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Empowering Rural Math Education: Strategies and Resources for Success

May 8, 2024

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Welcome

Stacey Wedin

Assistant Director,
CCEE

- Recording & slides will be posted on CCEE's website
- Slides will be linked in the chat
- **Questions/Comments**: Please use the Q&A feature

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Presenters

Kim Ferguson
RMC Lead Coordinator,
Lake County Office of Education

Michelle Sanchez
Senior Director of Special Projects,
Butte County Office of Education

Aaron Carter
SR. Director of Teaching & Learning,
Lake County Office of Education

Dr. Brian Lindaman
Professor of Math Education & Co-Director of the Chico Math Project,
CSU Chico

Rebecca Walker
Deputy Superintendent,
Lake County Office of Education

May 8, 2024

RURAL MATH COLLABORATIVE
LEARNING ACCELERATION SYSTEM

Who We Are

Rural Math Collaborative
Lead Team
and
Professional Learning
Team

RURAL MATH COLLABORATIVE

LEARNING ACCELERATION SYSTEM

Butte County Office of Education

"WHERE STUDENTS COME FIRST"

California Mathematics Project: North Coast

LAKE COUNTY OFFICE OF EDUCATION

TO TEACH. TO SERVE. TO LEARN.

Chico Math Project

CALIFORNIA mathematics PROJECT CMP

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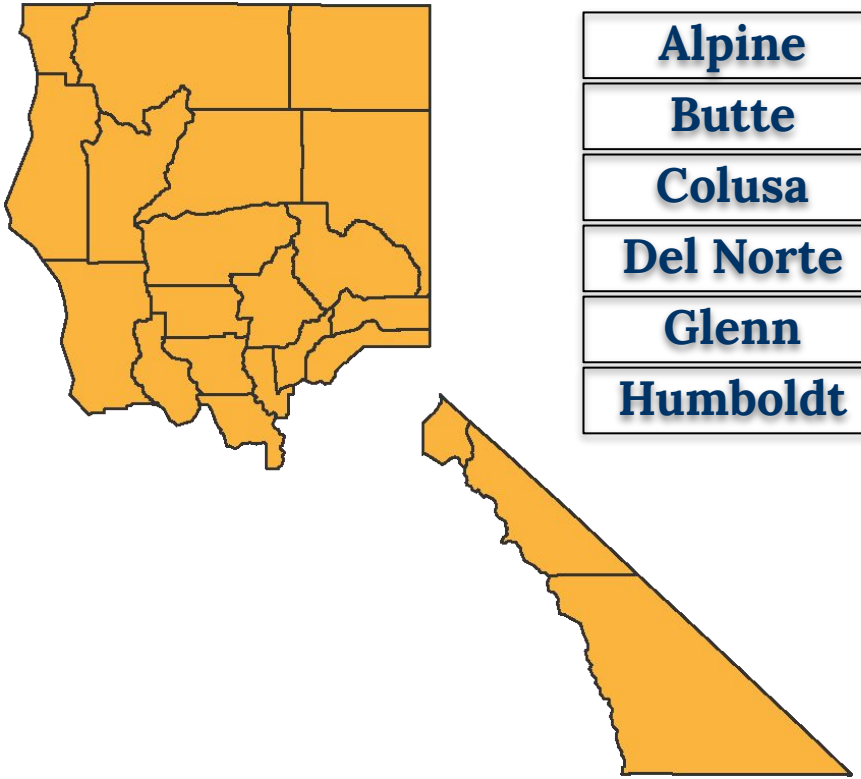
County Partners



Alpine	Inyo	Shasta
Butte	Lake	Sierra
Colusa	Lassen	Siskiyou
Del Norte	Mendocino	Sutter
Glenn	Modoc	Tehama
Humboldt	Mono	Trinity
	Nevada	Yolo
	Plumas	Yuba

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Lesson Study PD Team

Ben Ford
Professor of Math Education Sonoma State University
& Co-Director of North Bay Math Project
Framework Writing Team

Brian Lindaman
Professor of Math Education & Co-Director of the Chico Math Project, CSU Chico
Framework Writing Team

Danielle Reynolds
Inspire HS and
Chico Math Project

Katy Early
Former Grade 5 Teacher,
Chico Math Project,
Framework Writing Team

Frank Quinn
Administrator
Butte COE

Joan Easterday
Sonoma COE and North Bay
Math Project

Doreen Heath Lance
Sonoma COE and North Bay
Math Project

Kat Strand
CSU Chico and
Chico Math Project

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Coaching PD Team

Dr. Brian Lindaman
Professor of Math Education & Co-Director of the Chico Math Project,
CSU Chico

Sherry Rodgers
Shasta County
Office of Education
RMC Grade Span Coach

Shannon Morago
Humboldt County Office of Education
RMC Grade Span Coach

RURAL MATH COLLABORATIVE
LEARNING ACCELERATION SYSTEM

Our Why

and

Project Structure

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The Issue

What we call "professional development" is underperforming.

It is neither professional, nor does it develop.

—Steve Leinwand, Former President of NCSM

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The Issue

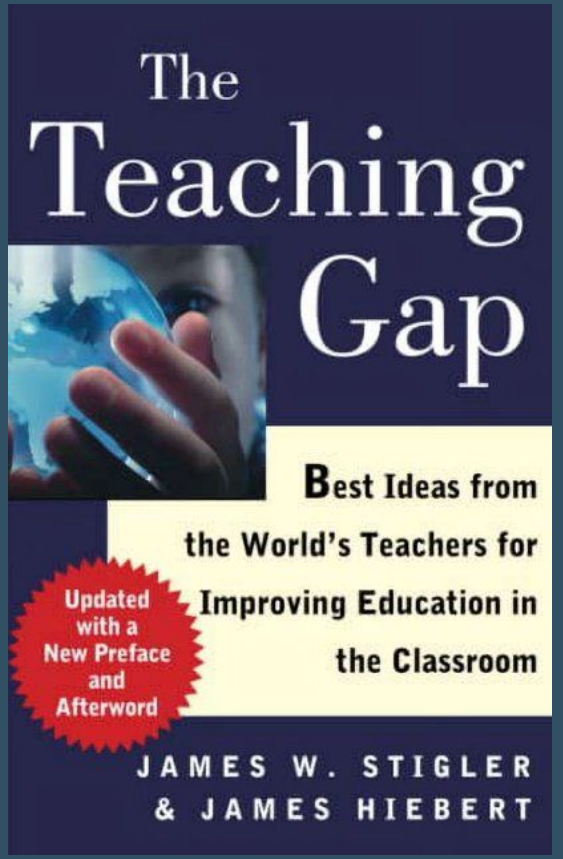
The United States is always reforming but not always improving.

The most alarming aspect of classroom teaching in the United States is not how we are teaching now, but that we have no mechanism for getting better.

Although teachers hold the key they teach in a system that currently works against improvement.

The hard work of improving teaching in the United States can't succeed without changes in the culture of teacher learning.

—Stigler and Hiebert, The Teaching Gap, 1999



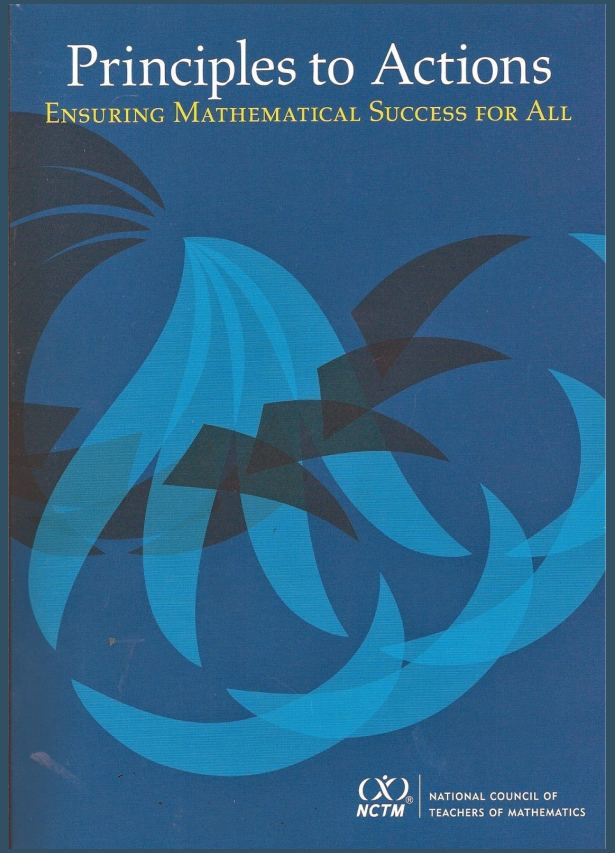
The Issue

The current structure of PD often stands as an obstacle to the development of a culture of professionalism.

Teachers frequently feel as though PD is something done to them, instead of something done for them, involving them as active partners in their own professional growth.

Too much of what currently is offered to teachers as PD has limited value and makes little impact on their pedagogical knowledge, their practice, or their students' achievement.

-NCTM, Principles to Action: Ensuring Mathematical Success for All, 2014



Rural Math Collaborative Goals

Build capacity in the rural counties of California to support math instruction and improve the culture of math education in rural communities.

Positive changes in attitudes and dispositions about math and these positive changes will result in greater student and teacher efficacy

Support teachers in the mindset shift from deficit-based, remedial approaches to asset-based acceleration approaches

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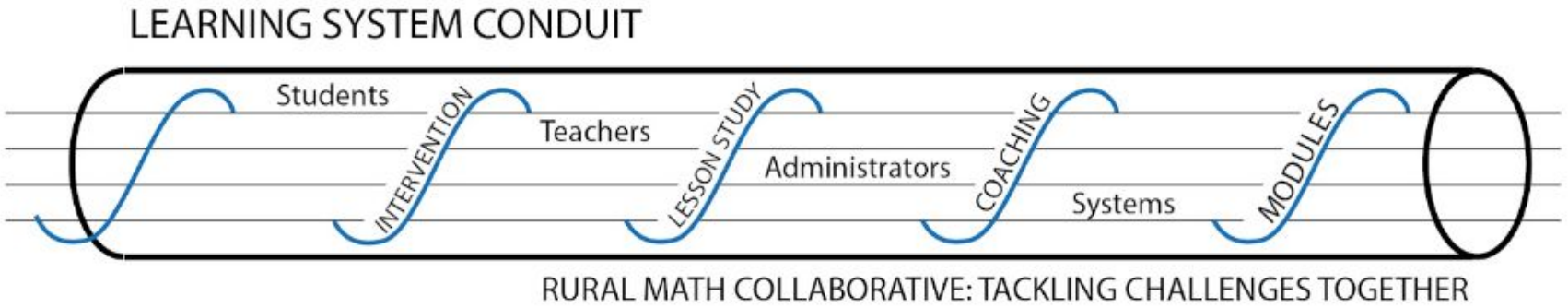

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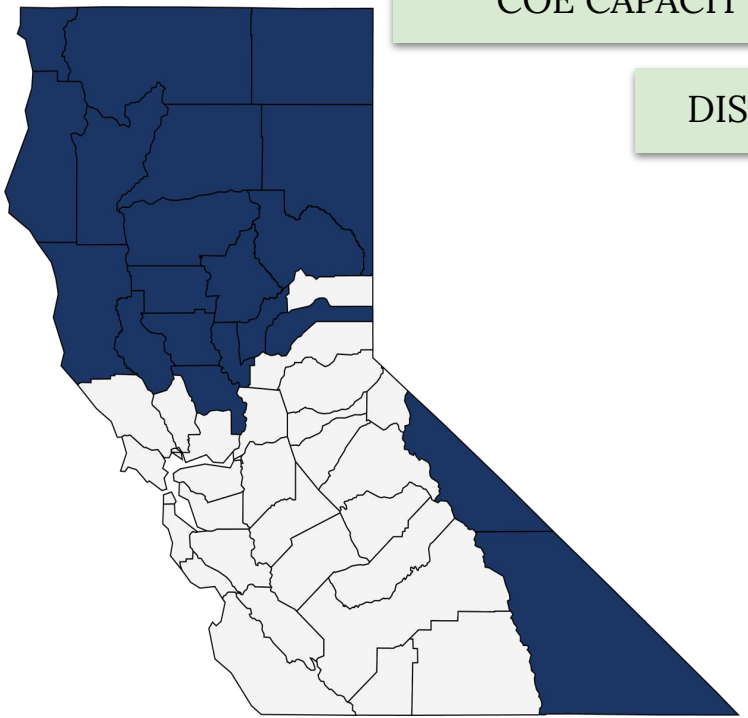

COE CAPACITY

DISTRICT CAPACITY

SCHOOL CAPACITY

TEACHER CAPACITY

STUDENT CAPACITY

Focus on Building Sustainable Systems to Leverage Continuous Improvement

Lesson Study	**High Impact Coaching**
Asynchronous Modules	**Intervention/Tutoring**

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Lesson Study and Instructional Coaching

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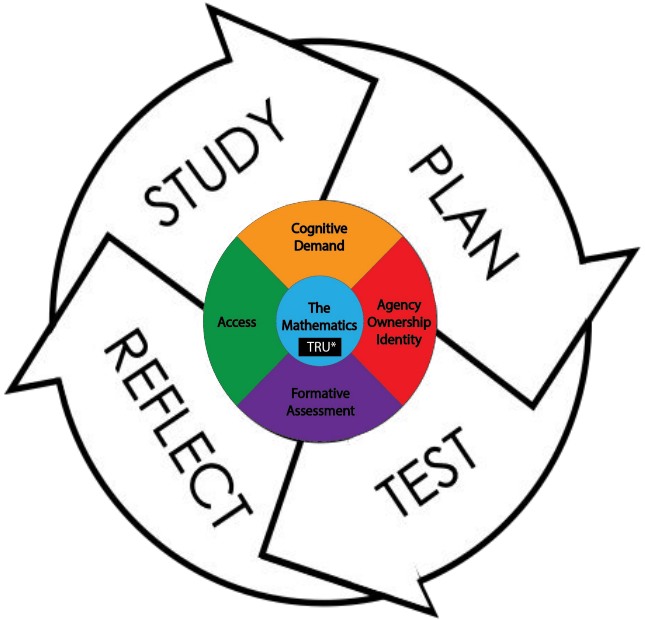
California Action Network for Mathematics Excellence and Equity
CANMEE

STUDY:

- ❑ Identify and Interview focal students
- ❑ Sources or patterns of inequities
- ❑ Mathematics standards and progressions
- ❑ Equity-based research theme
- ❑ Mathematics goal
- ❑ Lesson hypothesis

REFLECT:

- ❑ Focal students' actions
- ❑ Commentators' and observers' comments
- ❑ Their lesson study cycle



PLAN:

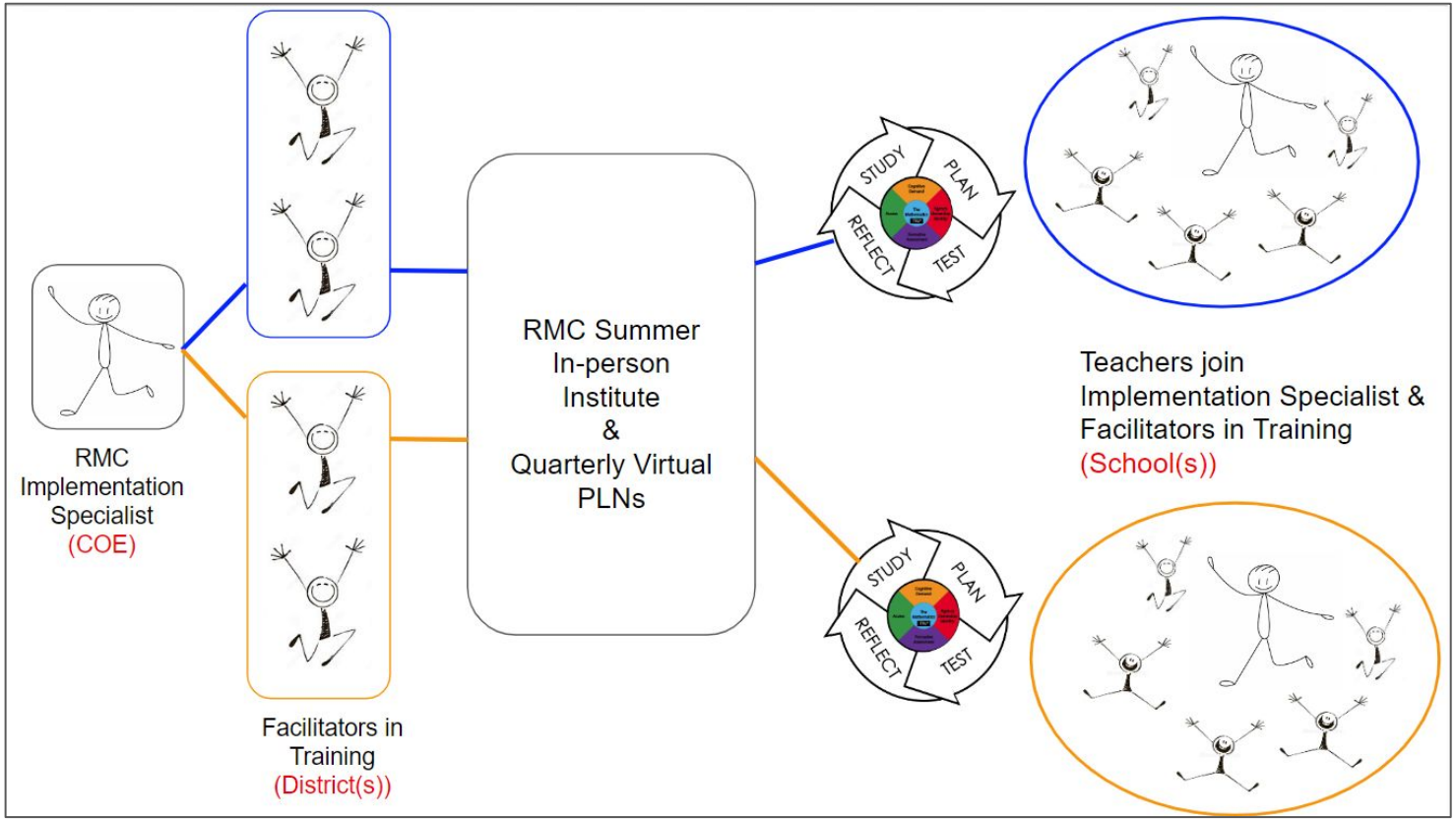
- ❑ Cognitively demanding mathematics tasks
- ❑ The *Standards for Mathematical Practice* and equity-based teaching practices
- ❑ Focal student responses

DO/TEST:

- ❑ Iterations
- ❑ Mock lesson
- ❑ Public lesson
- ❑ Observation of focal students

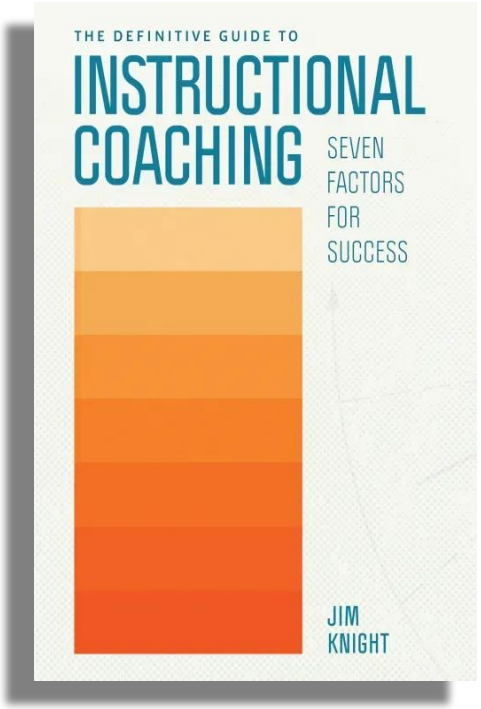
Each lesson study team is supported by a facilitator, a mathematics commentator, and an access/agency commentator

Lesson Study Prong

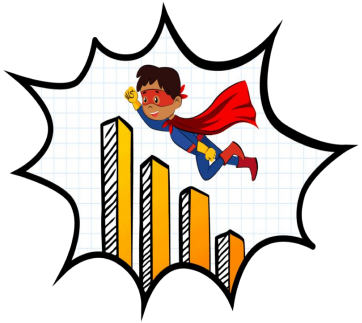


Trainer of Trainers Model

Coaching Prong



The Five Dimensions of Powerful Classrooms				
The Content	**Cognitive Demand**	**Equitable Access to Content**	**Agency, Ownership, and Identity**	**Formative Assessment**
The extent to which classroom activity structures provide opportunities for students to become knowledgeable, flexible, and resourceful disciplinary thinkers. Discussions are focused and coherent, providing opportunities to learn disciplinary ideas, techniques, and perspectives, make connections, and develop productive disciplinary habits of mind.	*The extent to which students have opportunities to grapple with and make sense of important disciplinary ideas and their use. Students learn best when they are challenged in ways that provide room and support for growth, with task difficulty ranging from moderate to demanding. The level of challenge should be conducive to what has been called "productive struggle."*	*The extent to which classroom activity structures invite and support the active engagement of all of the students in the classroom with the core disciplinary content being addressed by the class. Classrooms in which a small number of students get most of the "air time" are not equitable, no matter how rich the content: all students need to be involved in meaningful ways.*	*The extent to which students are provided opportunities to "walk the walk and talk the talk" – to contribute to conversations about disciplinary ideas, to build on others' ideas and have others build on theirs – in ways that contribute to their development of agency (the willingness to engage), their ownership over the content, and the development of positive identities as thinkers and learners.*	*The extent to which classroom activities elicit student thinking and subsequent interactions respond to those ideas, building on productive beginnings and addressing emerging misunderstandings. Powerful instruction "meets students where they are" and gives them opportunities to deepen their understandings.*



Jim Knight's Impact Cycle

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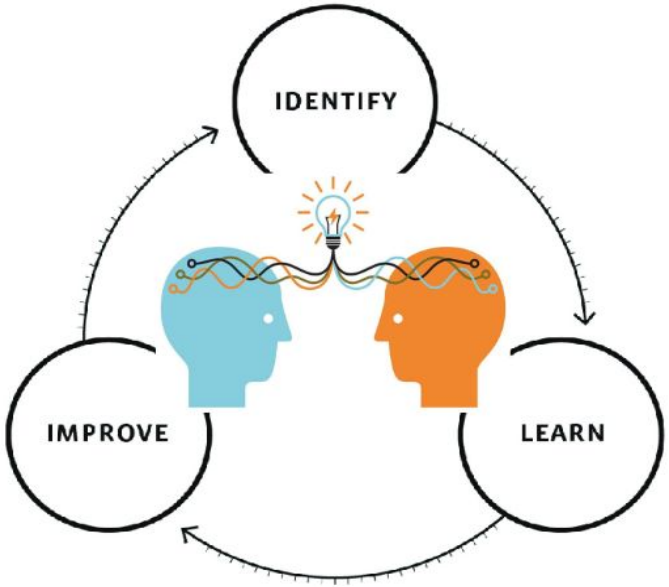
Teach lesson, measure progress, use data to adjust or set new goal to **Improve**



Identify goal by understanding classroom "reality" through data.

Choose a strategy

Learn how strategy can be implemented through watching coach model, reading, videos. Determine how to measure goals.

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Connection to Learning Acceleration

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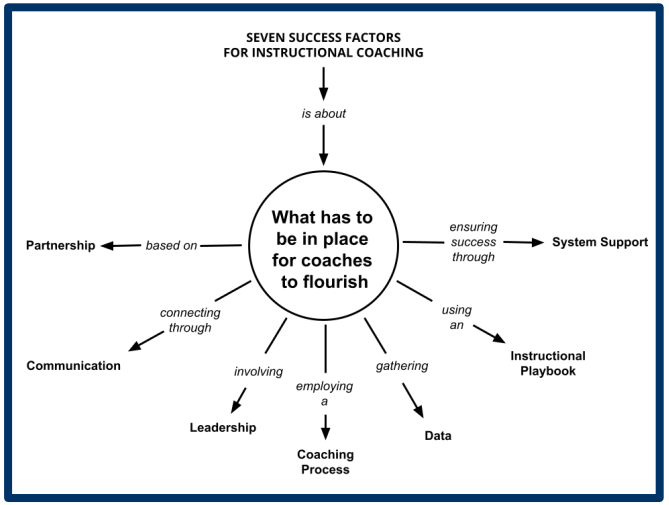
Learning Acceleration Focus



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Intervention

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Intervention Prong

What the Grant Will Fund

4 Prongs

1. COACHING
Create a system of support to build or better use your TOSAs and Instructional Coaches to improve math instruction

2. LESSON STUDY
Support teachers to thoughtfully implement change in their classrooms

3. INTERVENTION
K-8 Intervention Program Spring Math Pilot by Sourcewell and 9-12 High Impact Tutoring online program

4. ASYNCHRONOUS MODULES
Access monthly online professional development modules on such topics as Number Sense, SEL, Data Science, and MTSS

COACHING
- Up to $4,000 per team (36 team maximum for the RMC)
- 1 virtual onboarding and 2 day in person institute
- Quarterly professional learning network
- Ongoing support: Math Content Expertise, Grade Span Coach access

LESSON STUDY
- Up to $10,000 per team. (36 team maximum for the RMC)
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INTERVENTION
- 200 grant funded student licenses
- Ongoing support: data collection, professional learning training

ASYNCHRONOUS MODULES
- Free professional development modules: for staff meetings, individual learning, PLC meetings, etc.

CONTACT DETAILS
Kim Ferguson
kferguson@lakecoe.org
Michelle Sanchez
msanchez@bcoe.org

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PRONG 3
INTERVENTION

4 PRONGED APPROACH OF PARTICIPATION
Choose one or choose them all
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K-5 Intervention

WHY "DO THE MATH"?
"Math" is a K-5 math intervention written by Marilyn Burns.

...ep lessons help students:
...understanding of math
...athematical skills
...tionships
...nections

...Guide models mathematical
...des visual representations,
...point-of-use support to
...tudents' individual needs

...MATH
...ade small group sets
...onboard training
4 follow up virtual trainings

6-12 High Impact Tutoring

WHY "PAPER TUTORS?"
Paper Tutor is on demand one-on-one tutoring. All tutor-student communication is chat-based to provide 100% visibility to all student activity to school leaders, teachers, and parents or guardians.

Students can:
- Upload pictures of their homework
- Use a virtual whiteboard
- Communicate with a full emoji keyboard

WHY "AIR TUTORS?"
Air Tutors is an online tutoring organization that provides live, small group tutoring with high-quality paid tutors.

Sessions can be scheduled before, during, and after school programs, and requires a small institutional lift to start the program.

Students receive automated messages at regular intervals reminding them of upcoming sessions and what they'll need to bring with them.

Partnership Commitments

The Rural Math Collaborative (RMC) will collaborate with administrators to personalize your site's intervention pilot implementation plan.

ONBOARDING TRAINING
Virtual training for your chosen program will be provided in August to get you started with implementation.

INTERVENTION RESOURCES
The RMC will provide access to all resources and materials necessary for full implementation of the intervention program participants are using.

ONGOING SUPPORT AND COACHING
County Intervention and Implementation Specialists will be available to provide coaching and support, as needed. Program platforms will provide additional training as requested.

PLNs
Professional Learning Network invites district teams to attend 4 (3 hour) virtual sessions during the year to share learning with each other.

County Level Intervention Data Collector *Allocate $2,500/COE for quarterly data collection on student progress

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Intervention Prong

Current Pilots

Elementary

Do The Math™
Created by Marilyn Burns

Secondary

PAPER

AirTutors

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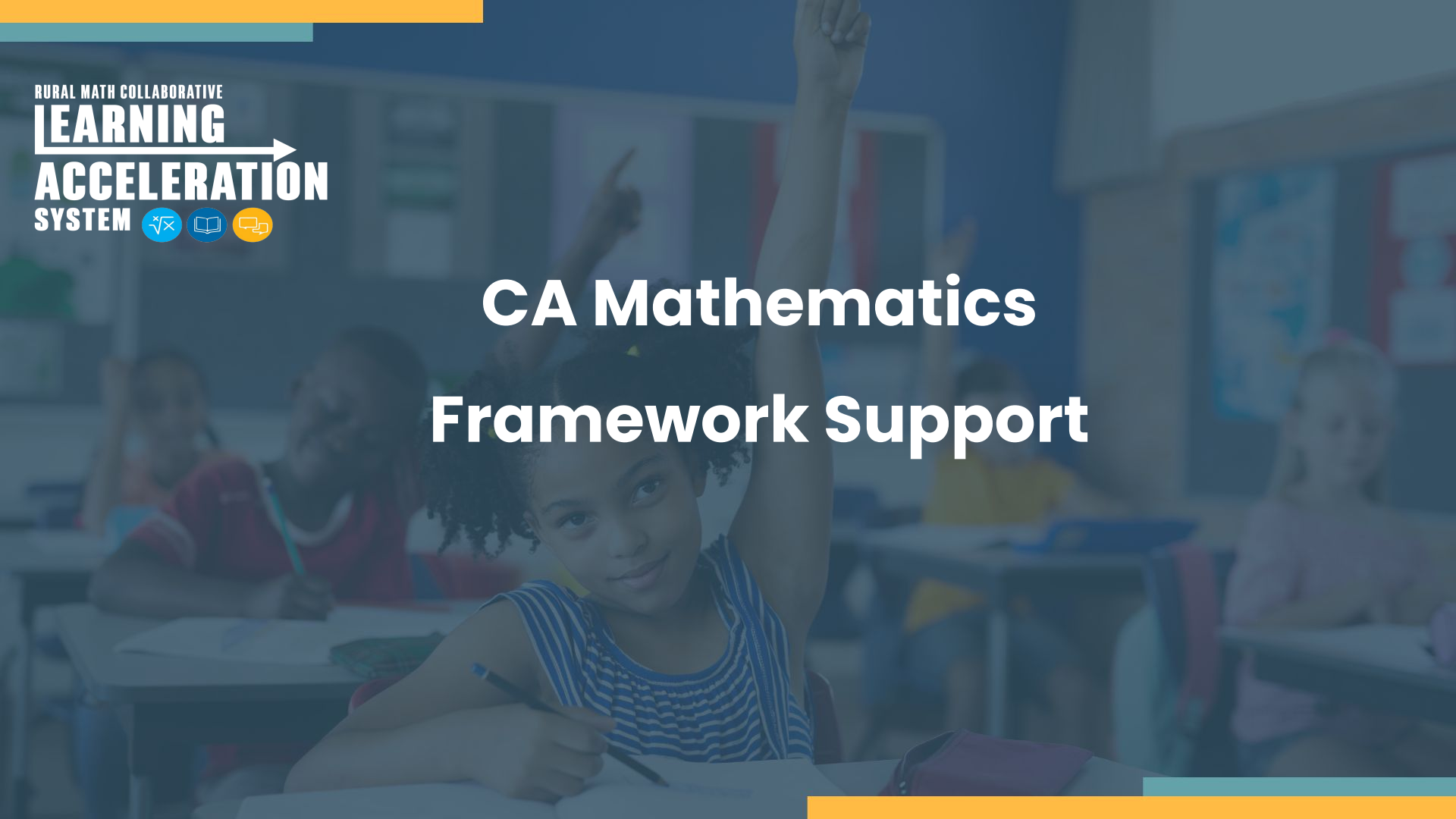
CA Mathematics Framework Support



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Math Framework Events: October & March

Sessions Include:
- Grade Span Specific Breakouts
- Collaborative Workshops
- Expert-led Discussions

Continuing Education Opportunity:
Earn Continuing Education Units through the CSU, Chico Professional Continuing Ed Dept. To qualify, attendees must:

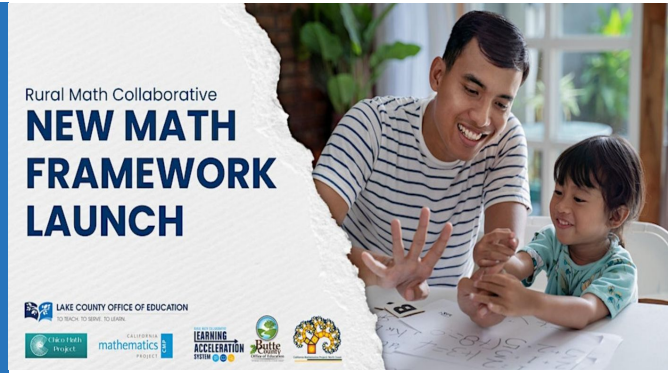
- Complete the 6-hour seminar
- Engage in 2-3 hours of advanced reading
- Participate in a couple of follow-up CoP meetings
- 15 hours = 1 unit

Dates & Locations:

Saturday, March 2
9:00 AM - 3:00 PM
Keynote: John SanGiovanni
Grade levels TK-5
Bell Memorial Union at CSU, Chico Room 309

Saturday, March 9
9:00 AM - 3:00 PM
Keynote: Phil Daro
Grade Levels 6-8 & High School
The Cornelius Event Center (Obsidian Middle School), Clearlake

Contact
Kim Ferguson at
kferguson@lakecoe.org
707-262-4183
or
Michelle Sanchez at
msanchez@bcoe.org
530-519-3864



Administrators, County, District, School Support Staff, and Teacher Leaders –

- These events will serve as an Introduction and Overview of the newly adopted 2023 California Math Framework, intended for those in administrative, teacher support and professional learning roles.
- Sessions led by four members of the writing team: Brian Lindaman (chair), Jo Boaler, Katy Early, and Ben Ford, and other county and state math advocates and specialists.

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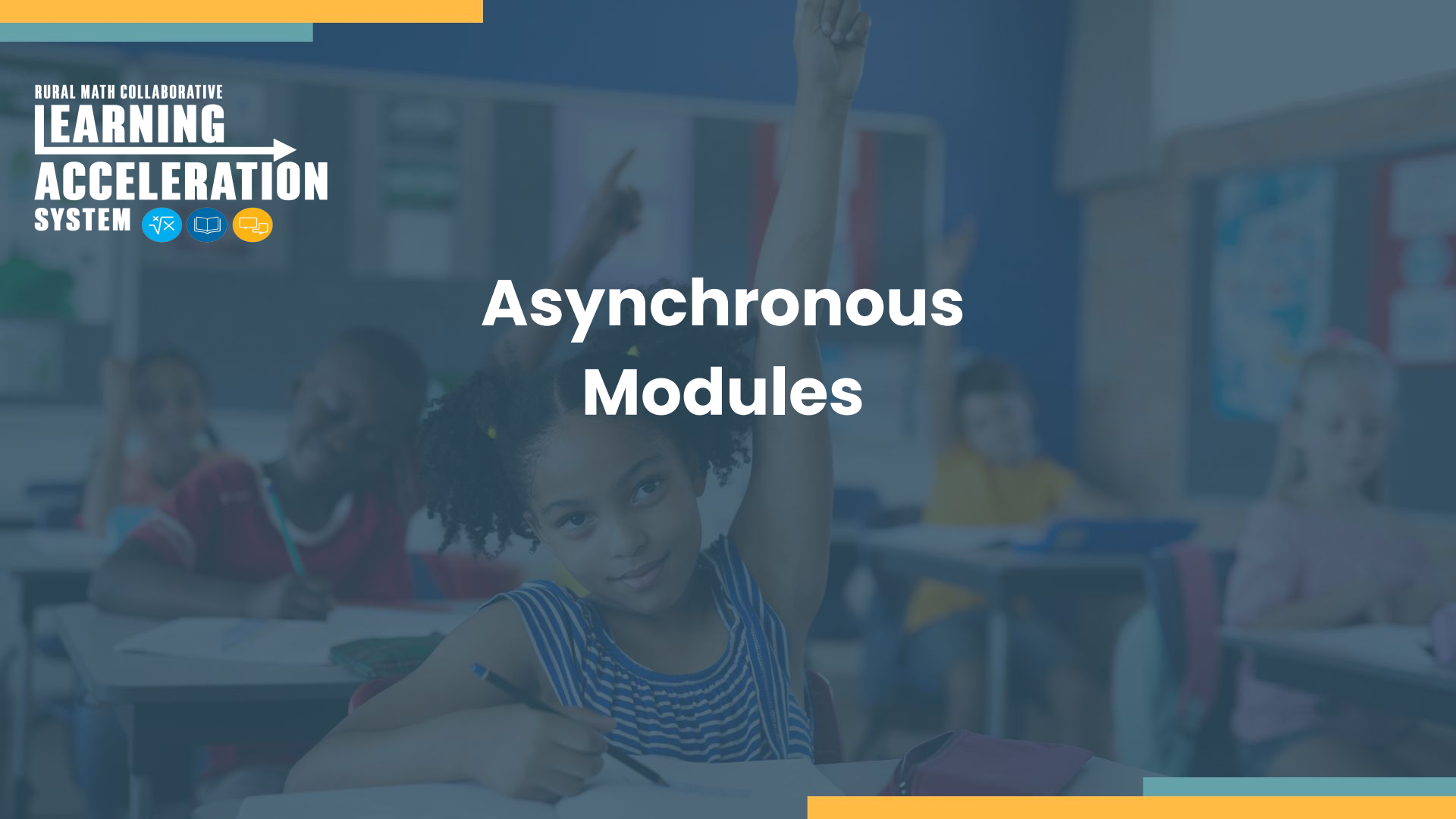
Asynchronous Modules



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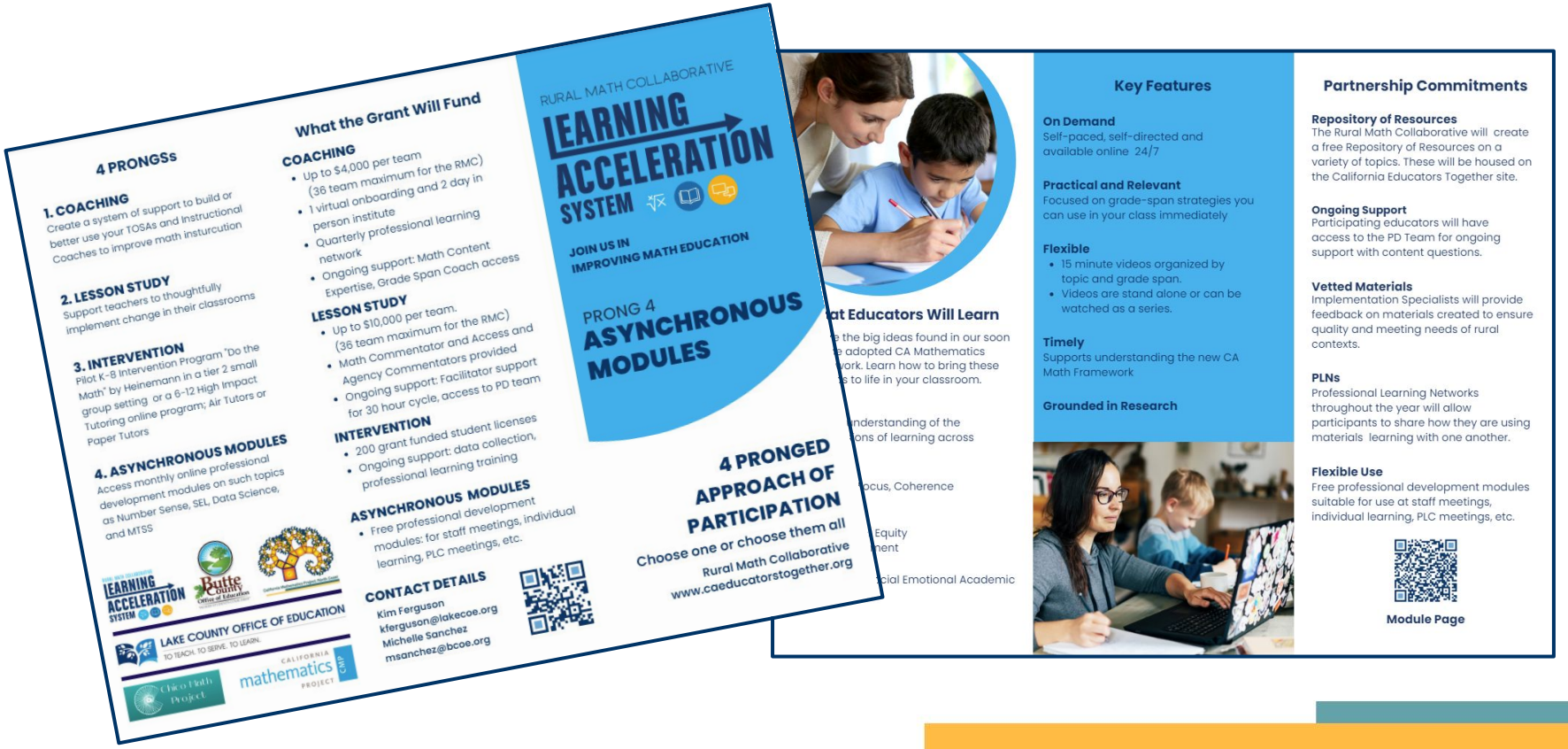
Asynchronous Modules



4 PRONGSs

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2. LESSON STUDY
Support teachers to thoughtfully implement change in their classrooms

3. INTERVENTION
Pilot K-8 Intervention Program "Do the Math" by Heinemann in a tier 2 small group setting or a 6-12 High Impact Tutoring online program; Air Tutors or Paper Tutors

4. ASYNCHRONOUS MODULES
Access monthly online professional development modules on such topics as Number Sense, SEL, Data Science, and MTSS

What the Grant Will Fund

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JOIN US IN IMPROVING MATH EDUCATION
PRONG 4
ASYNCHRONOUS MODULES

4 PRONGED APPROACH OF PARTICIPATION
Choose one or choose them all
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at Educators Will Learn
e the big ideas found in our soon e adopted CA Mathematics ork. Learn how to bring these s to life in your classroom.
nderstanding of the ons of learning across
ocus, Coherence
Equity ment
cial Emotional Academic

Key Features

On Demand
Self-paced, self-directed and available online 24/7

Practical and Relevant
Focused on grade-span strategies you can use in your class immediately

Flexible
- 15 minute videos organized by topic and grade span.
- Videos are stand alone or can be watched as a series.

Timely
Supports understanding the new CA Math Framework

Grounded in Research

Partnership Commitments

Repository of Resources
The Rural Math Collaborative will create a free Repository of Resources on a variety of topics. These will be housed on the California Educators Together site.

Ongoing Support
Participating educators will have access to the PD Team for ongoing support with content questions.

Vetted Materials
Implementation Specialists will provide feedback on materials created to ensure quality and meeting needs of rural contexts.

PLNs
Professional Learning Networks throughout the year will allow participants to share how they are using materials learning with one another.

Flexible Use
Free professional development modules suitable for use at staff meetings, individual learning, PLC meetings, etc.

Module Page

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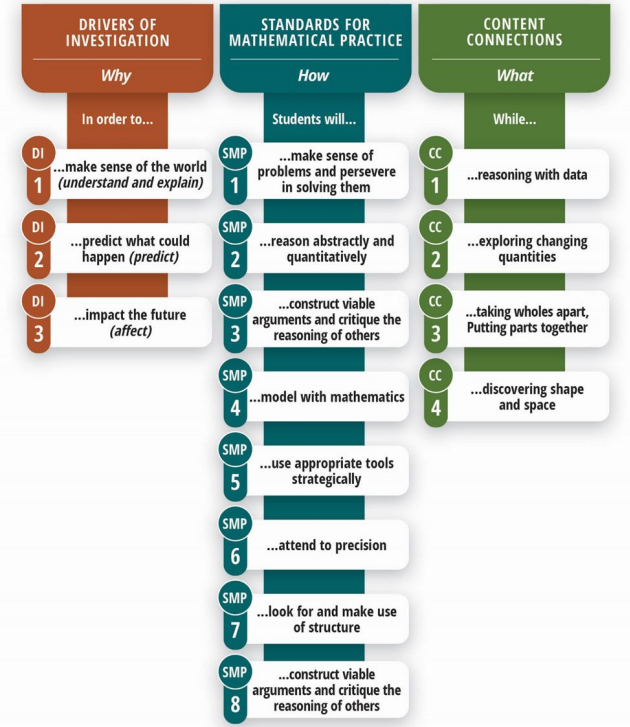
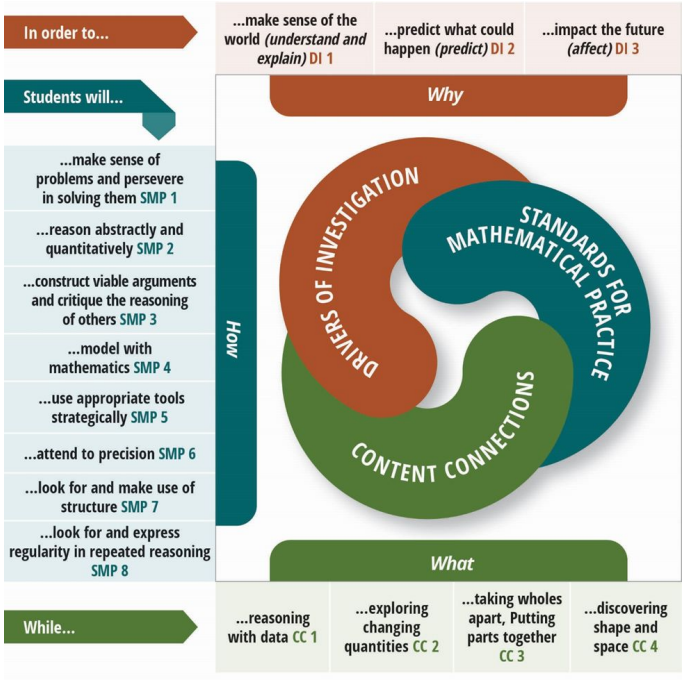
Asynchronous Module Prong





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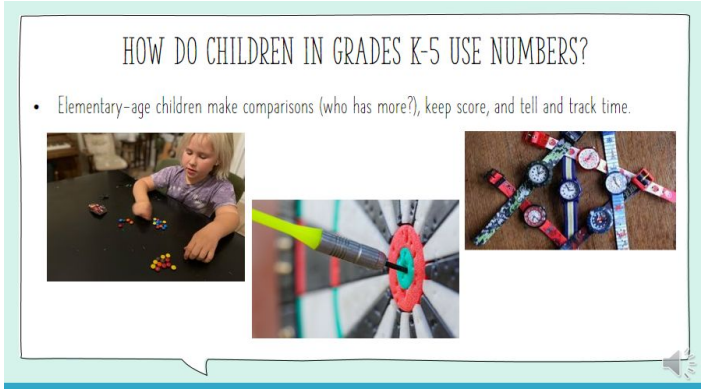
Example of Module

Number Sense Module (1.5 hours)

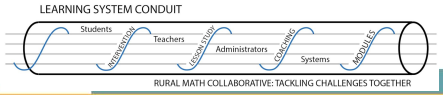
- Learning Progressions are a key component of learning acceleration
- Part 0: Overview of Number Sense in the 2023 Framework
- Part 1: TK-2 Counting and Cardinality with embedded SEL practices
- Part 2: 3-5 Numbers and Operations with embedded SEL practices
- Part 3: 6-8 Ratio and Proportions with embedded SEL practices



Part 0: Overview

- Provides an introduction to the layout of the entire Framework including the Drivers of Investigation, Content Connections and Standards for Math Practice.

- Introduces aspects of the Framework's interpretation of number sense, and the progression of number sense ideas through grades TK-8.



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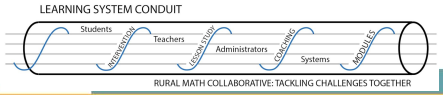
Part 1: TK-2

Provides guidance to grades TK-2 educators taken from Chapter 3 of the 2023 Math Framework.

This information is focused around three key areas of number sense in grades TK-2: organizing and counting numbers, comparing and ordering numbers on a line, and operating with numbers flexibly.



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Part 2: Grades 3-5

Provides guidance to grades 3-5 educators taken from Chapter 3 of the 2023 Math Framework.

This information is focused around four key areas of number sense in grades 3-5: extend flexibility with number, understand the operations of multiplication and division, use number lines as tools, and make sense of operations with fractions and decimals

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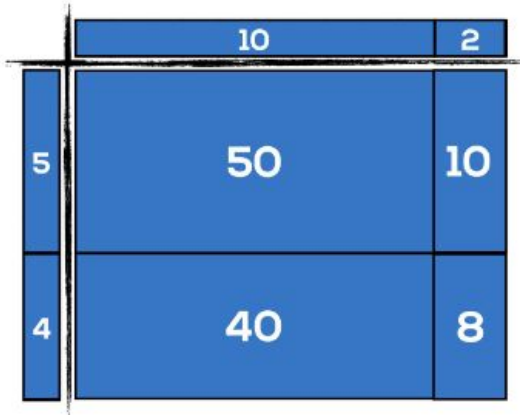
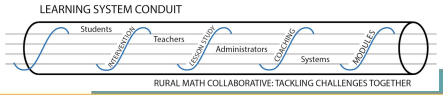
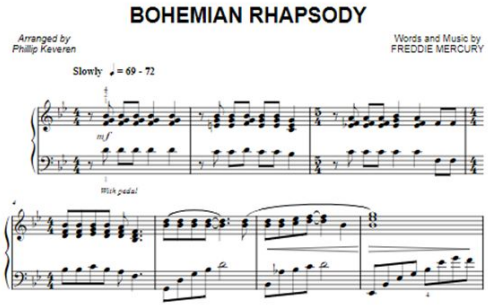


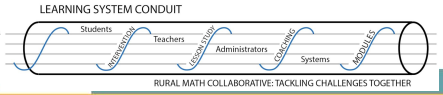


Part 3: Grades 6-8

Provides guidance to grades 6-8 educators taken from Chapter 3 of the 2023 Math Framework.

This information is focused around three key areas of number sense in grades 6-8: number line model continues in importance; proportions, ratios, percents, and relationships among these; and seeing generalized numbers as leading to algebra.





Future Asynchronous Modules

- 2023-24: Chapter 3 Launch
  - Number Sense TK-8
- 2024-25: Chapter 4 Launch
  - Standards for Math Practice 3, 7, 8
- 2025-26: Chapter 5 Launch
  - Data Science TK-12

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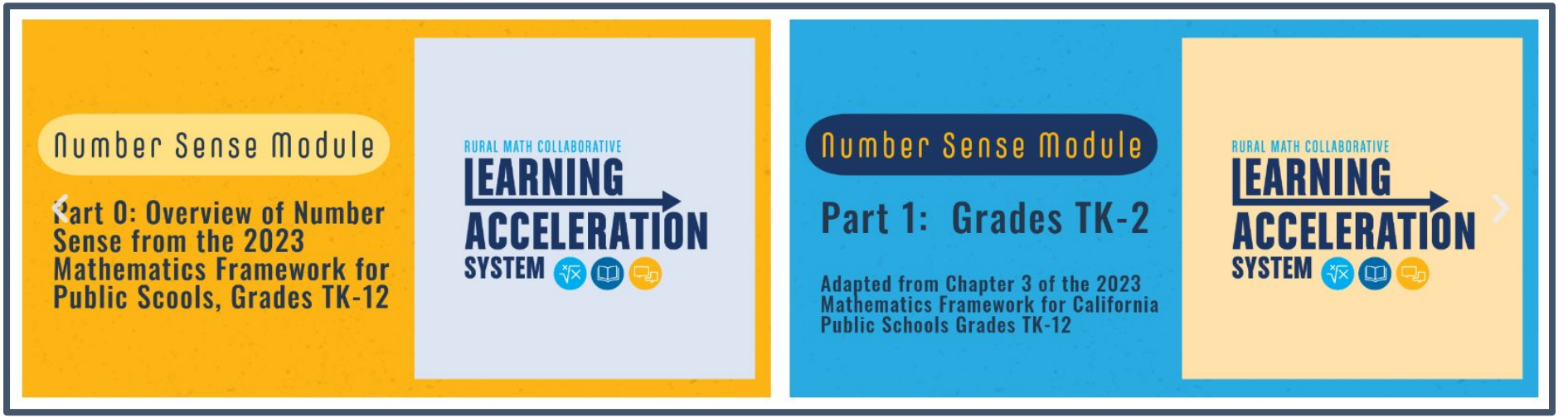
Accessing the Number Sense Modules

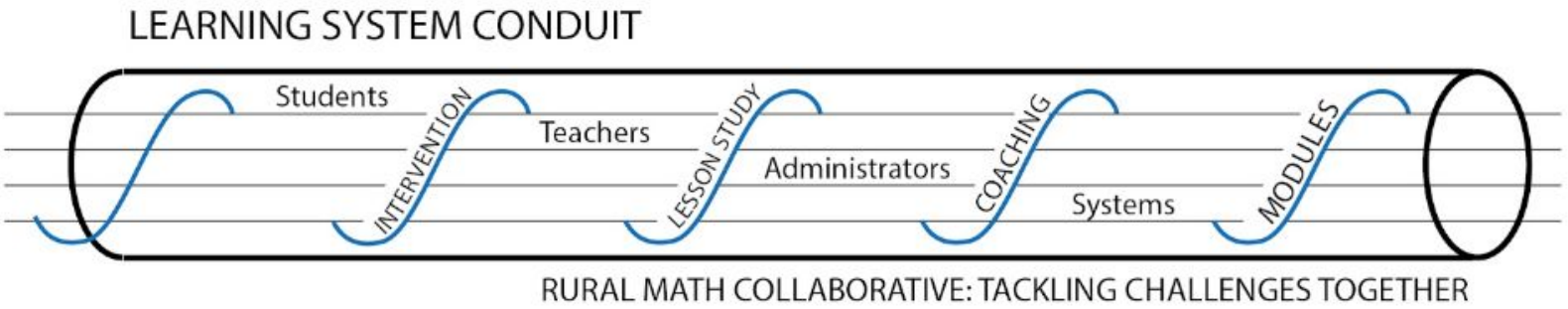
[CCEE Learning Acceleration Resource Hub]

[Rural Math Collaborative]



RURAL MATH COLLABORATIVE
LEARNING ACCELERATION SYSTEM

Impact


LEARNING SYSTEM CONDUIT
Students
INTERVENTION
Teachers
LESSON STUDY
Administrators
COACHING
Systems
MODULES
RURAL MATH COLLABORATIVE: TACKLING CHALLENGES TOGETHER

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RMC Participant Testimonial

How has RMC made an impact?

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Thank You

Contact

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Next Steps

Interested in connecting further?

Office Hours:

- May 10, 2024 from 2:00-3:00
- Zoom Link

Feedback Survey: bit.ly/4aYYalc