Analysis Coaching Project: Interpreting findings from an Early Learning Inventory study

Session 4

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Coaching sessions conducted with Lauren Jenks-Jones, Executive Director of Early Childhood, and team at the Oklahoma State Department of Education on October 20, 2022

Session objectives

1. Increase understanding of findings from the analyses.
2. Discuss implications of findings for developing or expanding supports for educators.
3. Identify additional questions that can be addressed with existing survey data.

Agenda

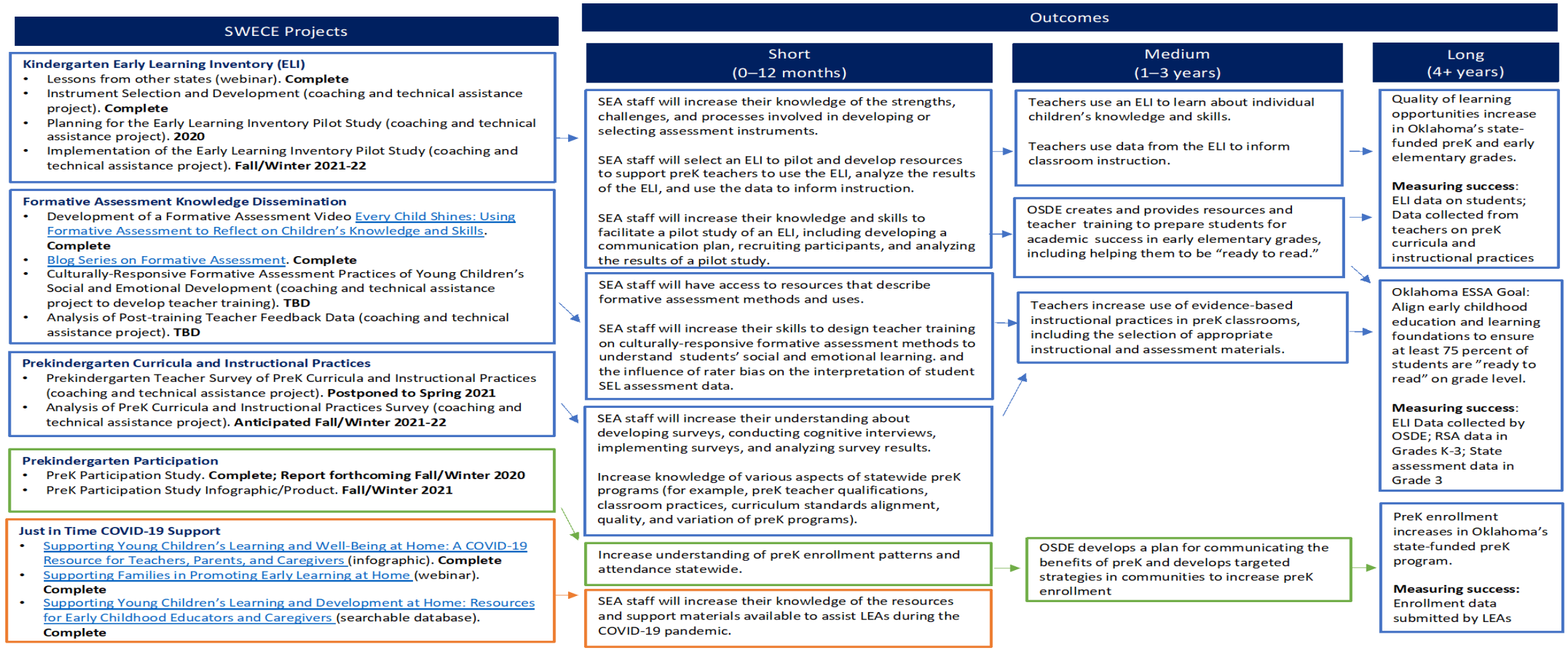
1. Introductions and SWECE Research Partnership overview
2. Overview of the project
3. Validation findings
4. Implementation findings
5. Next steps

Introductions

- Name
- Title

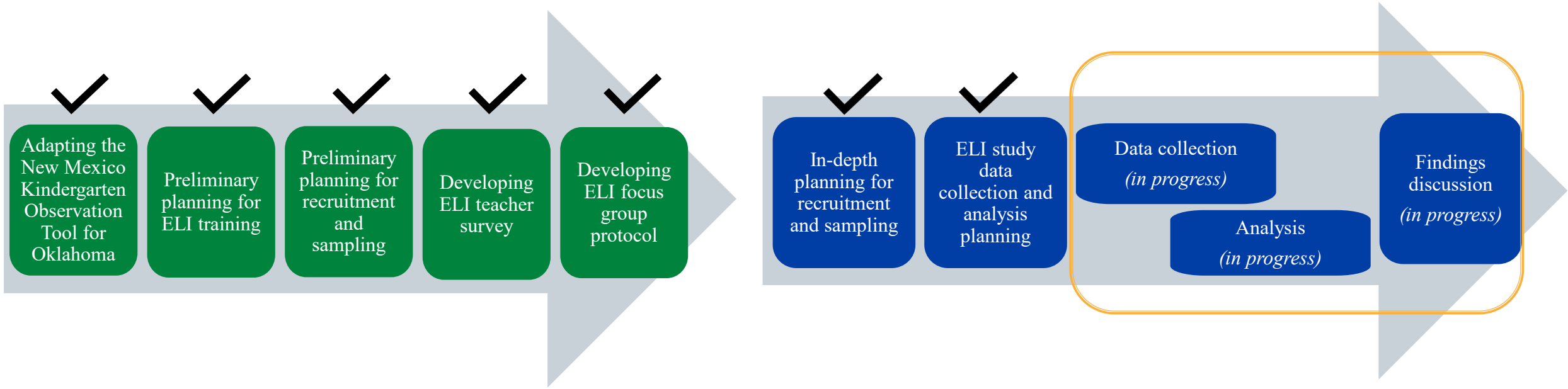
SWECE Research Partnership

Southwest Early Childhood Education (SWECE) Research Partnership Goals: REL Southwest is working with the Oklahoma State Department of Education (OSDE) and other partners to improve student learning in preK programs across the state by targeting participation, using an ELI to assess students' knowledge and skills in order to provide appropriate interventions, and strengthening instructional practices and curricula materials used in preK classrooms.



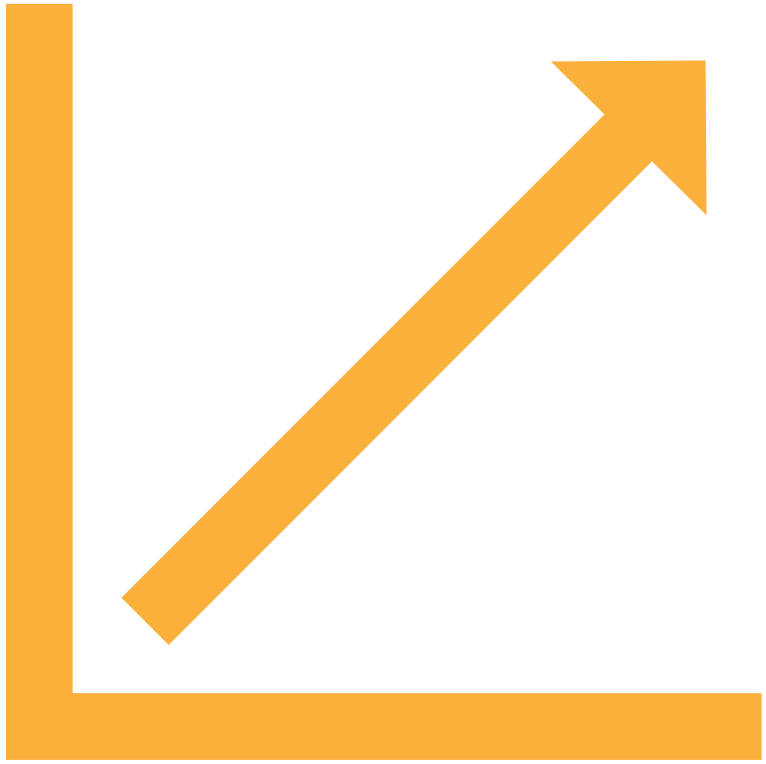
Overview of the project

ELI project phases



Study objectives

A continuous improvement study of the ELI that will inform changes to the measure, training, and guidance provided by OSDE



Validation questions and data sources

Validation research question	ELI beginning-of-year (BOY) ratings	Reading Sufficiency Act assessment (BOY)	Student characteristics
1. What domains of students' learning and development does the ELI validly measure?	●	●	
2. Do any of the ELI indicators exhibit potential bias for students with different characteristics?	●		●
3. Do teachers use rating categories for each ELI item as intended?	●		
4. To what extent does the ELI provide information about individual student abilities?	●		

Implementation questions and data sources

Implementation research question	Pre-training survey (May-Jul)	Post-training survey (Aug-Sept)	First follow-up survey (Oct-Nov)	Focus group protocol (Nov)
5. To what extent do the ELI training and resources prepare teachers to use the ELI?	●	●	●	●
6. How do teachers report administering the ELI in their classroom, and do they report using the ELI data to inform instruction?			●	●
7. What are teachers' perceptions about the feasibility and value of using the ELI in their classroom?			●	●
8. What are the key facilitators and challenges for teachers implementing the ELI with fidelity?			●	●
9. What improvements could be made to the ELI training, measure, and technology platform to increase feasibility and fidelity?		●	●	●

Note. Research question 10 will be addressed during Session 5.

Validation findings

Validation sample student characteristics on gender and race

Demographic information: Gender and race	Number of students	Percent
Gender		
Female	420	49.2
Male	433	50.8
Race		
White	596	69.9
Multiracial	105	12.3
Native American or Alaska Native	85	10.0
Black or African American	42	4.9
Asian	21	2.5
Native Hawaiian or other Pacific Islander	4	0.1

Note: The total sample size consists of 853 students from 46 teachers.
Source: Authors' analysis of data from the fall 2021 Early Learning Inventory.

Validation sample student characteristics on economic indicators

Demographic information: Economic indicators	Number of students	Percent
Free and reduced-price lunch eligibility		
Not receiving free or reduced-price lunch	346	40.6
Reduced-price lunch	47	5.5
Free lunch	155	18.2
Community Eligible lunch	272	31.9
Provision 2	33	3.9
Economic disadvantage		
Yes	489	57.3
No	364	42.7

Note: The total sample size consists of 853 students from 46 teachers. Percentages may not sum to 100 due to rounding.
Source: Authors' analysis of data from the fall 2021 Early Learning Inventory.

Validation sample student characteristics on special education status, English learner status, and ethnicity

Demographic information	Number of students	Percent
Special education		
Yes	95	11.1
No	758	88.9
English learner student		
Yes	201	23.5
No	652	76.4
Ethnicity		
Hispanic	256	30.0
Non-Hispanic	597	70.0

Note: The total sample size consists of 853 students from 46 teachers. Percentages may not sum to 100 due to rounding.
Source: Authors' analysis of data from the fall 2021 Early Learning Inventory.

Validation research question 1

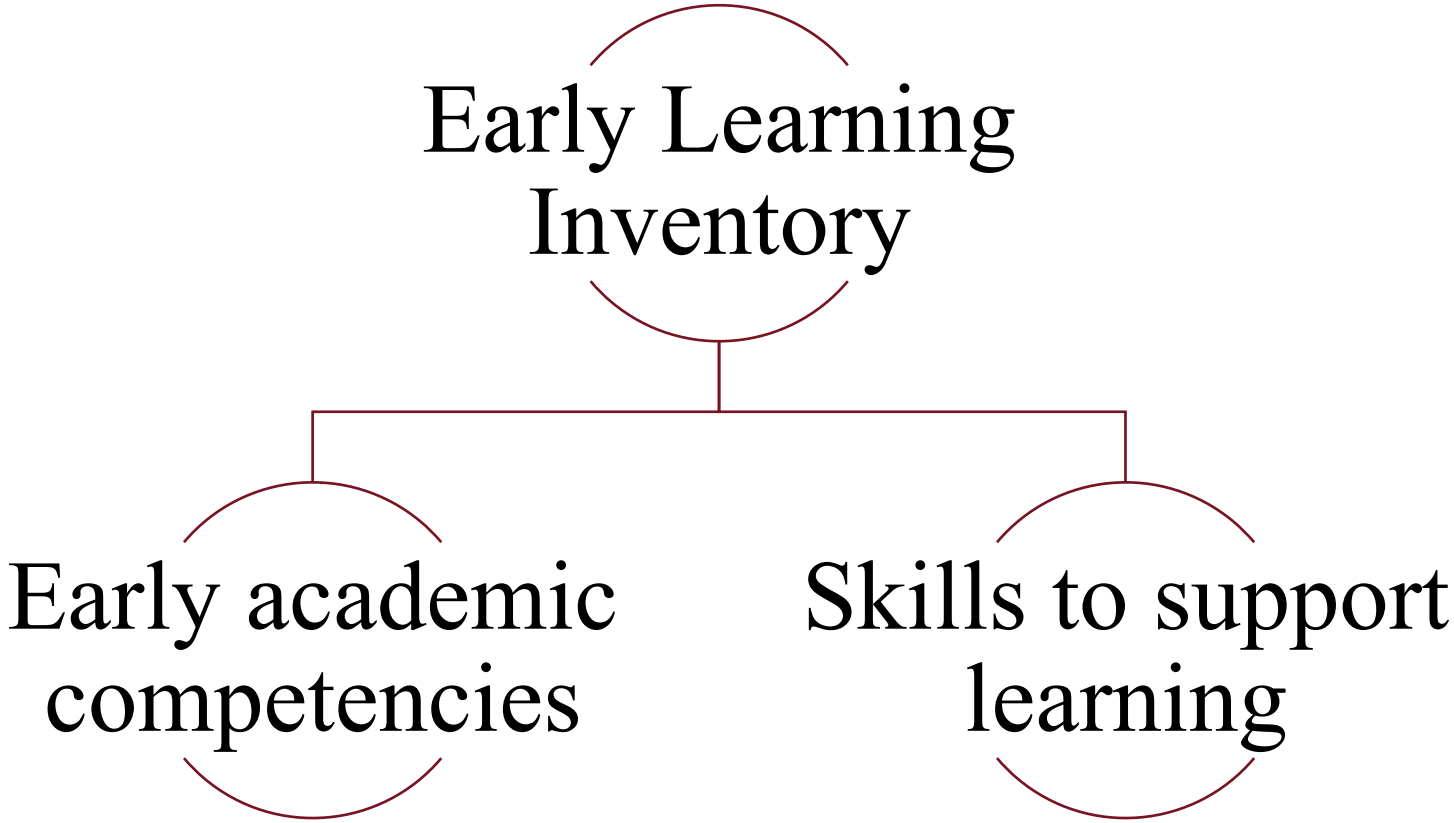
What domains of students' learning and development does the ELI validly measure?

Validity is the degree to which evidence and theory support the use of a measure for a specific purpose.

Type of validity evidence	Description	Examples of methods to produce evidence
Evidence based on internal structure of a measure	The degree to which the relationships among assessment items and domains (for example, components of the assessment) align with the intended construct(s) proposed for scoring and use. This category of analyses may also examine the extent to which there is potential bias in items or domain scores across groups.	Factor analyses; multigroup factor analyses; item response theory analyses; Rasch; differential item functioning

Source: American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (2014). *Standards for educational and psychological testing*.

Factor analyses supported two ELI domains.



Factor analyses supported two ELI domains.

Domain 1: Early Academic Competencies		Domain 2: Skills to Support Learning
Vocabulary	One-to-One Correspondence	Follows Directions
Conversational Ability	Rote Counting	Self-Control
Concepts of Print	Numerals	Cares for Possessions
Print Meaning	Shape Recognition	Cooperative Play
Rhyme	Measurement	Social Problem Solving
Phonological Awareness	Sorting	Guidance and Support
Letter Naming	Investigations	Independence
Letter-Sound Correspondence		Focus
Writing		

Note: The analytic sample consisted of 425 students from a randomly split-half sample of 851 students in the total sample. Two items did not form their own domain or load onto either domain: (1) Coordination and Strength and (2) Fine Motor Tools.
Source: Authors' analysis of data from the 2021 Early Learning Inventory.

Indicators with a factor loading of 0.40 or greater are included in the domain (slide 1 of 3).

Developer's intended domain and indicator	Two-factor model item loadings	
	Domain 1: Early Academic Competencies	Domain 2: Skills to Support Learning
Physical Development, Health, and Well-Being		
Coordination and Strength	—	—
Fine Motor Tools	—	—
Literacy		
Follows Directions	—	**0.52**
Vocabulary	**0.69**	—
Conversational Ability	**0.56**	—
Concepts of Print	**0.74**	—
Print Meaning	**0.79**	—
Rhyme	**0.78**	—
Phonological Awareness	**0.90**	—
Letter Naming	**0.85**	—
Letter-Sound Correspondence	**0.91**	—
Writing	**0.68**	—

— indicates that the item did not load saliently on the domain.
Note: The analytic sample consisted of 425 students from a randomly split-half sample of 851 students in the total sample.
Source: Authors' analysis of data from the fall 2021 Early Learning Inventory.

Indicators with a factor loading of 0.40 or greater are included in the domain (slide 2 of 3).

Developer's intended domain and indicator	Two-factor model item loadings Domain 1: Early Academic Competencies	Domain 2: Skills to Support Learning
Mathematics		
One-to-One Correspondence	**0.85**	—
Rote Counting	**0.93**	—
Numerals	**0.95**	—
Shape Recognition	**0.97**	—
Measurement	**0.95**	—
Sorting	**0.86**	—
Scientific Conceptual Understanding		
Investigations	**0.68**	—

— indicates that the item did not load saliently on the domain.
Note: The analytic sample consisted of 425 students from a randomly split-half sample of 851 students in the total sample.
Source: Authors' analysis of data from the fall 2021 Early Learning Inventory.

Indicators with a factor loading of 0.40 or greater are included in the domain (slide 3 of 3).

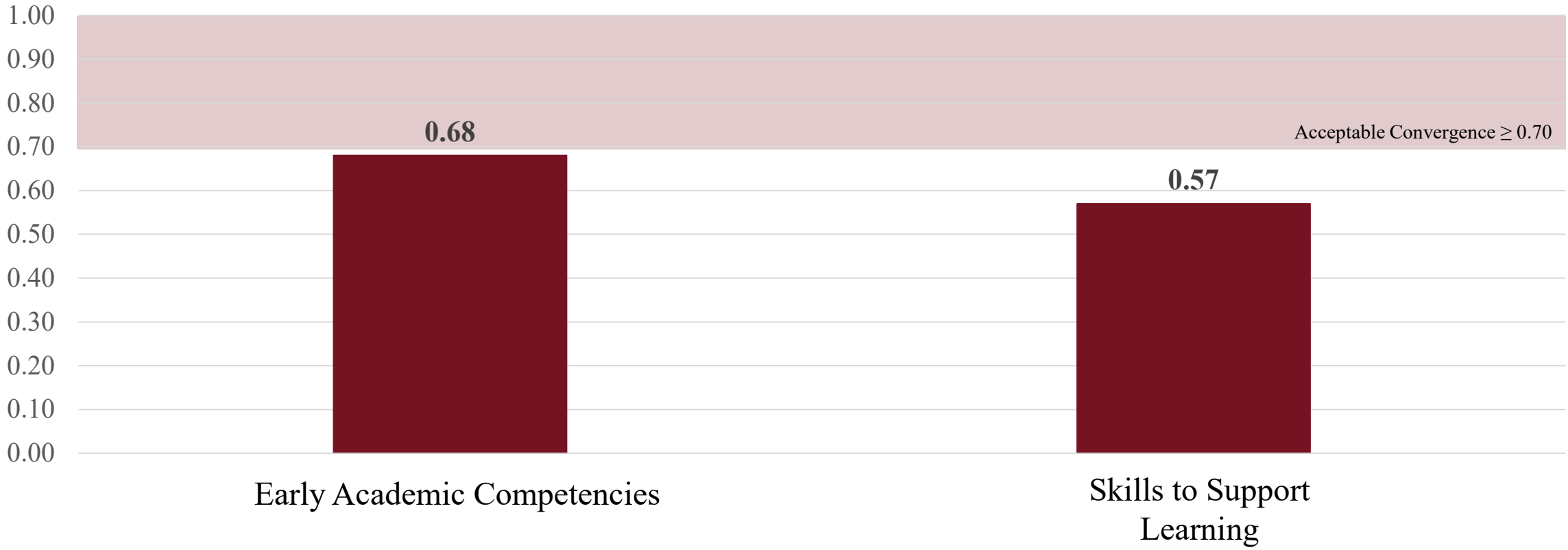
Developer's intended domain and indicator	Two-factor model item loadings Domain 1: Early Academic Competencies	Two-factor model item loadings Domain 2: Skills to Support Learning
Self, Family, and Community		
Self-Control	—	**0.87**
Cares for Possessions	—	**0.84**
Cooperative Play	—	**0.91**
Social Problem Solving	—	**0.88**
Guidance and Support	—	**0.82**
Approaches to Learning		
Independence	—	**0.80**
Focus	—	**0.80**

— indicates that the item did not load saliently on the domain.
Note: The analytic sample consisted of 425 students from a randomly split-half sample of 851 students in the total sample.
Source: Authors' analysis of data from the fall 2021 Early Learning Inventory.

Validity is the degree to which evidence and theory support the use of a measure for a specific purpose.

Type of validity evidence	Description	Examples of methods to produce evidence
Concurrent evidence	The degree to which the assessment correlates with other independent, reliable, and valid assessments of the same construct. Concurrent validity can be established by examining convergent relationships. Convergent validity evidence is when two assessments of the same construct have a strong relationship.	Correlational analyses with measures collected at the same time as the assessment

The Early Academic Competencies domain was more highly correlated with the Reading Sufficiency Act (RSA) assessment.



Note: The analytic sample consisted of 134 students with both RSA assessment data and ELI data available. This sample is a subsample of the 851 students in the total sample.
DiIorio, C. K. (2005). *Measurement in Health Behavior: Methods for Research and Evaluation*. John Wiley & Sons.
Source: Authors' analysis of data from the fall 2021 Early Learning Inventory and RSA assessment.

ELI indicators were correlated with the RSA assessment. Some indicators reached or approached the threshold for good convergence.

Domain	Indicator	RSA assessment and ELI indicator correlation coefficient[a]	Good convergence
Early Academic Competencies	Vocabulary	0.56	
	Conversational Ability	0.47	
	Concepts of Print	0.56	
	Print Meaning	0.43	
	Rhyme	0.47	
	Phonological Awareness	0.53	
	Letter Naming	0.72	Yes
	Letter-Sound Correspondence	0.66	
	Writing	0.59	
	One-to-One Correspondence	0.67	
	Rote Counting	0.62	
	Numerals	0.71	Yes
	Shape Recognition	0.58	
	Measurement	0.47	
	Sorting	0.58	
	Investigations	0.63	

Notes: The total sample size consists of 851 students from 46 teachers. The analytic sample consisted of 134 students with both RSA data and ELI data available.

[a] Represents Spearman rank-order coefficients between each ELI item and the RSA beginning-of-year composite score.

[b] Provides the convergent and validity strength of each ELI and RSA beginning-of-year composite score association measure (weak, moderate, good).

Source: Authors' analysis of data from the fall 2021 ELI and RSA assessment.

ELI indicators were correlated with the RSA assessment. Some indicators reached or approached the threshold for good convergence.

Domain	Indicator	RSA assessment and ELI indicator correlation coefficient[a]	Good convergence
Skills to Support Learning	Follows Directions	0.57	
	Self-Control	0.49	
	Cares for Possessions	0.54	
	Cooperative Play	0.55	
	Social Problem Solving	0.43	
	Guidance and Support	0.57	
	Independence	0.48	
	Focus	0.46	

Notes: The total sample size consists of 851 students from 46 teachers. The analytic sample consisted of 134 students with both RSA data and ELI data available.

[a] Represents Spearman rank-order coefficients between each ELI indicator and the RSA beginning-of-year composite score.

Source: Authors' analysis of data from the fall 2021 Early Learning Inventory and RSA assessment.

Reliability is the relationship among items within an assessment or between different administrations of the assessment.

Type of reliability	Description	Methods to produce evidence
Internal consistency	The relationship among items within an assessment or within assessment domain. Values range from 0, indicating no reliability, to 1, for perfect reliability. Reliability measures above 0.70 are considered acceptable.[a]	McDonald's omega; Cronbach's alpha; Rasch person reliability

[a] Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.

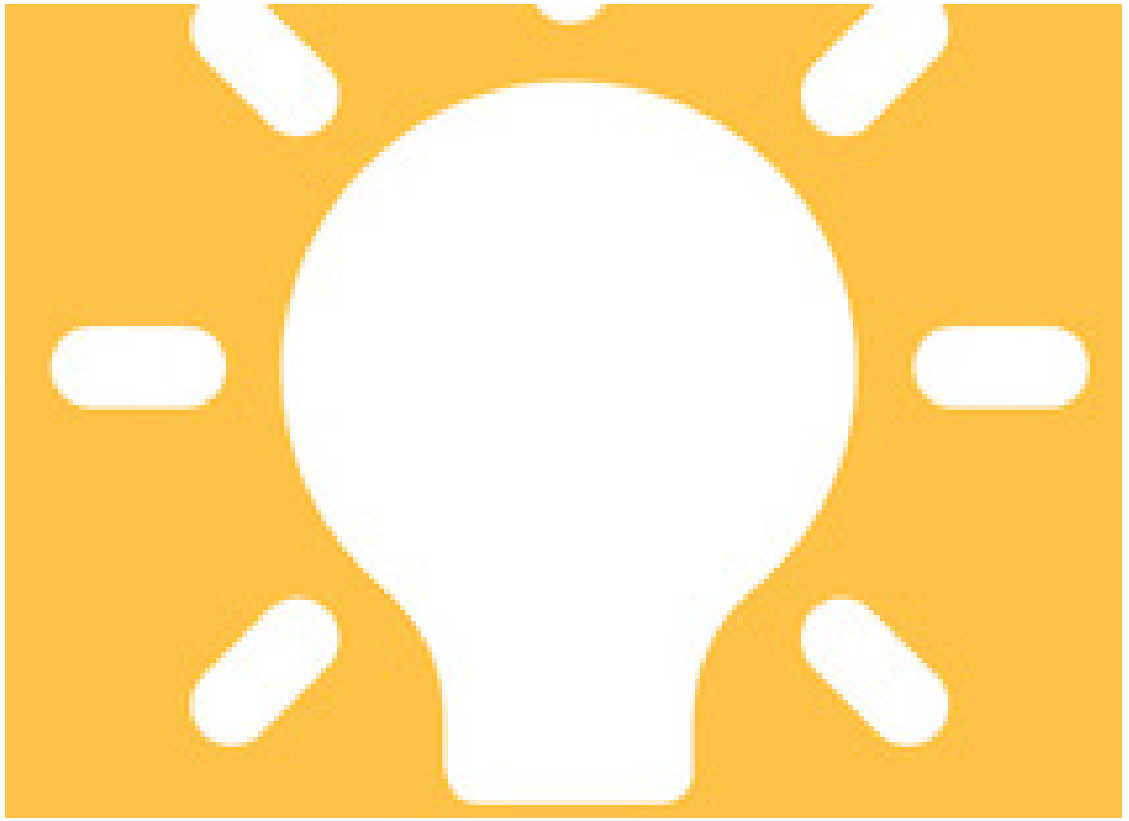
Both ELI domains had high internal consistency reliability.

Domain name	McDonald's omega	Cronbach's alpha	Rasch item reliability	Rasch person reliability
Early Academic Competencies	0.97	0.96	0.98	0.95
Skills to Support Learning	0.93	0.92	0.97	0.94

Note: The analytic sample consisted of 425 students from a randomly split-half sample of 851 students in the total sample.
Source: Authors' analysis of data from the fall 2021 Early Learning Inventory.

Implications and limitations

- The ELI validly measures two underlying constructs:
  - Early Academic Competencies
  - Skills to Support Learning
- OSDE and local education agencies can generate reliable summary scores using the validated domains from these two constructs.
- Indicator ratings may provide more specific information about students' competencies and skills than the RSA assessment.



Validation research question 1 Jamboard

Takeaways

Recommendations for changes to ELI

Validation research question 2

Do any of the ELI indicators exhibit potential bias for students with different characteristics?

Examination of assessment bias

Multigroup factor analyses investigate whether the assessment measures the construct of interest in the same way for individuals from different groups. For example, due to the differences in cultural, history, and shared background, different groups of individuals may have different interpretations of the same question and may respond to the question differently. Findings of measurement invariance from multigroup factor analysis examines if constructs are measured the same way across different groups.

Differential step functioning analyses test for any potential biases based on individuals' characteristics.

- Items are flagged for potential bias when students within one defined group (for example, females) are receiving better scores relative to students within the other group (for example, males), controlling for their overall ability.
- Additional analyses, such as a review by a panel of child development experts, would be needed to explore whether the potential bias is indeed a real bias or an attribute of the individuals with that characteristic.

The two ELI domains are appropriate for students with different characteristics.

1. The two-factor ELI domain structure, which included Early Academic Competencies and Skills to Support Learning, was equivalent for students regardless of gender or eligibility for the National School Lunch Program.

2. We did not have enough students in individual groups to test the factor structure by English learner student status, special education status, or race/ethnicity.

Note: 851 students from 46 teachers. For some student characteristics, factor invariance could not be determined due to the small number of observations.
Source: Authors' analysis of data from the fall 2021 Early Learning Inventory.

Analyses flagged 6 of 26 ELI indicators for potential bias between male and female students.

Indicator	Domain	Comparison	Favored student characteristic
13. One-to-One Correspondence	Early Academic Competencies	Gender	Male
14. Rote Counting	Early Academic Competencies	Gender	Male
15. Numerals	Early Academic Competencies	Gender	Male
20. Self-Control	Skills to Support Learning	Gender	Female
21. Cares for Possessions	Skills to Support Learning	Gender	Female
24. Guidance and Support	Skills to Support Learning	Gender	Female

Note: The total sample size consists of 851 students from 46 teachers.
Source: Authors' analysis of data from the fall 2021 Early Learning Inventory.

Analyses flagged 11 of 26 ELI indicators for potential bias between students based on economic advantage.

Indicator	Domain	Comparison	Favored student characteristic
6. Concepts of Print	Early Academic Competencies	FRL	Non-FRL
10. Letter Naming	Early Academic Competencies	FRL	Non-FRL
13. One-to-One Correspondence	Early Academic Competencies	FRL	Non-FRL
14. Rote Counting	Early Academic Competencies	FRL	Non-FRL
19. Investigations	Early Academic Competencies	FRL	Non-FRL
20. Self-Control	Skills to Support Learning	FRL	FRL
21. Cares for Possessions	Skills to Support Learning	FRL	FRL
22. Cooperative Play	Skills to Support Learning	FRL	FRL
23. Social Problem Solving	Skills to Support Learning	FRL	FRL
24. Guidance and Support	Skills to Support Learning	FRL	FRL
26. Focus	Skills to Support Learning	FRL	FRL

Note: The total sample size consists of 851 students from 46 teachers. FRL = Eligible for free or reduced-price lunch; Non-FRL = Not eligible for free or reduced-price lunch

Source: Authors' analysis of data from the fall 2021 Early Learning Inventory.

Analyses flagged 11 of 26 ELI indicators for potential bias by English learner (EL) student status.

Indicator	Domain	Comparison	Favored student characteristic
4. Vocabulary	Early Academic Competencies	EL student	Non-EL student
6. Concepts of Print	Early Academic Competencies	EL student	Non-EL student
7. Print Meaning	Early Academic Competencies	EL student	Non-EL student
8. Rhyme	Early Academic Competencies	EL student	Non-EL student
19. Investigations	Early Academic Competencies	EL student	Non-EL student
3. Follows Directions	Skills to Support Learning	EL student	EL student
20. Self-Control	Skills to Support Learning	EL student	EL student
21. Cares for Possessions	Skills to Support Learning	EL student	EL student
23. Social Problem Solving	Skills to Support Learning	EL student	EL student
24. Guidance and Support	Skills to Support Learning	EL student	EL student
26. Focus	Skills to Support Learning	EL student	EL student

Note: The analytic sample consists of 851 students from 46 teachers.
Source: Authors' analysis of data from the 2021 Early Learning Inventory.

Analyses flagged 2 of 26 ELI indicators for potential bias by special education status.

Indicator	Domain	Comparison	Favored student characteristic
16. Shape Recognition	Early Academic Competencies	Special education	Students in special education
20. Self-Control	Skills to Support Learning	Special education	Students not in special education

ELI is Early Learning Inventory.

Note: The analytic sample consists of 851 students from 46 teachers. *Source*: Authors' analysis of data from the 2021 Early Learning Inventory.

Analyses flagged 6 of 26 ELI indicators for potential bias between students by racial/ethnic characteristics.

Indicator	Domain	Comparison	Favored student characteristic
6. Concepts of Print	Early Academic Competencies	White vs. Black	White
17. Measurement	Early Academic Competencies	White vs. Black	White
21. Cares for Possessions	Skills to Support Learning	White vs. Black	Black
18. Sorting	Early Academic Competencies	White vs. Others or multiple races	White
9. Phonological Awareness	Early Academic Competencies	Black vs. Others or multiple races	Black
17. Measurement	Early Academic Competencies	Black vs. Others or multiple races	Others or multiple races

ELI is Early Learning Inventory.
Note: The analytic sample consists of 851 students from 46 teachers.
Source: Authors' analysis of data from the 2021 Early Learning Inventory.

Implications and limitations

- **At the domain level,** OSDE and local education agencies can generate summary scores using the validated domains for students overall and for students regardless of gender or eligibility for the National School Lunch Program.
  - ❖ More information is needed to determine if summary scores could be generated for other student groups.

- **At the indicator level**, OSDE should discuss indicators flagged as potentially biased from differential step functioning analyses. Items could be flagged either because the indicator is biased or because of true differences in students' competencies in that area relative to overall ability.

Validation research question 2 Jamboard

Takeaways

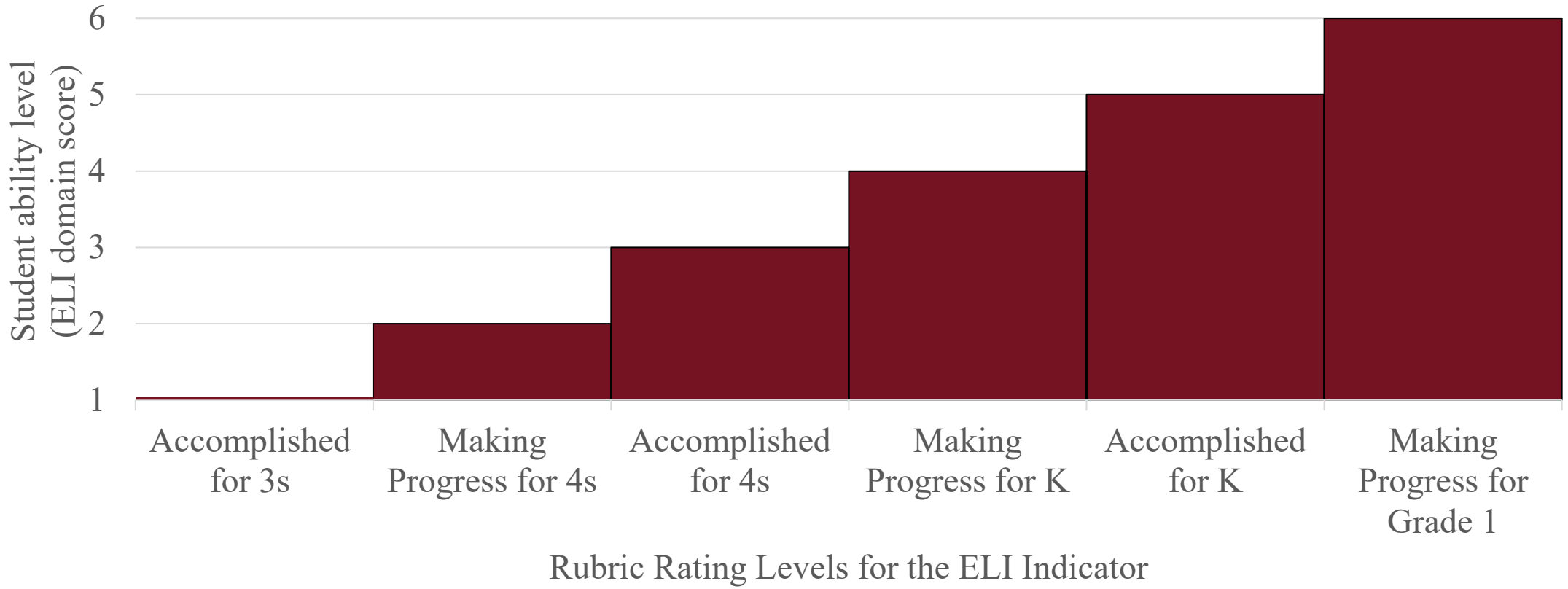
Recommendations for changes to ELI

Validation research question 3

Do teachers use rating categories for each ELI item as intended?

Rubric rating levels for the ELI indicator are ordered correctly.

**For each indicator, there was a clear threshold at which we would expect a student of a given ability to be rated in one category over the next.*



Note. 3s = children 3 years old; 4s = children 4 years old; K = kindergarten

Implications and limitations

- The rubric's six categories were developed to capture a learning progression.
- Based on the analysis from this pilot sample, teachers are using the rubric rating categories of the ELI indicator as intended. Teachers used higher ratings to characterize children with the higher overall ability levels and lower ratings to characterize children with lower overall ability levels.

Validation research question 3 Jamboard

Takeaways

Recommendations for changes to ELI

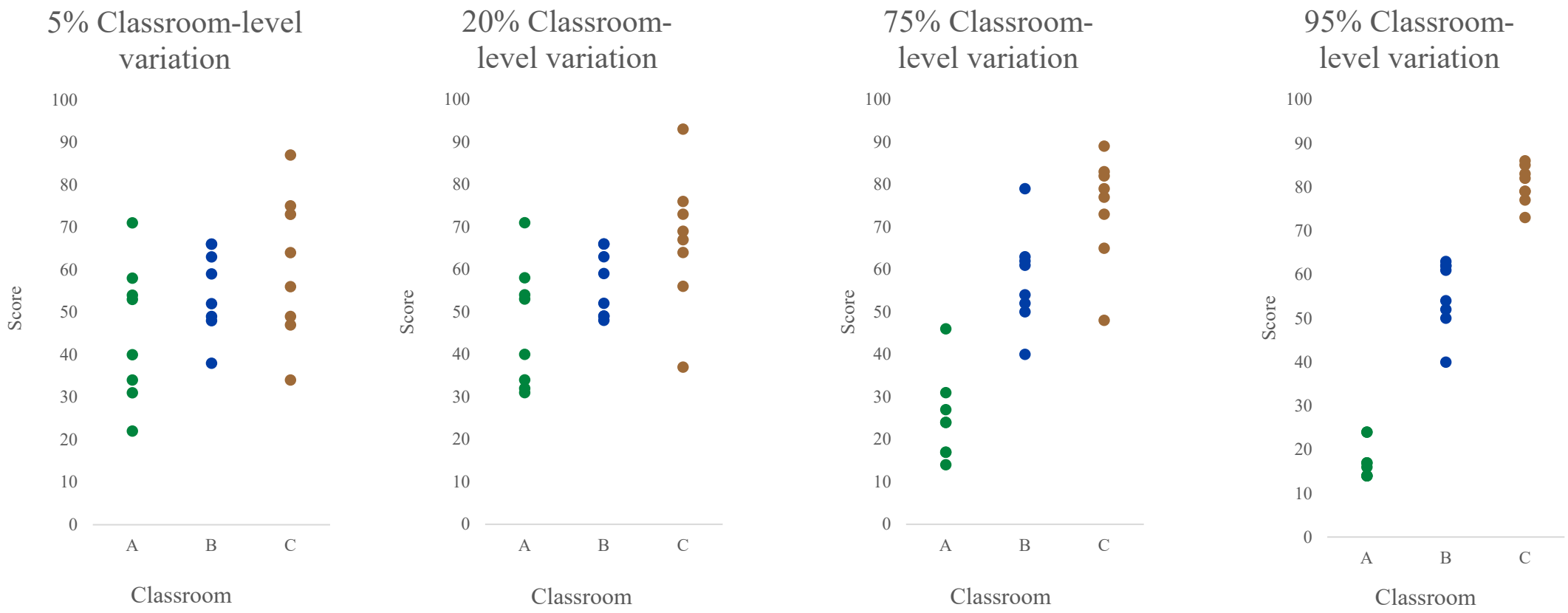
Validation research question 4

To what extent does the ELI provide information about individual student abilities?

Assessor (or teacher) variance is the amount of variation in ratings that is attributable to the assessor and not to the children's abilities or skills.

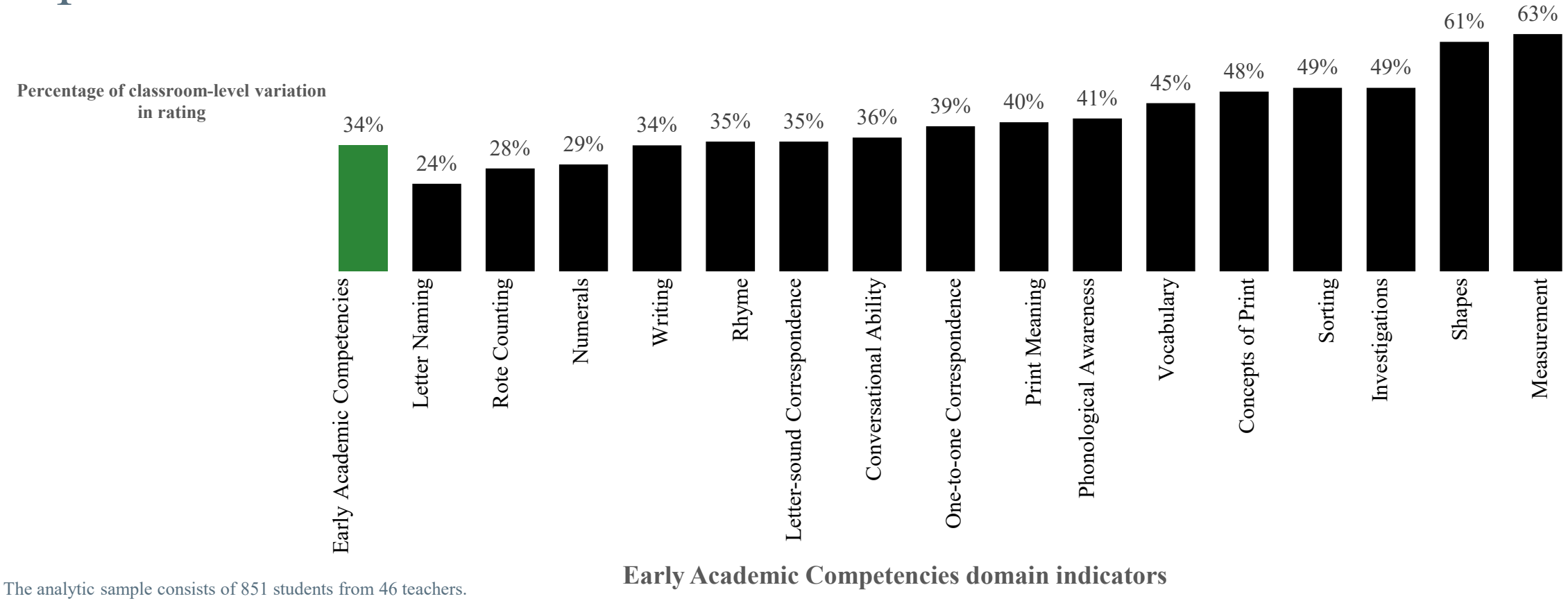
For ELI indicators and for the RSA assessment, the research team partitioned the variance in the ELI indicator and RSA assessment scores by teachers and students.

Examples of different classroom-level variations



Note. Simulated data based on 24 observations across three teachers (8 observations per teacher) with scores ranging from 0 to 100. A, B, and C represent different teachers.

The ELI indicators of letter naming and rote counting had the least classroom-level variation of the cognitive ability domain, while shapes and measurement had the most classroom variation.

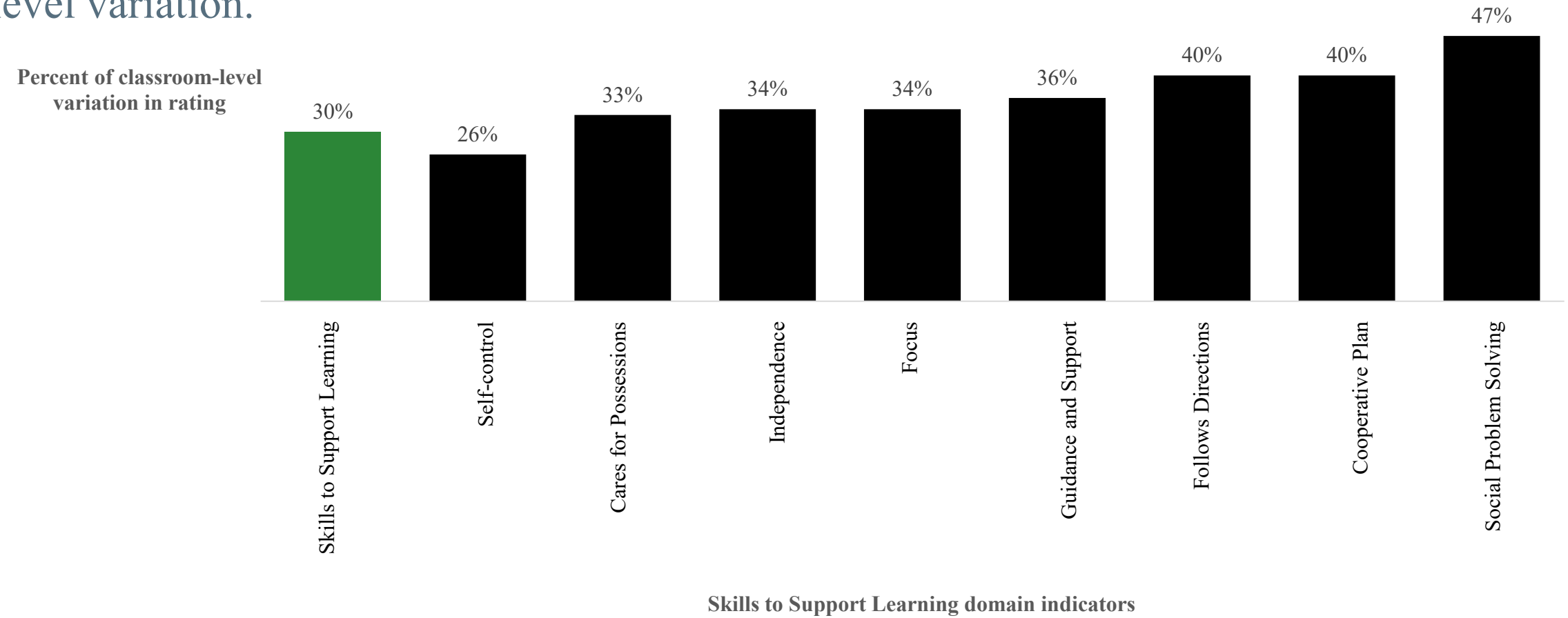


Note: The analytic sample consists of 851 students from 46 teachers.

Source: Authors' analysis of data from the fall 2021 Early Learning Inventory.

***By comparison, the RSA assessment had 1% classroom-level variation in scores.**

The ELI indicators of self-control had the least classroom-level variation of the social-emotional development domain, while social problem solving had the most classroom-level variation.



Note: The analytic sample consists of 851 students from 46 teachers.

Source: Authors' analysis of data from the fall 2021 Early Learning Inventory.

***By comparison, the RSA assessment had 1% classroom-level variation in scores.**

Implications and limitations

- Although the ELI indicators do provide information about students' ability, about one-third of the variability in ratings (on average) may reflect something other than children's individual ability.

- The explanation that sorting of children with similar ability into classrooms was a major source of classroom-level variability was not supported by the data.

- Several indicators, including Shapes and Measurement, had much higher levels of classroom-level variation in ratings. Teachers may need additional training or guidance for rating these indicators.

Validation research questions 4 Jamboard

Takeaways

Recommendations for changes to ELI

Implementation findings

Crosswalk of implementation research questions and data sources

Implementation research question	Pre-training survey (May-Jul)	Post-training survey (Aug-Sept)	First follow-up survey (Oct-Nov)	Focus group protocol (Nov)
5. To what extent do the ELI training and resources prepare teachers to use the ELI?	•	•	•	•
6. How do teachers report administering the ELI in their classroom, and do they report using the ELI data to inform instruction?			•	•
7. What are teachers' perceptions about the feasibility and value of using the ELI in their classroom?			•	•
8. What are the key facilitators and challenges for teachers implementing the ELI with fidelity?			•	•
9. What improvements could be made to the ELI training, measure, and technology platform to increase feasibility and fidelity?		•	•	•

Characteristics of ELI study teachers

Teacher characteristic	ELI Sample		Kindergarten Teachers in Oklahoma (N = 2,536)
	Number of teachers	Percentage	Percentage
Certification			
Traditional certification	38	86.4	81.8
Other types of certification	6	13.5	18.3
Education			
Bachelor's degree	26	59.1	83.2
Some graduate education	7	15.9	--
Master's degree	11	25.0	16.6

Note: All 44 teachers completed the survey. Percentages may not sum to 100% due to rounding.

ELI study teacher characteristics (continued)

Teacher characteristic	ELI Sample		Kindergarten Teachers in Oklahoma (N = 2,536)
	Number of teachers	Percentage or average	Percentage or average
Years of paid experience teaching kindergarten	44	6.2 years	11.3
Years of paid experience teaching grades other than kindergarten	44	10.8 years	--
Race/ethnicity			
Hispanic/Latinx	1	2.3	--
Native American	3	6.8	--
White/Caucasian	35	79.5	--
Multiracial	5	11.3	--

Note: All 44 teachers completed the survey.

Implementation research question 5

To what extent do the ELI training and resources prepare teachers to use the ELI?

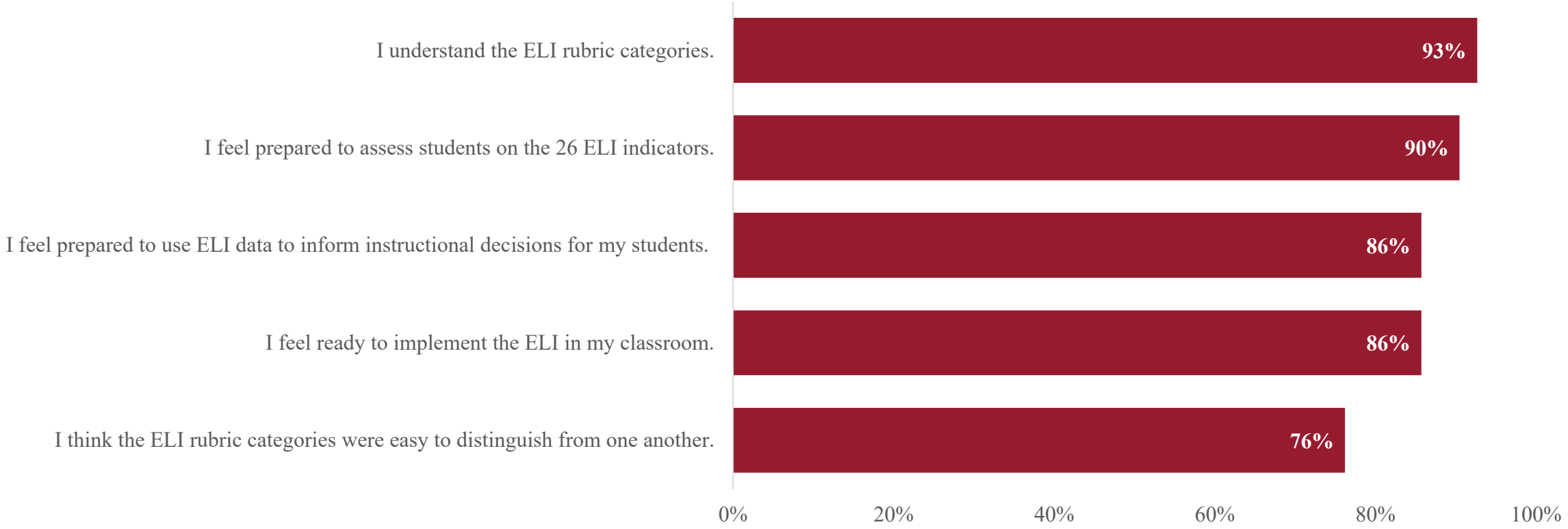
Implementation Sample

- The implementation research questions is based on a sample of 44 teachers in Oklahoma who implemented the ELI during the pilot. This sample of teachers is not representative of the entire population of Kindergarten teachers in the state of Oklahoma.

Sample Items from Implementation Survey

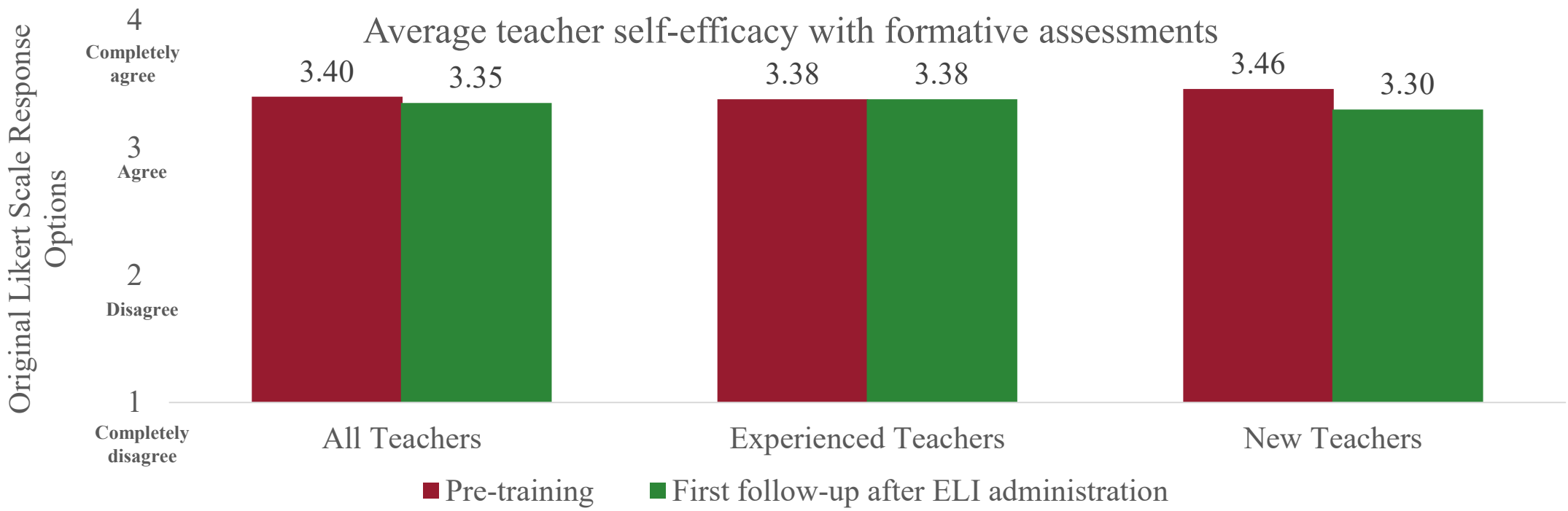
	Completely disagree	Disagree	Agree	Completely agree
a. I am effective at administering formative assessments.	○	○	○	○
b. I can effectively incorporate use what I learn about students through formative assessment into my instruction	○	○	○	○
c. Formative assessments are a useful tool to improve my practice.	○	○	○	○
d. Assessments help teachers plan instruction.	○	○	○	○

Following the training, 86% of teachers agreed or completely agreed that they felt prepared to use ELI data to inform instructional decisions for their students.



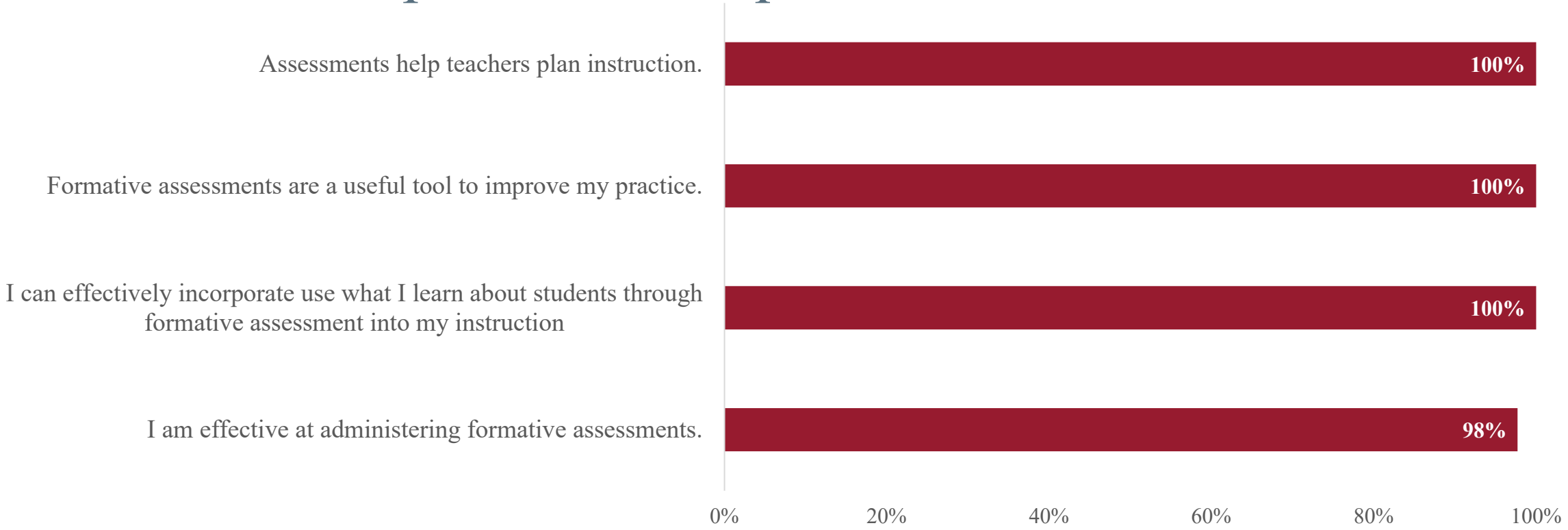
Note: The total sample size consists of 44 teachers. This sample is non-representative of all K teachers in OK. 42/44 teachers responded to all except for one of these item. 41/44 responded to "I understand the ELI rubric categories." Reported percentages are rounded to the nearest full percentage. The percentage represents the percentage of respondents who responded with agree or completely agree with the statements.
Source: Authors' analysis of the Post-Training Survey.

There were no statistically significant differences in teachers' self-efficacy to use formative assessments from baseline to the follow-up time point after ELI administration.



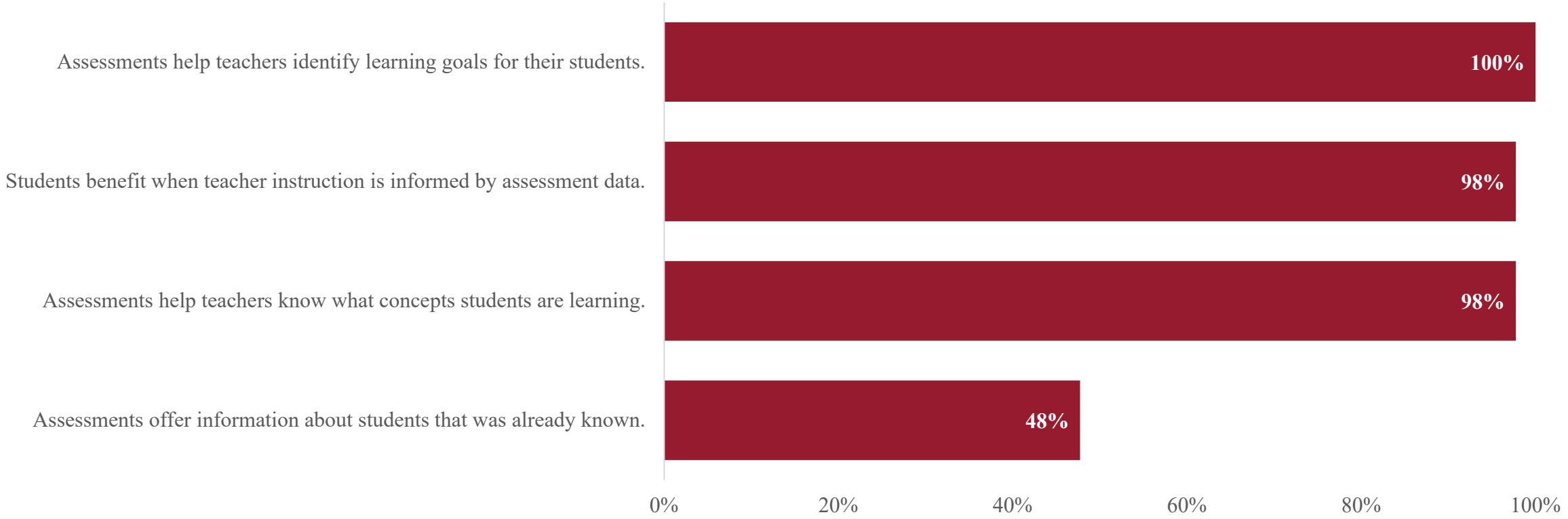
Note: The total sample size consists of 44 teachers. This sample is non-representative of all K teachers in OK. To examine changes in teacher self-efficacy to use formative assessment practices over time (implementation research question 5), REL Southwest created a composite measure as the average of the relevant survey items (items 1a–1n on the pre-training and post-ELI survey). Next, we used a paired samples t-test to examine if changes over time were statistically significant.
Source: Authors' analysis of the First Follow-Up Survey.

At the first follow-up point, all teachers agreed or completely agreed that assessments help teachers plan instruction and are a useful tool to improve teacher practice.



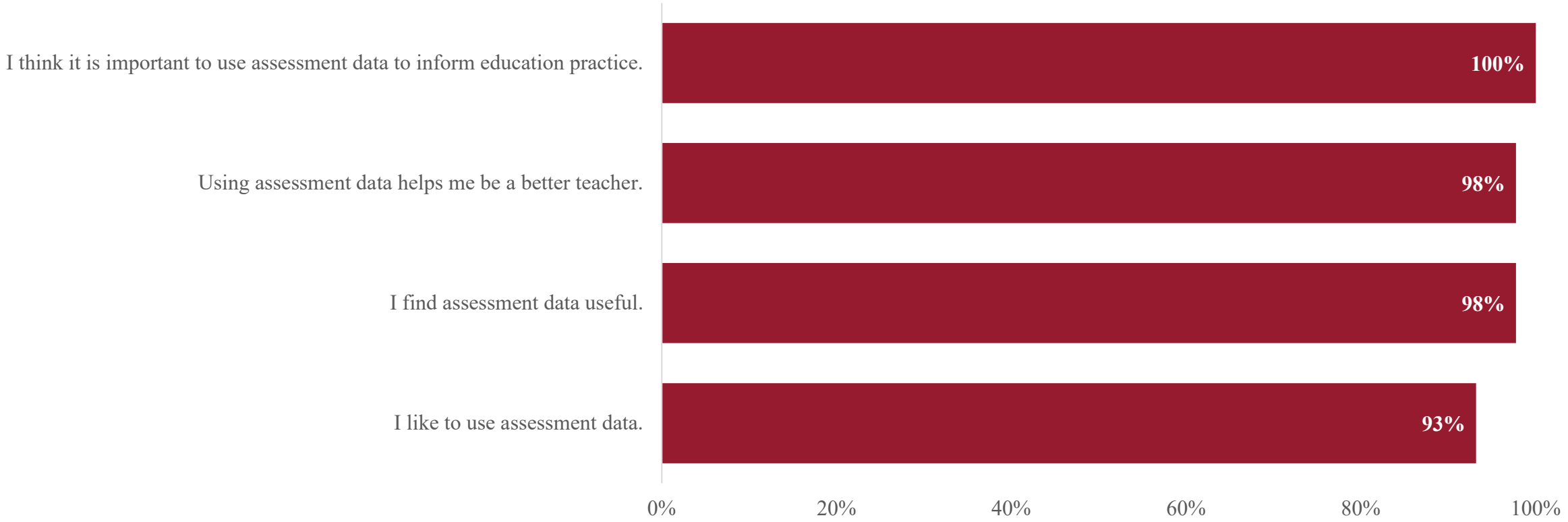
Note: The total sample size consists of 44 teachers. This sample is non-representative of all K teachers in OK. Reported percentages are rounded to the nearest full percentage. The percentage represents the percentage of respondents who responded with agree or completely agree with the statements.
Source: Authors' analysis of the First Follow-Up Survey

At first follow-up, all teachers agreed or completely agreed that assessments helped them identify learning goals for their students.



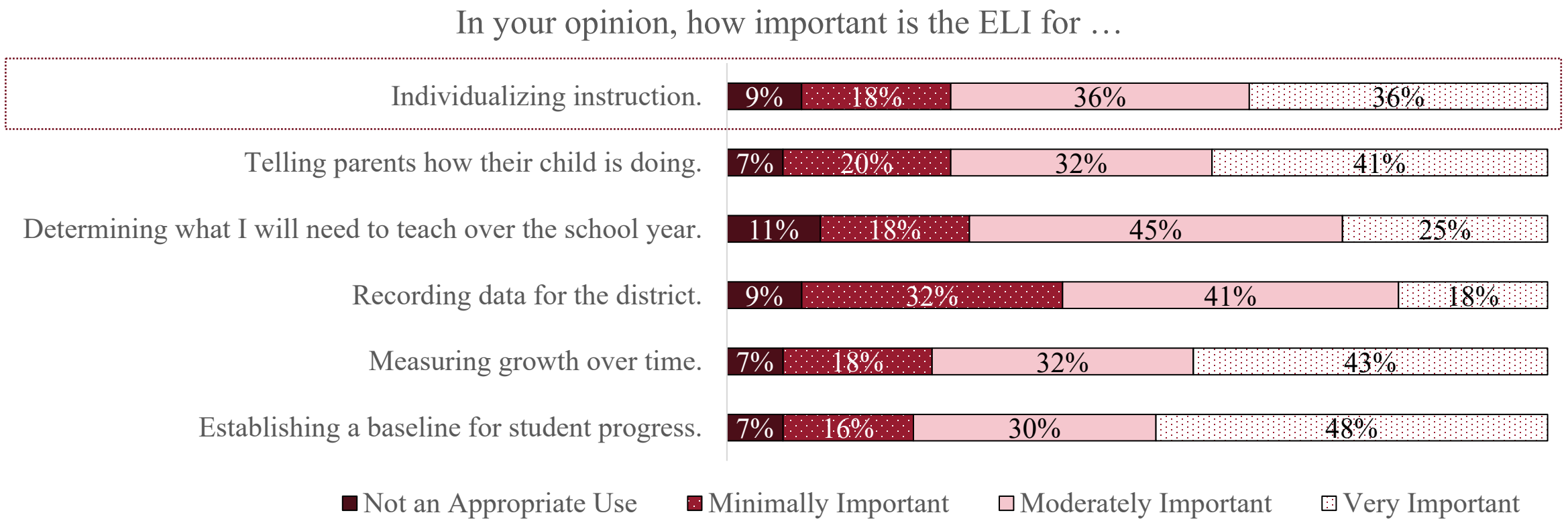
Note: The total sample size consists of 44 teachers. This sample is non-representative of all K teachers in OK. Reported percentages are rounded to the nearest full percentage. The percentage represents the percentage of respondents who responded with agree or completely agree with the statements.
Source: Authors' analysis of the First Follow-Up Survey.

At the first follow-up point, all teachers agreed that assessment data are important to inform educational practice.



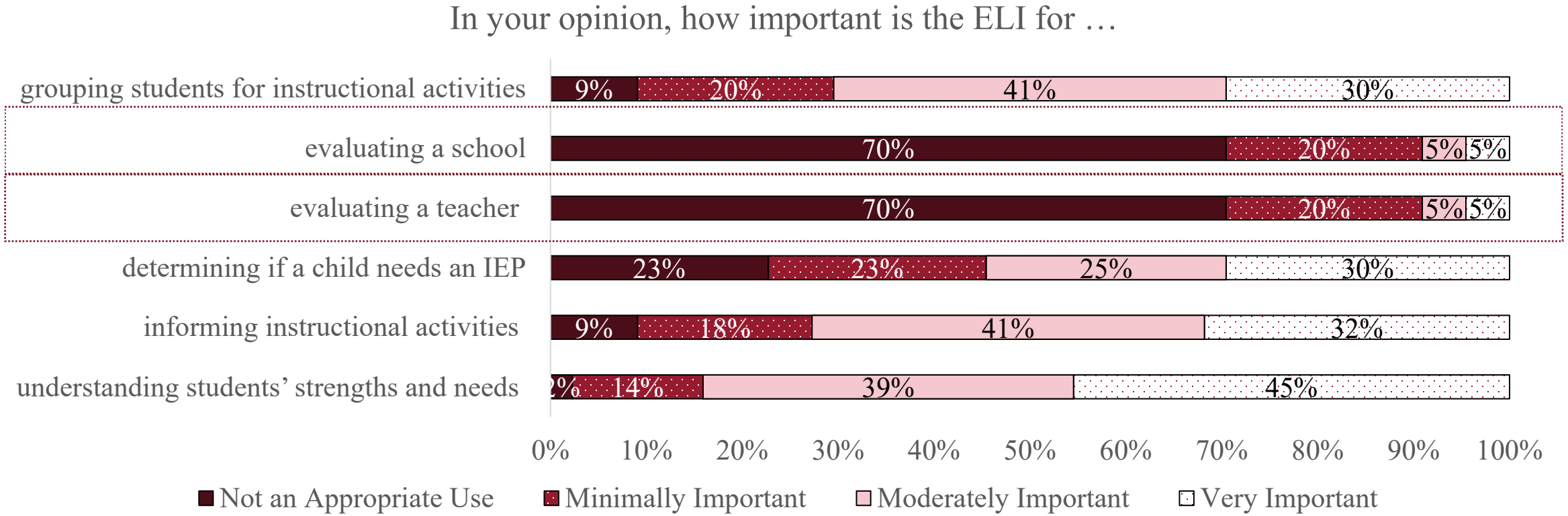
Note: The total sample size consists of 44 teachers. This sample is non-representative of all K teachers in OK. Reported percentages are rounded to the nearest full percentage. The percentage represents the percentage of respondents who responded with agree or completely agree with the statements.
Source: Authors' analysis of the First Follow-Up Survey

At the first follow-up point, 72% of teachers found the ELI moderately or very important for individualizing instruction.



Note: The total sample size consists of 44 teachers. This sample is non-representative of all K teachers in OK.
Source: Authors' analysis of the First Follow-Up Survey

At the first follow-up point, 70% of teachers reported that the ELI is not appropriate for evaluating a school and a teacher, which aligns with the intent of the ELI.



Note: The total sample size consists of 44 teachers. This sample is non-representative of all K teachers in OK.
Source: Authors' analysis of the First Follow-Up Survey

Teachers reported that ELI training was useful.

- Teachers reported finding the training videos useful.

  "... the videos were helpful. I'm that kind of learner that likes to be able to see examples. I mean, I could read about it and that, but it was nice to see that. It's very time consuming, the training was, but the videos were helpful."

- Teachers reported finding the asynchronous timeline of the training useful.

  "It was on our own time ... I liked that it was when we had time to do it. It wasn't, 'Well, it has to be done by this deadline' or 'I have to be at a meeting at this time.' It was when we could actually 'Oh, I'm not stressing to get this done because I have time.'"

Note: The total sample size consists of 8 focus groups.

Source: Authors' analysis of data from the 2021 Early Learning Inventory teacher focus group transcripts.

Implementation research question 5 Jamboard

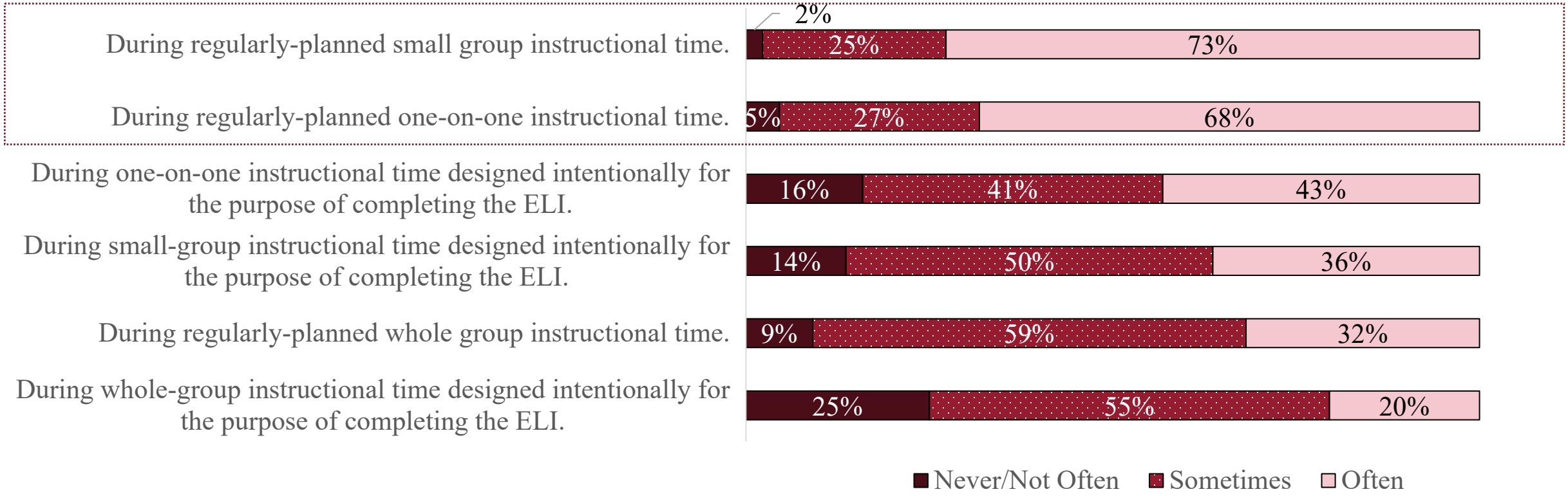
Takeaways

Recommendations for changes to ELI

Implementation research question 6

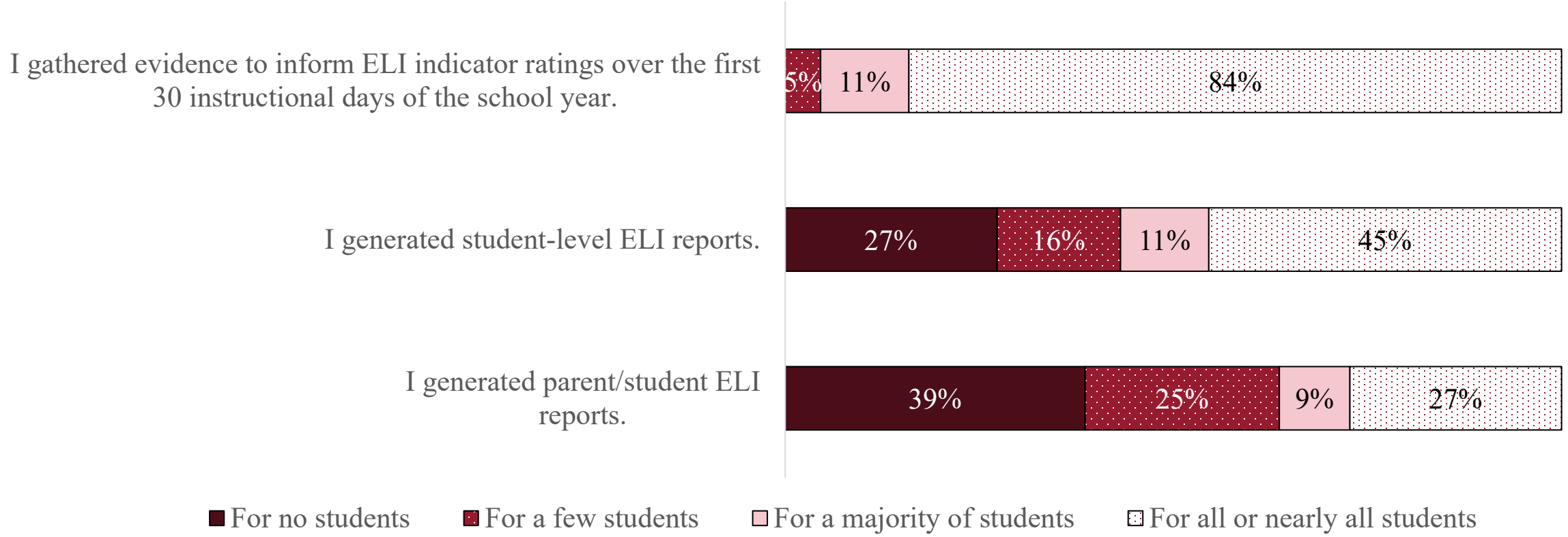
How do teachers report administering the ELI in their classroom, and do they report using the ELI data to inform instruction?

Teachers most often gathered evidence to inform ELI indicator ratings during regularly planned small-group or one-on-one instructional time.



Note: The total sample size consists of 44 teachers.
Source: Authors' analysis of First Follow-Up Survey.

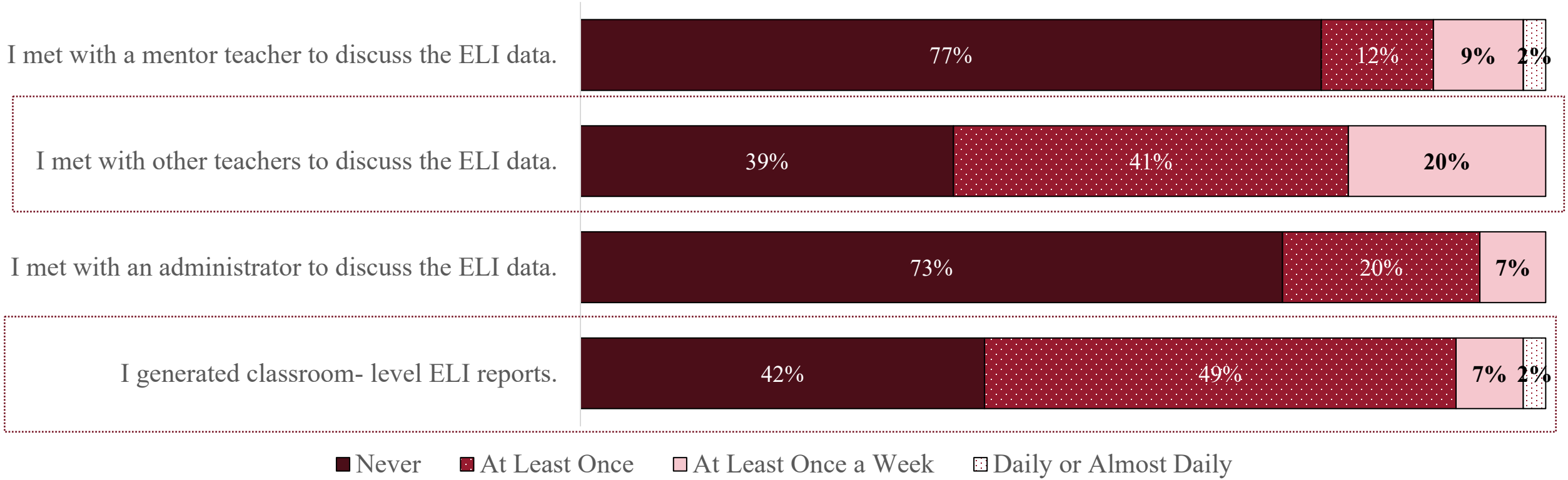
Teachers more often gathered evidence to inform the ELI indicators than generated student-level and parent/student ELI reports.



Note: The total sample size consists of 44 teachers.
Source: Authors' analysis of First Follow-Up Survey.

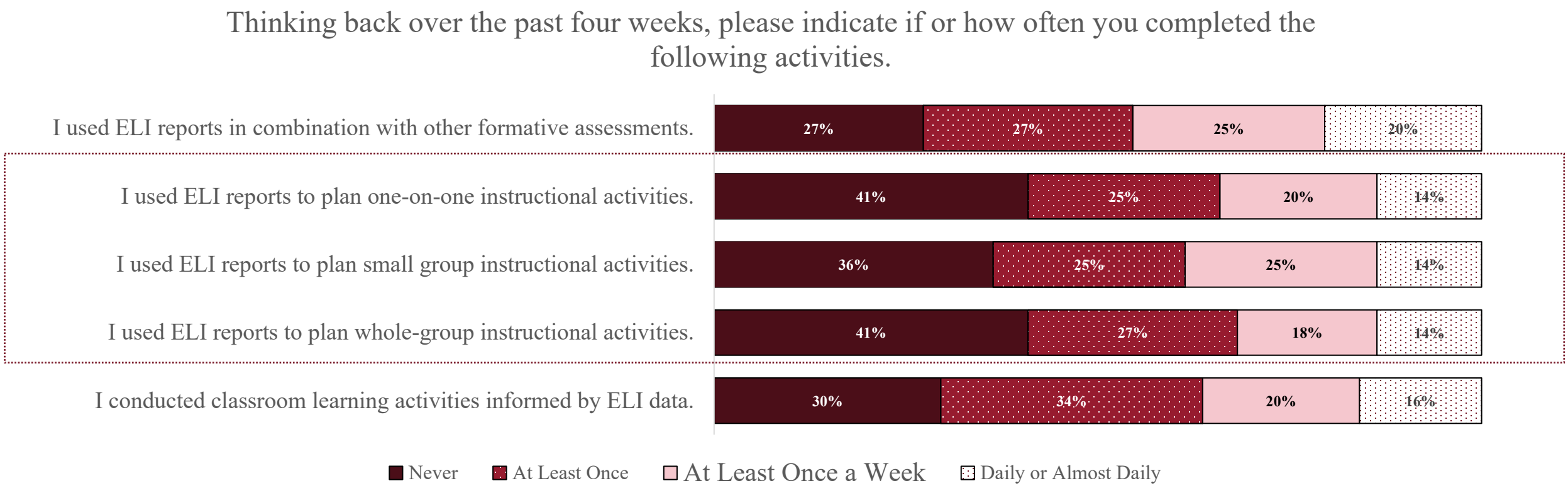
More than half (61%) of teachers met at least once with other teachers to discuss the ELI data and 58% have generated classroom level ELI reports at least once or more.

Thinking back over the past four weeks, please indicate if or how often you completed the following activities.



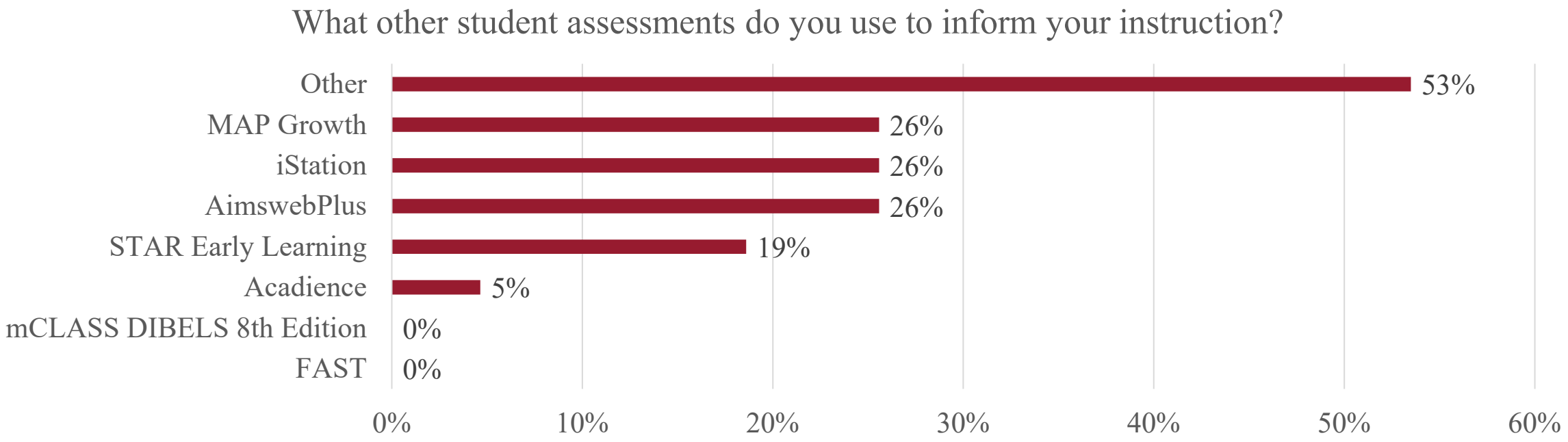
Note: The total sample size consists of 44 teachers.
Source: Authors' analysis of First Follow-Up Survey.

Roughly 60% to 70% of teachers used ELI reports to plan one-on-one instructional, small-group and whole-group activities at least once.



Note: The total sample size consists of 44 teachers.
Source: Authors' analysis of First Follow-Up Survey.

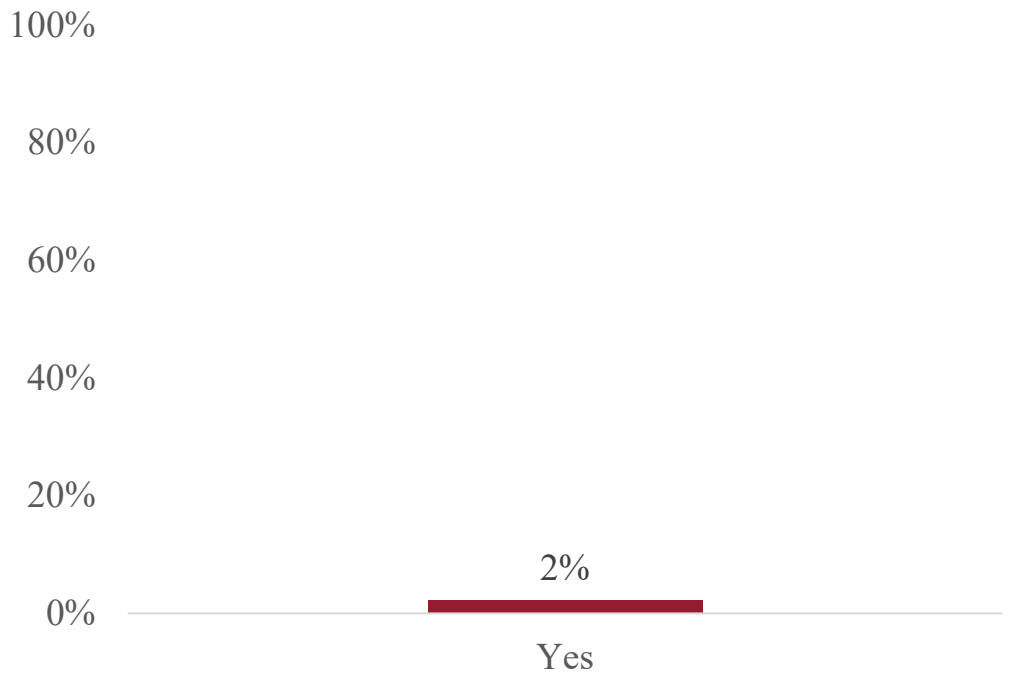
Teachers used a variety of other assessments to inform instruction.



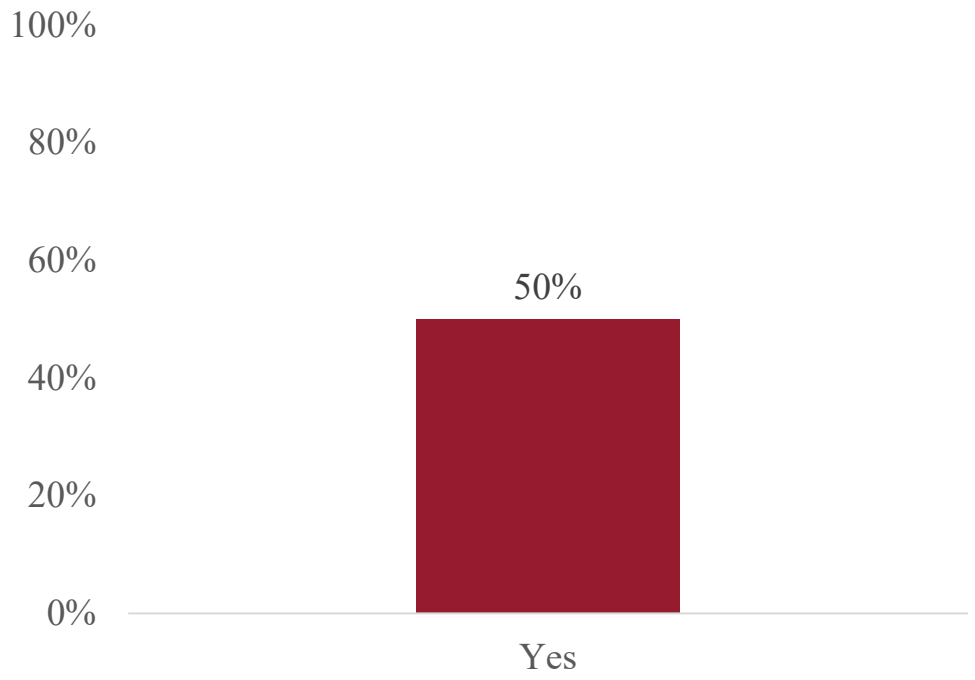
Note: The total sample size consists of 44 teachers. Teachers who selected "other" reported that they used Literacy First, district assessments, or other monitoring systems.
Source: Authors' analysis of First Follow-Up Survey.

Most responding teachers shared that the ELI did not replace another assessment. Half of teachers used data from the ELI report to inform student report cards.

Did the ELI replace another assessment that you were using?



Did you use data from the ELI report to inform student report cards?



Note: The total sample size consists of 44 teachers. Response options were yes or no.
Source: Authors' analysis of First Follow-Up Survey.

Teachers' feedback on implementing the ELI

- Teachers use both natural classroom observation and structured activities to gather evidence.

  "The things you can kind of walk around and observe, especially like play time … and how they interacted, that was easy, you could do a checklist and kind of go along, but some things you didn't know f they could do, you just didn't see it in play or whatever and you would have to pull them, and actually sit down and see if they could do it."

- Teachers found the ELI easy and quick to use.

  "I thought it was really easy to use...Once I had all my data, it didn't take long at all to enter it."

- Entering data into the dashboard was fast, and there were clear directions on how to do it.

  "I felt doing the dashboard. If I had all the papers already filled out, I felt doing the dashboard and submitting the info was the fastest. … I did like that there's specific information on the rubric. Gave you some really clear direction."

Note: The total sample size consists of 8 focus groups.

Source: Authors' analysis of data from the 2021 Early Learning Inventory teacher focus group transcripts.

Implementation research question 6 Jamboard

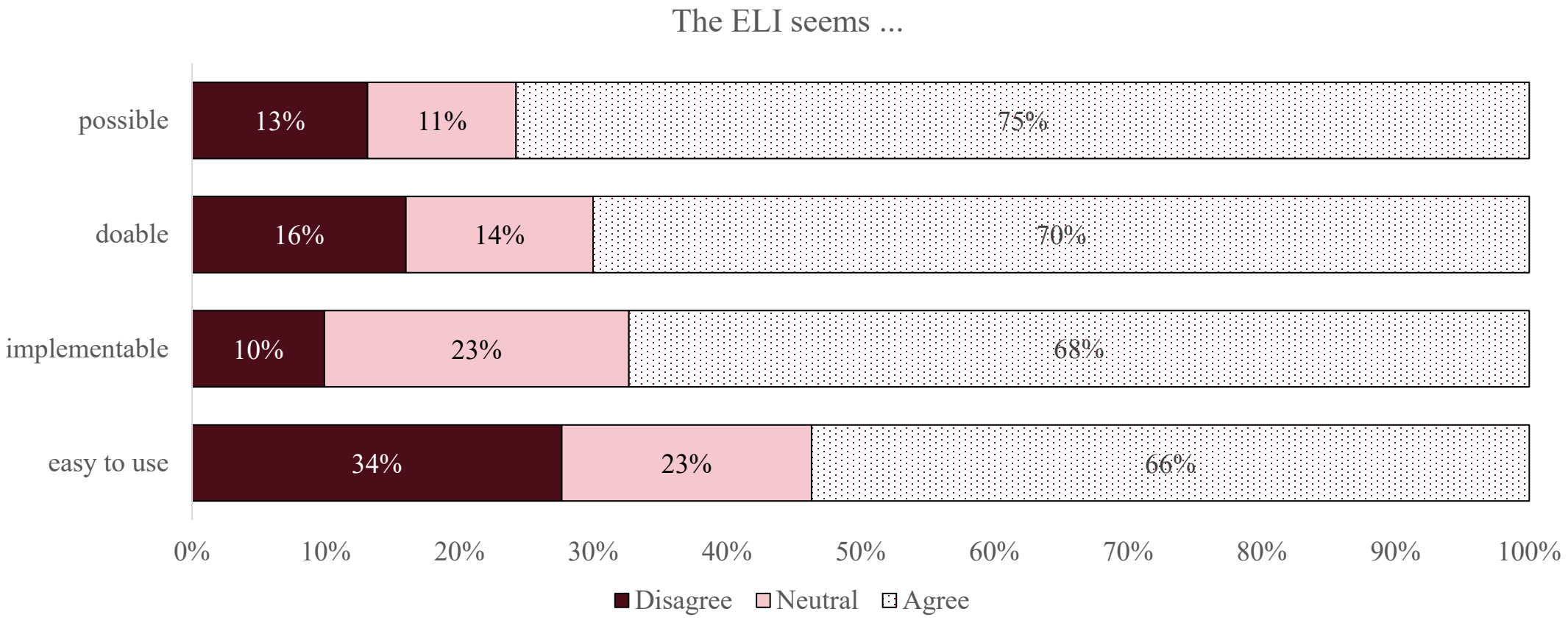
Takeaways

Implications for developing or expanding supports for educators

Implementation research question 7

What are teachers' perceptions about the feasibility and value of using the ELI in their classroom?

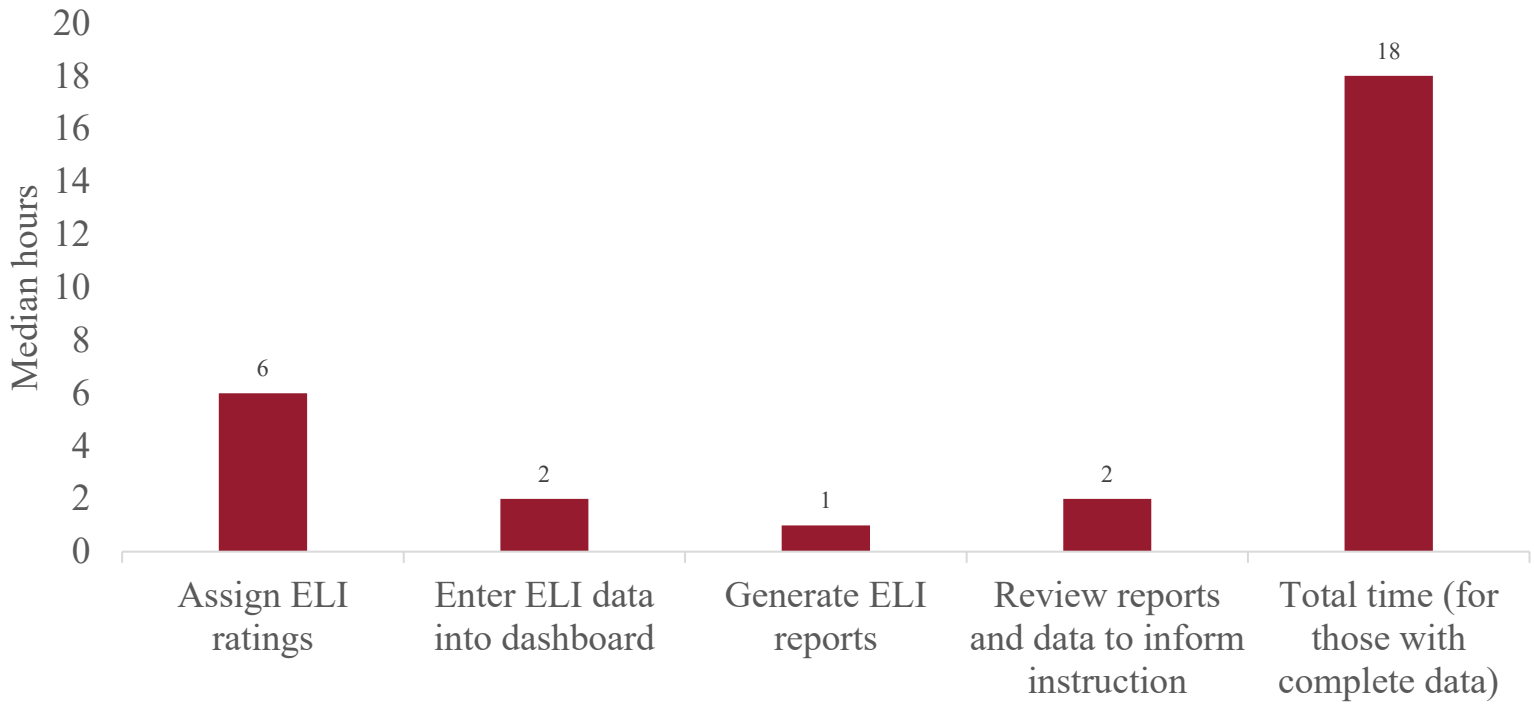
Most teachers found the ELI to be feasible to use.



Note: The total sample size consists of 44 teachers. The "disagree" category includes "strongly disagree" and "disagree" responses. The "agree" category includes "strongly agree" and "agree" responses.

Source: Authors' analysis of First Follow-Up Survey.

The median number of hours teachers spent on various ELI tasks ranged from 1 to 6 hours.



Note: The total sample size consists of 44 teachers. There was a high amount of missing item-level data for "General ELI report" (22/44 teachers responded to this item) and "Review reports" (30/44 teachers responded to this item). See appendix slides for table of characteristics of respondents and nonrespondents. See appendix for histograms of distributions.

Source: Authors' analysis of First Follow-Up Survey.

Additional detail on time spent on ELI tasks

ELI task	Median hours	Average hours	Minimum hours	Maximum hours
Assign ELI ratings	6	10	1	48*
Enter ELI data into dashboard	2	2	1	8
Generate ELI reports	1	2	1	30*
Review reports and data to inform instruction	1	3	1	15

Note: The total sample size consists of 44 teachers. There was a high amount of missing item-level data for "Generate ELI reports" (22/44 teachers responded to this item) and "Review reports" (30/44 teachers responded to this item). See appendix slides for table of characteristics of respondents and nonrespondents.

*Outlier values might be data entry errors.

Source: Authors' analysis of First Follow-Up Survey.

Teachers found the ELI relevant and helpful

- Teachers found the ELI helpful for grouping children by skills for small-group instruction.

  "It helped me to just group them…before I really knew them—by skill-wise—and then I can change them as the year goes on and as their progress continues."

- Teachers found the ELI helpful in presenting data in a meaningful way.
- ELI data were also helpful when planning for parent-teacher conferences.

  "It kind of helped me with some parent-teacher conference topics to talk about … I had that rubric to show, this is where your child is, this is where they should be. … So they kind of like opened some eyes to some parents that were like 'Wow! I didn't realize it was that bad.' And I'm like 'Yeah, it is.'"

Note: The total sample size consists of 8 focus groups.

Source: Authors' analysis of data from the 2021 Early Learning Inventory teacher focus group transcripts.

Teachers described positive changes to their planning and instruction after attending the ELI training.

- Teachers were more intentional about observing skills such as gross and fine motor skills and listening and following directions.
- Teachers gained a better understanding of whole-child development.
- Teachers were better able to meet student needs (overall) when they used ELI data to understand student skills and needs.
- Teachers were planning instruction with a focus on the ELI domains.
- Teachers used ELI data to plan small-group activities to specifically address student needs.
- Teachers were better able to articulate their learning goals and expectations to individual students.

Source: Authors' analysis of open-ended responses on the First Follow-Up Survey

Implementation research question 7 Jamboard

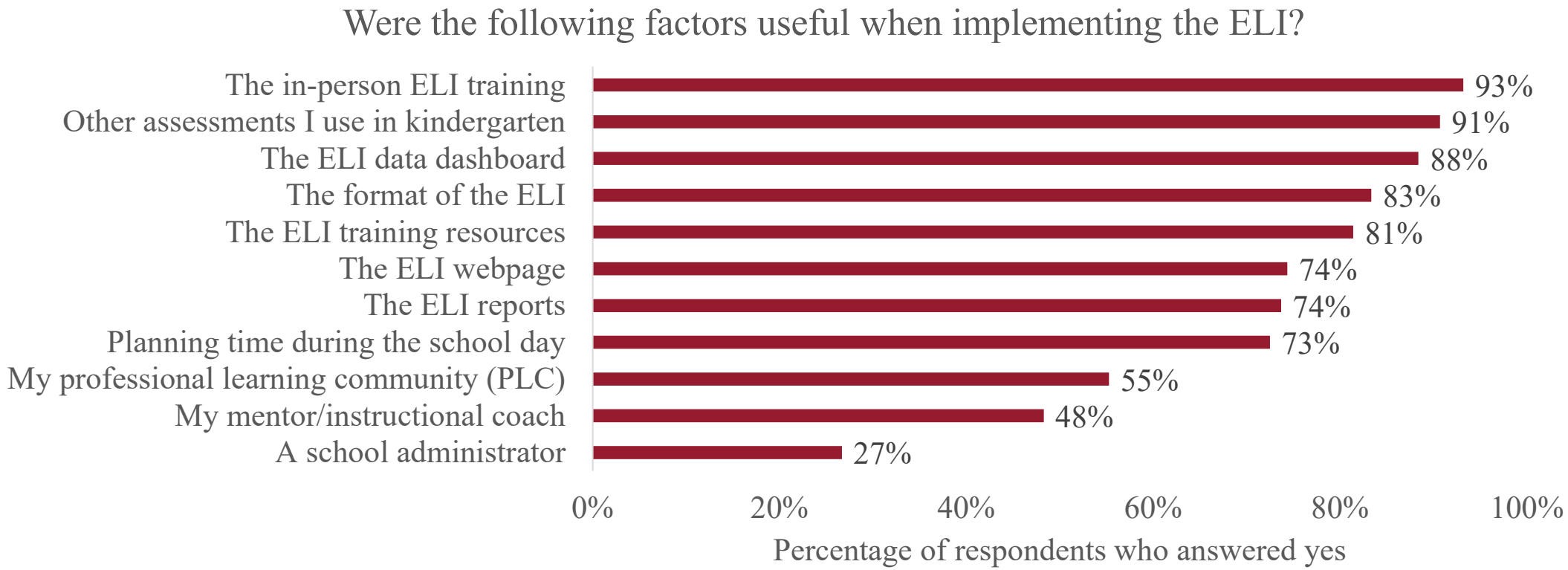
Takeaways

Implications for developing or expanding supports for educators

Implementation research question 8

What are the key facilitators and challenges for teachers implementing the ELI with fidelity?

Teachers reported that the most helpful supports for implementing the ELI were the in-person training, other assessments the teacher used in kindergarten, and the ELI data dashboard.



Note: The total sample size consists of 44 teachers. There was a high amount of missing item-level data for "A school administrator" (30/44 teachers responded to this item) and "Mentor/instructional coach" (29/44 teachers responded to this item). See appendix slides for table of characteristics of respondents and nonrespondents.

Source: Authors' analysis of the First Follow-Up Survey.

Professional learning communities were the most frequently mentioned support available to teachers.

Supports mentioned	Number of focus groups where theme emerged
Professional learning communities	4
Interventionists	3
Instructional coaches	3
Other teachers	2
No one available	1

Additionally, teachers stated that having full buy-in from principals (e.g., they are trained on the ELI and accept the ELI data as valuable) would be very supportive and helpful.

Note: The total sample size consists of 8 focus groups.
Source: Authors' analysis of data from the 2021 Early Learning Inventory teacher focus group transcripts.

Implementation research question 8 Jamboard

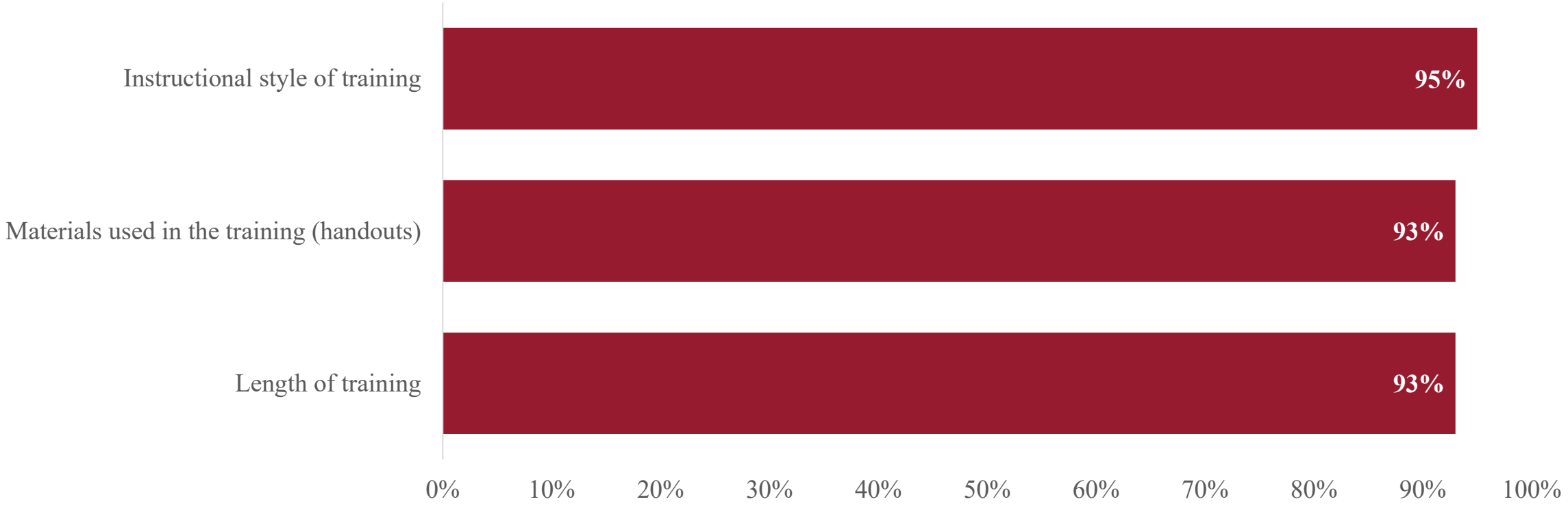
Takeaways

Implications for developing or expanding supports for educators

Implementation research question 9

What improvements could be made to the ELI training, measure, and technology platform to increase feasibility and fidelity?

Nearly all teachers reported that they were satisfied with the training length, instructional style, and materials used.



Note: The total sample size consists of 44 teachers. The percentage reported represents the percentage of respondents who were satisfied or completely satisfied with the training component.

Source: Authors' calculations using data from the post-training teacher survey.

Recommendations to improve the ELI training

Themes	*n*	Percentage	Exemplary quotes
Provide explanations for correct answers on the assessment.	6	14%	"I would have liked to have an explanation of the correct answers on the final assessment, rather than incorrect: answer should have been B. I scored most of the students one level too high, and I don't know why."
Provide additional guidance and modeling on use.	5	11%	"I was still unclear how I was going to be collecting the information. Is it digital, do I need to print everything myself?" "We need to see the actual tool we will be using. Do we just assess on each indicator one time and we are done?"
Improve sound quality in the training videos.	4	9%	"I had trouble hearing the children on the videos. It very well could have been my ears or the computer speakers. I heard more background noise than what the children actually said."
Offer training further in advance.	4	9%	"The only problem I had with the training was the lack of time. We received the class a week before our students. This training on top of the back-to-school prep was very hard and stressful."
Organize training materials.	4	9%	"Put all document downloads together. I didn't realize till late in the training that those were the documents you want us to go off of. I have to sift through the training again to get them."

Note: The total sample size consists of 44 teachers.
Source: Authors' calculations using data from the post-training teacher survey.

Recommendations to improve the ELI training materials

Themes	*n*	Percentage	Exemplary quotes
Provide printed handouts.	7	16%	"A packet of the rubrics and checklist would have been great. I had to run off my own copies. I am old school; I guess I like the hard copy or a booklet."
Increase volume on the training videos.	3	7%	"Higher quality videos with less background noise would be super helpful!"
Demonstrate how to enter data.	3	7%	"I would have loved a step-by-step tutorial on how to log into the ELI rubrics and enter data for students."

Note: The total sample size consists of 44 teachers.
Source: Authors' calculations using data from the post-training teacher survey.

Recommendations for other teachers about what is important for effectively administering the ELI

Themes	*n*	Percentage	Exemplary quotes
Take your time.	11	25%	"Make sure you focus on one or two indicators a day, so you won't be overwhelmed or be in a bind to get them completed by the deadline."
Collect data for multiple assessments at the same time.	4	9%	"Try to use other assessments you have to do to help rate your students for the indicators."
Take notes and use the data tracker.	3	7%	"To have a running log with them throughout the first 30 days to take notes."
Plan instructional format for observations.	3	7%	"Look the ELI over thoroughly beforehand and decide how to observe or assess each area … (small group, whole group, one-on-one, etc.)." "Have as much small-group time as possible."
Understand the domains and rubric in advance.	3	7%	"Become familiar with the rubrics for the indicators so you can assess quickly."

Note: The total sample size consists of 44 teachers.
Source: Authors' calculations using data from the First Follow-up survey.

Recommendations for other teachers about what is important for effectively using data from the ELI

Themes	*n*	Percentage	Exemplary quotes
Use the data to form small groups.	7	16%	"Look for students with similar ratings to create focused small-group interventions."
Use the data to plan instruction.	5	11%	"Study the data for each student and make changes to your teaching to help the child improve that specific domain/skill."
Use the data for parent-teacher conferencing.	3	7%	"Use the parent/family reports to support your conversations with parents."
Print out the reports.	3	7%	"Print everything off so you can make quick looks back to your data to ensure small groups are effective."

Note: The total sample size consists of 44 teachers.
Source: Authors' calculations using data from the First Follow-up survey.

Teacher recommendations to improve the ELI measure

Themes	Exemplary quotes	Number of focus groups in which theme emerged out of 8 total focus groups
Teachers suggested ways to improve the ELI measure.	**Practical examples.** "I think it would make the most sense … to have a teacher come in and compensate them for their time, but also walk you through what that [indicator] practically looks like in a classroom. Even the changes since I started teaching kindergarten three years ago are so drastic with technology implementation, behavioral concerns, and the growing diversity of the whole state. I think would be very worthwhile to have a current teacher or a team of current teachers to give you a realistic perspective of what that [indicator] looks like." **Coordination with other assessments.** "If we could marry it all together to be one thing, because we already have to give all those other [assessments] repeatedly throughout the year. … It's like we assess and then have a week where it's like, 'Oh, I get a small group to just teach.' And then the next thing you're back into report cards or back in Aimsweb or back into whatever. If there was a way that our district could support us in marrying all of that together in early childhood, that would be phenomenal. Because I do think that the information that the ELI provides is so beneficial."	3

Teacher recommendations to improve ELI data dashboard

Themes	Exemplary quotes	Number of focus groups in which theme emerged out of 8 total focus groups
Teachers suggested ways to improve the ELI data dashboard.	**Single sign-on challenges.** "Can you guys just take [ELI] out of the single-server sign-on? I hate that sign-on and always have to do a password recovery ... It's not something that's used very much by me … if [ELI is] going to be used a lot, then they create a whole different system for it or something, that might be practical." **Continued support.** "Potentially have a Zoom meeting halfway through [the assessment period] to see how people are keeping up. Having a benchmark for a check-in could be helpful."	2

Source: Authors' analysis of data from the 2021 Early Learning Inventory teacher focus group transcripts.

Implementation research question 9 Jamboard

Takeaways

Implications for developing or expanding supports for educators

What additional questions do these validation and implementation findings surface?


What's
NEXT?

Supporting analyses for reference

The two ELI domains are appropriate for students with different characteristics.

1. The two-factor ELI domain structure was valid for students regardless of gender or eligibility for the National School Lunch Program.

2. For some student characteristics (EL, special education, race/ethnicity), the number of individuals for which ELI data were available was too small to obtain additional support for the factor structure.

Grouping variable	Configural invariance established	Chi-square test nonsignificant	Shift in comparative fit index ≤ .01	Shift in root mean square error of approximation ≤ .015	Strong factor invariance achieved
Gender	Yes	Yes	Yes	Yes	Yes
English learner student status	Unable to determine	Unable to determine	Unable to determine	Unable to determine	Unable to determine
Eligibility for the National School Lunch Program	Yes	Yes	Yes	Yes	Yes
Special education status	Unable to determine	Unable to determine	Unable to determine	Unable to determine	Unable to determine
Race/ethnicity	Unable to determine	Unable to determine	Unable to determine	Unable to determine	Unable to determine

Note: The analytic sample consists of 851 students from 46 teachers.
For some student characteristics, factor invariance could not be determined due to the small number of observations.
Source: Authors' analysis of data from the fall 2021 Early Learning Inventory.

Rasch threshold parameters are ordered from smallest to largest.

Indicator	Rasch threshold parameters
Coordination and Strength	-4.00, -3.04, -1.55, 0.48, 2.80
Fine Motor Tools	-3.44, -2.48, -0.99, 1.04, 3.36
Follows Directions	-2.87, -1.91, -0.42, 1.62, 3.93
Vocabulary	-2.87, -1.91, -0.42, 1.62, 3.93
Conversational Ability	-3.17, -2.21, -0.72, 1.32, 3.63
Concepts of Print	-2.84, -1.88, -0.39, 1.64, 3.96
Print Meaning	-2.80, -1.84, -0.35, 1.68, 4.00
Rhyme	-2.96, -2.00, -0.51, 1.52, 3.84
Phonological Awareness	-2.41, -1.45, 0.04, 2.08, 4.39
Letter Naming	-3.08, -2.12, -0.63, 1.41, 3.72
Letter-Sound Correspondence	-2.49, -1.53, -0.04, 1.99, 4.31
Writing	-2.51, -1.55, -0.06, 1.97, 4.29
One-to-One Correspondence	-2.84, -1.88, -0.39, 1.64, 3.96
Rote Counting	-2.77, -1.81, -0.32, 1.72, 4.04
Numerals	-3.58, -2.62, -1.12, 0.91, 3.23
Shape Recognition	-2.34, -1.38, 0.11, 2.14, 4.46
Measurement	-2.44, -1.48, 0.01, 2.04, 4.36
Sorting	-2.94, -1.98, -0.49, 1.54, 3.86
Investigations	-3.14, -2.18, -0.69, 1.35, 3.67
Self-Control	-3.06, -2.10, -0.61, 1.43, 3.74
Cares for Possessions	-3.22, -2.26, -0.77, 1.26, 3.58
Cooperative Play	-2.96, -2.00, -0.51, 1.52, 3.84
Social Problem Solving	-2.26, -1.3, 0.20, 2.23, 4.55
Guidance and Support	-3.11, -2.15, -0.66, 1.38, 3.69
Independence	-3.24, -2.28, -0.79, 1.25, 3.56
Focus	-3.08, -2.12, -0.63, 1.41, 3.73

Notes: Values in the table are threshold parameter estimates obtained by Rasch analysis at different rating categories (from left to right and separated by commas): the jump at rating 2, at rating 3, at rating 4, at rating 5, and at rating 6. The analytic sample consists of 851 students from 46 teachers.

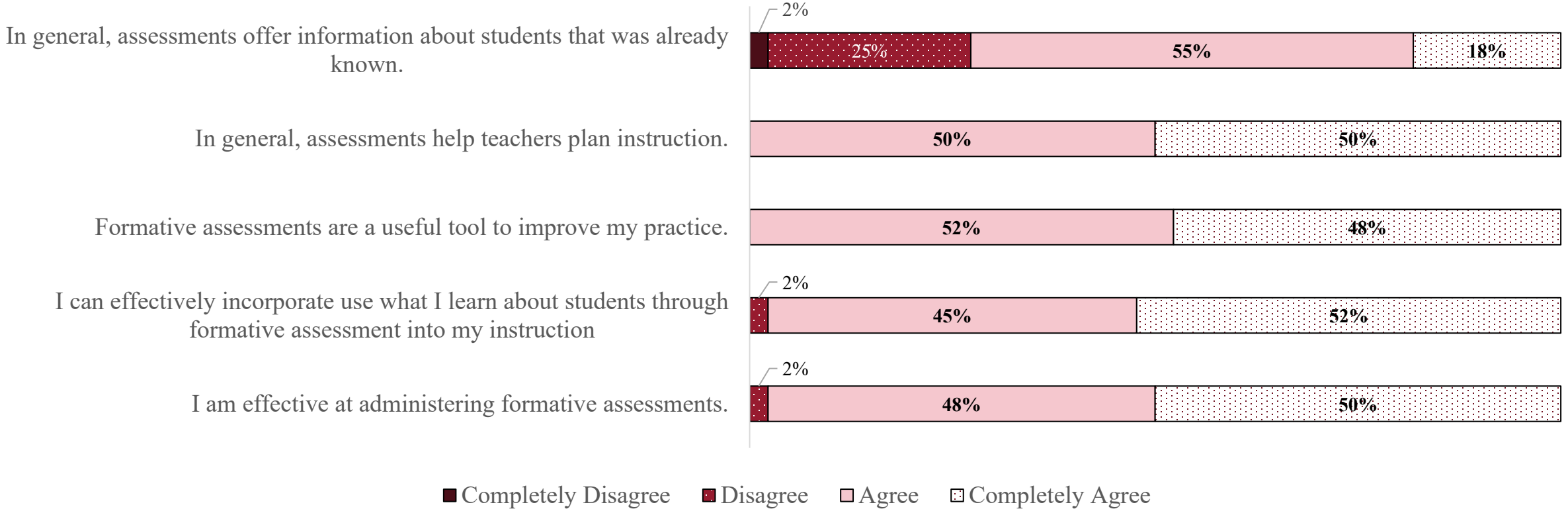
Source: Authors' analysis of data from the fall 2021 Early Learning Inventory.

Supporting table: Change in the mean scores on self-efficacy to use formative assessments scores were nonsignificant.

	Mean (Pre-survey)	*SE* (Pre-survey)	Mean (First follow-up)	*SE* (First follow-up)	Paired *t* test	*p*-value
All teachers	3.40	0.06	3.35	0.06	-0.74	0.46
Experienced teachers	3.38	0.08	3.38	0.07	-0.04	0.97
New teachers	3.46	0.12	3.30	0.11	-1.10	0.29

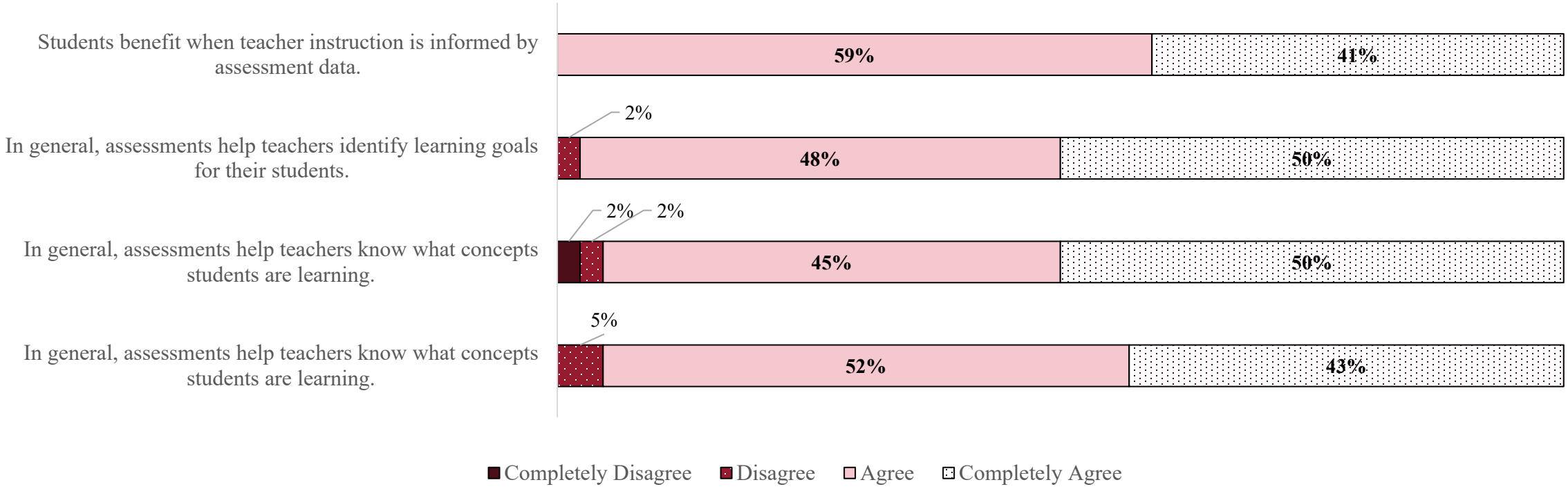
Note: The total sample size consists of 44 teachers.
Source: Authors' analysis of the First Follow-Up Survey.

Prior to training, all participating teachers agreed or completely agreed that assessments help teachers plan instruction and are a useful tool to improve their practice.



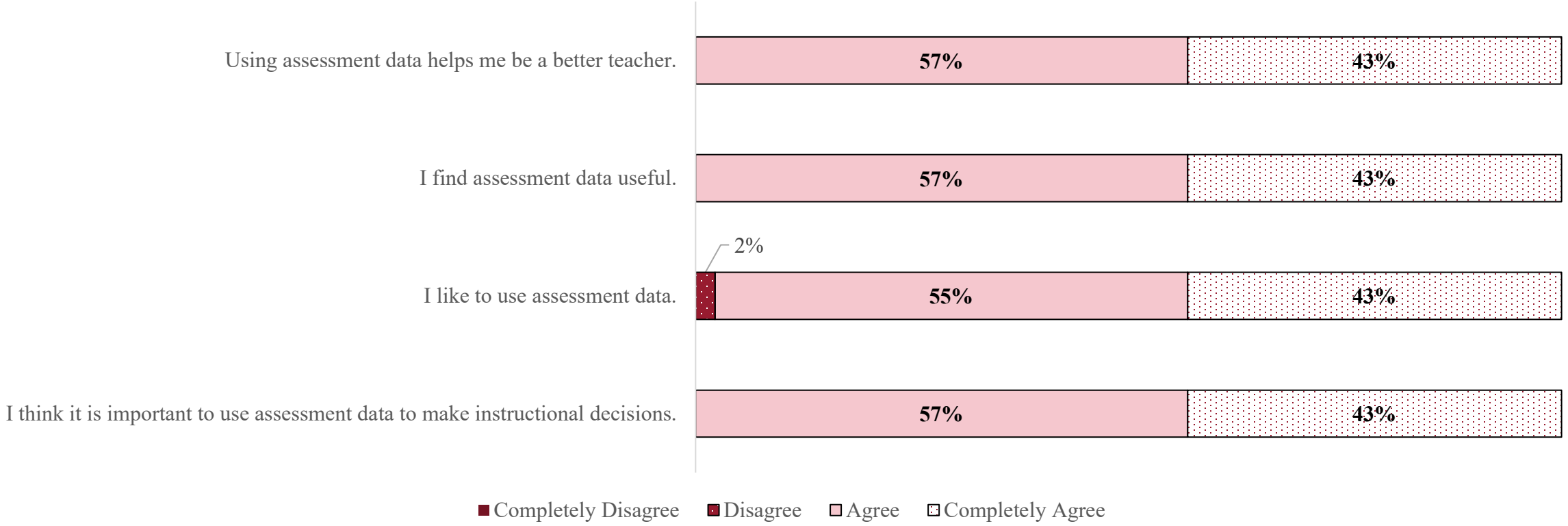
Note: The total sample size consists of 44 teachers.
Source: Author's analysis of the ELI Pre-Training Survey

Prior to training, all participating teachers agreed that students benefit from instruction that is informed by assessment data.



Note: The total sample size consists of 44 teachers.
Source: Author's analysis of the ELI Pre-Training Survey

Prior to training, all participating teachers agreed that assessment data help them be better teachers and that they find assessment data useful and important for instructional decisions.



Note: The total sample size consists of 44 teachers.
Source: Author's analysis of the ELI Pre-Training Survey

Before the ELI training, most of both new and experienced teachers had high levels of self-efficacy with formative assessments.

Pre-training survey question 1: Please select your level of agreement for each of the following statements.	% New teachers agree or completely agree	% Experienced teachers agree or completely agree
I am effective at administering formative assessments.	92.3%	100.0%
I can effectively incorporate what I learn about students through formative assessment into my instruction.	100.0%	96.8%
Formative assessments are a useful tool to improve my practice.	100.0%	100.0%
In general, assessments help teachers plan instruction.	100.0%	100.0%
In general, assessments offer information about students that was already known.	69.2%	74.2%
In general, assessments help teachers know what concepts students are learning.	100.0%	93.6%
In general, assessments help teachers know what concepts students need to learn.	100.0%	96.8%
In general, assessments help teachers identify learning goals for their students.	100.0%	96.8%
Students benefit when teacher instruction is informed by assessment data.	100.0%	100.0%
I think it is important to use assessment data to make instructional decisions.	100.0%	100.0%
I like to use assessment data.	92.3%	100.0%
I find assessment data useful.	100.0%	100.0%
Using assessment data helps me be a better teacher.	100.0%	100.0%

Note: The total sample size consists of 44 teachers, 13 of which are new teachers and 31 are experienced teachers. Experienced teachers have three or more years of teaching experience; new teachers have fewer than three years of teaching experience.
Source: Author's analysis of the ELI Pre-Training Survey responses disaggregated by teaching experience.

Most of both new and experienced teachers had high levels of self-efficacy with formative assessments at the first follow-up survey after ELI administration.

First follow-up survey question 1: Please select your level of agreement for each of the following statements.	% New teachers agree or completely agree	% Experienced teachers agree or completely agree
I am effective at administering formative assessments.	100.0%	96.8%
I can effectively incorporate what I learn about students through formative assessment into my instruction.	100.0%	100.0%
Formative assessments are a useful tool to improve my practice.	100.0%	100.0%
Assessments help teachers plan instruction.	100.0%	100.0%
Assessments offer information about students that was already known.	53.9%	45.2%
Assessments help teachers know what concepts students are learning.	100.0%	96.8%
Assessments help teachers identify learning goals for their students.	100.0%	100.0%
Students benefit when teacher instruction is informed by assessment data.	100.0%	96.8%
I think it is important to use assessment data to inform education practice.	100.0%	100.0%
I like to use assessment data.	100.0%	90.3%
I find assessment data useful.	100.0%	96.8%
Using assessment data helps me be a better teacher.	100.0%	96.8%

Note: The total sample size consists of 44 teachers, 13 of which are new teachers and 31 are experienced teachers. Experienced teachers have three or more years of teaching experience; new teachers have fewer than three years of teaching experience.
Source: Author's analysis of the First Follow-Up Survey

Experienced teachers agreed more than new teachers that they felt prepared to assess students using the ELI indicators.

Post-survey question 1: Please select your level of agreement for each of the following statements.	% New teachers agree or completely agree	% Experienced teachers agree or completely agree
I feel prepared to assess students on the 26 ELI indicators.	75.0%	96.7%
I understand the ELI rubric categories.	83.3%	96.6%
I think the ELI rubric categories were easy to distinguish from one another.	66.7%	80.0%
I feel ready to implement the ELI in my classroom.	83.3%	86.7%
I feel prepared to use ELI data to inform instructional decisions for my students.	75.0%	90.0%

Note: The total sample size consists of 42 teachers, 12 of which are new teachers and 30 are experienced teachers. Experienced teachers have three or more years of teaching experience; new teachers have fewer than three years of teaching experience.
Source: Author's analysis of the First Follow-Up Survey

A majority of both new and experienced teachers reported that the ELI was at least moderately important for establishing a baseline for student progress.

First follow-up survey question 2: In your opinion, how important is the ELI for …	% New teachers moderately or very important	% Experienced teachers moderately or very important
establishing a baseline for student progress	76.9%	77.4%
measuring growth over time	84.6%	71.0%
recording data for the district	61.5%	58.1%
determining what I will need to teach over the school year	76.9%	67.7%
telling parents how their child is doing	76.9%	71.0%
individualizing instruction	69.2%	74.2%
understanding students' strengths and needs	84.6%	83.9%
informing instructional activities	69.2%	74.2%
determining if a child needs an IEP	61.5%	51.6%
evaluating a teacher	15.4%	6.5%
evaluating a school	15.4%	6.5%
grouping students for instructional activities	69.3%	71.0%

Note: The total sample size consists of 44 teachers, 13 of which are new teachers and 31 are experienced teachers. Experienced teachers have three or more years of teaching experience; new teachers have fewer than three years of teaching experience.
Source: Author's analysis of the First Follow-Up Survey

A majority of both new and experienced teachers gathered evidence to inform ELI indicator ratings over the first 30 days of instruction with most of their students.

Question	% New teachers for a majority or for all or nearly all students	% Experienced teachers for a majority or for all or nearly all students
I gathered evidence to inform ELI indicator ratings over the first 30 instructional days of the school year.	84.6%	100.0%
I generated student-level ELI reports.	46.2%	61.3%
I generated parent/student ELI reports.	30.8%	38.7%

Differences and similarities between nonrespondents and respondents for "Generate ELI reports"

	Nonrespondents	Respondents
Education level		
Bachelor's degree	63.6%	54.5%
Some graduate	13.6%	18.2%
Master's degree	22.7%	27.3%
Certification		
Traditional certificate	90.9%	81.8%
Alternative certification	0.0%	9.1%
Emergency certification	9.1%	0.0%
Emergency certification *and* alternative certification	0.0%	4.5%
Traditional certification *and* special education	0.0%	4.5%
Experience		
Less than 3 years	13.6%	45.5%
3 years+	86.4%	54.5%
Race/ethnicity		
Hispanic/Latinx	0.0%	4.5%
Native American	4.5%	9.1%
White/Caucasian	90.9%	68.2%
White/Caucasian *and* Asian	0.0%	4.5%
White/Caucasian *and* Native American	4.5%	13.6%
Observations	**22**	**22**

Note: The total sample size consists of 44 teachers, 22 teachers responded to this item. Source: Author's analysis of the First Follow-Up Survey

Differences and similarities between nonrespondents and respondents for "Review reports"

	Nonrespondents	Respondents
Education level		
Bachelor's degree	64.3%	56.7%
Some graduate	14.3%	16.7%
Master's degree	21.4%	26.7%
Certification		
Traditional certificate	85.7%	86.7%
Alternative certification	0.0%	6.7%
Emergency certification	14.3%	0.0%
Emergency certification *and* alternative certification	0.0%	3.3%
Traditional certification *and* special education	0.0%	3.3%
Experience		
Less than 3 years	21.4%	33.3%
3 years+	78.6%	66.7%
Race/ethnicity		
Hispanic/Latinx	0.0%	3.3%
Native American	7.1%	6.7%
White/Caucasian	85.7%	76.7%
White/Caucasian *and* Asian	0.0%	3.3%
White/Caucasian *and* Native American	7.1%	10.0%
Observations	**14**	**30**

Note: The total sample size consists of 44 teachers, 30 teachers responded to this item. Source: Author's analysis of the First Follow-Up Survey

Similarities and differences between nonrespondents and respondents for "School administrator"

	Nonrespondents	Respondents
Education level		
Bachelor's degree	71.4%	53.3%
Some graduate	14.3%	16.7%
Master's degree	14.3%	30.0%
Certification		
Traditional certificate	85.7%	86.7%
Alternative certification	7.1%	3.3%
Emergency certification	7.1%	3.3%
Emergency certification *and* alternative certification	0.0%	3.3%
Traditional certification *and* special education	0.0%	3.3%
Experience		
Less than 3 years	28.6%	30.0%
3 years+	71.4%	70.0%
Race/ethnicity		
Hispanic/Latinx	0.0%	3.3%
Native American	14.3%	3.3%
White/Caucasian	71.4%	83.3%
White/Caucasian *and* Asian	7.1%	0.0%
White/Caucasian *and* Native American	7.1%	10.0%
Observations	**14**	**30**

Note: The total sample size consists of 44 teachers, 30 teachers responded to this item. Source: Author's analysis of the First Follow-Up Survey

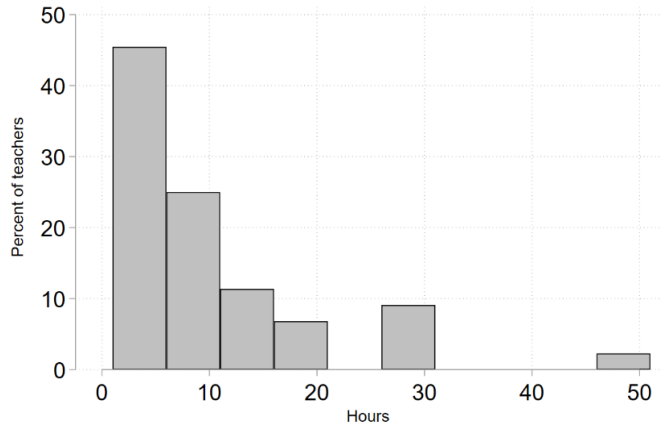
Similarities and differences between nonrespondents and respondents for "Mentor/instructional coach"

	Nonrespondents	Respondents
Education level		
Bachelor's degree	53.3%	62.1%
Some graduate	13.3%	17.2%
Master's degree	33.3%	20.7%
Certification		
Traditional certificate	73.3%	93.1%
Alternative certification	13.3%	0.0%
Emergency certification	6.7%	3.4%
Emergency certification *and* alternative certification	0.0%	3.4%
Traditional certification *and* special education	6.7%	0.0%
Experience		
Less than 3 years	20.0%	34.5%
3 years+	80.0%	65.5%
Race/ethnicity		
Hispanic/Latinx	6.7%	0.0%
Native American	6.7%	6.9%
White/Caucasian	80.0%	79.3%
White/Caucasian *and* Asian	6.7%	0.0%
White/Caucasian *and* Native American	0.0%	13.8%
Observations	**15**	**29**

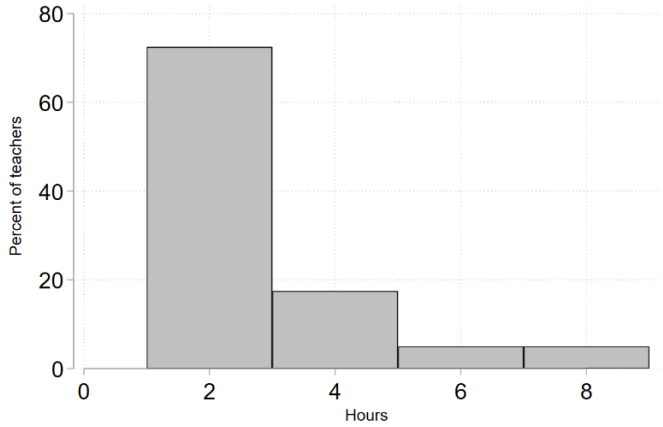
Note: The total sample size consists of 44 teachers, 29 teachers responded to this item. Source: Author's analysis of the First Follow-Up Survey

Teachers' reports of the time needed to use the ELI were strongly skewed.

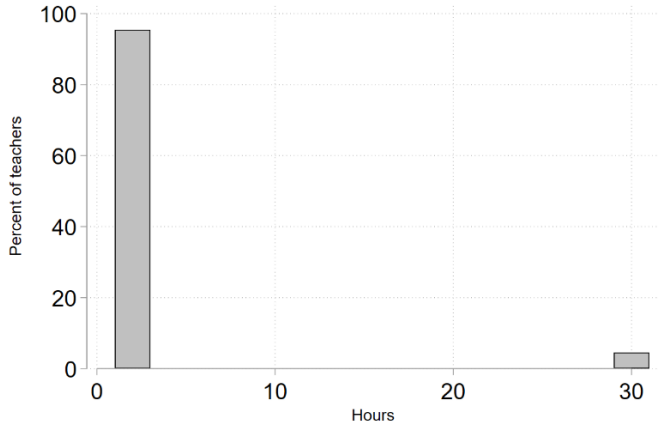
Assign ELI ratings



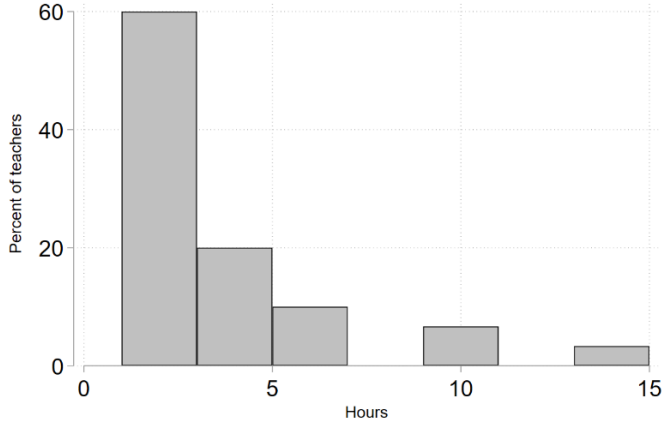
Enter ELI data into dashboard



Generate ELI reports



Review reports



Note: The total sample size consists of 44 teachers. There was a high amount of missing item-level data for "General ELI report" (22/44 teachers responded to this item) and "Review reports" (30/44 teachers responded to this item). All teachers responded to "Assign ELI ratings" and 40/44 teachers responded to "Enter ELI data into dashboard". See appendix slides for table of characteristics of respondents and nonrespondents. Source: Author's analysis of the First Follow-Up Survey