One County's Journey to Improve Mathematics Instruction at Scale

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Welcome

- Recording & slides will be posted on [CCEE's website](https://www.ccee.org)
- Slides will be linked in the chat
- **Questions/Comments**: Please use the Q&A or “Raise Hand” features

Sujie Shin
Deputy Executive Director, California Collaborative for Educational Excellence
Mathematics: Comprehensive Improvement Plan

CONTINUOUS IMPROVEMENT

Ambitious Instruction

COACHING
PLC
LEADERSHIP
Objectives

- Where we started?
- Where we are now?
- A quick overview of the Comprehensive Improvement Plan
- Digging deeper into 2 of the components of the CIP
- Next Steps
## MCOE Continuous Improvement Program Growth

### Number of CI Content Coordinators

<table>
<thead>
<tr>
<th>SCHOOL YEAR</th>
<th>State &amp; Federal</th>
<th>STEAM, Science, Arts, Ed Tech</th>
<th>Literacy</th>
<th>Math</th>
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<td>2019-20</td>
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<td>2020-21</td>
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<td>3</td>
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<tr>
<td>2021-22</td>
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</tr>
<tr>
<td>2022-23</td>
<td>2</td>
<td>3</td>
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</tbody>
</table>

### School and Programs Served

![Graph showing growth](image-url)
The problem with improving at scale...

- What are we aiming for?
- How will we know we achieved it?
- How do we make it happen in every classroom?
Change begins with...

Dissatisfaction with the status quo and a recognition that existent outcomes are either not desirable or just not good enough.
EVERY student is "enthused about mathematics, sees the value and beauty of mathematics, and is empowered by the opportunities mathematics affords."

(National Council of Teachers of Mathematics, 2016)
Dissatisfaction with the status quo and a recognition that existent outcomes are either not desirable or just not good enough.
A transformational culture of professional development...
PD is...

...structured professional learning that results in changes in teacher practices and improvements in student learning outcomes.

Typical PD

- Teachers passively sit-and-get
- Outside of the classroom
- Measures of PD success rarely include implementation rate or impact on student achievement
What is our answer?

Comprehensive Improvement Plan
Ambitious Instruction

- Instructional goals are defined
- Teacher-centered PD

Math Hierarchy of Needs:
- Math literacy
  - confident problem-positors and problem-solvers
- Equitable assessment
  - feedback and intervention to achieve at grade level
- Student-centered instruction
  - meaningful discourse to promote conceptual understanding, procedural fluency, problem-solving, and application
- Mindset & culture
  - all students can learn, mistakes are normalized
- Material needs
  - teacher content knowledge, essential standards, curriculum, math tools

CONTINUOUS IMPROVEMENT
Three Pillars of Support

- **Job-embedded Coaching**
  - Support teachers in the classroom
  - ELD and Special Education instructional support

- **PLC Support**
  - Ensure collective understanding of the instructional goal
  - Collecting and analyzing data to measure implementation

- **Leadership Support**
  - Measure and monitor classroom implementation
Continuous Improvement

- Research-informed principles of improvement science
- Identify roadblocks and design learning cycles to create innovative solutions
Ambitious Instruction - Deeper Dive

Math Hierarchy of Needs

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- student-centered instruction
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http://MathHierarchy.com
Ambitious Instruction - Deeper Dive

Maslow’s Hierarchy of Needs
- Physiological needs: breathing, food, water, shelter, clothing, sleep
- Safety and security: health, employment, property, family and social stability
- Love and belonging: friendship, family, intimacy, sense of connection
- Self-esteem: confidence, achievement, respect for others, the need to be a unique individual
- Self-actualization: morality, creativity, spontaneity, acceptance, experience purpose, meaning and inner potential

Math Hierarchy of Needs
- Material needs: teacher content knowledge, essential standards, curriculum, math tools
- Mindset & culture: all students can learn, mistakes are normalized
- Student-centered instruction: meaningful discourse to promote conceptual understanding, procedural fluency, problem-solving, and application
- Equitable assessment: feedback and intervention to achieve at grade level
- Math literacy: confident problem-posers and problem-solvers
Ambitious Instruction - Deeper Dive

Thinking Classrooms/Math 360
5 Practices / Bansho / CGI
Three-Read Protocol
Mathematical language routines
Mathematical instructional routines
Three-Act Math Tasks
Think-Pair-Share-Compare
Workshop / Stations / Math Centers

Thinking Classrooms
Number Talks
Universal Design for Learning
GLAD & ELD instructional strategies
CRA Approach
Low floor/High ceiling problems
Complex Instruction

Thinking Classrooms/VNPS
Math Technology - Desmos, GeoGebra, Mathigon, etc.
Teacher content knowledge
Access to grade-level essential standards
Integrated ELD standards

Math Hierarchy of Needs

- **math literacy**
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- **equitable assessment**
  - feedback and intervention to achieve at grade level

- **student-centered instruction**
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- **mindset & culture**
  - all students can learn, mistakes are normalized

- **material needs**
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Tell me and I forget, teach me and I may remember, involve me and I learn.

Xunzi
Benjamin Franklin
Coaching - Deeper Dive
Thank You

Contact

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Next Steps

Interested in connecting further? Join us for the Special Interest Group (SIG) Session by providing your contact information in the feedback survey!


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