



Work plan status: Not Started ▾
Contract #

# Merced County Office of Education

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 DEPARTMENT OF EDUCATIONAL SERVICES

## Professional Development – Dos Palos Oro Loma Joint Unified School District *January 7, 2025 Work Plan*

11/22/2024

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# Work Plan Objective for January 7, 2025

The objective of this plan is to increase teachers' MKT through the use of Concrete-Representational-Abstract Instructional Approach (CRA), which is a highly effective instructional routine for developing students' conceptual understanding of math, especially for multilingual learners and students with learning disabilities.

## **MATH KNOWLEDGE FOR TEACHING (MKT)**

Knowing mathematics for teaching demands a kind of depth and detail that goes well beyond what is needed to carry out a mathematical algorithm reliably (Ball, Hill, Bass, 2005). To teach mathematics well, teachers need a specialized type of knowledge called mathematical knowledge for teaching (MKT). MKT is the teacher's ability to

- identify incorrect answers and faulty methods and analyze errors efficiently and fluently, just like mathematicians do in the course of their work.
- make sense of students' non-standard procedures, even when they have never encountered them before.
- provide justification for the steps in algorithms and procedures, meanings for terms, and explanations for concepts.
- make strategic choices of mathematical representations and examples when illustrating ideas.
- sequence student examples to create a trajectory towards the teaching of algorithms.

Student achievement is strongly correlated with teachers' MKT and it is the experience of Merced COE that the implementation of powerful mathematics instructional routines and protocols are also highly correlated to teachers' MKT.

*Participants will increase their own mathematical knowledge for teaching by:*

- Refining their understanding of the Number Talk Routine and how to enhance student understanding through the use of visual representations;
- Applying the principles of Concrete-Representational-Abstract Instructional Approach to the math curriculum.

## **CONCRETE-REPRESENTATIONAL-ABSTRACT (CRA) APPROACH**

CRA is an instructional approach for mathematics that research suggests can enhance the mathematics performance of all students, but is especially effective for English Language Learners and students with learning disabilities. It is a three-part instructional strategy, with each part building on the previous instruction to promote student learning and retention, and to address conceptual knowledge.

CRA supports students understanding underlying mathematical concepts before learning "rules." Research-based studies show that students who use concrete materials develop more precise and more comprehensive mental representations, often show more motivation and on-task behavior, understand mathematical ideas, and better apply these ideas to life situations (Harrison & Harrison, 1986; Suydam & Higgins, 1977)

*Participants will:*

- Learn how to apply the principles of the CRA Approach to Instruction to their math curriculum. The professional development provided will align with the curriculum teachers are using. Possible topics:
  - Number sense, addition, and subtraction (Grade TK – 2)
  - Multiplication and division facts (Grade 3)
  - Multiplication and division (Grades 4 and 5)
  - Fractions (Grades 3 - 6)
  - Ratios, proportions, and percents (Grades 6 - 8)
  - Expressions and equations (Grades 6 - 8)
  - Linear and Non-Linear Expressions and Equations (Grades 9 - 12)
- Increase their own mathematics knowledge for teaching

TK – 2: Duane Habecker

Grades 3 – 5: Gloria Carrasco

Grades 6 – 8: Katie Koehn

Grades 9 – 12: Dave Mattoon

## Responsibilities of MCOE Math Team and Dos Palos Oro Loma Joint Unified School District

MCOE Math Team	Dos Palos Oro Loma Joint Unified School District
<ul style="list-style-type: none"> <li>● Provide the services listed above in the Work Plan Objective</li> <li>● Provide Dos Palos Oro Loma Joint Unified School District with as much advanced notice as possible in the event dates must be rescheduled.</li> <li>● Provide additional on-going teacher support via phone calls, texts, or Zoom sessions</li> </ul>	<ul style="list-style-type: none"> <li>● Provide a location for the PD sessions</li> <li>● Support the Work Plan Objective by creating a Building Implementation Team (BIT) consisting of at least one site administrator, TOSA (optional), and one teacher from each grade level.</li> </ul> <p>The function of the BIT is to</p> <ul style="list-style-type: none"> <li>● attend all professional development and lesson design sessions</li> <li>● assure adequate ongoing supports for implementation of the work plan objectives</li> <li>● create a culture and collective commitment to implementation of the work plan objectives</li> <li>● use informally collected data to monitor the ongoing classroom implementation of the work plan objectives. (This is NOT intended to evaluate teachers in any way.)</li> <li>● ensure effective bi-directional communication amongst MCOE Math Team and Dos Palos Oro Loma Joint Unified School District</li> </ul>

# Mathematics Goals, Actions, and Metrics

Participants will participate in training with the MCOE Math Team to achieve the following goals:

<b>#1 LCAP and/or SPSA Goals/Actions:</b>		
<b>Goal Number and Description</b>	<b>State Priority/LCAP Category</b>	<b>Work Plan Objective(s)</b>
Increase the number of students who Meet or Exceed the math standards as measured by local benchmarks, IAB/FIAB results, and CAASPP testing.	Priority 4: Pupil Achievement (Pupil Outcomes)	(1) Teaching and Learning

<b>Action Title &amp; Description</b>	<b>Metrics (Identified or potential)</b>
<p>1) DPOL will contract with MCOE Math Team to provide teachers with professional development to support the teacher development of Mathematical Knowledge for Teaching (MKT) to increase the percentage of students meeting or exceeding the math standards by 10% annually as measured by local measures and CAASPP testing (grades 3-8) with progress monitoring to include IAB/FIABs, local measures, and benchmarks (TK-8).</p> <p>2) DPOL will contract with MCOE Math Team to provide teachers with professional development in the CRA Instructional Strategy to increase the percentage of students meeting or exceeding the math standards by 10% annually as measured by local measures and CAASPP testing (grades 3-8) with progress monitoring to include IAB/FIABs, local measures, and benchmarks (TK-8).</p>	<p>1) Local measures and CAASPP testing (grades 3-8,11) with progress monitoring to include IAB/FIABs, local measures, and benchmarks (TK-12)</p> <p>2) Local measures and CAASPP testing (grades 3-8,11) with progress monitoring to include IAB/FIABs, local measures, and benchmarks (TK-12). We will also use observational data to monitor implementation rate of CRA in the classrooms.</p>

## January 7, 2025 Cost of services

<i>Item</i>	<i>Cost</i>
January 7, 2025 full-day session with FOUR math coordinators @ \$1500/day per coordinator – preparation time and typically printed materials are included in the daily rate	\$6,000
Additional printed materials	\$0
<b>Total</b>	<b>\$6,000</b>