Coaching session:
Early Learning Inventory (ELI) Analysis Planning

May 26, 2022

Katie Dahlke Janice Keizer Yibing Li Alison Hauser

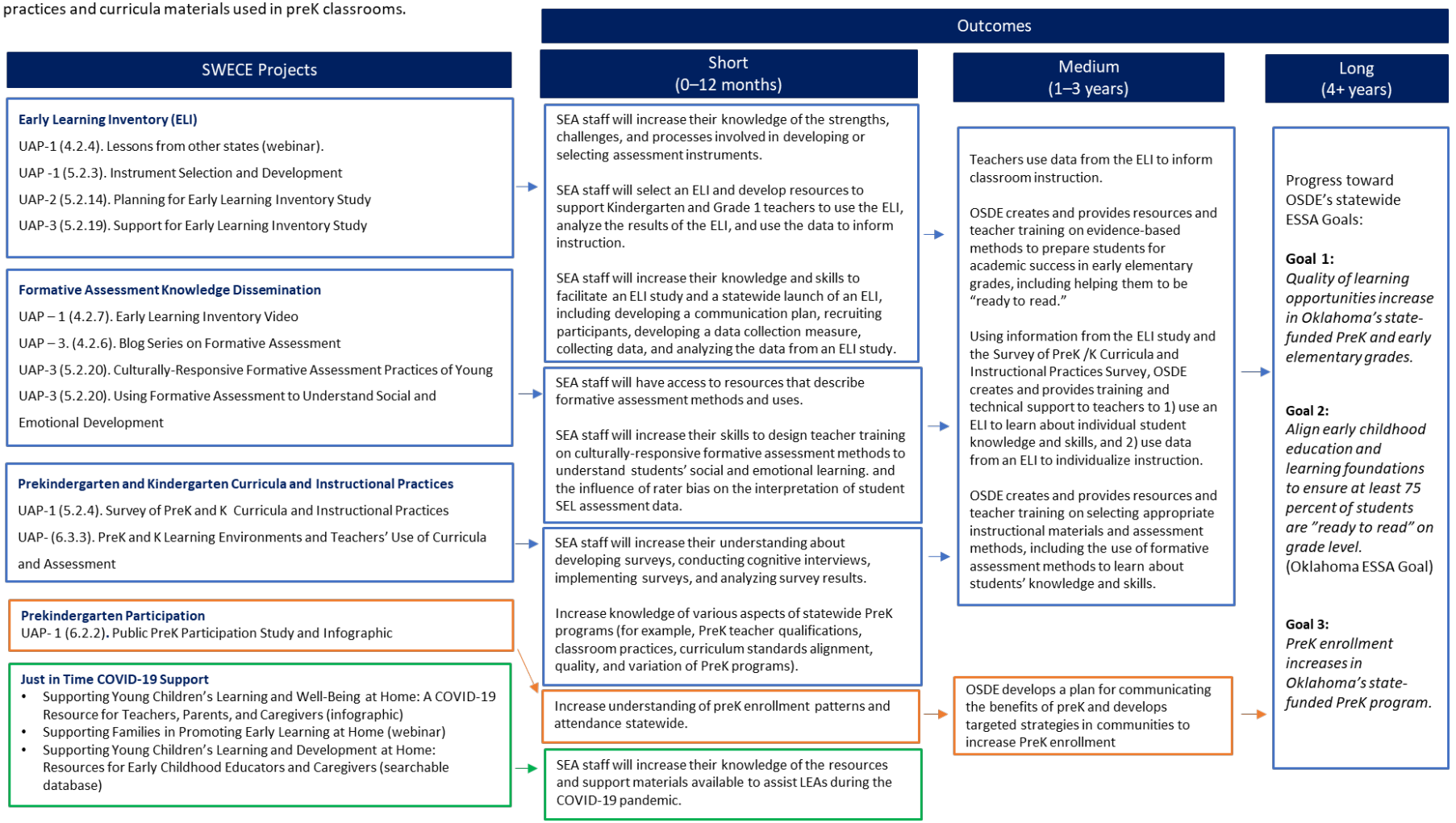
IES Institute of Education Sciences

Session objectives

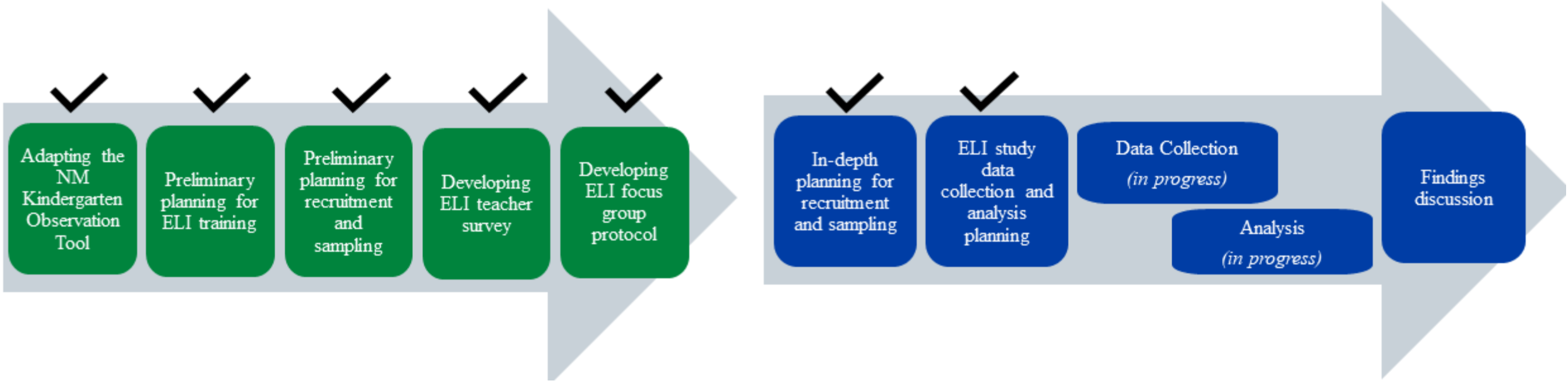
1. Review the approved analysis plan.
2. Identify any new priorities for information needed.
3. Identify how and when the information will be used.

SWECE Research Partnership logic model

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.



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 research questions
  - Domains validly measured?
  - Potential bias for student subgroups?
  - Provide information about individual student abilities?
  - Comparability across years?
- Implementation research questions
  - Do the ELI training and resources prepare teachers?
  - How do teachers administer ELI and use ELI data to inform instruction?
  - Teachers' perceptions about the feasibility and value of using the ELI?
  - Key facilitators and challenges for implementing the ELI?
  - Improvements to the ELI training, measure, and technology platform?
  - Systems and contextual factors and motivations of ELI use by districts?

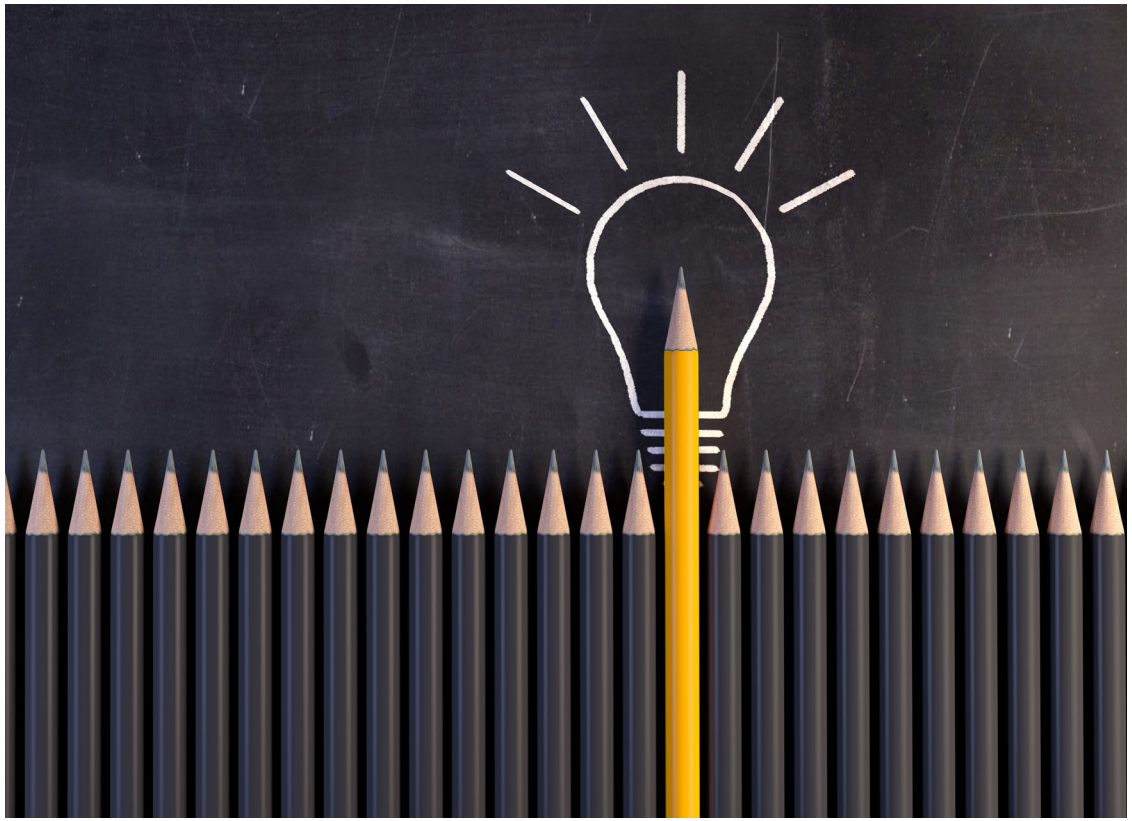
Validation Analysis Plan

Validation Research Questions

1. What domains of students' learning and development does the ELI validly measure?
2. Do any of the ELI indicators exhibit potential bias for student subgroups?
3. Do teachers use rating categories for each ELI item as intended?

Validation Research Questions (continued)

4. To what extent does the ELI provide information about individual student abilities?
5. To what extent are students' beginning-of-year, middle-of-year, and end-of-year administrations of the ELI comparable?



Data Preparation and Preliminary Analytic Steps

- Student-level data preparation
- Teacher survey data preparation
- Merge of student and teacher data files
- Nonresponse analyses and weighting
  - Unit nonresponse
  - Item nonresponse

RQ1: What domains of students' learning and development does the ELI validly measure?

Identify domains measured by ELI.

- Group items into domains
- Test if grouping is supported by the data

Are ELI and its domains reliable?

- Are teacher's responses across the items consistent?
- Other types of reliability measures

Does ELI measure what it is intended to measure?

- Types of validity

RQ2. Do any of the ELI indicators exhibit potential bias for student subgroups?

Does the ELI measure the same constructs across groups of students?

- Gender
- EL status
- FRPL
- Special education status
- Race/ethnicity

Do teachers' responses to any ELI indicators differ for different student groups?

RQ3: Do teachers use rating categories for each ELI item as intended?

- Examine the performance of each item.
- Rasch model

RQ4: To what extent does the ELI provide information about individual student abilities?

- Did teachers in Grades K and 1 perform the assessment the same way?
  - Multi-level modeling
  - Amount of score variation attributable to teachers rather than children

RQ5: To what extent are students' beginning-of-year, middle-of-year, and end-of-year administration of the ELI comparable?

- Are domains of ELI comparable across different time points?
  - Factor structure
  - Functions of ELI items

Examp

REL SOUTHWEST Regional Educational Laboratory Southwest

Early Learning Inventory Example Figures and Tables (Appendix M of proposal)

M. Example figures and tables

Example Figure M1. ELI indicators by validated N-factor structure dimensions, fall 2021

Domain 1	*Domain 2*
Indicator name	*Indicator name*
Indicator name	*Indicator name*
Indicator name	*Indicator name*
Indicator name	*Indicator name*
Indicator name	*Indicator name*
Domain …	*Domain N*
Indicator name	*Indicator name*
Indicator name	*Indicator name*

Brainstorm: Emerging information needs that could be addressed with the data

Brainstorm: How and when will you use this information?

Implementation Analysis Plan

Crosswalk of Implementation Research Questions and Data

Research Questions	Pre-training survey	Post-training survey item sets	First follow-up survey	Second follow-up survey	Administrator Survey	Focus Group Protocol
1. To what extent do the ELI training and resources prepare teachers to use the ELI?	#1	#1	#1-2, 11	#4-5	#4	#7-8
2. How do teachers report administering the ELI in their classroom, and do they report using the ELI data to inform instruction?	n/a	n/a	#3-8	#6-12	#5 (administrator use)	#1-2
3. What are teachers' perceptions about the feasibility and value of using the ELI in their classroom?	n/a	n/a	#9-10	#13	n/a	#1-2
4. What are the key facilitators and challenges for teachers implementing the ELI with fidelity?	n/a	n/a	#12	#14-16	#6-10	#3-6
5. What improvements could be made to the ELI training, measure, and technology platform to increase feasibility and fidelity?	n/a	#2-4	#13-14	#14-15	#11-12	#7-10
6. Under what circumstances (systems and contextual factors) and for what motivations did districts elect to use the ELI?	n/a	n/a	n/a	#17-19	#13-14	n/a
7. Demographic characteristics	#2-8	n/a	n/a	n/a	#1-2, 15	n/a

Implementation Analysis Methods

Survey analyses

Individual close-ended survey items

- Tabulate responses to each survey item.
- Examine distribution of responses for the overall sample.
- Examine the distribution of responses separately for new and experienced teachers.
- Examine changes in teacher self-efficacy to use formative assessment over time.

Open-ended items

- Examine responses for potential categories of findings.
- All responses will be double-coded.

Implementation Analysis Methods – Continued

Teacher focus group analyses

- Obtain transcripts of the focus groups.
- Read and evaluate transcripts and label sections of the transcripts with a priori and emergent theme codes.
- Summarize the main themes into summary paragraphs.

Example Survey Table Format

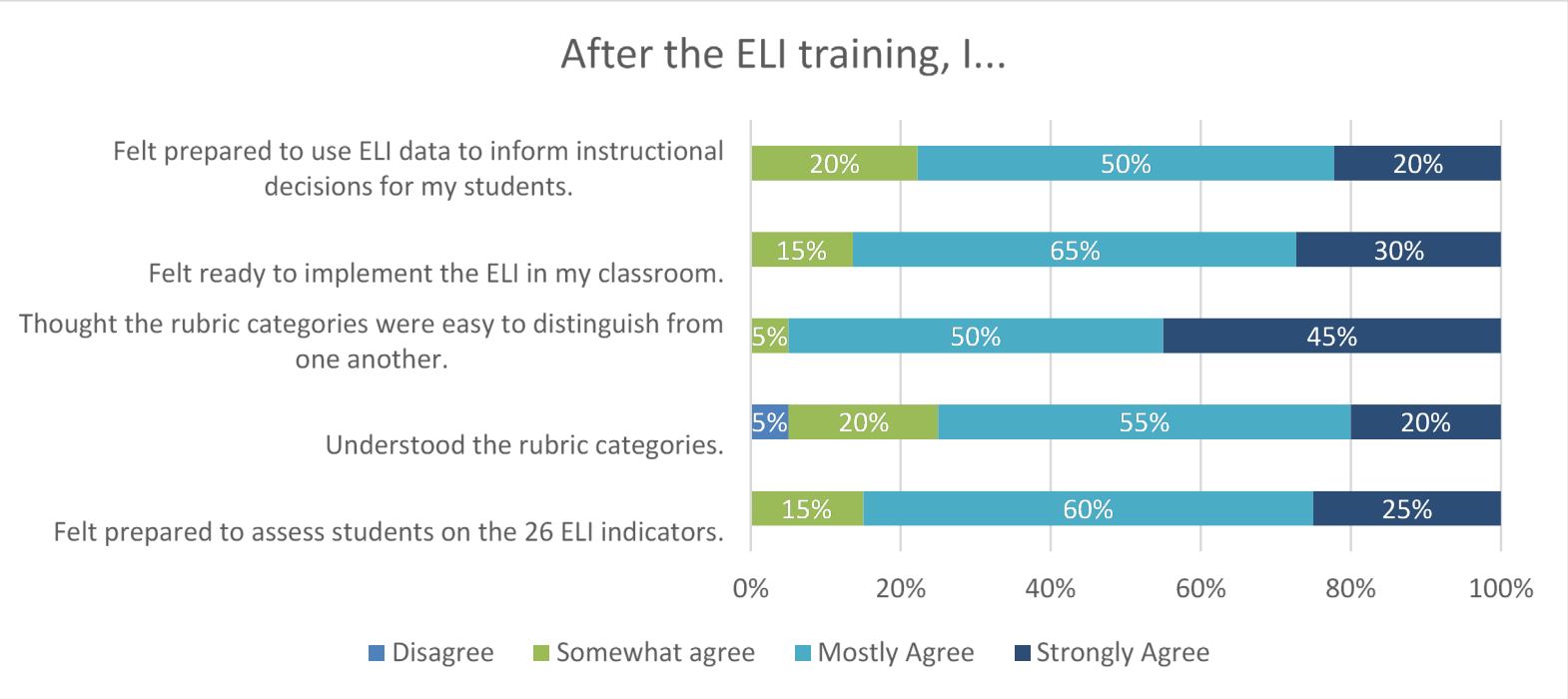
Example Table M8. Descriptive summary of teacher survey responses, fall 2021

Please indicate the amount of time it took you to complete the following ELI tasks:	N	Minutes		
		Average	Minimum	Maximum
Complete the ELI assessment for all students.				
Enter ELI assessment data into the technology platform.				
Generate ELI reports.				
Review reports and data to inform your instruction.				

ELI is Early Learning Inventory.
Note: *N* = XX teachers.
Source: Authors' analysis of data from the 2021 Early Learning Inventory teacher survey responses.

Example Survey Figure Format

Example Figure M5. Frequency distribution of teacher survey responses, fall 2021



ELI is Early Learning Inventory.
N = XX teachers.
Source: Authors' analysis of data from the 2021 Early Learning Inventory teacher survey responses.

Example Focus Group Table Format

Example Table M10. Qualitative themes to focus group protocol question, "How would you change the ELI training to improve it?", fall 2021

Themes	Exemplary Quotes

Note: *N* = XX teachers.
Source: Authors' analysis of data from the 2021 Early Learning Inventory teacher focus group transcripts.

Brainstorm: Emerging information needs that could be addressed with the data

Brainstorm: How and when will you use this information?

Next steps

- Finish data analyses from fall 2021
- Collect and analyze data from spring 2022
- Present results

Thank You!

https://ies.ed.gov/ncee/edlabs/regions/southwest/index.asp

Follow us on Twitter!
@ RELSouthwest

This presentation was prepared under Contract 91990018C0002 by Regional Educational Laboratory Southwest, administered by American Institutes for Research. The content does not necessarily reflect the views or policies of the Institute of Education Sciences or the U.S. Department of Education, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

REL SOUTHWEST

Contacts

Katie Dahlke
kdahlke@air.org

Janice Keizer
jkeizer@air.org

Yibing Li
yli@air.org

Alison Hauser
ahauser@air.org