instructional materials. Given the district priorities and the Spring 2020 COVID-related school closures, evaluation this year leaned exclusively

data from a survey in February 2020 of all teachers who indicated that they teach middle school math content.

Key findings from Year 2 implementation of enVision include:

- Response Rates: We heard from 87 teachers of middle school mathematics content. Of those respondents, 17 are elementary teachers and 70 are middle school teachers. The middle school teacher response rate was 60%.
- Fidelity of Implementation: We calculated an implementation index using various components of fidelity (e.g. frequency of use, leadership expectations, etc.), and found that implementation fidelity of enVision fell this past year, going from 59% use “as intended” to 50%. The drop was greater for elementary teachers (teaching HCC classes) than for middle school teachers.
- Teacher Practices: Teachers reported some declines in instructional practices with enVision in some areas (e.g. ability to engage in student discourse, probe for deeper conceptual understanding) and gains in other areas (e.g. differentiating instruction to diverse learner needs, understanding Common Core instruction). Teachers also have low levels of agreement – and a drop in agreement from last year – on the question of whether the instructional materials are culturally relevant.
- Assessments: Teachers are using the enVision embedded assessments, but the majority are modifying them before they use them. Modification is much more prevalent in middle school classrooms than in elementary classrooms.
- Student Outcomes: Perceptions of student engagement have fallen in 2019-20 from the previous year, with 56% of teachers agreeing that students are engaged, down from 73% in 2018-19. Perceptions of the degree to which the materials help students meet the math practice standards and raise student academic achievement for particular groups of students (e.g. students of color furthest from educational justice, English Language Learner students, and students with disabilities) have also fallen from the previous year.

In response to the Year 2 survey findings on this survey, as well as remote learning environments in 2020-21, the district has planned the following adjustments to the implementation of enVision materials:

- Providing a pared-down scope and sequence for 2020-21 school year that focuses on priority standards and aligned lessons;
- Upgrading to “enVision 2021,” which has enhanced features to support classroom discourse, more robust ELL supports, a new observation and recording tool to capture student thinking and work;
- Launching a professional development series on facilitating productive math discussing during enVision lessons;
- Entering into a digital partnership with nine other large urban enVision districts that includes cross-district collaboration, input to the publisher, and tailored PD opportunities;
- Preparing to offer enVision 7 Accelerated, in a Math 7/8 compacted course prioritizing the enrollment of students of color who are ready to accelerate;
- Convening a group of middle school educators, including educators of color, to further understand why some of the findings in the teacher survey results changed.

Research activities for Year 3 will focus on implementation of the new remote learning technology tools, needed professional development supports, and student engagement as measured through self-report and user data. As in past years, the study will center on supports for students of color furthest from educational justice, particularly African American males.

2020 Curriculum & Instruction Teacher Survey: Middle School Math Findings

Seattle Public Schools
Research & Evaluation Department
June 2020



Jessica K. Beaver, PhD
Lief Esbenschade

MS Math Study Overview

- | | |
|---------------|---|
| Goal 1 | Use evaluation data to contribute to continuous improvement efforts in curriculum adoption and implementation |
| Goal 2 | Study schools' implementation of high-leverage, gap-closing strategies in middle school mathematics content and instruction |
| Goal 3 | Examine effect of curriculum on student achievement (future) |

Theory of Action

IF WE

Provide access to high-quality, standards-aligned, rigorous, coherent middle school math instructional materials;
Provide coordinated, robust professional development to teachers and principals; and
Identify at least one person in each school who will help guide implementation...



THEN

Principals and/or identified school staff will become “lead learners” who support teachers’ ability to grow in their beliefs and practice;
Teachers will implement enVision using high-quality, equity-based teaching practices; and
ALL students will perceive themselves as capable and proficient mathematicians demonstrating deep understanding of math standards



SO THAT

By 2025, the opportunity gap in math is eliminated and students enter high school prepared to be successful on their college, career, and life math pathway.

Adoption Materials and Resources

Teacher and Leader Shifts

Student Outcomes

Impact

Deliver enVision Math 2.0 “as intended”

Instructional Materials

- *Teachers consistently use enVision materials/framework in the classroom*
- *School leaders provide clear communication to staff, as well as opportunities for staff to collaboratively plan implementation*

Professional learning

Teachers, leaders and identified staff attend coordinated professional learning sessions, engage in cooperative learning (e.g. in learning walks, PLCs)

Formative Assessments

Teachers use data from a wide range of grade-level assessments – including District Interim Assessments – to guide instruction of enVision

School leaders and identified school staff are empowered as “lead learners”

Perception data (surveys, interviews)



Teachers shift to student-centered, equity-based teaching practices with opportunities for students to explore math for deep conceptual understanding

- *Classroom observations*
- *Perception data (surveys, focus groups) – including student voice*
- *Interim Assessment data*

Students are engaged, motivated math learners

- *Classroom observations*
- *Perception data (surveys, focus groups) – including student voice*

Students achieve at high levels in mathematics

- *SBA proficiency (7th grade)*
- *Math growth (6th grade)*
- *Gap elimination for students of color furthest from educational justice, ELL students, students with disabilities*

More students – particularly students of color furthest from educational justice – access and successfully complete advanced HS math courses

8th grade Algebra completion
HS course-taking patterns
Course completion, GPA



Students graduate ready for STEM-based college courses, career and technical trades

Graduation rate trends
Postsecondary data trends (NSC)

Supports and Resources

- “Taught as Intended” expectations
- CAI staff
- Board approved funding
- Continuous improvement study from Research & Evaluation
- Dedicated professional development time

Study Context for Years 1 and 2

	Year 1	Year 2
Instructional Leadership	In-depth enVision sessions with middle school principals on five occasions (Sept, Oct, Nov, Dec, Jan, Apr).	One presentation to middle school principals in October 2019
Professional Development for Teachers	Two days of initial use professional development required for all teachers. Options to participate in up to 3 additional days of professional development	Optional 2-day summer session on “engaging reluctant learners.” One-day initial use training for new teachers in fall 2019. Additional optional PD planned for Spring 2020 but was not delivered due to COVID-related school closures.
Other	Full-time Math Program Manager in place with facilitation of Strategic Plan Workgroup on 5 th and 7 th Grade Math goals	Interim Math Program Manager and temporary pause in Strategic Plan Workgroup

What is the 2020 Teacher Survey?

- **Timeline:** Administered in February 2020.
- **Areas of Focus:** Teacher practices in curriculum implementation (K-5 ELA, Middle School Math, and K-5 science) and the Superintendent's 3rd Grade Early Literacy Goal.
- **Goal:** Better understand teachers' classroom practices so that the district can design better supports and learn from schools' implementation efforts.



Teacher self-report data are not intended to stand on their own as “outcome data.” Instead, they should be viewed as an important indicator that can help influence future efforts on behalf of students. Furthermore, the survey was administered prior to the school closures, and therefore does not reflect the reality of middle school math content instruction during this time.

Response Rates

Overall Response Rates

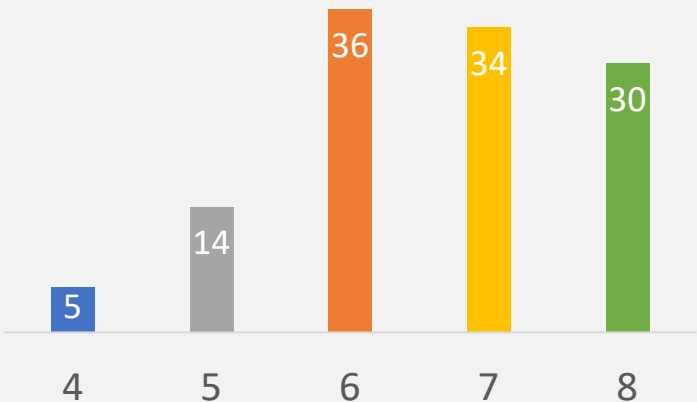
87 teachers responded
(roughly the same as last year).

Of those respondents,
17 are elementary teachers and
70 are middle school teachers.

The middle school teacher response
rate was **60%**.

Responses by Grade Level

Number of Teachers by
Grade Level



Note: 21 teachers indicated that they
teach more than one grade level

Middle School Responses Rates

Aki Kurose	2	7	29%
Broadview-Thomson	3	2	150%*
Catharine Blaine	2	2	100%
Denny	0	9	0%
Eagle Staff	5	6	83%
Eckstein	7	6	117%*
Hamilton	6	7	86%
Hazel Wolf	2	3	67%
Jane Addams	2	9	22%
Licton Springs	1	1	100%
Louisa Boren	0	4	0%
Madison	8	12	67%
McClure	4	8	50%
Meany	5	4	125%*
Mercer	8	9	89%
Orca	2	3	67%
Pathfinder	1	3	33%
Salmon Bay	3	5	60%
Seattle World School	0	1	0%
South Shore	4	2	200%*
TOPS	1	2	50%
Washington	2	6	33%
Whitman	2	6	33%

*Wherever possible, analysis was restricted to classroom teachers. A response rate over 100% indicates that some specialists/interventionist may have responded, or some teachers may have taken the survey more than once.

Prompts for reviewing the survey findings

1

What in the data is surprising?

2

What more information do we wish we had?

How would we go about getting that information? (e.g., additional looks at the survey findings, qualitative data collection, etc.)

3

How do the findings inform our decisions to support the 3rd grade goal this year? Next year?



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Fidelity of Implementation



Questions about....

- “Taught as Intended” (TAI) definition
- TAI findings
- Supplementation



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"Taught as Intended" Definition

How did we use the survey to assess implementation fidelity?

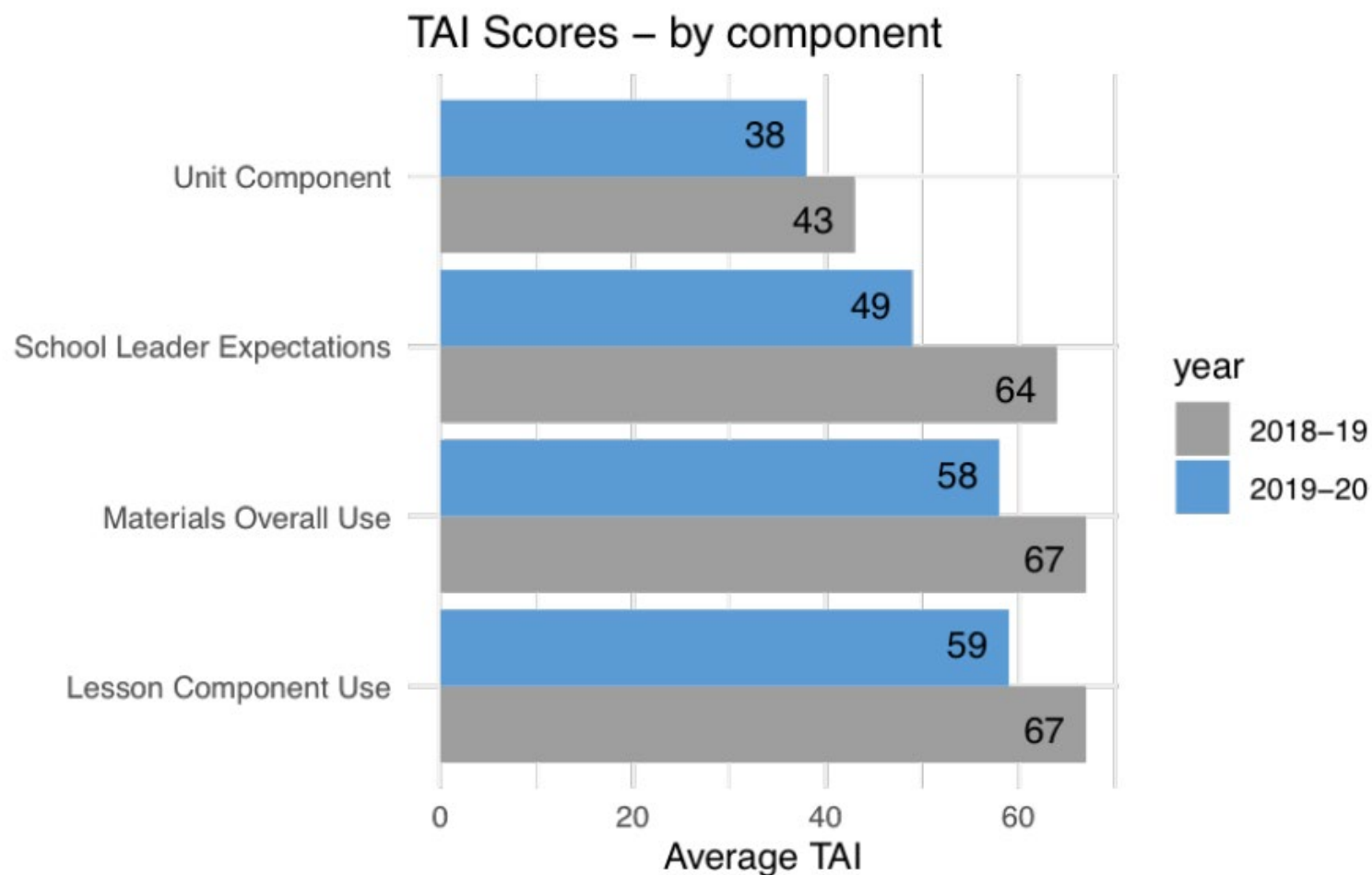
Materials Overall Use	Lesson Components	Unit Components	Leadership Expectations
• 1 Question • Reported use at least 4 days/week	• Combined 3 questions • Reported use "Always," "Often" (or "Sometimes" for the third question)	• Combined 6 questions • Reported use "Always" or "Often"	• 1 Question • "Strongly Agree" or "Agree" with statement

What is missing from this definition?

- Adherence to scope and sequence, pacing
- Indicators of implementation *quality*
- Understanding where/how teachers supplement enVision

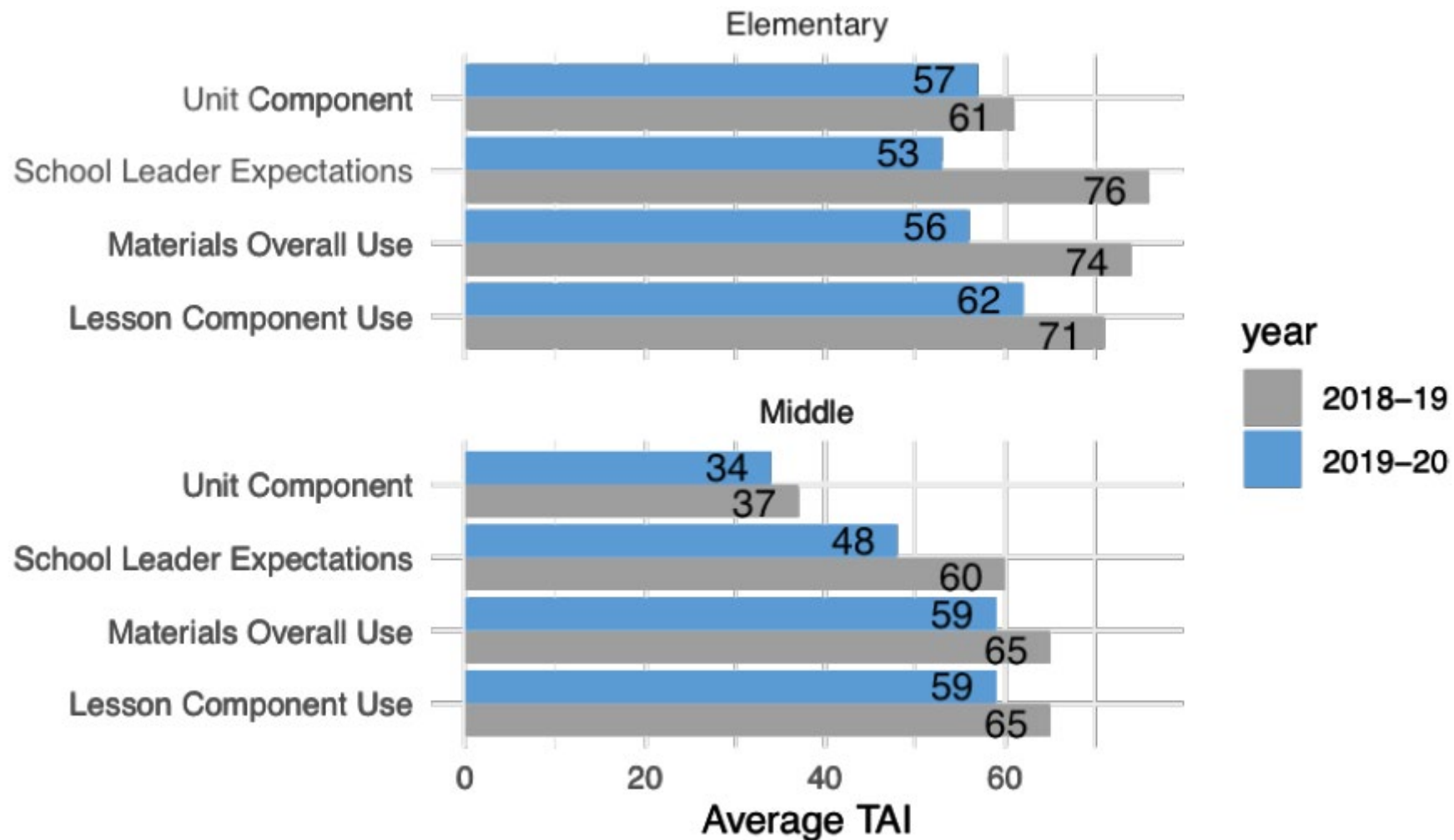
“Taught as Intended” Components

Looking across all teacher respondents, the overall implementation of the enVision instructional materials decreased in 2019-20 compared to 2018-19. The greatest decrease was in school leaders’ expectations that the materials would be “taught as intended.”



“Taught as Intended” Components

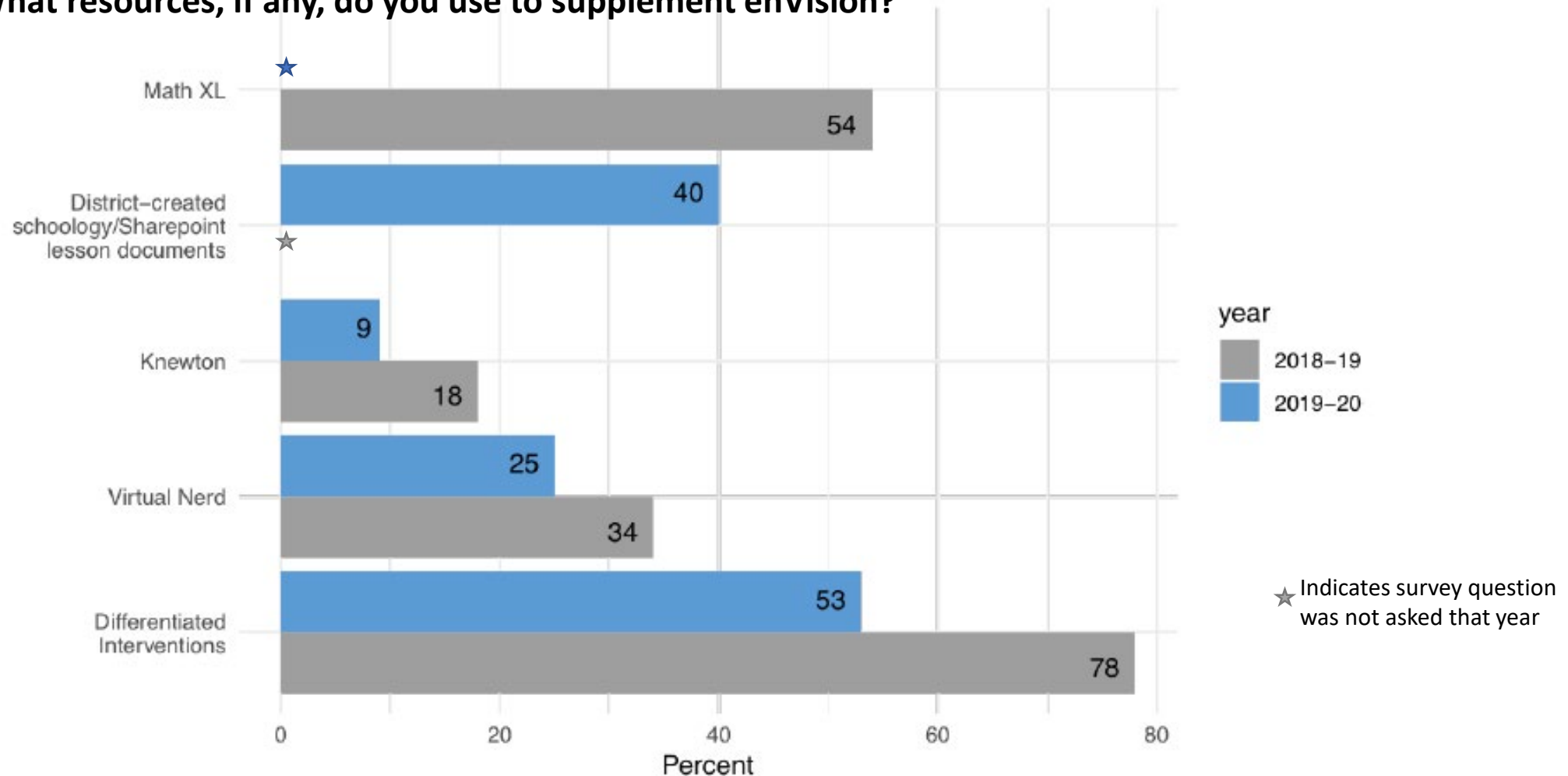
Examining implementation by level (elementary versus middle school), there is greater year-to-year stability in middle schools than there is in elementary schools.



Supplementation

The enVision materials include several within-curriculum supplements. Reported use of these supplements is shown below, with year-to-year comparisons where available.

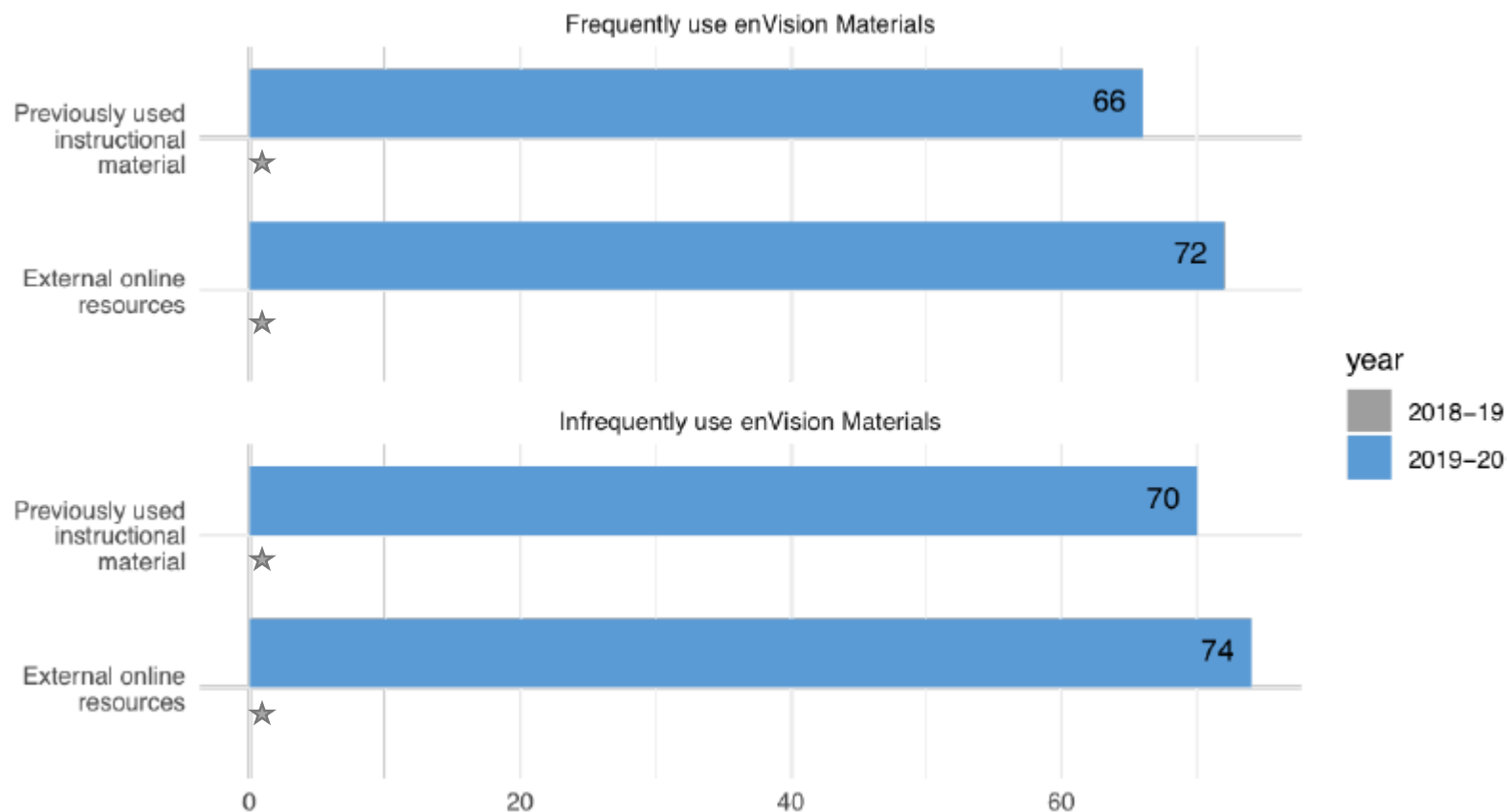
What resources, if any, do you use to supplement enVision?



Supplementation

Teachers may also choose to supplement with external materials. Reported use of these supplements is high, even among those teachers who report that they use the enVision materials regularly. We did not have survey questions on external supplements in 2018-19.

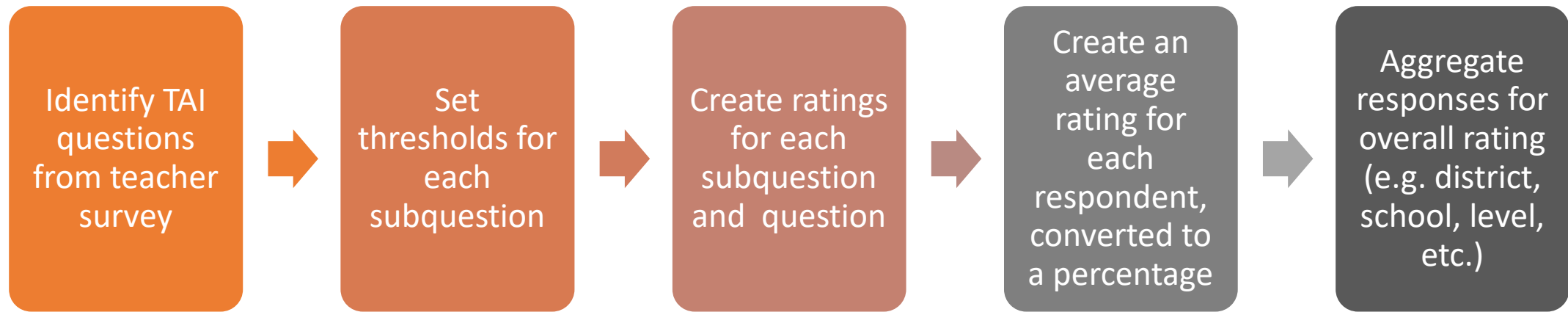
What resources, if any, do you use to supplement enVision?



★ Indicates survey question was not asked that year

Creating a “Taught as Intended” Index

General strategy:



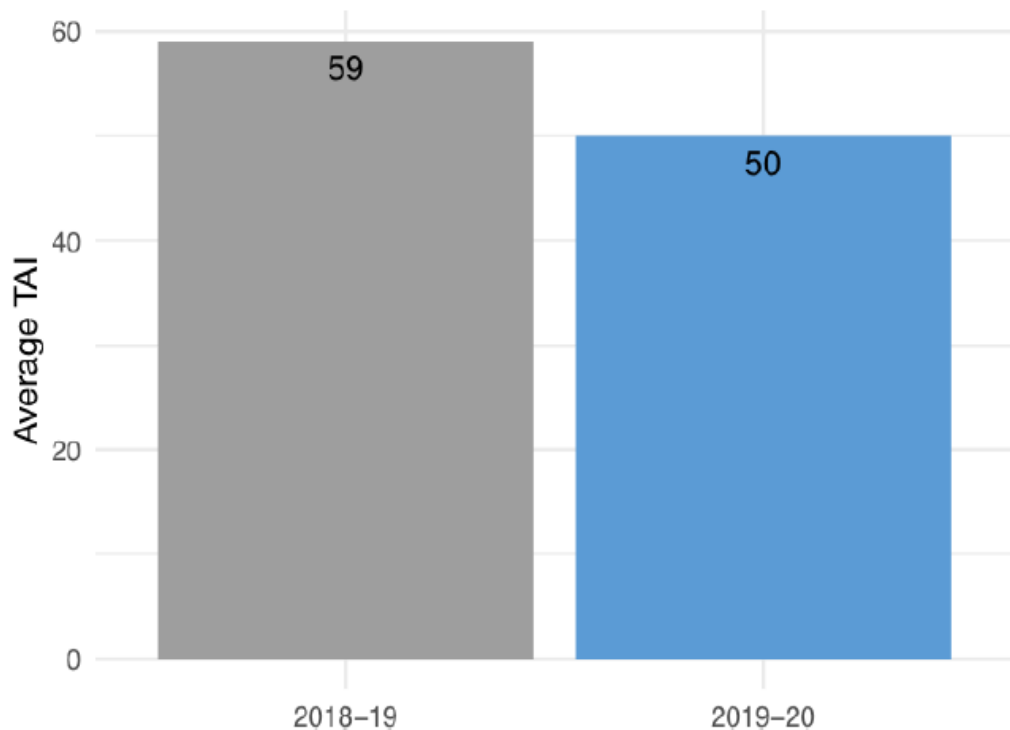
What does this tell us?

“On average across the [school/district], teachers are implementing the enVision instructional materials XX% ‘as intended’”

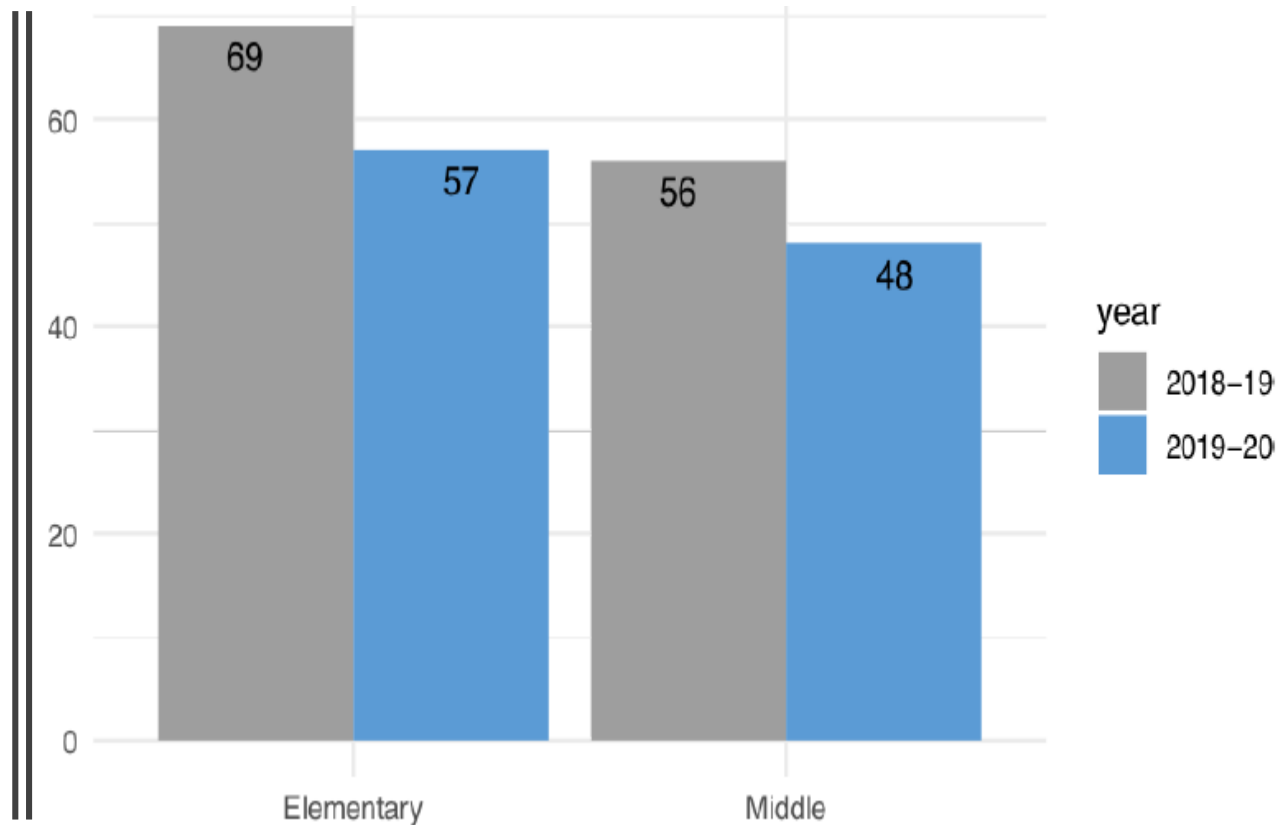
“Taught as Intended” Overall

Overall, teachers are teaching enVision 50% “as intended” in 2019-20, a 9-percentage point decrease from 2018-19. Looking by level shows that both elementary and middle schools show decreases in implementation fidelity, but steeper declines in elementary schools.

Overall



By Level



Teacher Practice Shifts



Questions about....

- Instructional practices
- Cultural relevance of texts
- PD/supports requested for next year

Instructional Practices

Using enVision has helped me to....

Use students' cultural knowledge/experiences

Shift to student-centered instruction

Hold all students to high expectations

Facilitate meaningful mathematical discourse

Engage in deeper conceptual understanding

Differentiate my instruction

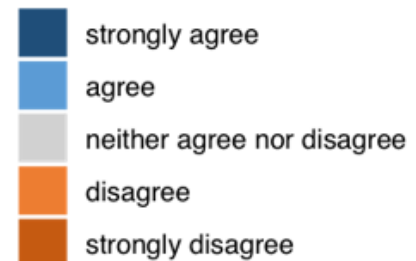
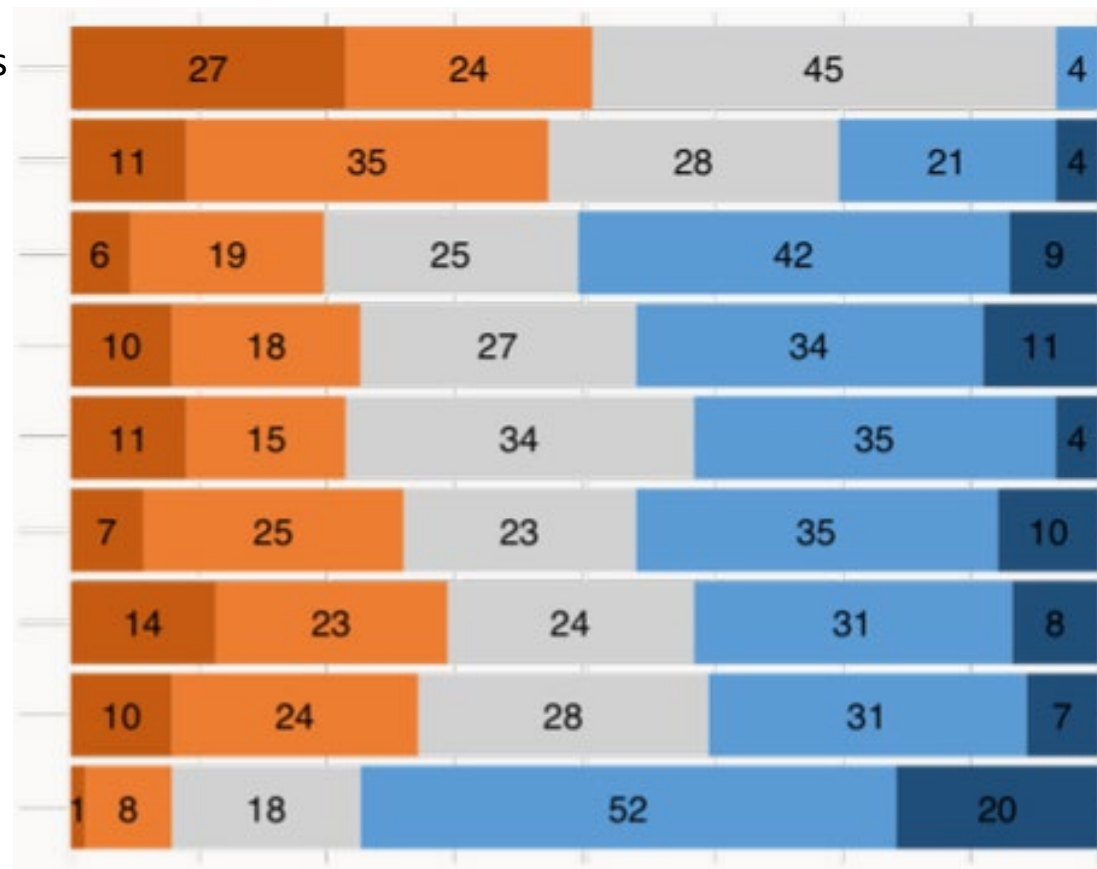
Dedicate time to other areas of my practice

Connect math to real-world issues

Align my instruction to the CCSS

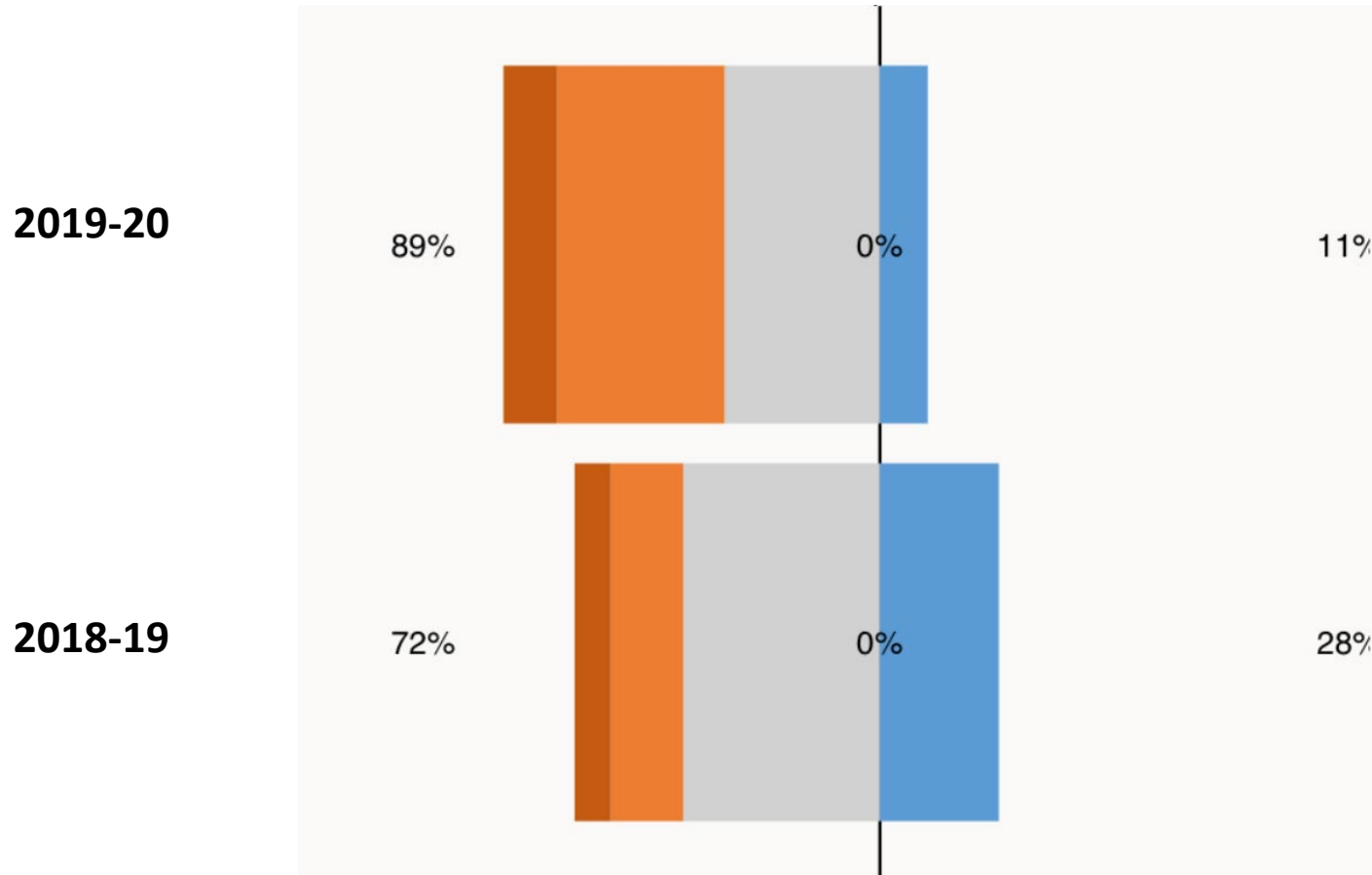
2019-20

Change

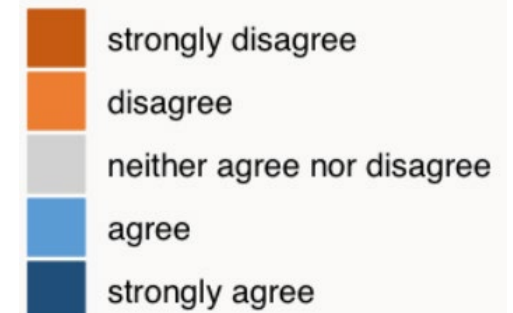


Cultural Relevance of Texts

The enVision textual materials are culturally and ethnically relevant – they represent the diversity of students and contribute to the development of understanding identity with distinct cultures and issues of gender, ethnic, cultural, occupational and religious groups.



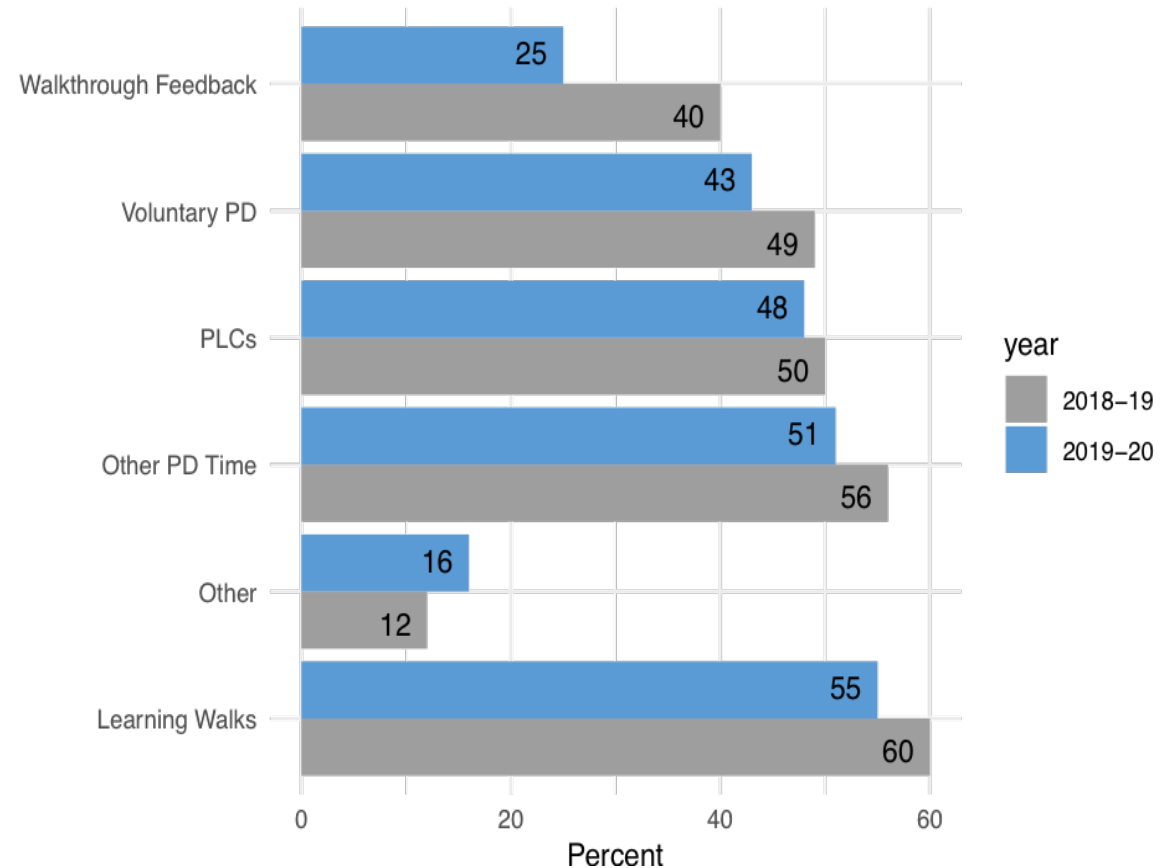
Note: The enVision materials were evaluated and passed the SPS Anti-Bias Screener, scoring higher than the other piloted material on cultural responsiveness. That said, the response trends shown here likely reflect our district's evolving understanding of cultural relevance in instructional materials, which will require us all to take deeper and more nuanced looks at this question in the future.



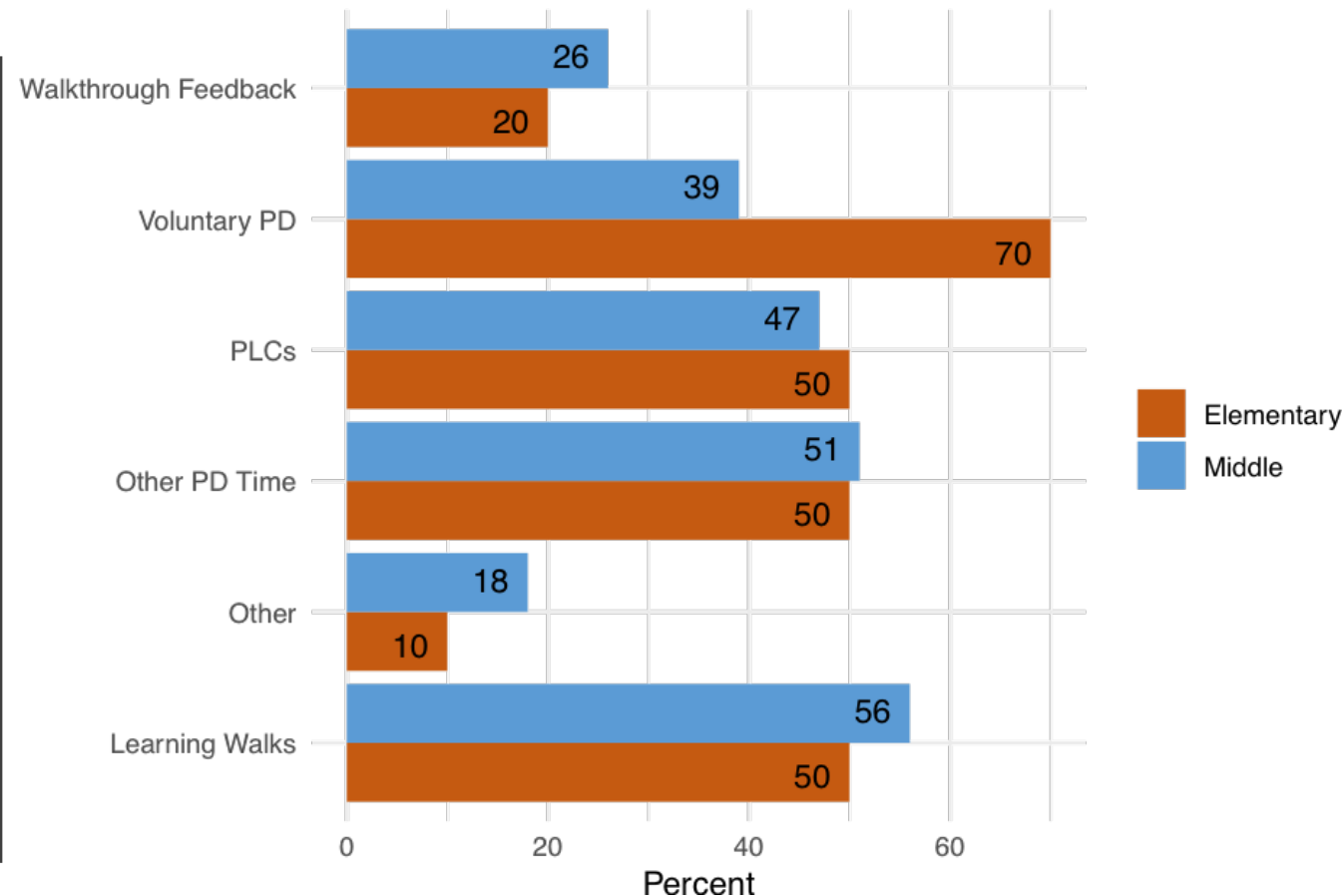
Desired Professional Development

What professional learning opportunities related to enVision would teachers like in the future?

Year-to-Year Trends



2020 Elementary vs. Middle School



Assessment



Questions about....

- SBA Interim Assessments
- enVision embedded assessments



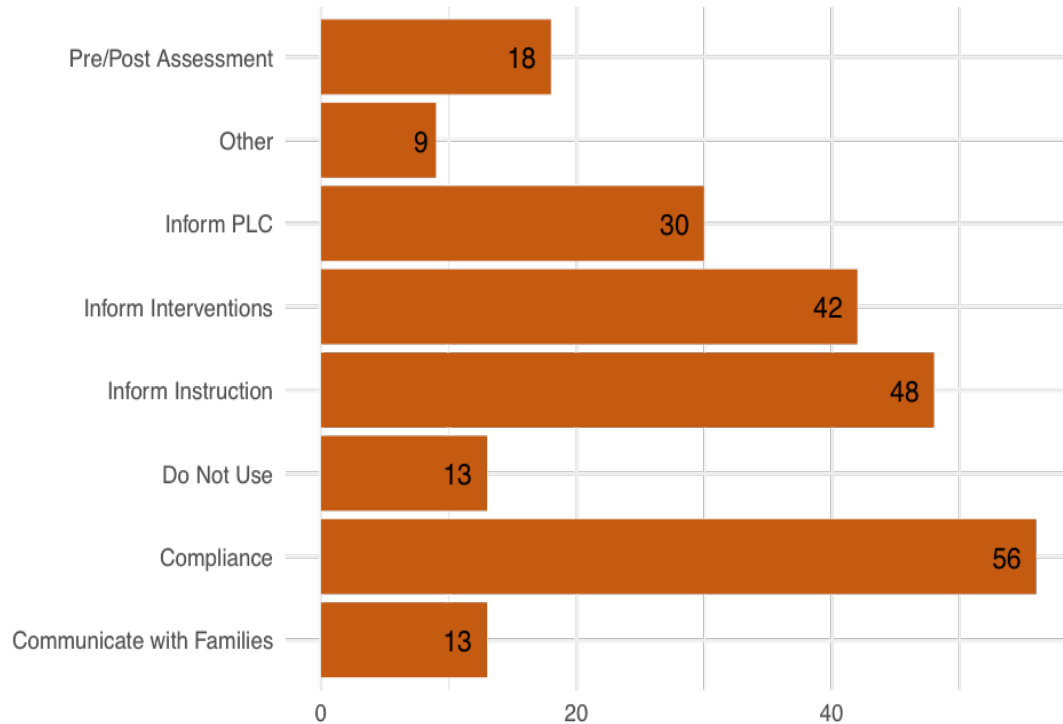
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SBA Interim Assessments

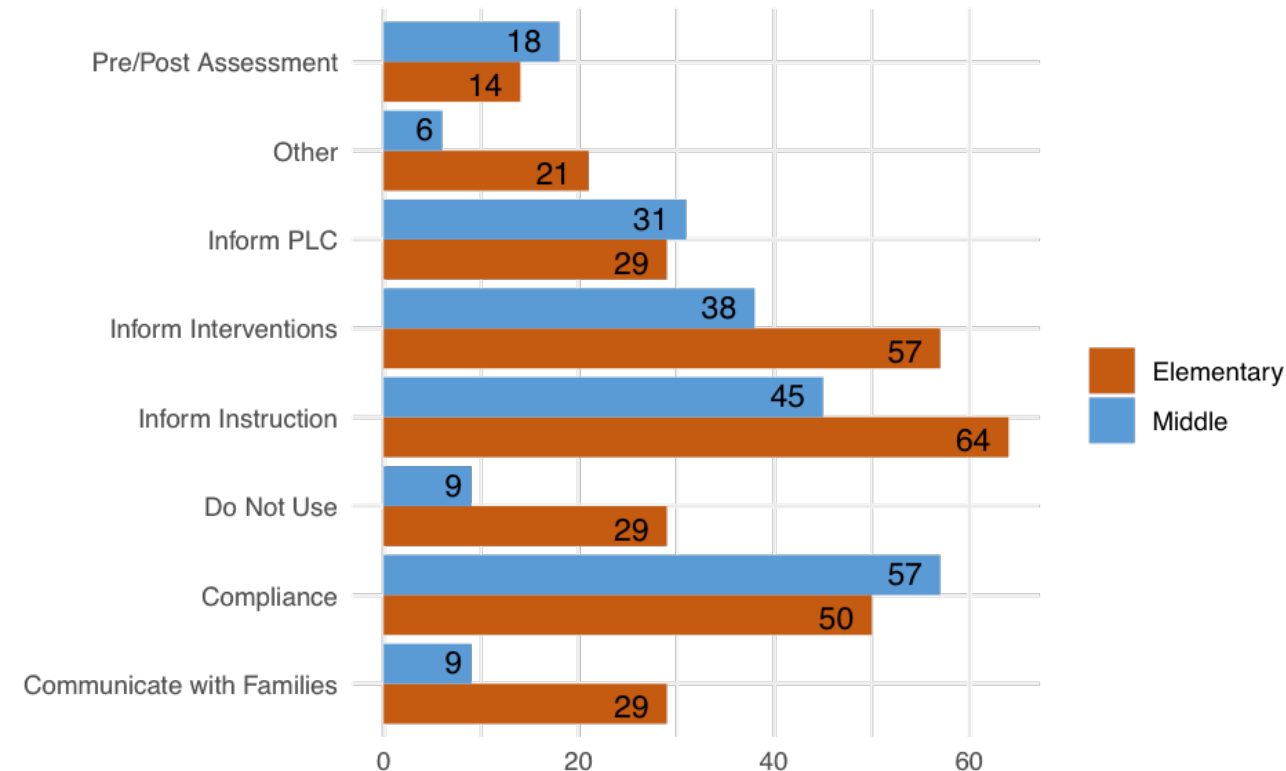
How do teachers use the SBA Interim Assessments?

(shown as percentage of respondents who indicated that they used SBA Interims for that purpose)

Overall



By Level



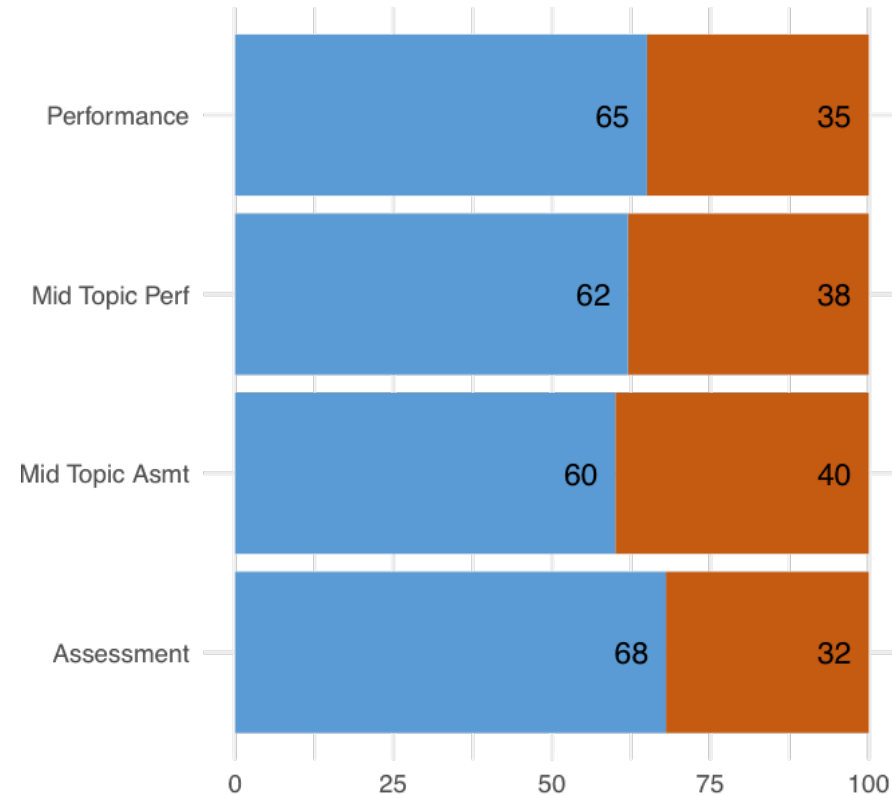
*"Other" responses focused mainly on practice for the SBAs

enVision Embedded Assessments

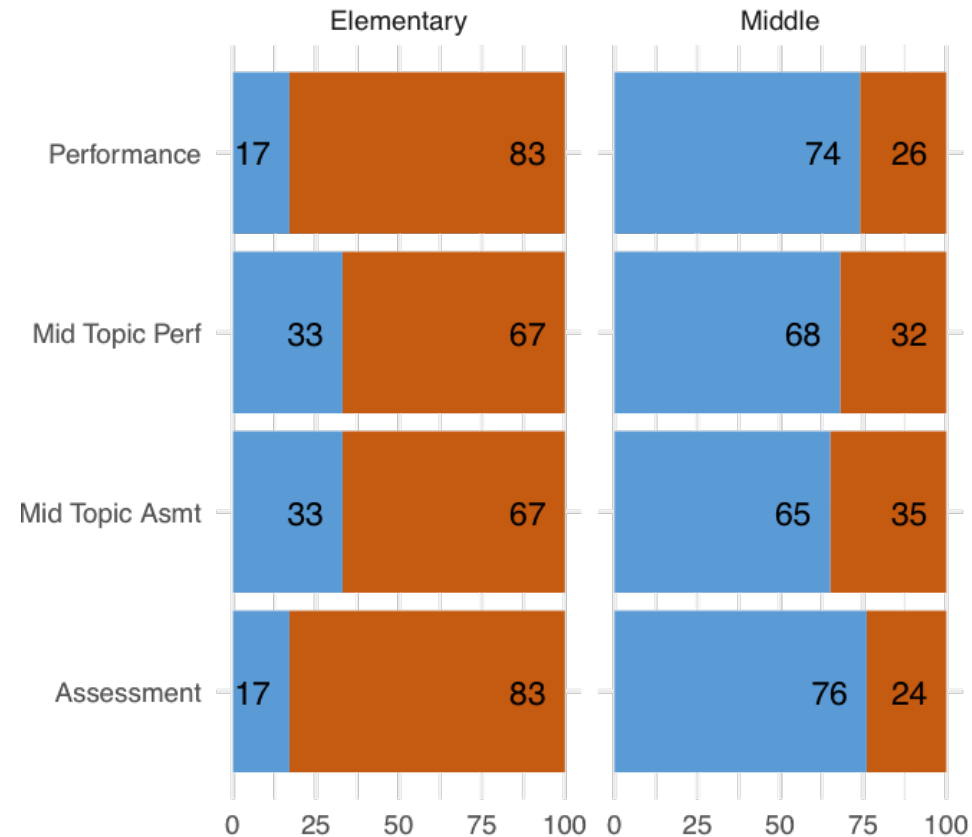
Do teachers modify the envision embedded assessments?

(shown as percentage of respondents who indicated that they use assessments “as is” vs. “in a modified way”)

All Respondents



Elementary vs. Middle School



I Use the Assessment

As is
In a modified way

Student Outcomes



Questions about....

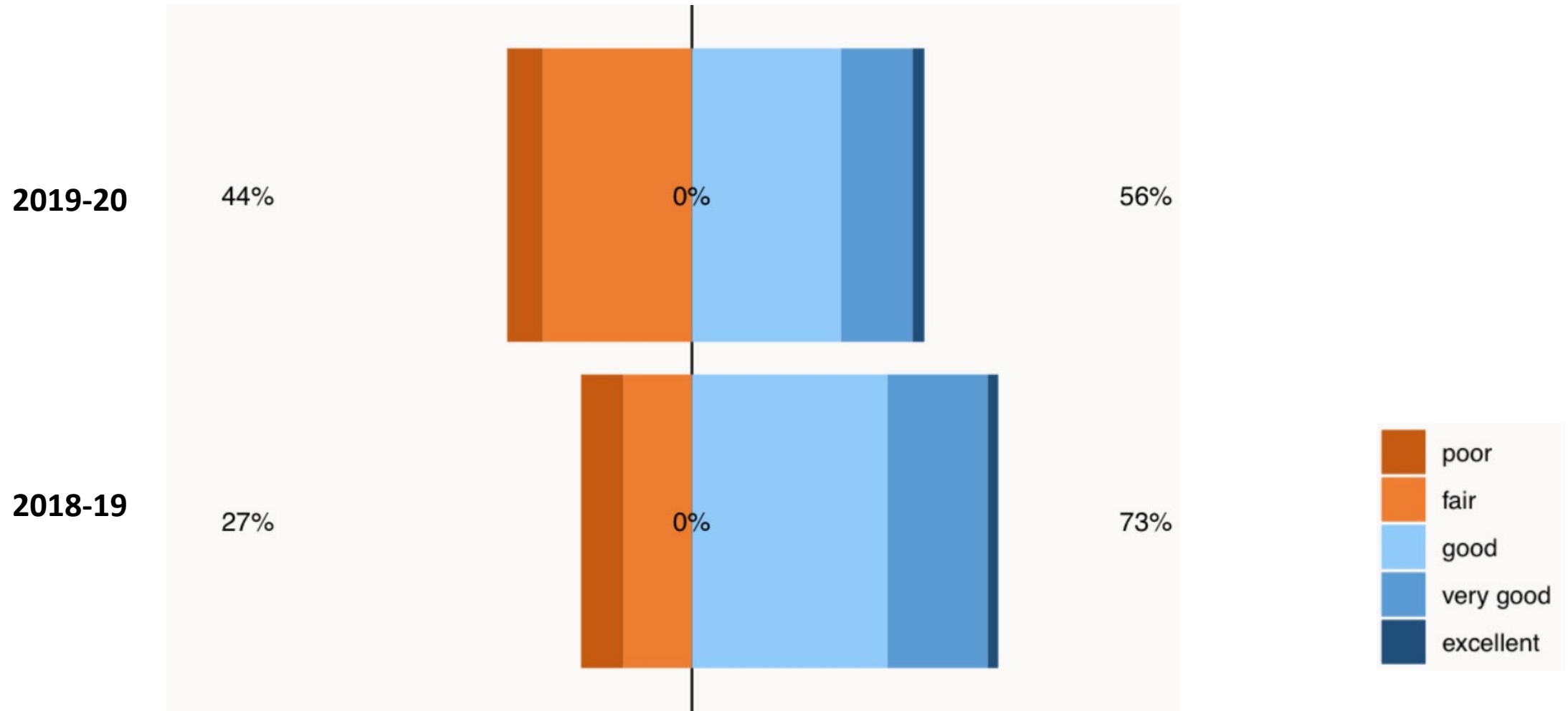
- Student engagement
- Mathematical reasoning and skills
- Academic achievement by student group



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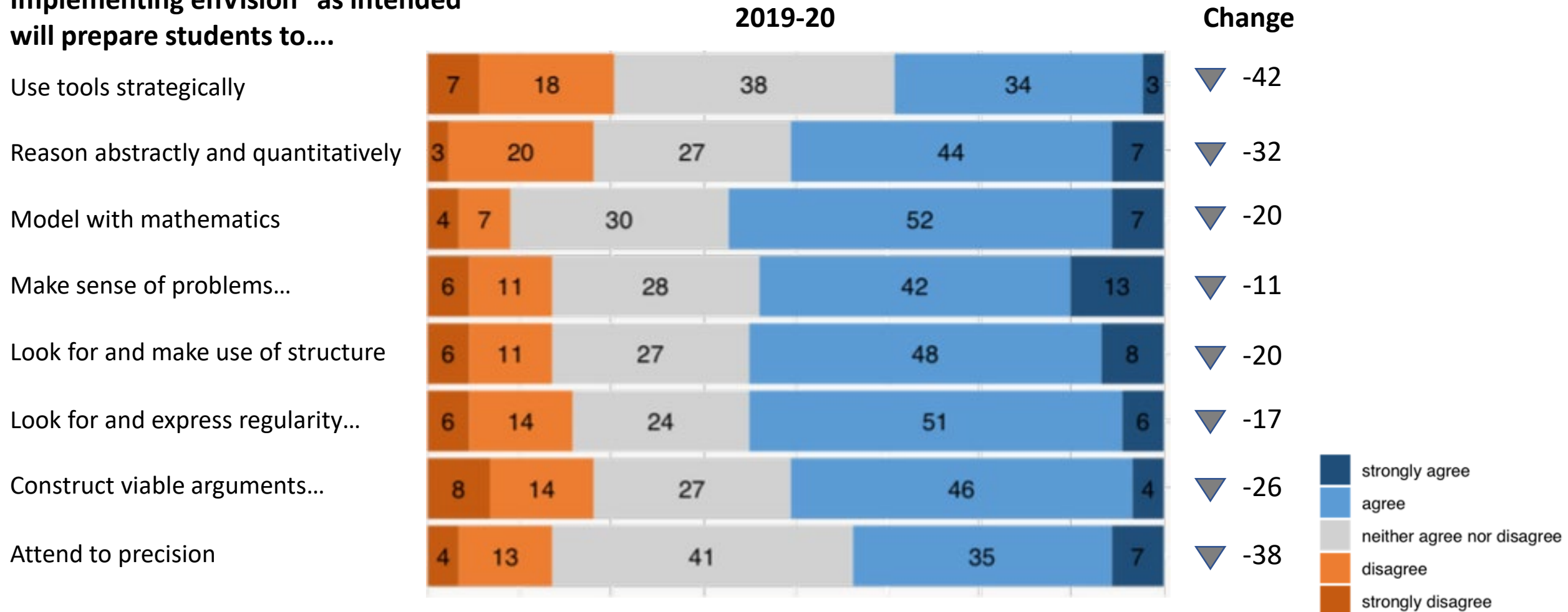
Student Engagement

When I use the enVision materials, I would rank the engagement of my students as:



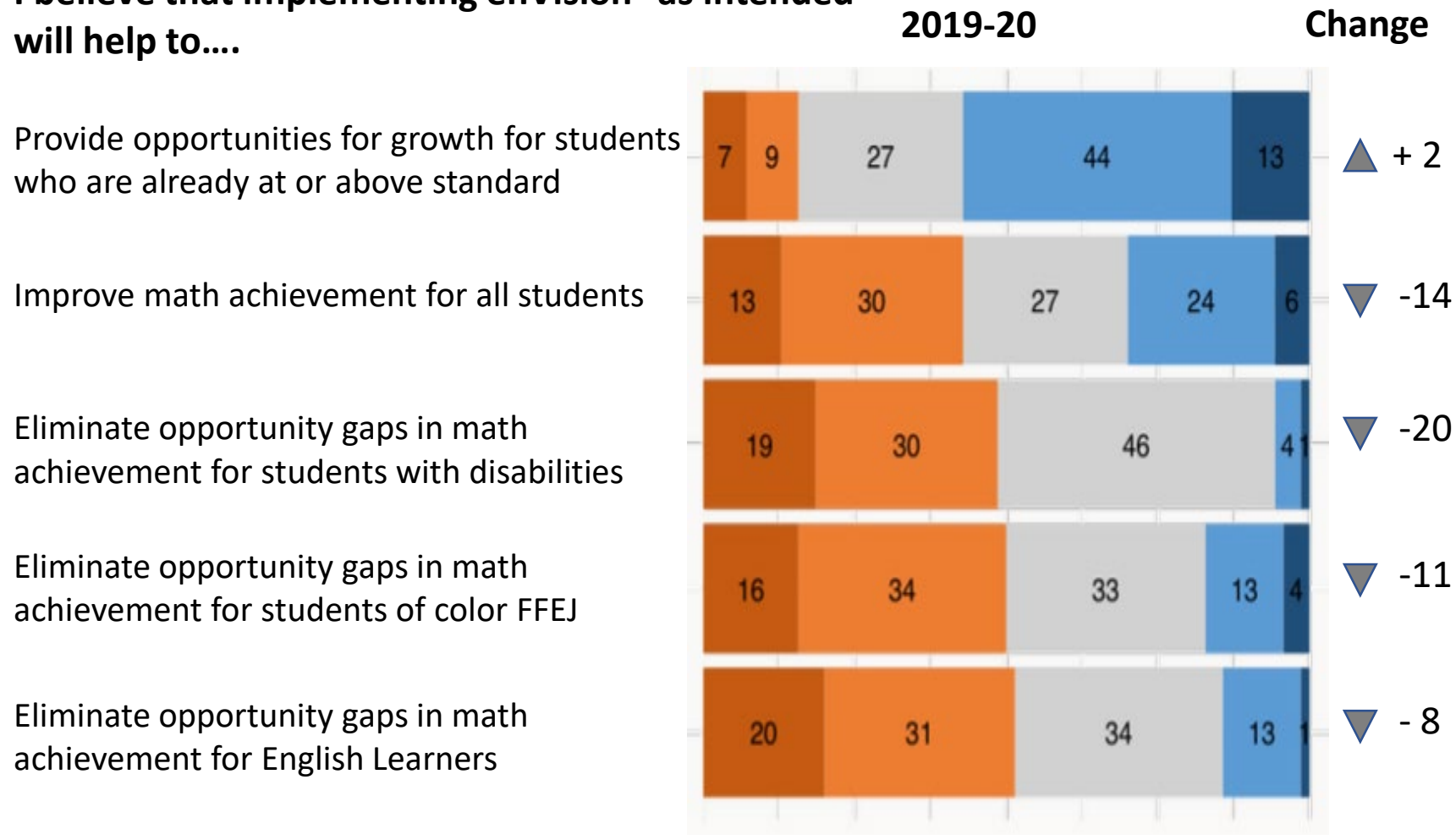
Practice Standards

**Implementing enVision “as intended”
will prepare students to....**



Perceptions of Academic Achievement by Student Group

I believe that implementing enVision “as intended” will help to....



Additional Context:

In 2018-19, teachers answered this question before the state tests were administered. Responses in 2019-20 may account for teachers’ reflections on their students’ actual state test performance, which showed an “implementation dip” in proficiency.

Open-Ended Response Analysis



Question: *Is there anything else you'd like to add about enVision implementation this year?*

Topics:

- General
- Rigor
- Equity
- PD
- SPED/ELL
- Materials management
- Student engagement
- Technology
- Assessment

Open-Ended Response Analysis

Codes: General, TAI

General comments trended neutral or positive, with teachers acknowledging that a curriculum alone cannot be expected to raise student academic achievement and many noting that they supplement or modify the curriculum

“Solid teaching practices and relationships are most important to leading to strong engagement and achievement for ALL students. No curriculum AS IS can do this. I do appreciate having a district-adopted curriculum--it's good to have something in common with colleagues around the district.”

“I've had to supplement a lot and I'm finding that students who are at a lower level of understanding have a hard time being self engaged in the text without continual support. However, the curriculum is pushing these students to a higher standard and though the learning is slow they are achieving.”

“I believe this is a solid program for introduction to higher level courses. There is enough support for all learners. No curriculum can make up for poor instructional practice - It is important for the delivery of the curriculum to be relevant/purposeful.”

Open-Ended Response Analysis

Codes: Rigor, SPED, ELL, Equity

Teachers indicate that the curriculum does not always meet the needs of students who are below-standard in math, learning English and/or have disabilities. Specifically, teachers mention the lack of practice questions, fast pacing, and unrelatable math problems.

From the beginning, our 6th graders found this curriculum unattainable...It was clear that the pace of materials and concepts was far too fast,...that the materials were culturally awkward and pertaining to middle class experience more than true-to-life experiences of people with financial disadvantages.

"This textbook is pretty good for my grade level students. Unfortunately, that is less than 50% of our 6th graders as a school, and for me, a teacher who co-teaches three math classes with an IEP teacher, that percentage is much lower."

"I feel like the program expects students to come in with concepts they have not been taught prior. The instructions at the start of each section often do not align with the 'do you understand' and 'do you know how' questions."

Open-Ended Response Analysis

Codes: PD, Assessments, Technology, Materials Management, Student Discourse and Engagement

Teachers also mentioned opportunities for improvement in several areas:

- Providing professional development for SPED teachers
- Investing in culturally relevant assessments
- Improved connectivity in classrooms
- Increased guidance from the district on how to manage materials (workbooks, etc.)

Only one teacher mentioned student discourse and student engagement, mentioning that the curriculum's routines can become demotivating for students.

Reflections

In response to findings on this survey, as well as remote learning environments in 2020-21, the district has planned the following adjustments to the implementation of enVision materials:

- **Providing a pared-down scope and sequence for 2020-21 school year that focuses on priority standards and aligned lessons**
- **Upgrading to “enVision 2021,” which has enhanced features to support classroom discourse, more robust ELL supports, a new observation and recording tool to capture student thinking and work**
- **Launching a professional development series on facilitating productive math discussing during enVision lessons**
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- **Convening a group of middle school educators, including educators of color, to further understand why some of the findings in the teacher survey results changed.**

Next Steps

The 2020-21 school year marks the third year of the enVision curriculum study. Although the study will continue the implementation work of past years, some changes to the study plan are required to account for both the newly upgraded “enVisionmath 2021” resources (approved by the Instructional Materials Committee in Summer 2020), remote learning environments due to school closures, and the lack of standardized test data. Research will focus on implementation of the new remote learning technology tools, needed professional development supports, and student engagement as measured through self-report and user data. As in past years, the study will center on supports for students of color furthest from educational justice, particularly African American males.

Thank you!



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