

December 12, 2025



Beyond Fidelity

Understanding HQIM Implementation through Multi-stakeholder Data

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Who am I?



Who are you?



Why are you here?



Today's Objectives?

- Experience a multi-stakeholder data conversation about HQIM implementation
- Generate questions together to connect different data representations and spur new data inquiry
- Leverage the multiple perspectives in the room on curriculum implementation.

Today's Agenda

1. Understanding where our data comes from (20 minutes)
2. Time to dive into implementation data and discuss with others (35 minutes)
3. Discussion and Crowdsourcing important next questions (20 minutes)



Understanding High-Quality Instructional Materials (HQIM) Impact and Implementation:

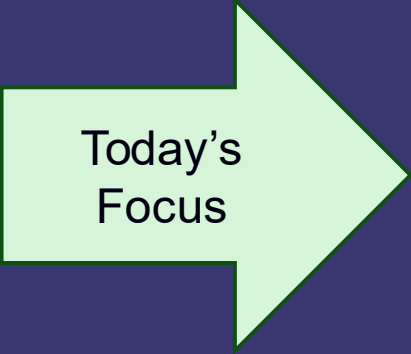
- **Purpose:**
 - To build rigorous, causal evidence on HQIM student impacts
 - To understand implementation variation across and within HQIM
 - To contextualized impact with implementation data
 - To provide districts with HQIM data guidance
- **Design:** Year 1: QED in 6 districts across 4 states in the 24-25 school year (expanding for 25-26) who use Illustrative Mathematics (IM) or other HQIM in grades 6-8. 46 total participating middle schools.

Research Questions

1. How do various interest holders—curriculum developers, district leaders, and teachers—communicate about quality implementation? In short, what is the intended curriculum and what guidance do developers provide to educators involved in implementation?
2. How do school districts understand curriculum adoption and implementation? What are school districts' challenges in implementation fidelity and how do they support quality implementation?
3. How do teachers characterize their HQIM implementation and support they receive? How do students experience the curriculum implementation, and is their experience aligned with the teachers' characterization of implementation?
4. What data displays and communication structures help instructional leaders support implementation and continuous improvement?

Research Questions

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Today's
Focus

Curriculum as Artifact – Representations of mathematical ideas and practices around which mathematical interactions are organized and facilitated

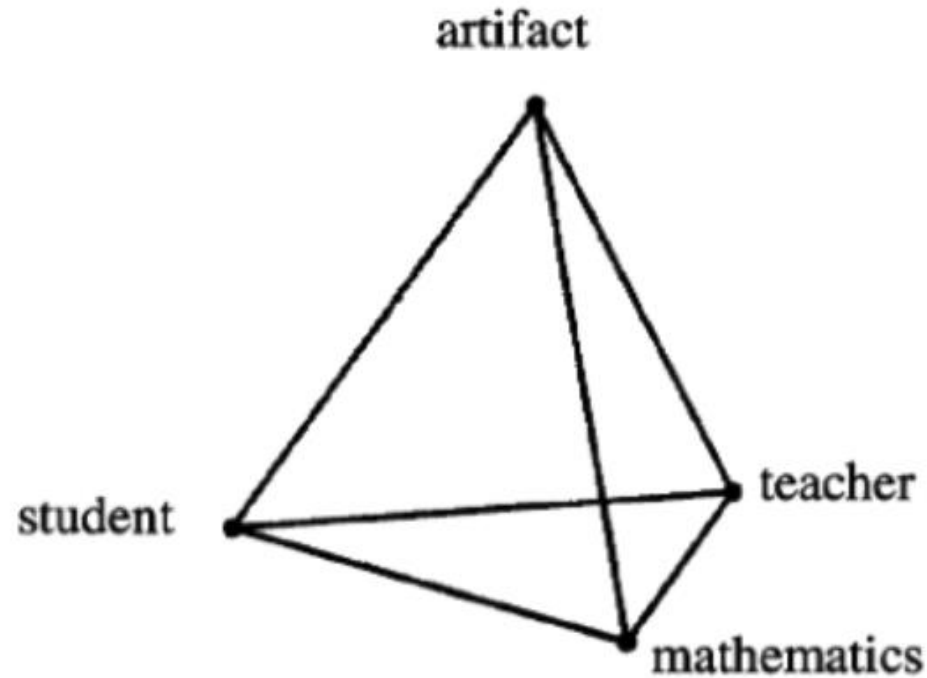
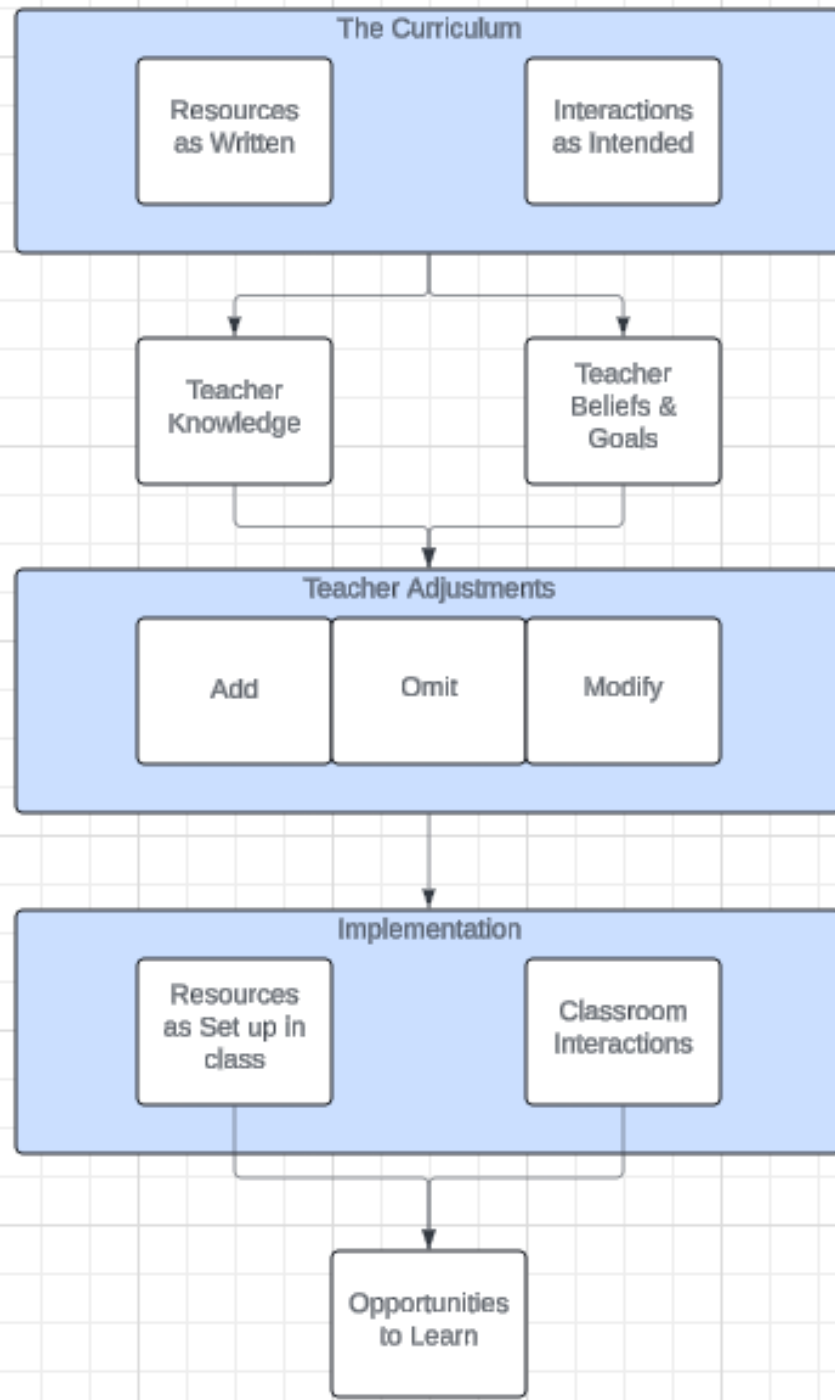


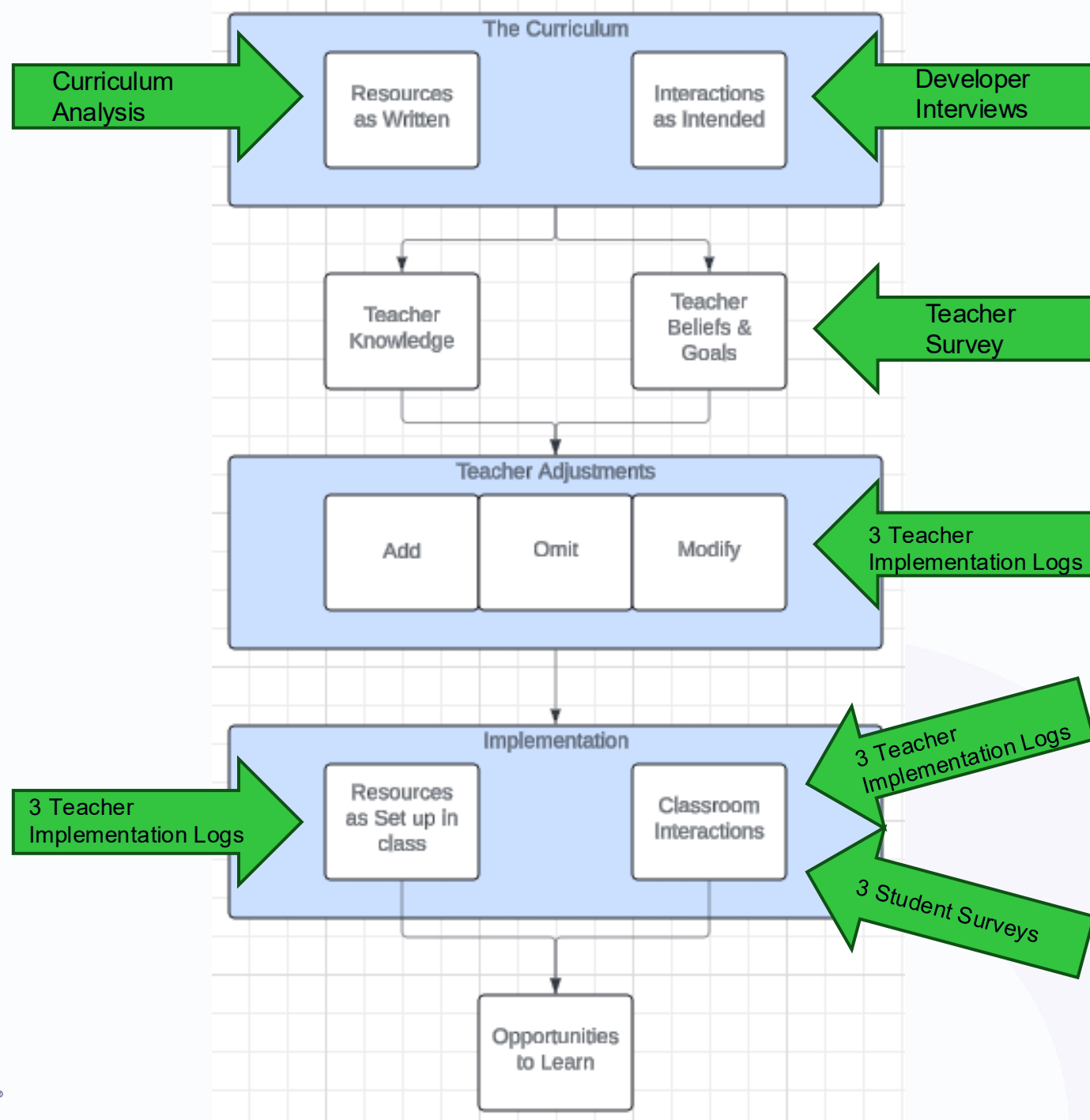
Fig. 1 Rezat and Sträßer's (2012) tetrahedron model of the didactical situation

How Curriculum Implementation Connects to Student Learning

(Brown, 2009; Remillard & Heck, 2014, van Steennbrugge & Remillard, 2012)

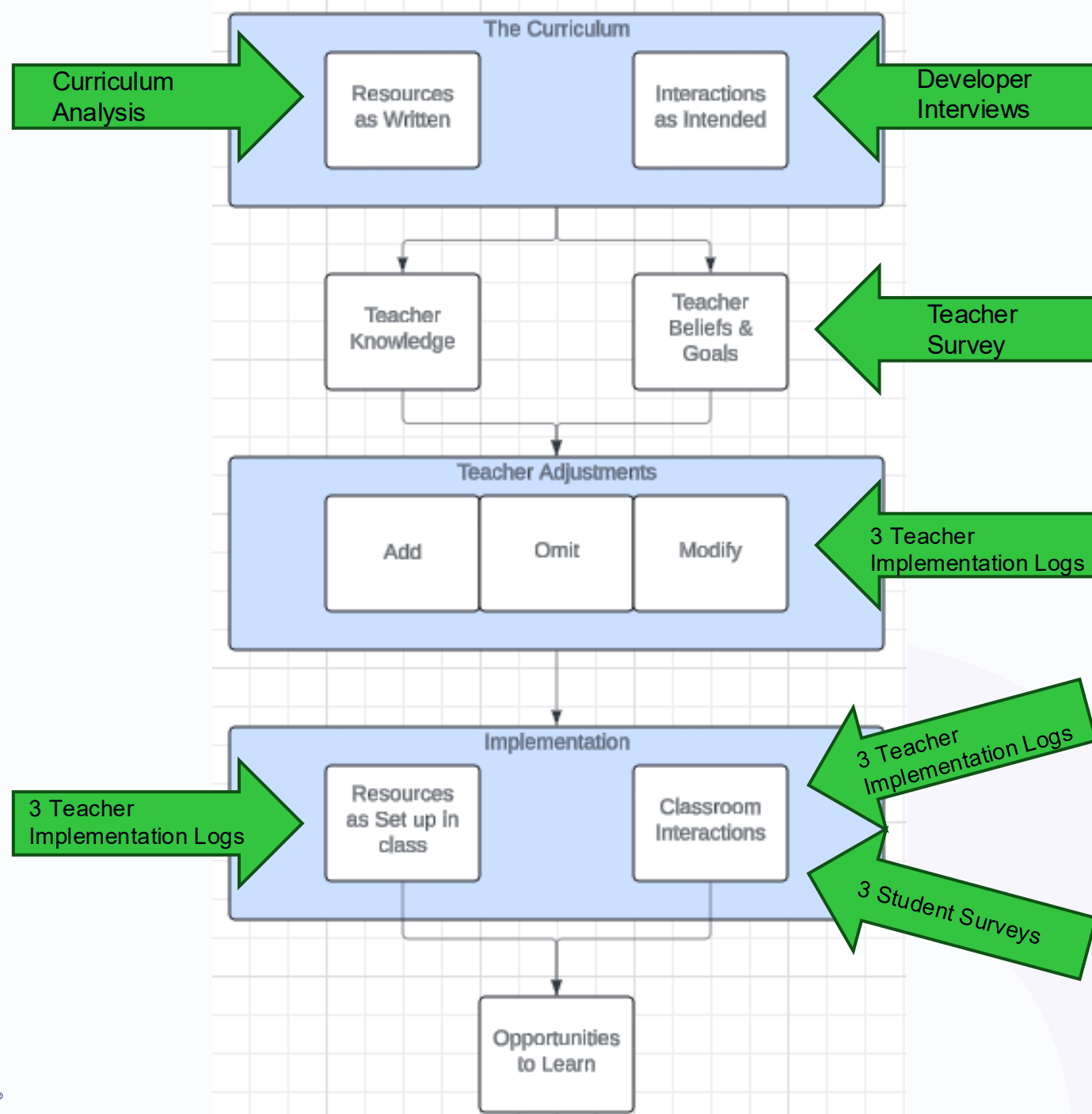


Data Generation

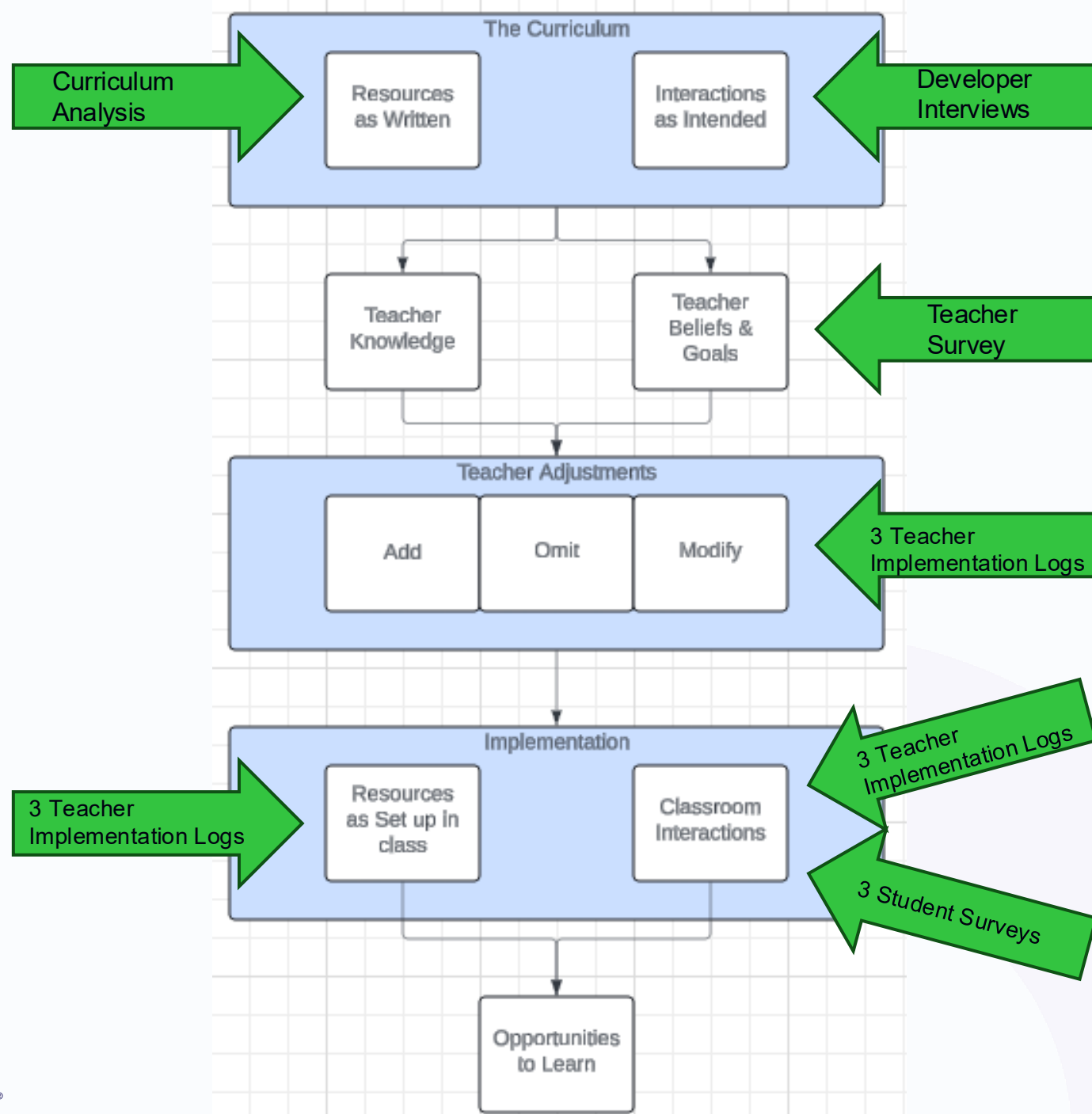


- Pacing (Units, Lessons, Activities)
- Lesson Structures
- Teacher Role
- Educative Features

Choppin et al., 2022; Doabler et al., 2012; Huntley, 2008; Quebec Fuentes & Ma, 2018



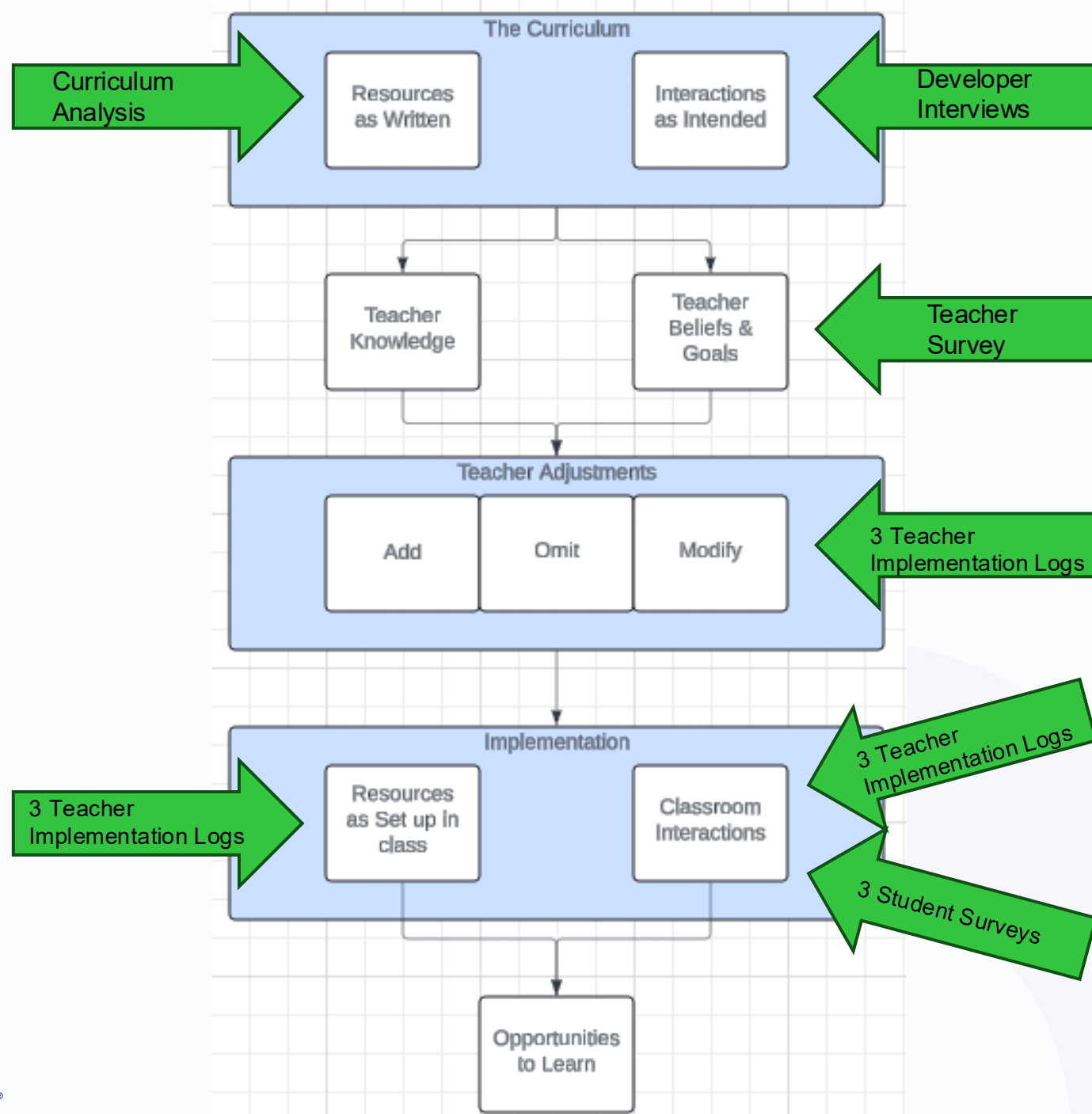
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- How do they define adequate coverage?
- How do they define appropriate adaptation?
- What are the essential interactional features?

Choppin et al., 2022; Gage et al., 2020; Rezat & Straßer, 2012

- Pacing (Units, Lessons, Activities)
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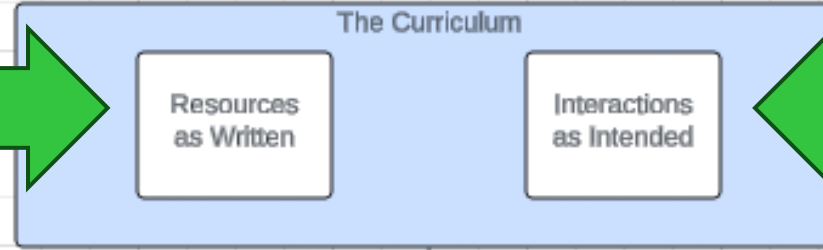
- How do they define adequate coverage?
- How do they define appropriate adaptation?
- What are the essential interactional features?

- **What is a teacher's understanding of high-quality math instruction?**

Clark et al., 2014;

- Pacing (Units, Lessons, Activities)
- Lesson Structures
- Teacher Role
- Educative Features

Curriculum Analysis



Developer Interviews

- How do they define adequate coverage?
- How do they define appropriate adaptation?
- What are the essential interactional features?

Teacher Knowledge

Teacher Beliefs & Goals

Teacher Survey

- What is a teacher's understanding of high-quality math instruction?

Teacher Adjustments

Add

Omit

Modify

3 Teacher Implementation Logs

- **Unit, Lesson, Activity Coverage**
- **Frequency and Reasons for Add, Omit, Modify**
- **Instruction consistent with Interactional Intent (Focus & Coherence, Cognitive Demand, Collaboration & Discourse)**

Implementation

3 Teacher Implementation Logs

Resources as Set up in class

Classroom Interactions

3 Teacher Implementation Logs

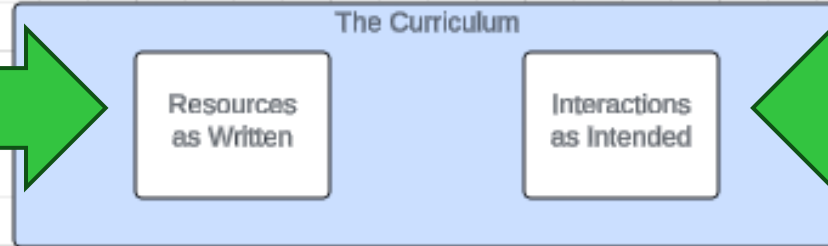
3 Student Surveys

Coverage items: Horizon Research, Inc., 2018
Interaction Items: Team created based on Curriculum Analysis and Developer Interviews

Opportunities to Learn

- Pacing (Units, Lessons, Activities)
- Lesson Structures
- Teacher Role
- Educative Features

Curriculum Analysis



Developer Interviews

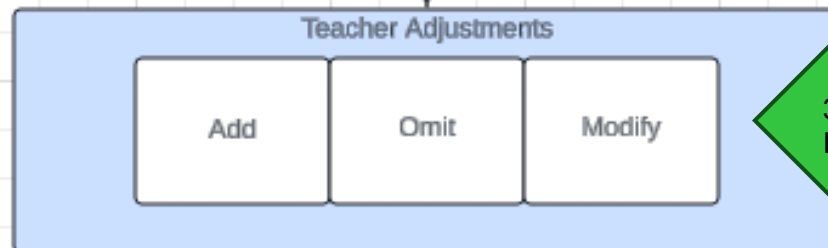
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Teacher Knowledge

Teacher Beliefs & Goals

Teacher Survey

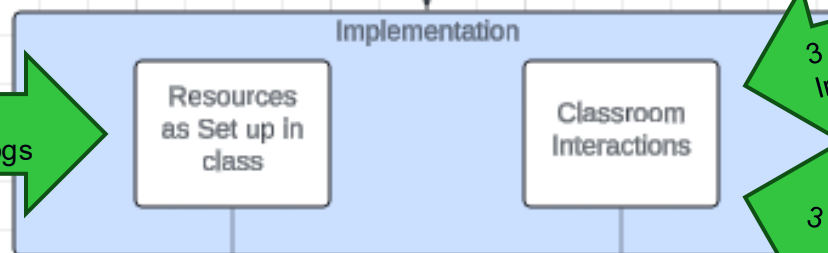
- What is a teacher's understanding of high-quality math instruction?



3 Teacher Implementation Logs

- Unit, Lesson, Activity Coverage
- Frequency and Reasons for Add, Omit, Modify
- Instruction consistent with Interactional Intent (Focus & Coherence, Cognitive Demand, Collaboration & Discourse)

3 Teacher Implementation Logs



3 Teacher Implementation Logs

3 Student Surveys

- **Focus & Coherence, Cognitive Demand, Collaboration & Discourse**
- **Belonging & Self Efficacy**

Opportunities to Learn

Some Participant Data:

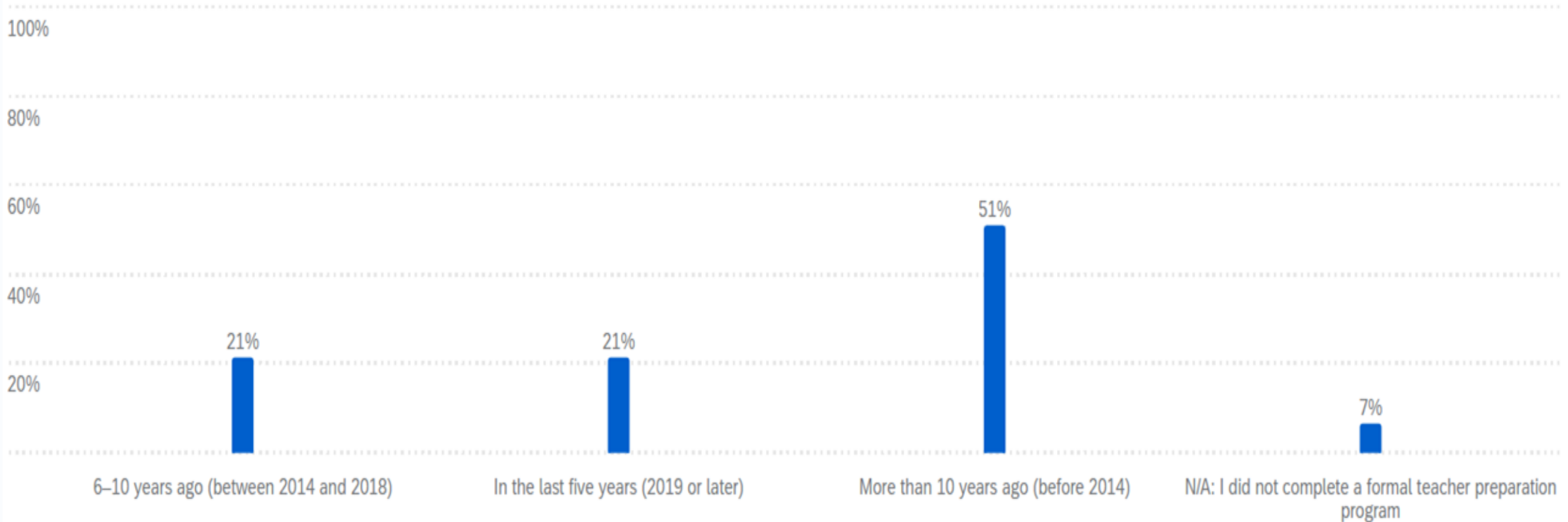
Teachers: $n = 61$

Students: $n = 2,379$

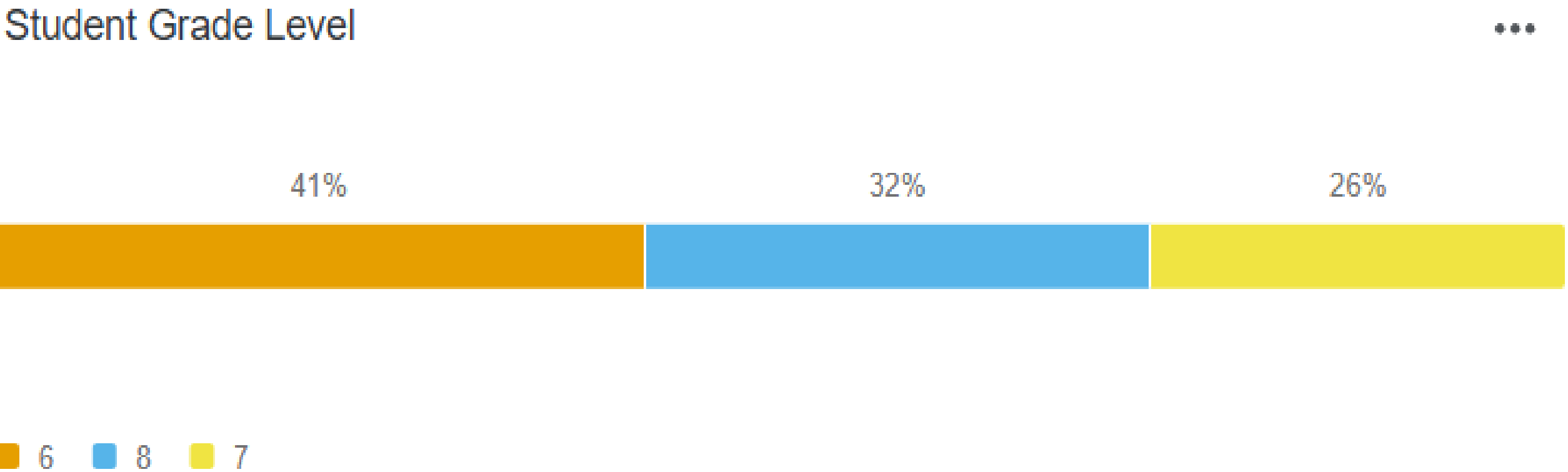


Teacher Respondents

How Long Ago Completed Formal Teacher Preparation (Percentage of Total)



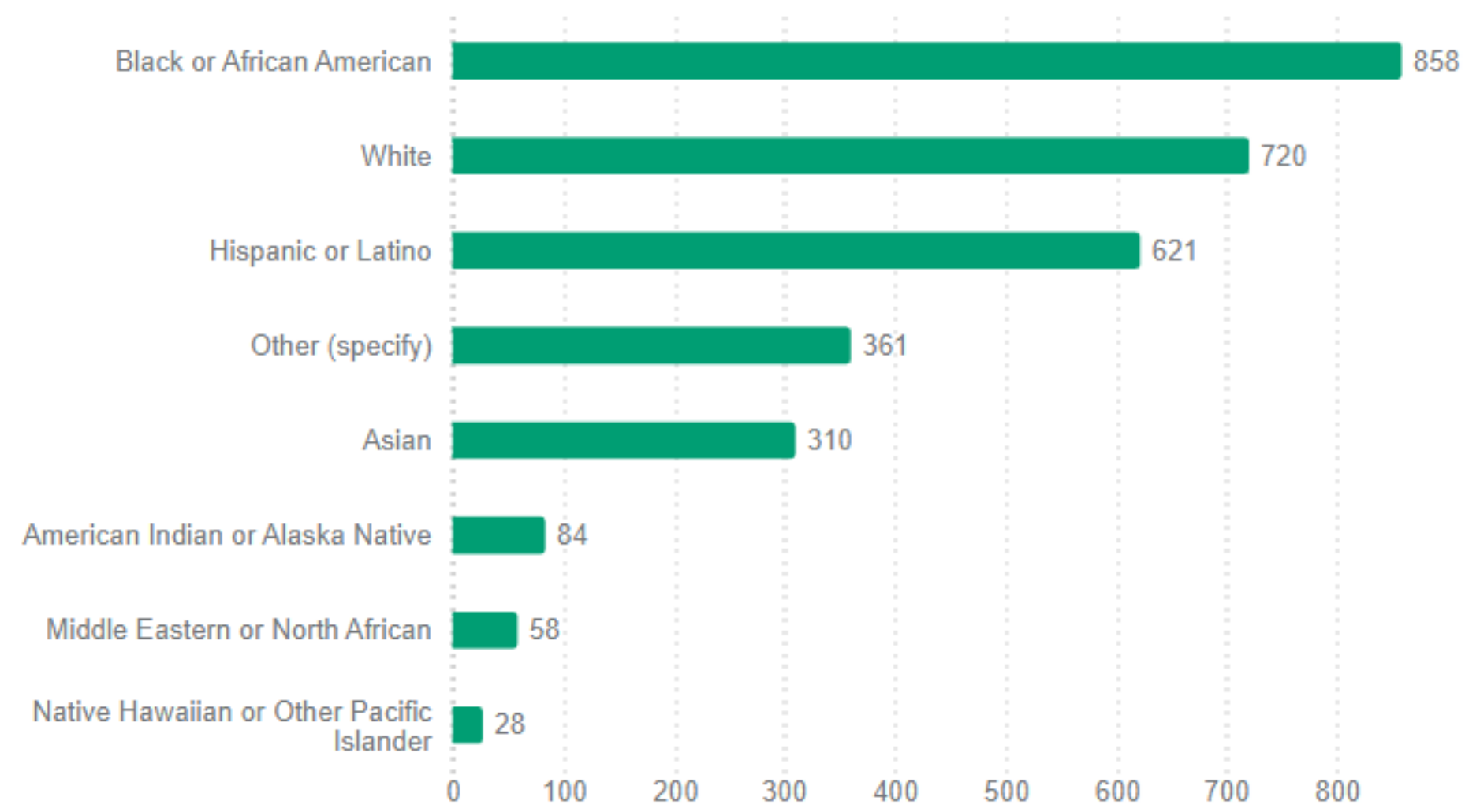
Student Demographics



Student Demographics

Student Race/Ethnicity

...



Achievement Grouping

According to your school's policy, are students typically grouped by achievement level for mathematics instruction?

...

44%

56%

☐ Yes ☐ No

Choose your top 3,
then turn & talk

1. **Teacher Beliefs**
2. **Student Beliefs**
3. **Teacher Planning/Preparation**
4. **Teacher Adherence (Resource Usage, Add/Omit/Modify)**
5. **Teacher View of Classroom Activity**
6. **Student View of Classroom Activity**
7. **Curriculum Implementation Supports**

1. **5 Minutes of Individual Think Time**

1. Look through the Data Charts to see what seems most interesting to you. (STAR them)
2. Take a minute to orient to the chart(s).
3. Write down what you are noticing and wondering about the data.

2. **15 Minutes Table Discussion**

1. Why did you choose the chart(s) you did?
2. What are you noticing or wondering about it?
3. What would you like to understand better about the data (either *in* or *behind* the data)?
4. What *connections* are you seeing between the charts your group is focused on?

3. **5-minute Synthesis**

1. What are your big takeaways from your discussion?
2. What do you think the most impactful *next questions* are to be asking about HQIM implementation, especially in your district?

4. **10-minutes – Connection: Trade Tables, bring your favorite charts with you, and do a Pair-Share with someone from another table. How does your data go together? What new questions arise?**

Share Out:

What charts seemed most compelling to you and why?

What were your big questions?

What connections were you making between charts?



1. Teacher Beliefs



Beliefs about Implementation/Instruction

Overall, how do you feel about your implementation of the core mathematics...

...

36%

64%

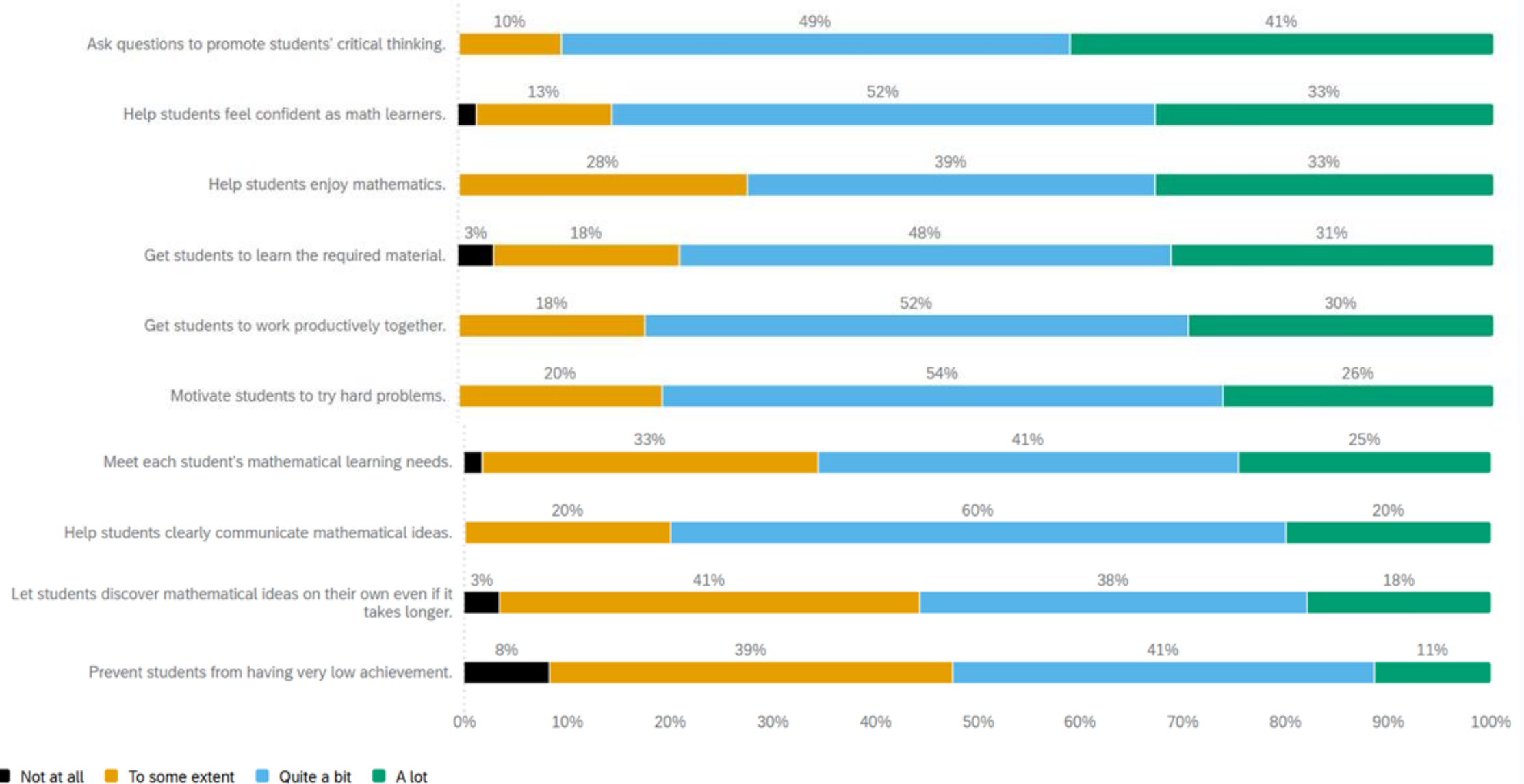


■ My implementation is improving, but I do not feel proficient yet. ■ I feel I am implementing the curriculum well.

Beliefs about Implementation/Instruction

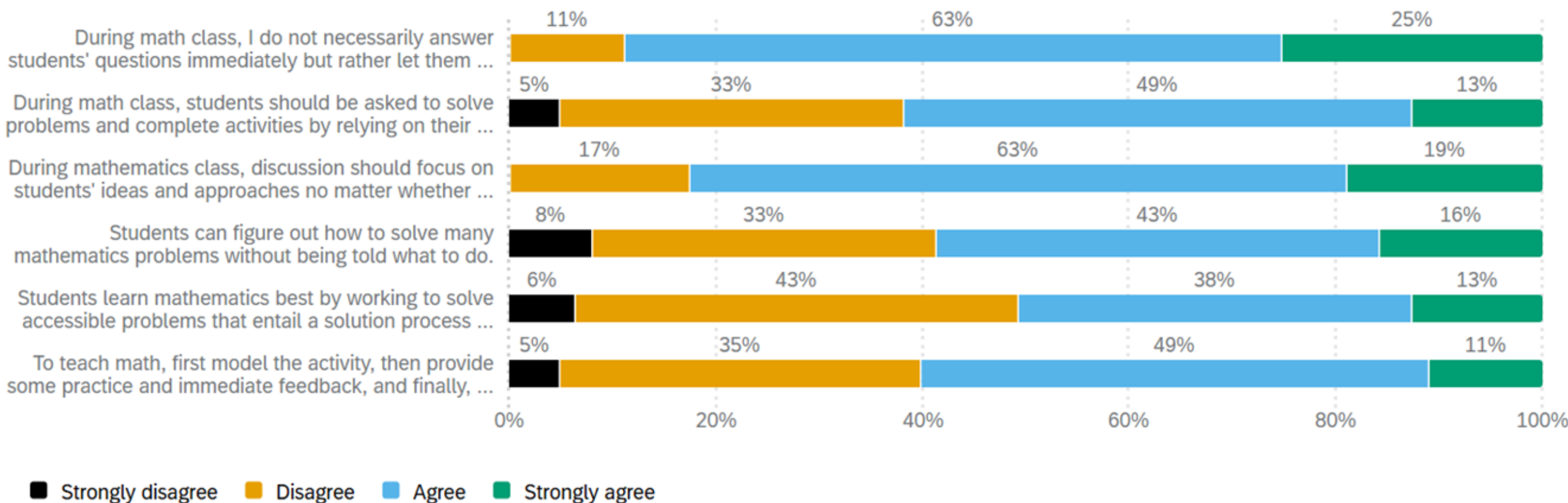
In your teaching, to what extent can you do each of the following? ⓘ

...



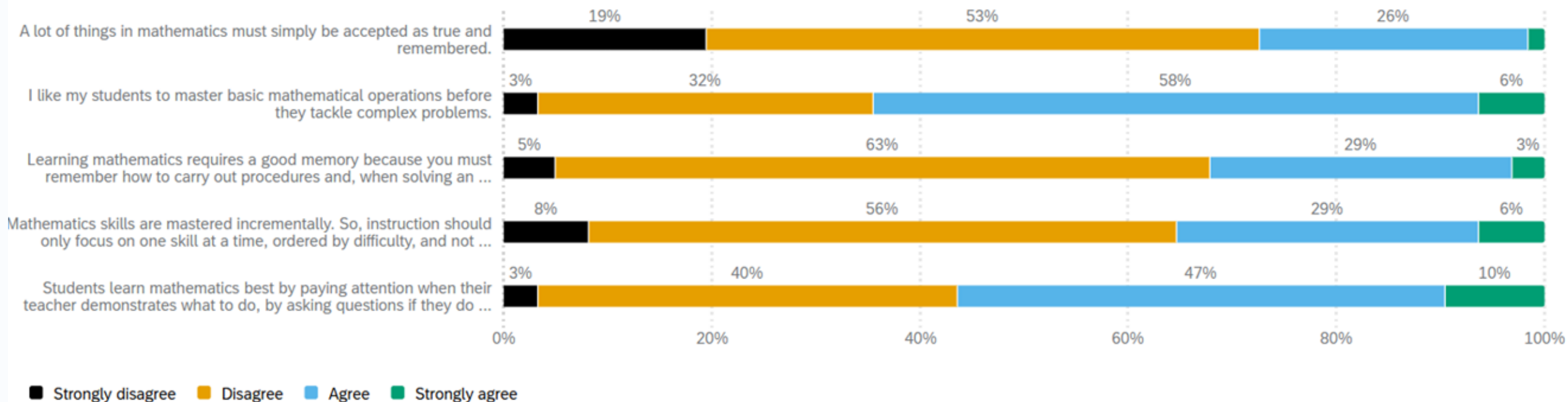
Other Beliefs

Acceptance of Student Struggle



Other Beliefs

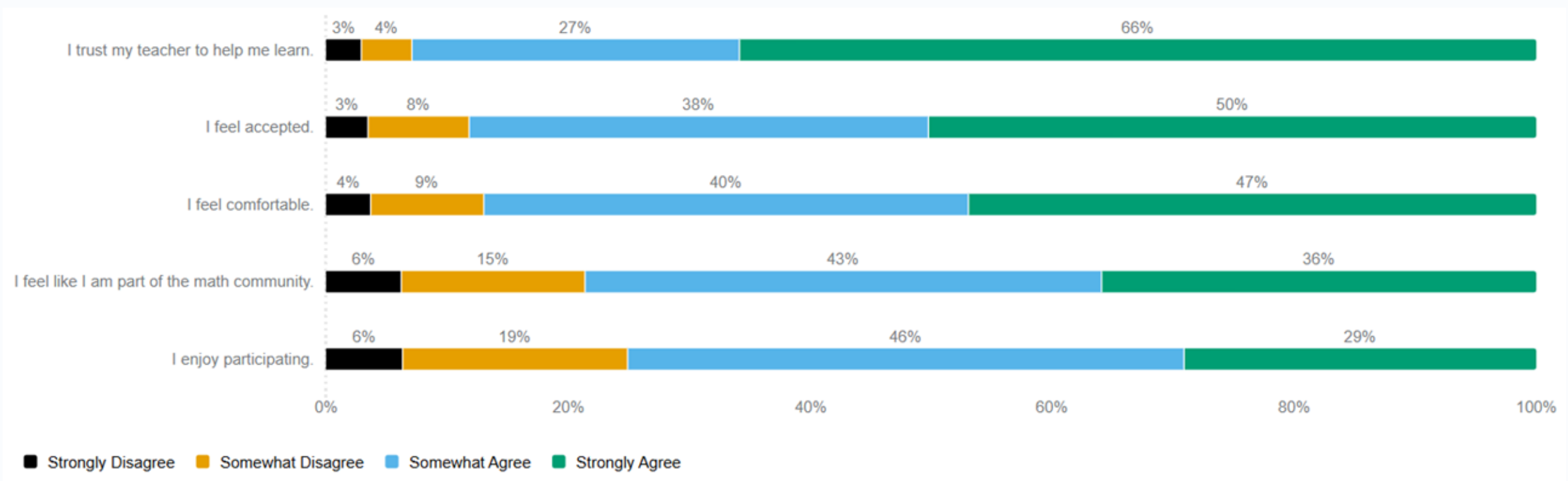
Modeling for Incremental Mastery



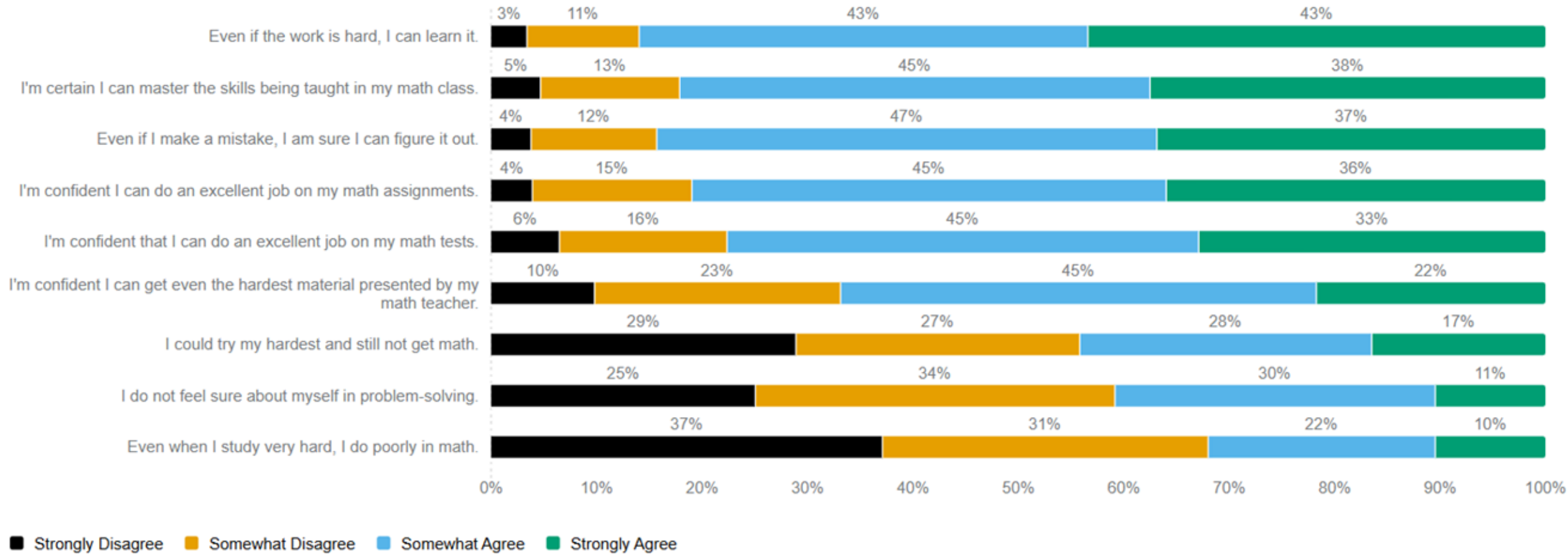
2. Student Beliefs



Belonging



Self-Efficacy

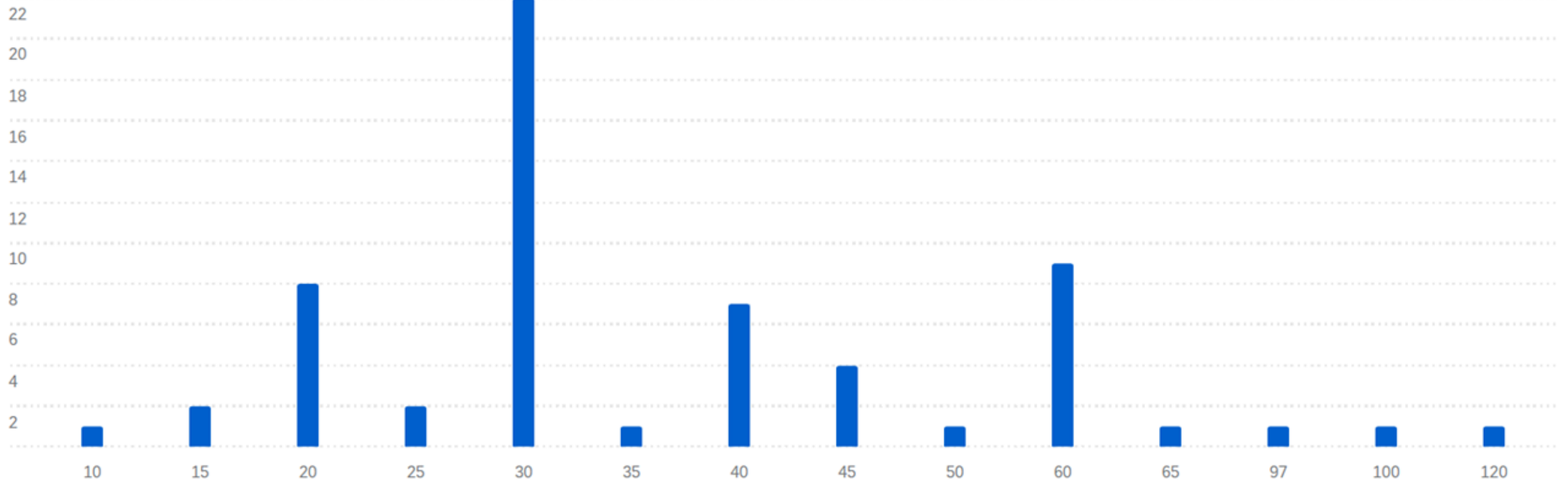


3. Teacher Planning/Prep



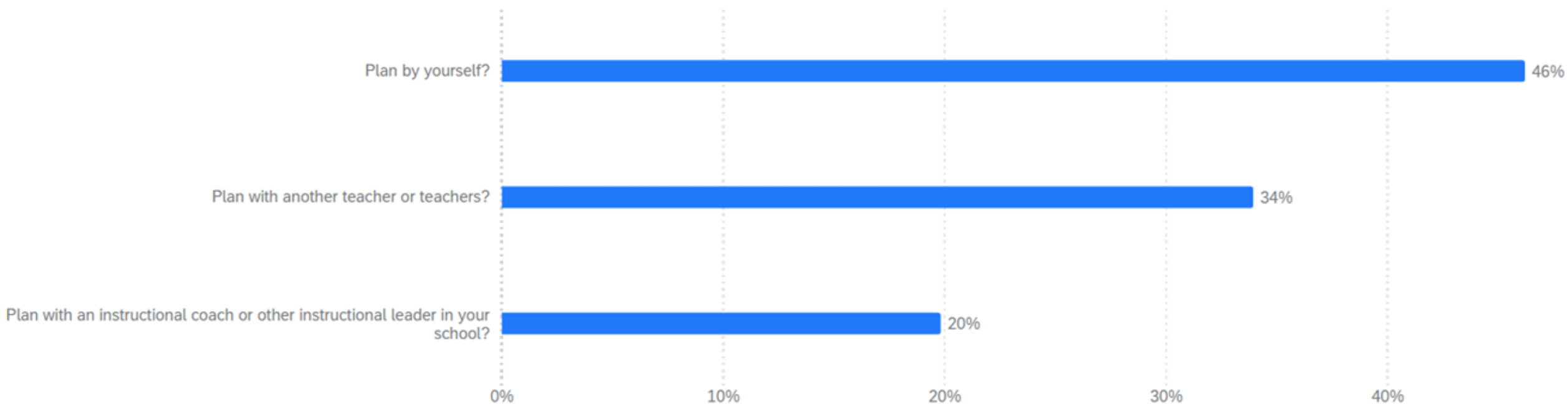
Planning

Average number of minutes spent lesson planning (number of teachers)



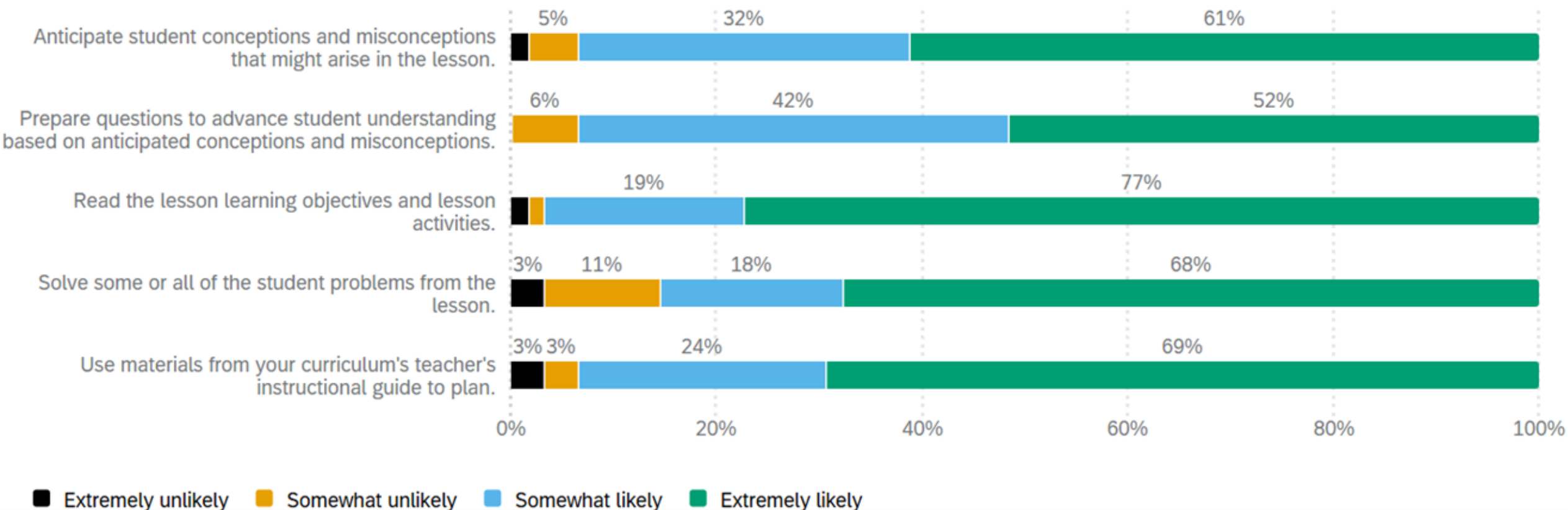
Other Planning

When you plan units or lessons for your focal class, do you typically:



Other Planning

Likelihood teachers use curriculum for lesson planning



4. Curriculum Adherence



Use of Resources

In a typical week, the approximate percentage of mathematics class time I use my core curriculum with my focal class is:

...



■ 76%–100% of the class time ■ 51%–75% of the class time ■ 26%–50% of the class time

Use of Resources

What percentage of time do you use the following sources to develop lesson plans?

...

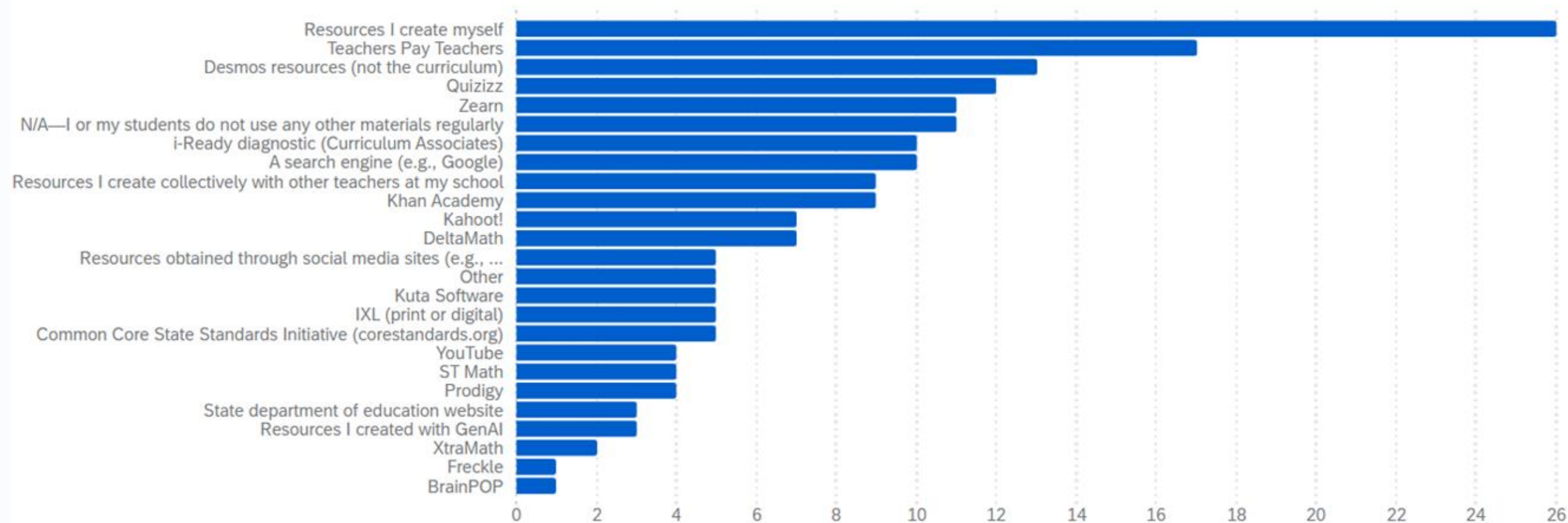


■ My recommended or required mathematics curriculum materials ■ Materials from other sources (including the internet)

Use of Resources

Number of Teachers Using Additional Curriculum Materials in Math Class

...



Curriculum Adherence

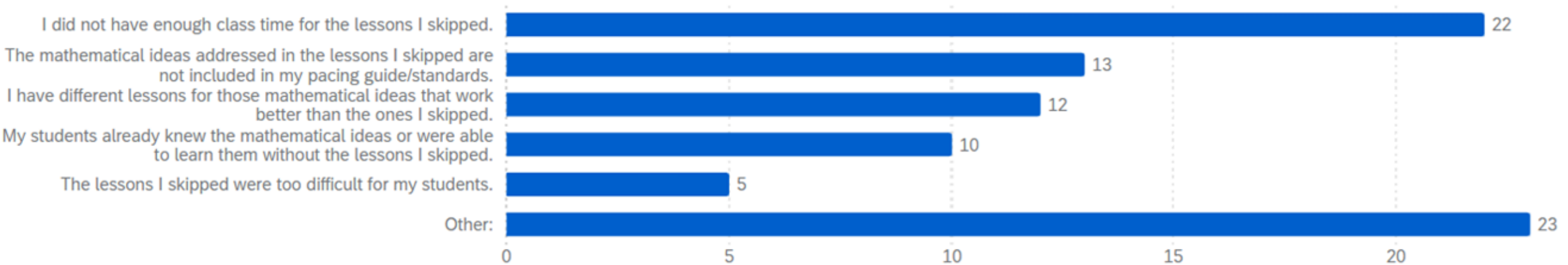
For the last unit that you taught, what percentage of the curriculum's lessons did you skip? >



■ Nearly All (90-100%) ■ Most (76-89%) ■ More than a half (50-75%) ■ Less than half (25-49%) ■ Less than a quarter (under 25%)

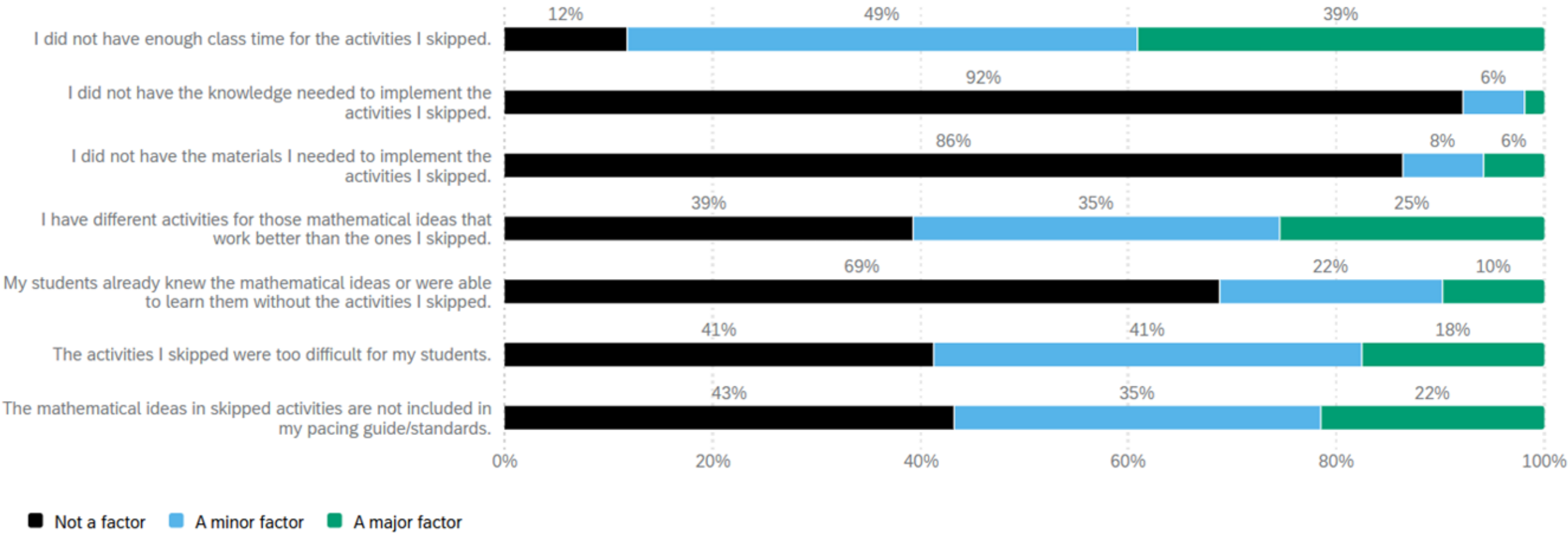
Curriculum Adherence

Why did you skip the lessons you did?



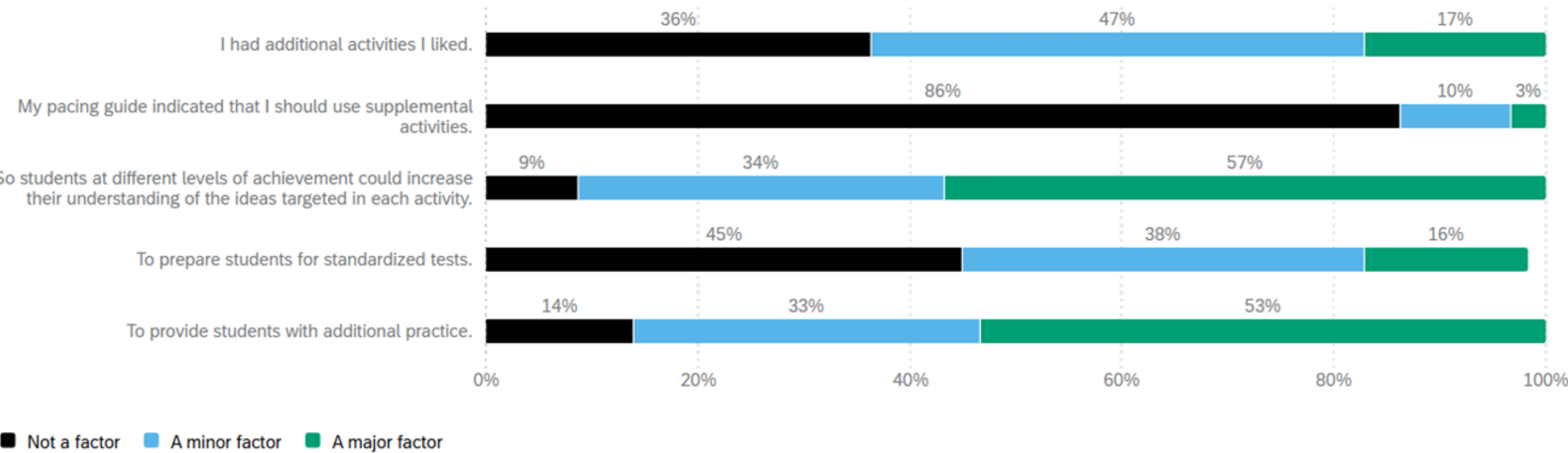
Curriculum Adherence

Reasons teachers skipped curricular content



Curriculum Adherence

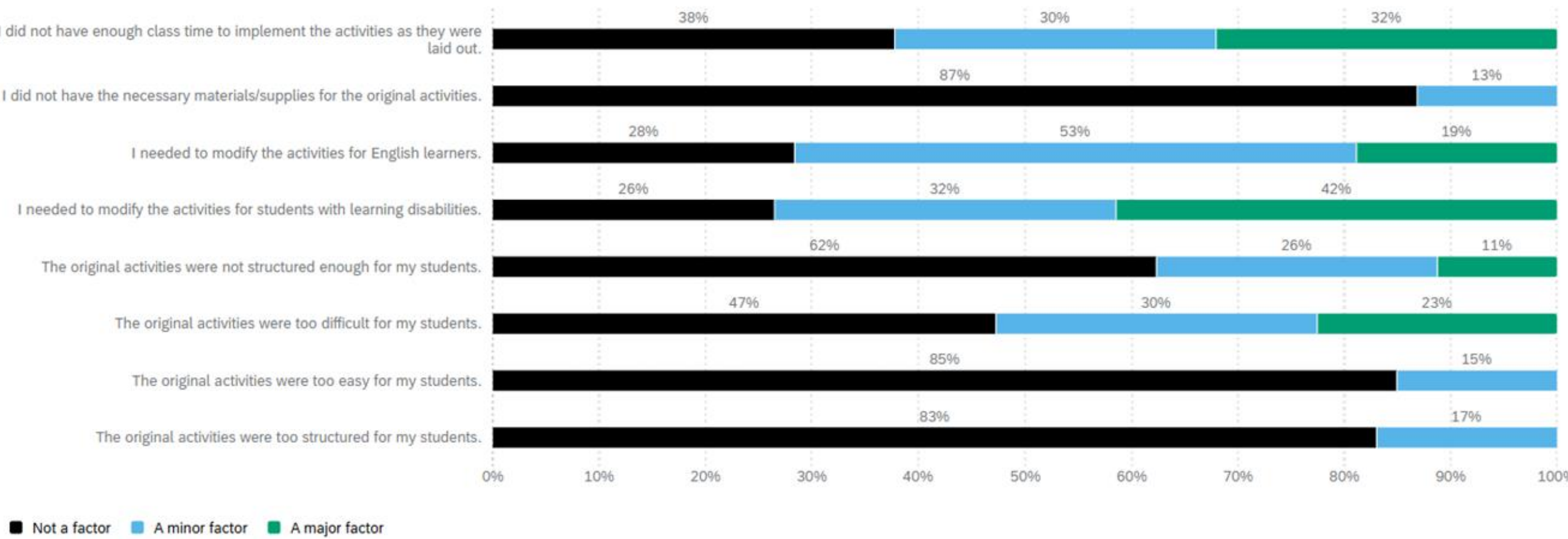
Reasons teachers supplemented curricular content



Curriculum Adherence

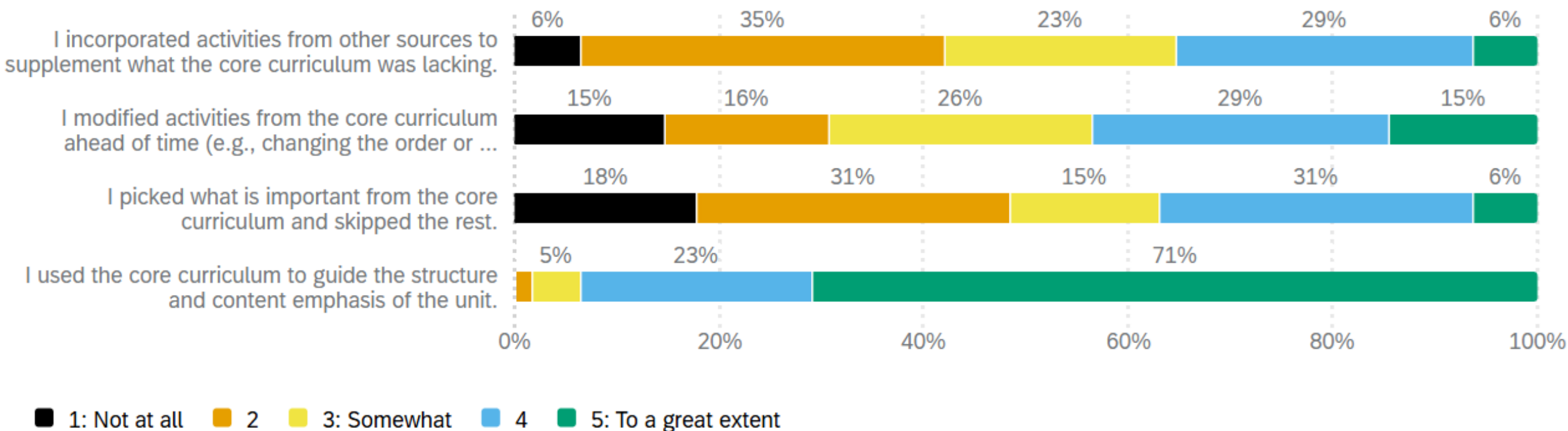
Reasons teachers modified curricular content

...



Curriculum Adherence

Please indicate the extent to which you did each of the following while teaching your last completed unit. ...

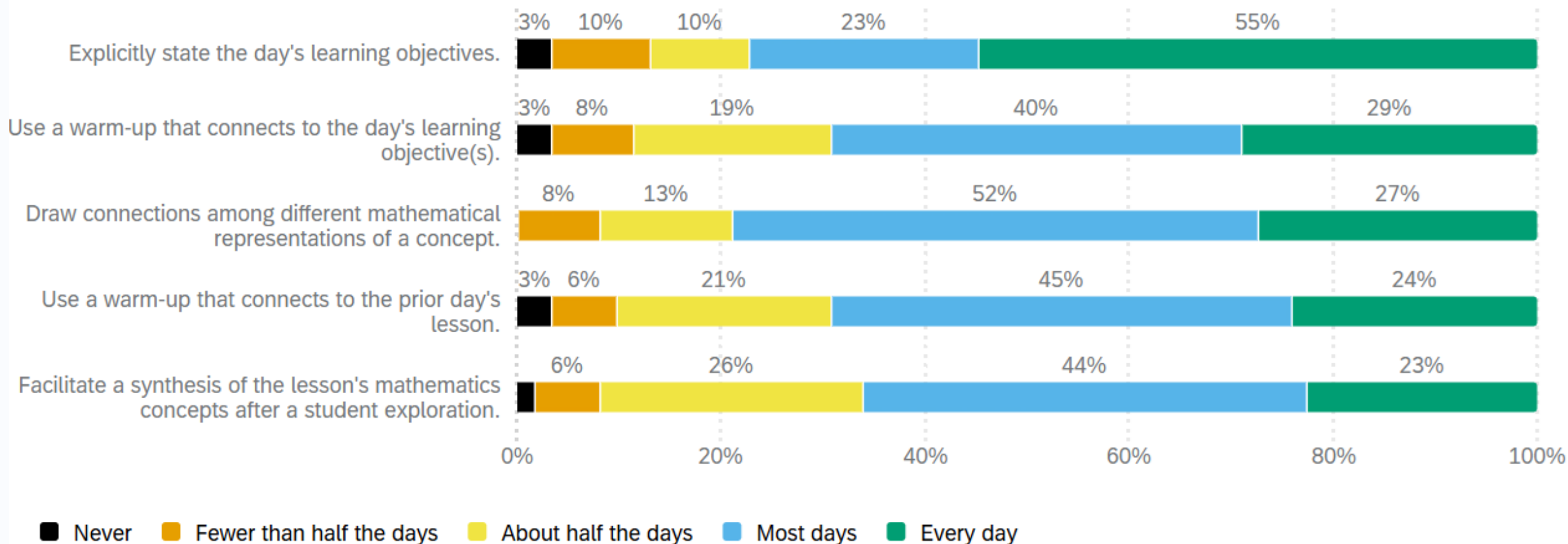


5. Teacher View of Classroom Activity



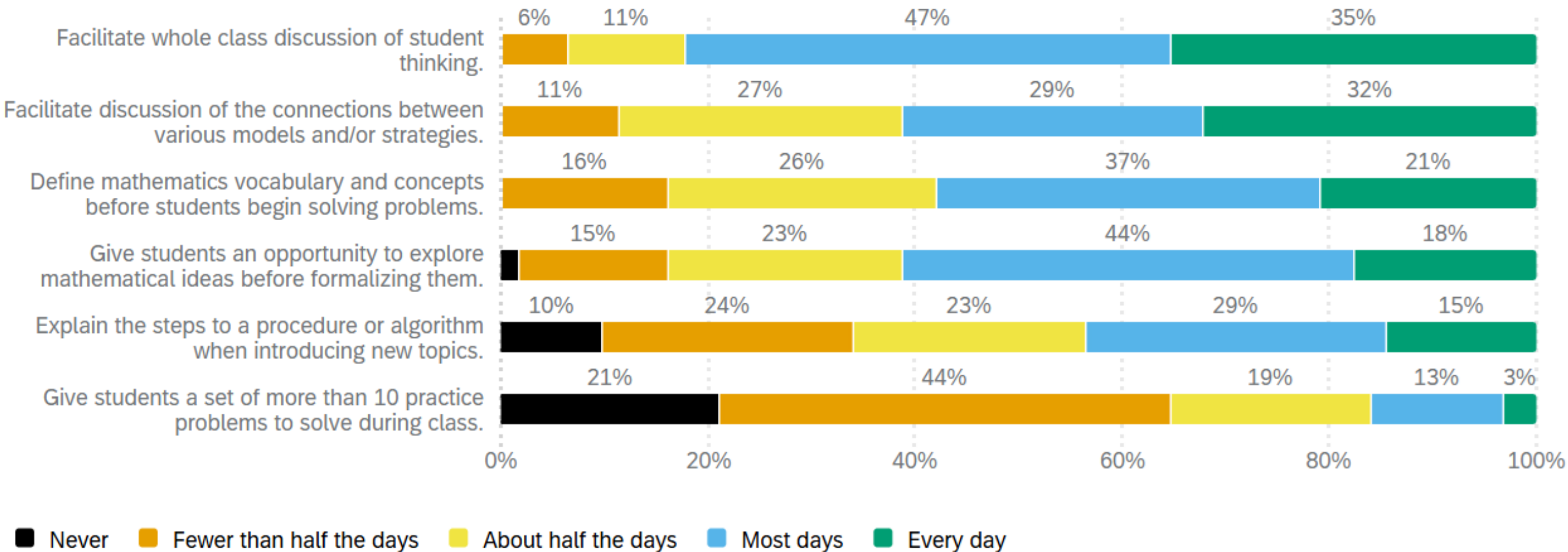
Classroom Activities in Last Completed Unit

Classroom Activities in Last Completed Unit: Focus and Coherence



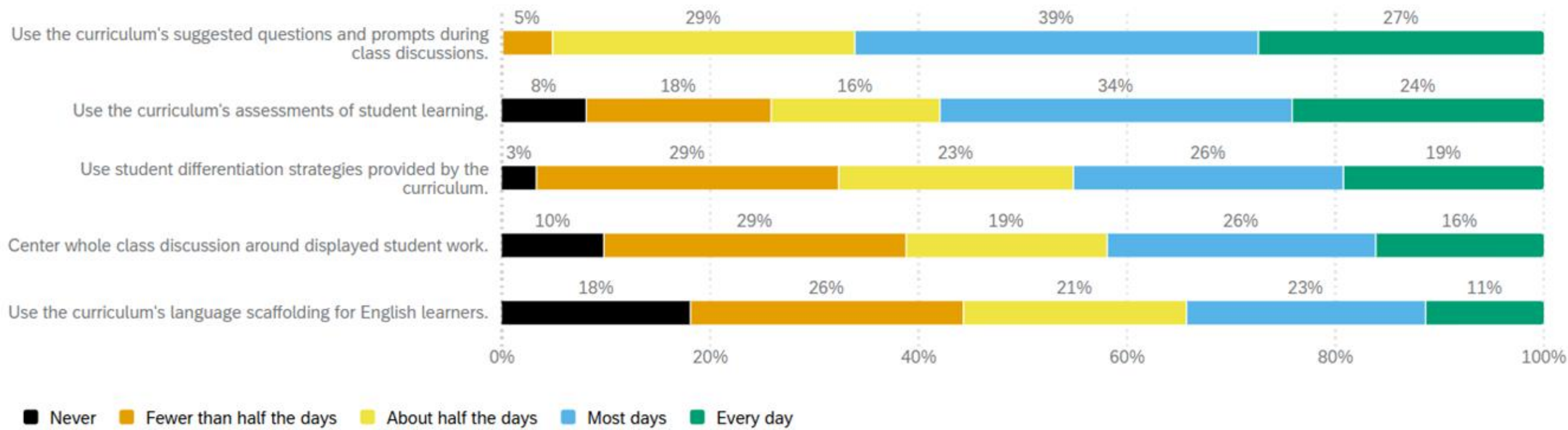
Classroom Activities in Last Completed Unit

Classroom Activities in Last Completed Unit: Collaboration & Discourse/Cognitive Rigor



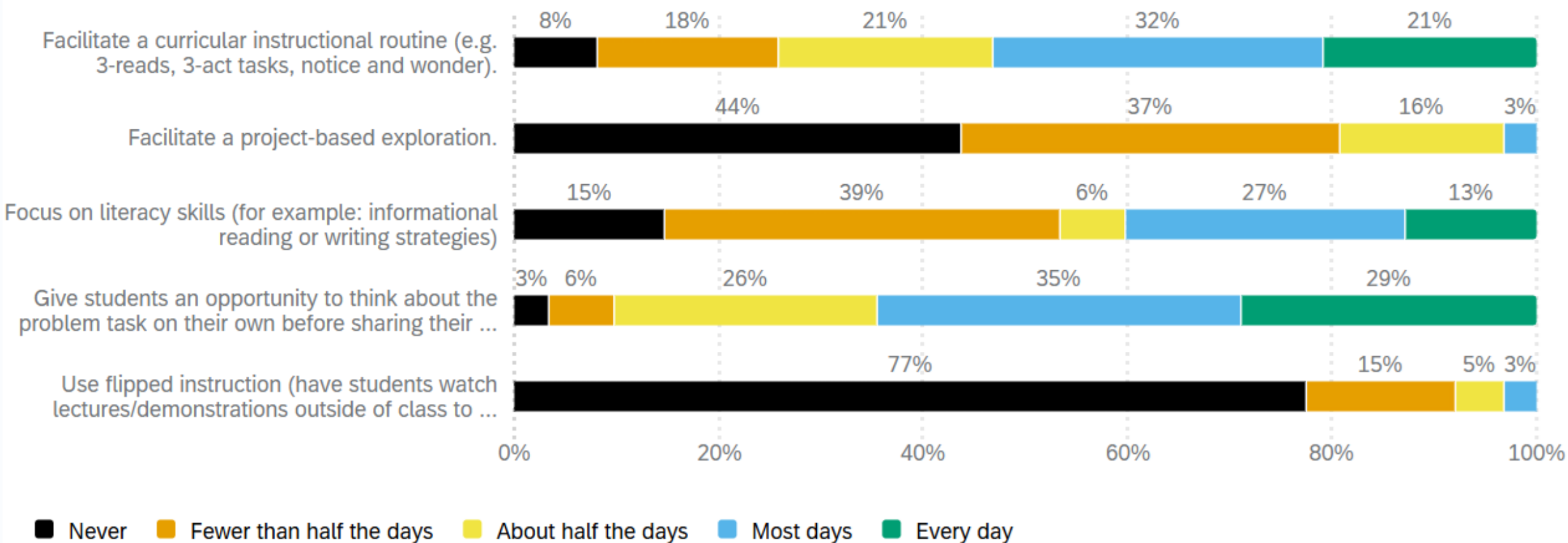
Classroom Activities in Last Completed Unit

Classroom Activities in Last Completed Unit: Assessment, Discourse, Differentiation



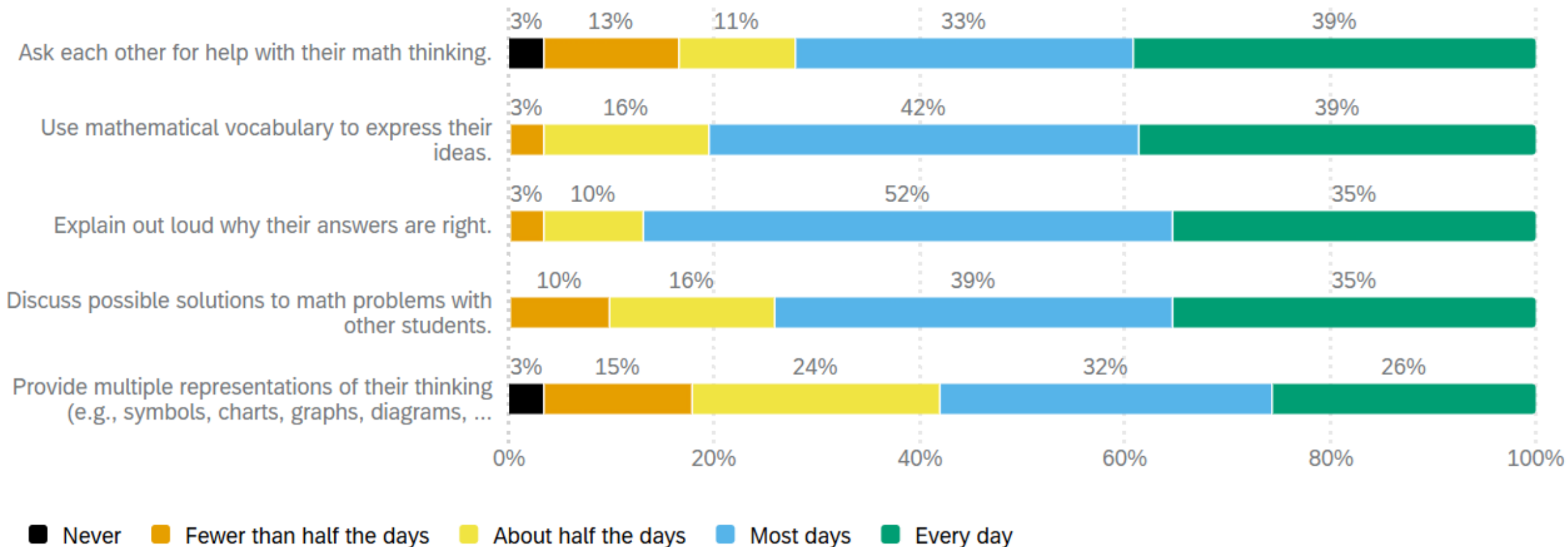
Classroom Activities in Last Completed Unit

Classroom Activities in Last Completed Unit: Teacher Routines



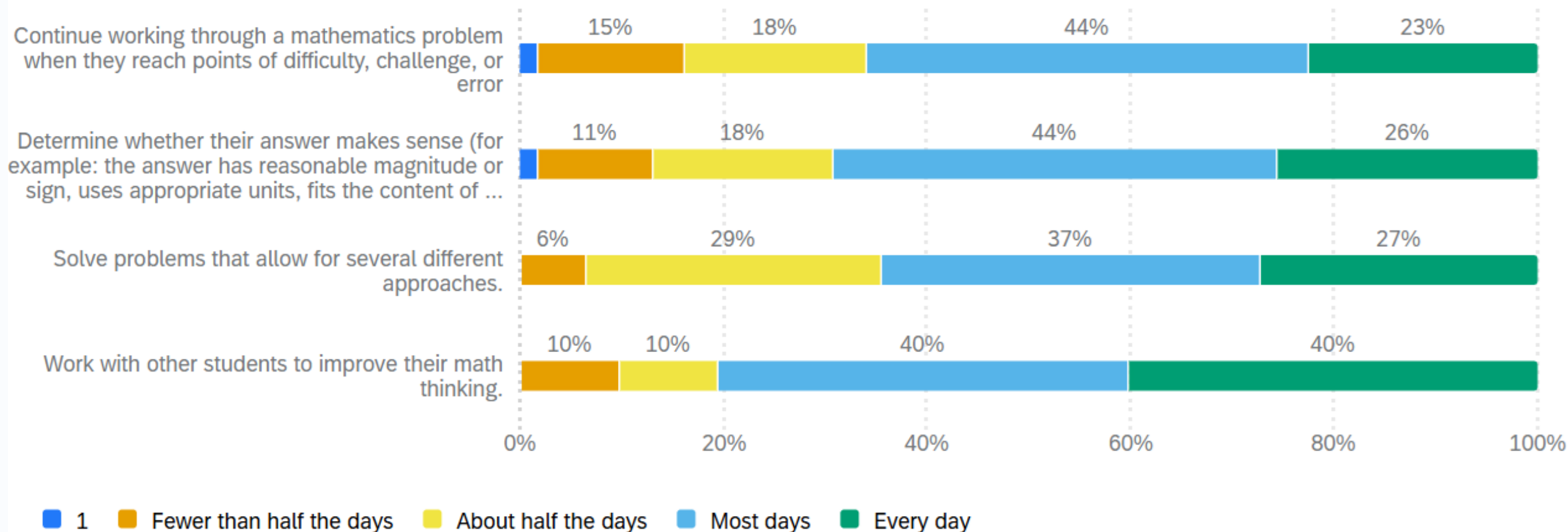
Student Discourse Opportunities

During the last completed unit, how often did your students do each of the following in class?



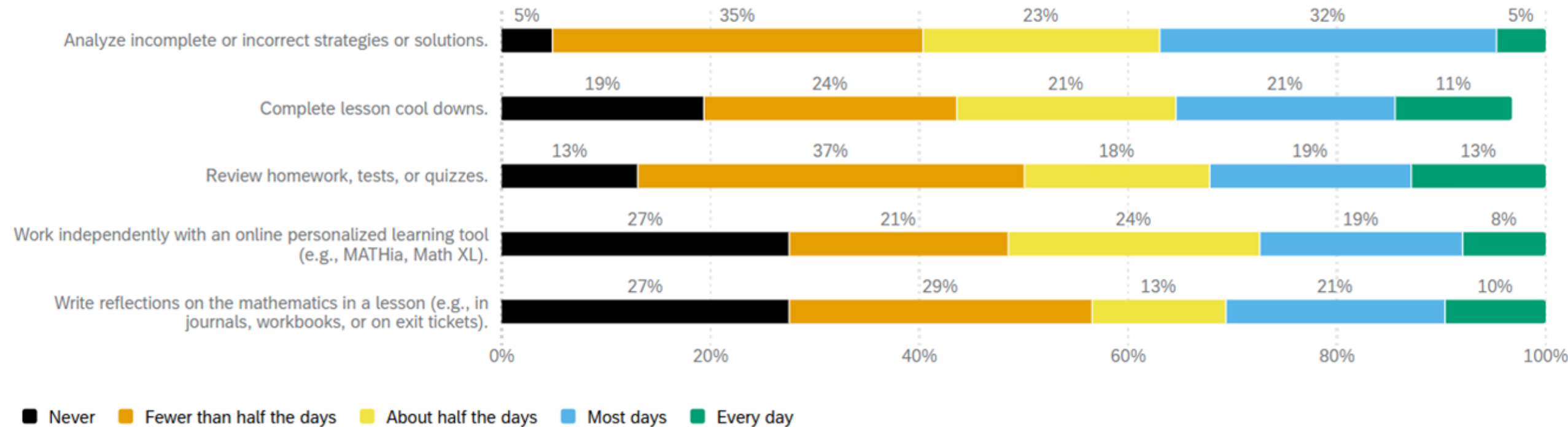
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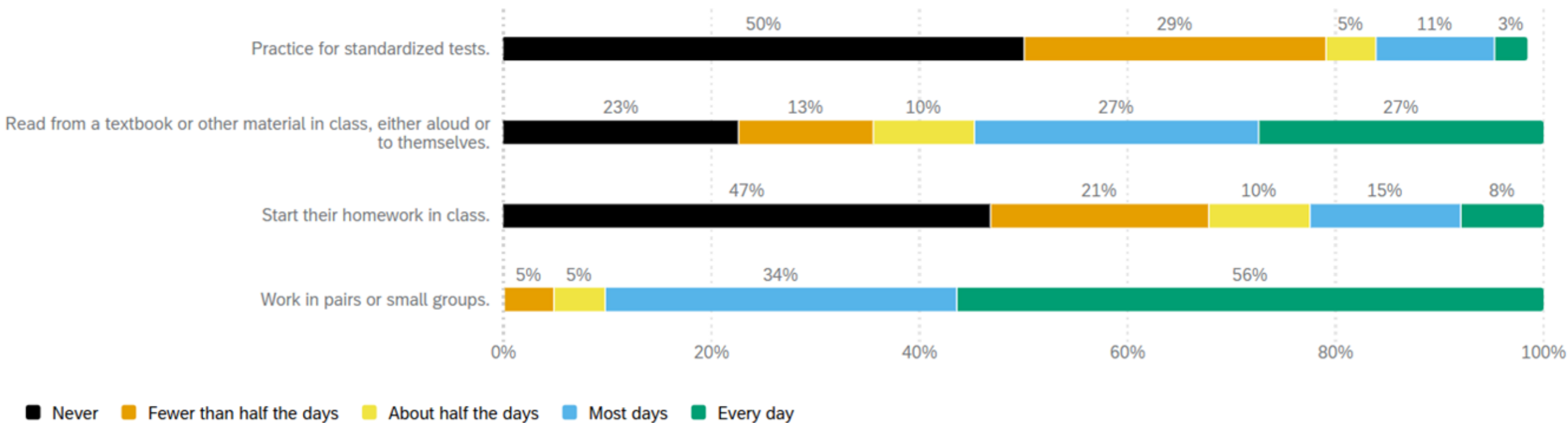
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Student Discourse Opportunities

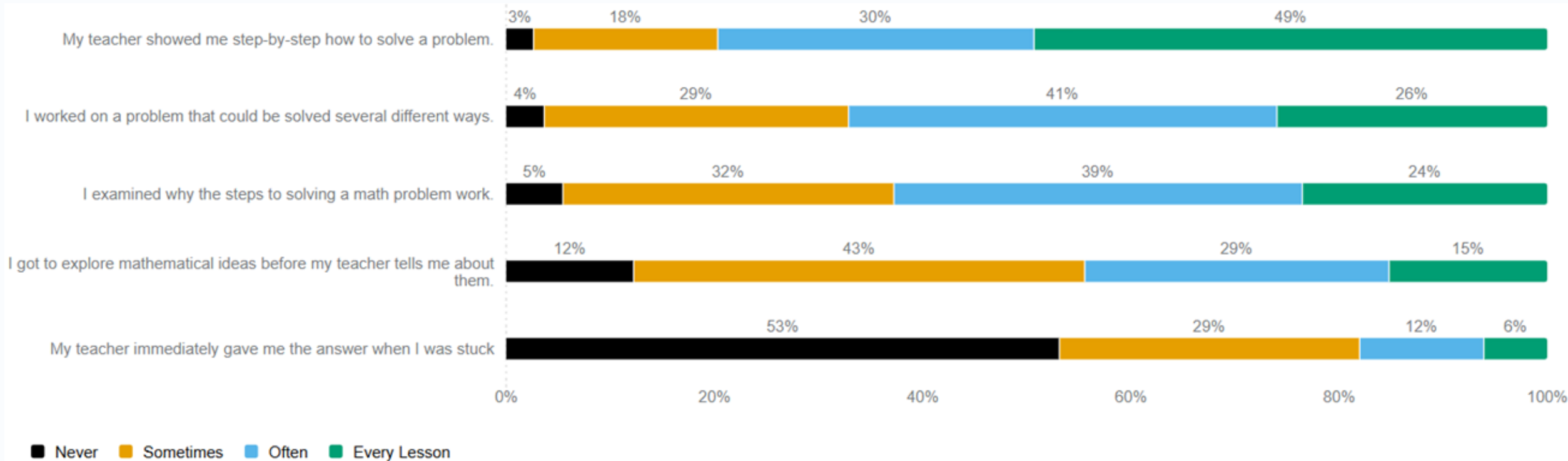
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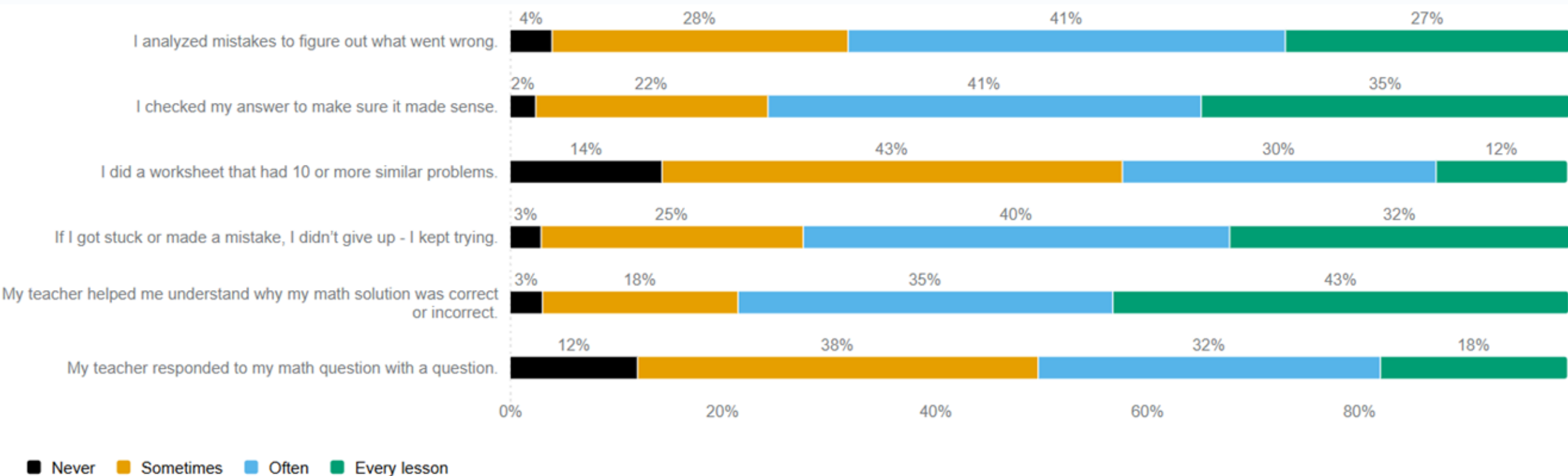
6. Student View of Classroom Activity



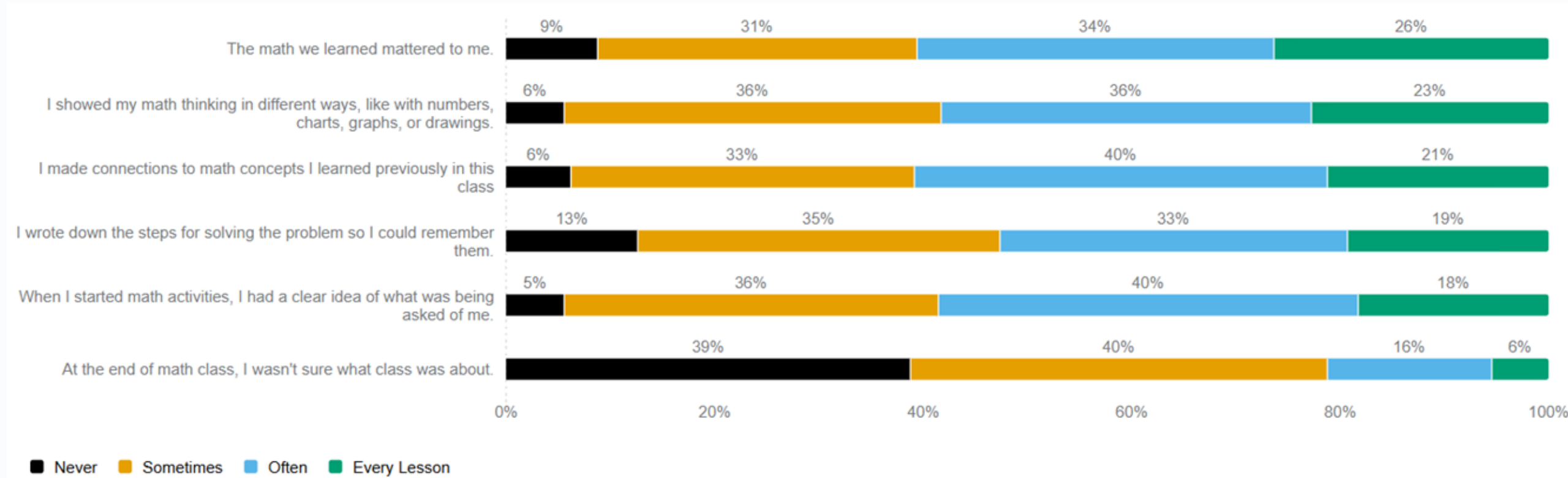
Cognitive Demand and Rigor



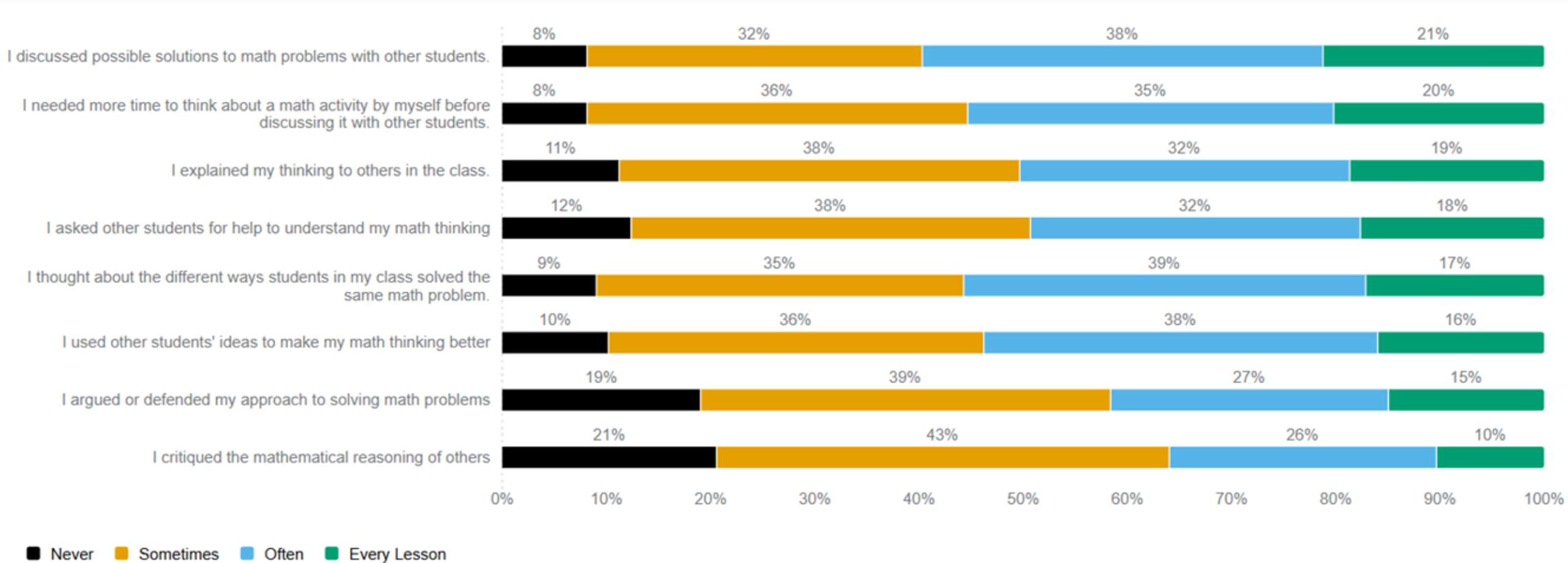
Cognitive Demand and Rigor



Coherence, Focus, Content, and Access



Collaboration and Discourse

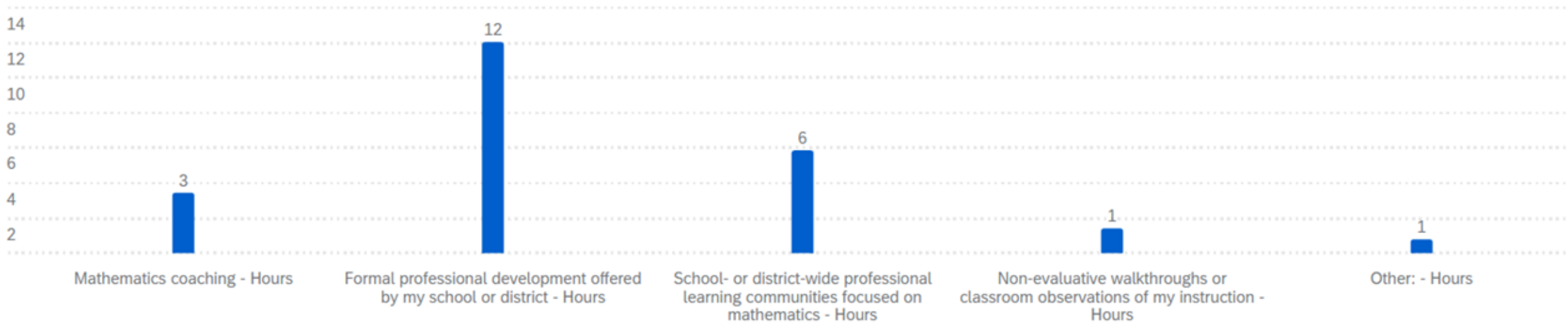


7. Curriculum Implementation Support



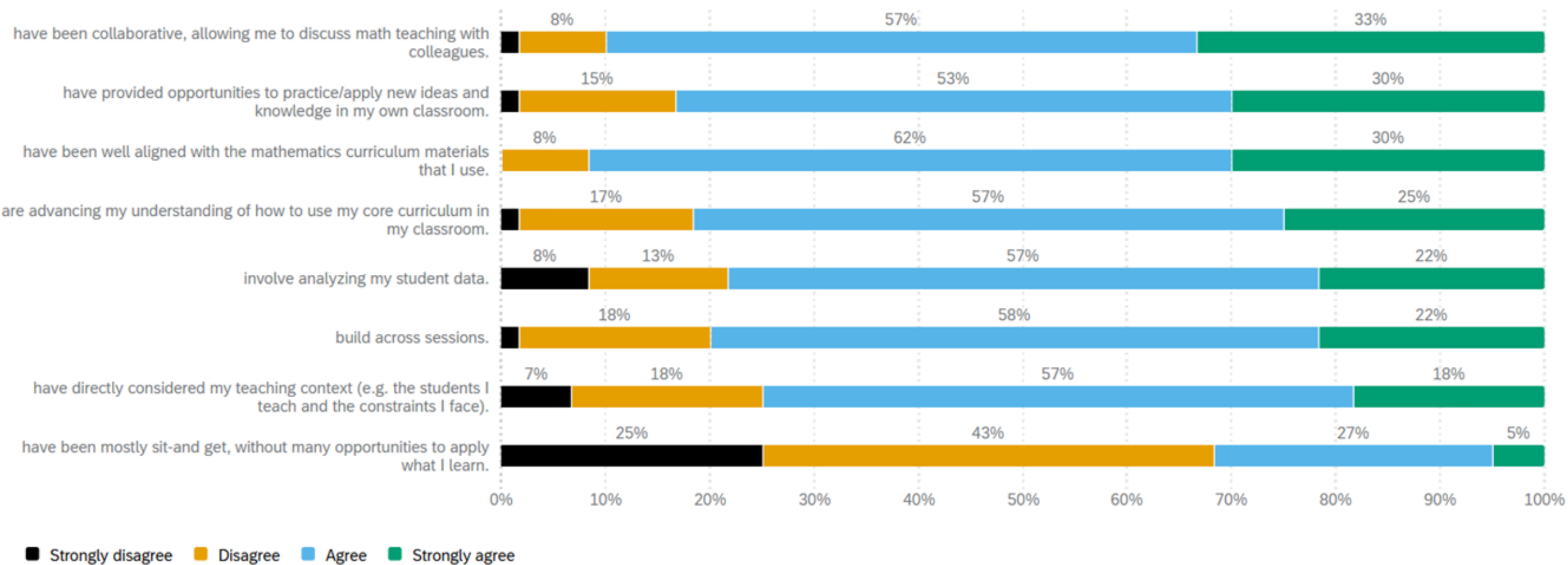
Supports for Curriculum Implementation

Average number of hours in different types of professional learning



Supports for Curriculum Implementation

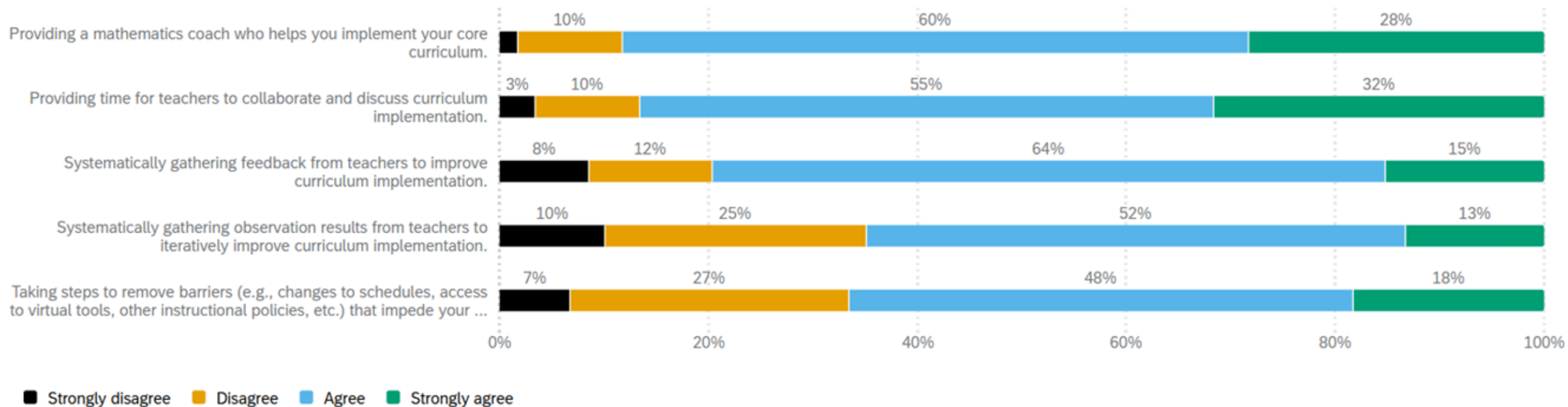
School and district professional learning supports since the beginning of the school year...



Supports for Curriculum Implementation

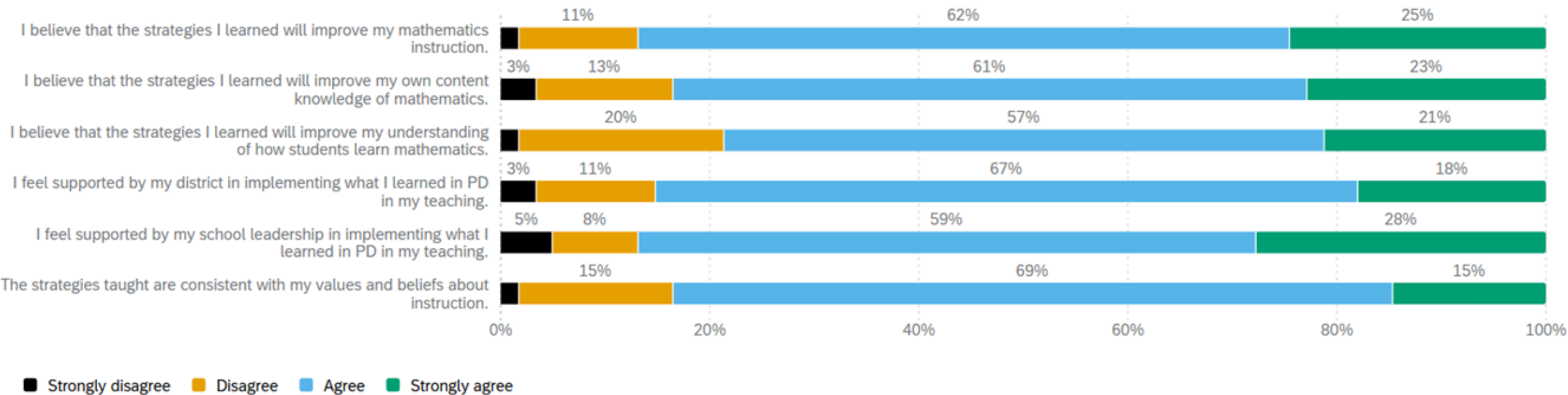
Extent to which teachers agree their school supports mathematics curriculum implementation in the following ways

...



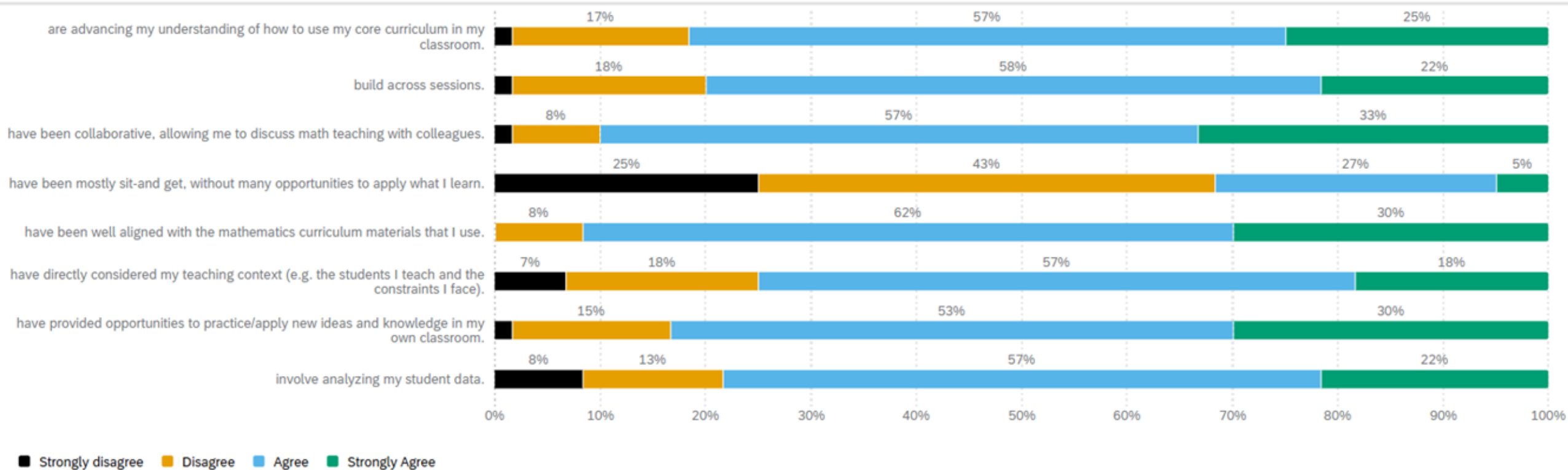
Supports for Curriculum Implementation

Beliefs about curriculum professional learning



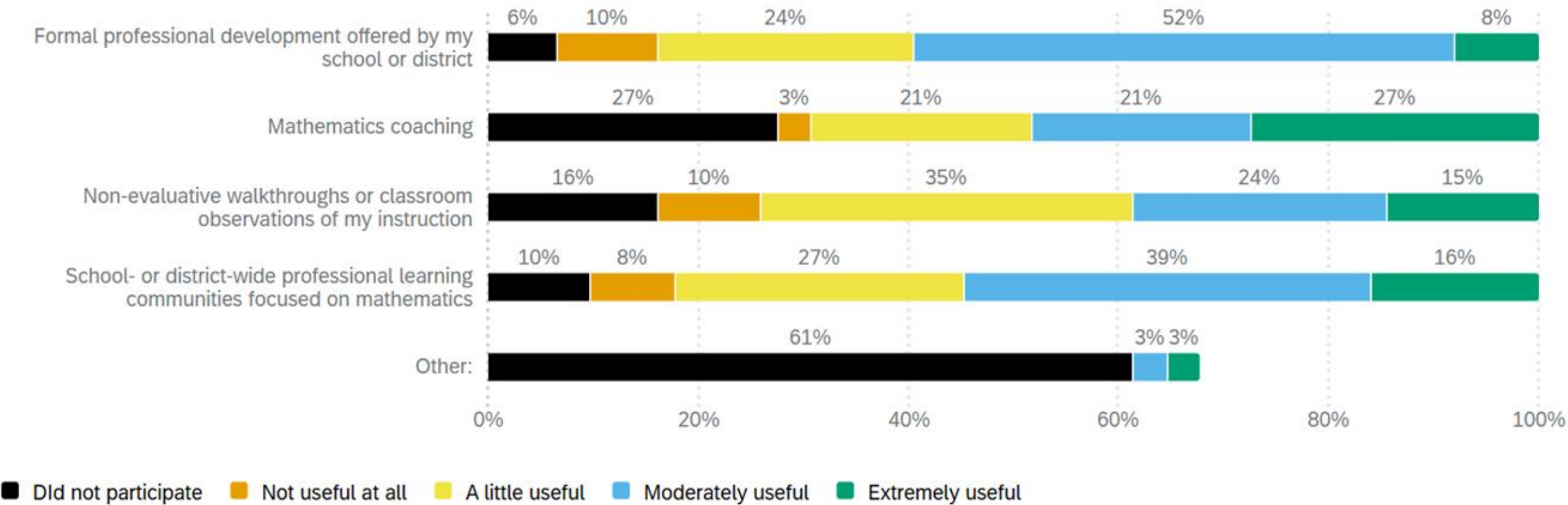
Supports for Curriculum Implementation

To what extent do you agree or disagree with the following statements about the professional learning activities offered by your school or district since the beginning of the school year. The professional learning opportunities... >



Other Professional Learning

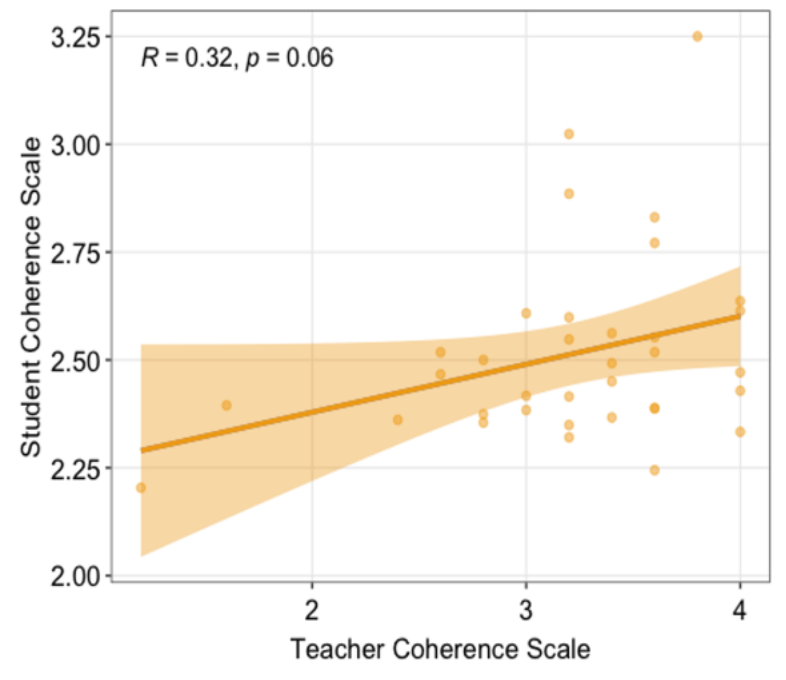
Extent to which teachers feel professional learning was useful for improving math instruction ...



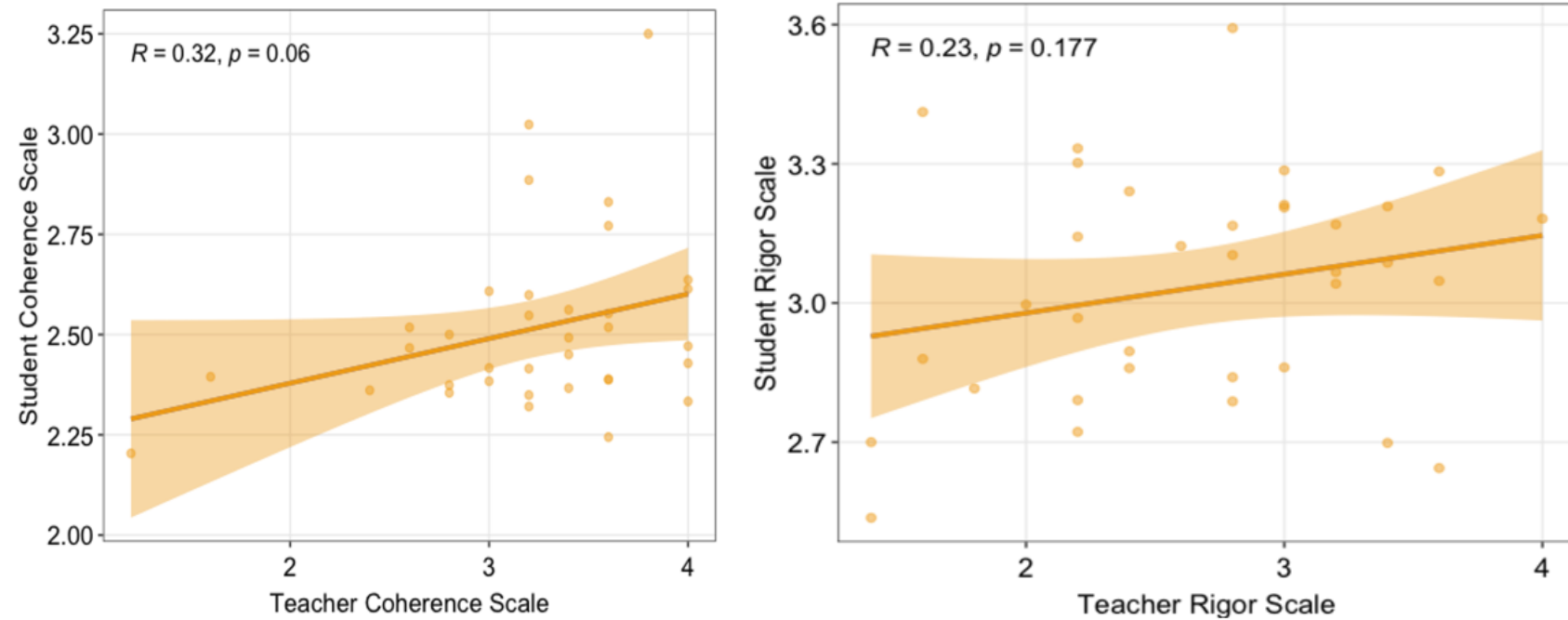
Preliminary Findings: Teacher-Student Crossover



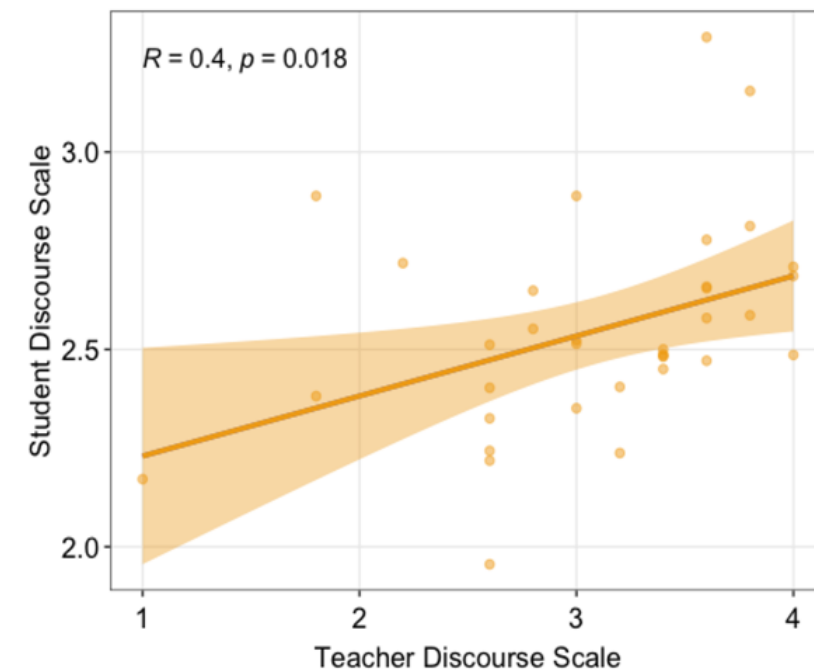
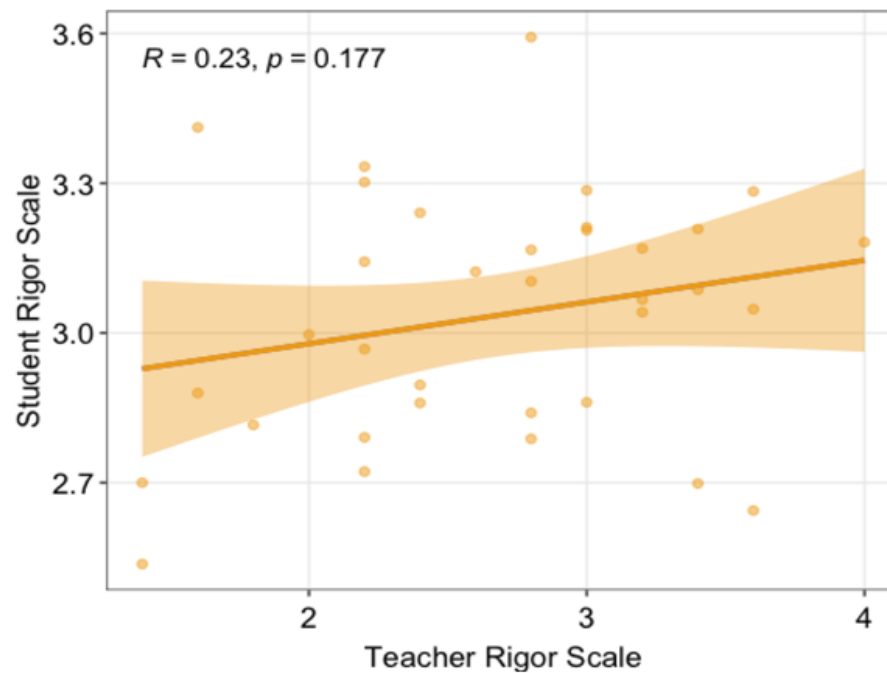
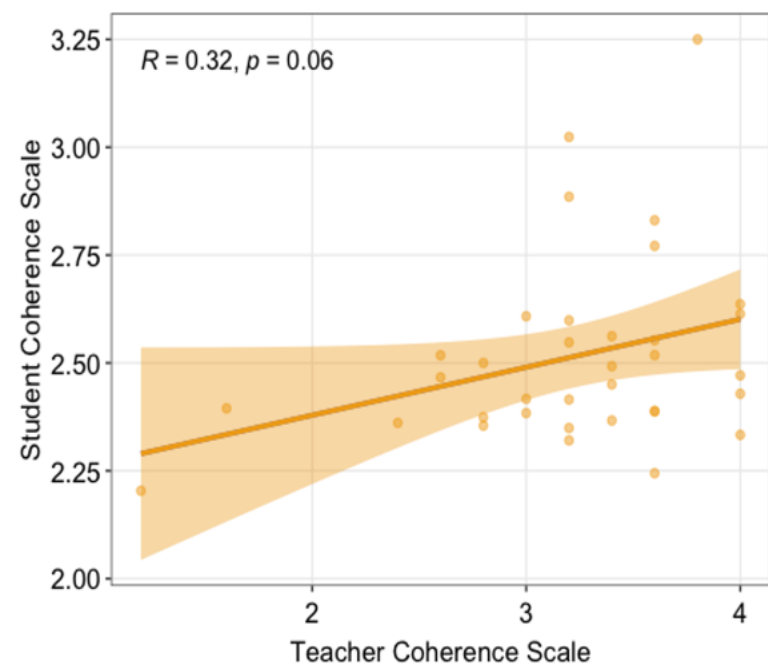
Teachers and Students Characterizations of Classroom Practice show a Small to Medium Positive Relationship



Teachers and Students Characterizations of Classroom Practice show a Small to Medium Positive Relationship



Teachers and Students Characterizations of Classroom Practice show a Small to Medium Positive Relationship



What we are learning and next steps

- **District leaders want to know more about individual teacher curricular decision-making than our data provide.**
 - All cited walkthroughs as a key part of their implementation strategy. Our data helps bring a lens to that important work.
- **District leaders wonder about which additional professional learning supports to provide**
 - Our data showed that teachers cite coaching as the most helpful for curriculum-based professional learning, but district budgets are stretched tight.
- **Our next steps include an expansion on sample for year 2 and a focus on districts' professional learning supports.**

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