Recruitment Agenda

Welcome
MCP Overview
Student Mathematical Thinking
Lunch
Year 3 Coach Presentation
Site Visitor Report
Program Assurances
Q & A
What was she thinking?

The Problem:
There are 42 stamps to put in the stamp book. There are 7 pages in the stamp book. How many stamps can be on each page if all of the pages and all of the stamps are used and there are the same number of stamps on each page?

Given to a second grade student.
Interviewer Notes

The student’s responses to the stamp problem were documented as below. What is the student thinking?

Q. 42/7

A: 3 x 4 = 12
   12 + 2 = 14
   2 x 7 = 14
   4 + 2 = 6
Look at This!!

\[
\frac{42}{7}
\]

A: \(3 \times 4 = 12\)  
4 threes left over after the 7 from each 10 (in 40).

\(12 + 2 = 14\)  
2 extra ones in 42, so 14 ones left over altogether.

\(2 \times 7 = 14\)  
There are 2 sevens in the left over 14, plus the 4 sevens from the 4 tens in step one.

\(4 + 2 = 6\)  
That makes 6 sevens in 42!
MCP Conceptual Framework
Our MCP Coaching Model
We have **ONE GOAL**

We will work together to enact research-based ideas in YOUR classroom with YOUR kids using YOUR materials and YOUR curriculum to improve student learning and understanding of mathematics.
MCP Coaching Model
Our Non-Negotiables

Full-time district hires, classroom-embedded professional development for all mathematics teachers, one coach per building.

Work with teachers intensively - daily with 4 teachers for 6 weeks, and then move on to another 4 teachers.

(cont.)
MCP Coaching Model
Our Non-Negotiables (cont.)

Support teachers in learning mathematics content, pedagogy, and assessment strategies to meet students’ diverse needs.

Team plan, team teach, debrief, re-plan, to create a data-based and student responsive pedagogy.

Honor confidentiality of all teacher and student data.
MCP Coaching Model

Getting started: Awareness session, recruiting volunteers

Working in the classroom:
4 teachers at a time, every day for 4-6 weeks, in the classroom.
Pre- and post-conferencing and team planning between the coach and the teacher.
Focus on student learning, data about student understanding, pedagogical choices, and mathematics content aligned with the ODE standards and the MCP framework.

This is not a pull-out program. Coaches are not substitute teachers; coaches are not modelers.
MCP Teaching Approach

The MCP pedagogy is curriculum independent

The pedagogy consists of:

Rich problems.
Allowing students to work freely.
Questioning, encouraging, facilitating discussions.
Documenting the on-going assessment.
Grounding instructional strategies on assessment.
Focus on student thinking.
Constant use of NCTM Process Standards and the Common Core State Standards Mathematical Practices.
Common Core State Standards Mathematical Practices Ohio’s New Learning Standards

Make sense of problems and persevere in solving them
Reason abstractly and quantitatively
Construct viable arguments and critique the reasoning of others
Model with mathematics
(cont.)
Common Core State Standards Mathematical Practices
Ohio’s New Learning Standards (cont.)

Use appropriate tools strategically

Attend to precision

Look for and make use of structure

Look for and express regularity in repeated reasoning
# Mathematics Coaching Preparation by Year

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Learning as students. Content, thinking, learning. Learning as teachers. Content, student thinking, pedagogy. Learning as coaches. All of the above plus working with peers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 2</td>
<td>Deeper Content Knowledge Conceptual &amp; Procedural. Deeper Student Thinking Assessment. Deeper Learning, Pedagogy and Coaching.</td>
</tr>
<tr>
<td>Year 3</td>
<td>Advanced Coaching. Advanced Leadership. Independent Learning and Leading.</td>
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</tbody>
</table>
Program Emphases by Year

- Year One
- Year Two
- Year Three
MCP Implementation Fidelity

Top 10 schools with highest gains.
Bottom 10 schools with lowest gains.
Coach reports, site visitor reports, facilitator reports.
Student mathematics achievement gain scores.
MCP Schools Having the Greatest Amount of Growth

Strong alignment with MCP protocol
Strong leadership capabilities
Administrative support
Knowledge of coaching, mathematics, and pedagogy
Focus on MCP Instructional Principles
## Coaching Characteristics Prevalent in the Most- and Lacking in the Least- Improved MCP Schools

| Alignment with Assurances | • One building - one coach.  
• Working with 3 – 4 teachers at a time.  
• Co-teaching/teaming more often than modeling.  
• Providing embedded professional development.  
• Support of Principal for coach role and MCP model.  
• Few additional non-coaching activities.  
• Consistent pre- and post- conferences. |
|---------------------------|-----------------------------------------------------------------------------------|
| Leadership                | • Consistent attendance and participation in PD sessions and small group meetings with MCP Facilitators.  
• Willingness to promote expected role of coach in the school.  
• Participation in other leadership roles within the school: Building Leadership Team; School Improvement Team; Intervention Assistance Team. |
| Administrative Support                  | - Strong administrative support to implement the program.  
|                                        | - Principal understanding of MCP goals, approaches, and required aspects of coaching. |
| Professional Knowledge and Coaching Role | - Average and above average measures on content, pedagogy  
|                                        | - High comfort level with the program.  
|                                        | - Analyzes student work and assessment data with teachers.  
|                                        | - Pursues implementing MCP coaching model. |
| Focus on OMCP Instructional Principles  | - Student thinking.  
|                                        | - Mathematical knowledge.  
|                                        | - Questioning techniques.  
|                                        | - Using process standards.  
|                                        | - Using rich problems. |
Roles of MCP Team Members

MCP Project Staff
Facilitators
Coaches
Principals
Teachers
Site Visitors
Problem Sets

What are they?

What is the purpose for using them?

Administering the problem sets.

The importance of documenting students’ authentic responses.
What Are the Problem Sets?

Each set consists of five problems
Each grade level has a specific problem set
Each problem addresses one of the five content standards identified by NCTM and ODE

Number and Number Sense
Patterns, functions and Algebra
Measurement
Geometry and visualization
Data analysis
Process Standards

Each problem provides children an opportunity to demonstrate their proficiency with Process Standards identified by NCTM and ODE

Communication
Connection
Reasoning
Multiple representation
Problem solving
What Is the Purpose for Using the Problem Sets?

Provide informative qualitative information on children’s problem solving skills.

Provide evidence of the students’ growth over time with an emphasis on the mathematical processes.

Provide illustrations of authentic ways that children might solve problems and their thinking.

They are equally as valuable to teachers.
Administering the Problem Sets

Give students time to think about the problem and decide on a strategy they find useful.

Advise students to show all their work; recording only a final answer is not enough.

Reassure students that getting the “right” answer is not the focus of the task.

(cont.)
Administering the Problem Sets (cont.)

Neatness is not of importance; we learn from how children organize their ideas.

What we are interested in is learning HOW children solve problems in each area, the methods they use and how they communicate their ideas in writing.
Why Authenticity of Students’ Responses Is Crucial

They allow us to tell how students' mathematical processing changes over time. They can greatly influence what they do in class and enhance student learning.
The Rope Problem

Jessica needs to buy a rope for a school project. She needs lengths of one-fourth, three-fifths foot, and two-thirds foot. How much rope does she need in all?
Sample Response 1

1. Jessica needs to buy rope for a school project. She needs lengths of one-fourth foot, three-fifths foot, and two-thirds foot. How much rope does she need in all?

\[
\frac{1}{4} + \frac{3}{5} + \frac{2}{3}
\]

\[
= \frac{15}{60} + \frac{36}{60} + \frac{40}{60}
\]

\[
= \frac{91}{60}
\]
Sample Response 2

1. Jessica needs to buy rope for a school project. She needs lengths of one-fourth foot, three-fifths foot, and two-thirds foot. How much rope does she need in all?

Jessica need to buy a school rope about like three fifth foot long or two thirds foot long she need to buy 5 ropes because every rope is about three five feet long or two three feet long so she need to buy 5 ropes so a lot of people can get in the rope so they can all be friends and all feet in the rope all together so 5 is how many ropes she have to buy.
1. Jessica needs to buy rope for a school project. She needs lengths of one-fourth foot, three-fifths foot, and two-thirds foot. How much rope does she need in all?

\[
\frac{1}{4} + \frac{3}{5} + \frac{2}{3} = \frac{6}{10} + \frac{10}{10} = \frac{16}{10}
\]

\[
\frac{20}{60} \times \frac{3}{60}
\]
Sample Response 4

1. Jessica needs to buy rope for a school project. She needs lengths of one-fourth foot, three-fifths foot, and two-thirds foot. How much rope does she need in all?

\[
\begin{align*}
4 & \quad 8, 12, 16, 20, 24, 28, 32, \\
5 & \quad 5, 10, 15, 20, 25, 30, 35, 40, \\
3 & \quad 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36
\end{align*}
\]
Roles of MCP Team Members

MCP Project Staff
Facilitators
Coaches
Principals
Teachers
Site Visitors
Lunch Logistics
Lunch!
Travel Reimbursement Logistics
Data Collection and Use in the Coaching Process

LAMP for teachers
Coaches trained in analysis – not scoring
Confidentiality is key

LAMP for coaches
Analysis by selves and MCP

Coach and teacher work in schools
Site Visitor Reports
Site Visitors

Kristi Graves

Laurie Hunker
About the Site Visitors

Educational Background

Experience in Education
Mathematics
Curriculum & Instruction
Administration
Observation

Involvement with MCP
The Need for Site Visits

Qualitative Snap Shots
Two from Site Visitors
Two from Facilitators

Communication

Accountability
During the Site Visit

Meeting with the Coach & Teacher
Pre-conference
Classroom Observation
Post-conference

Meeting with the Principal
Informal Discussion about the MCP Partnership
Session Overview

A Glimpse into the Data…

What are the common themes?
How can we use the findings when planning for implementation?
Need for the Program

Professional Development for the Coach

“Columbus is doing a great job preparing us to coach.”

“The professional development from OSU and the support from facilitators and other people in the group has been phenomenal. This is more support than I have ever had in my previous years as a coach.”
Need for the Program

Professional Development for the Coach

“The knowledge [the coach] is bringing back from Columbus pd sessions is great.”

Doing things I “haven’t ever done or wouldn’t have done if it wasn’t for the MCP ways of teaching.”

“My ways of teaching are changing and the student learning is changing. It is all positive.”
Professional Development

School-wide

OAA, Scoring, Transitioning to PARCC, Transitioning to CCSS, Mathematical Practices, Adapt a Task, Article Discussions, Curriculum, Assessments, Data Analysis

Job-embedded Coaching (HQPD)

“A little different in each room”

“Different places in the process with different teachers.”

“With each teacher, there are important things to be working on.”

A DELICATE Balance
Job-Embedded Coaching

Pre-conferencing
Modeling Specific Strategies
Co-teaching*
Debriefing
An Evolution of Practices…
Traditional Instruction

Structured
Limited Student Involvement
Page-by-Page

Limited Expectations for Learning
Basic, Low-Level Problems
Replication
Evolving Practices

“Change is difficult. The longer you do something, the harder it is to change. He is very patient and gives us small bits at a time, encouraging us and celebrating our accomplishments without making us feel overwhelmed.”
Evolving Practices: Embracing a Conceptual Approach

“I am seeing teachers moving from a pencil/paper rut. Teachers are comfortable with her [the coach], and feel safe asking her questions and trying new things.”

Teachers are “seeing differences in providing content and students having a conceptual understanding.”

“She was very traditional. She is now on board with the MCP way.”
“I use to do all of the work, now I am letting the students do the work and become engaged in their learning.”

“My room is less teacher directed. I am using more hands-on. It takes more time, but in the end, the methods are far more effective and memorable.”
Alignment to the Mathematical Practices

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Ex: Making sense of problems and persevering in solving them

“Kids are experiencing math, not hearing it.”

Inquiry-based, Hands-on Manipulatives and Tools

“The kids are being challenged and that’s how they learn.”

“My thinking has changed. I can see that these strategies/practices are beginning to come out in all I do. It is so weird.”
“I love the MCP way because when I grew up there was only one way to do math and that was the way the teacher taught it.”

“No longer asking what is the answer to number one, number two but how did you get that… we are moving beyond having one possible solution.”

“Present as many ways as you can.”

“Can you show your work in another way?”
Ex: Constructing viable arguments and critiquing the reasoning of others

“I am learning to ask more questions and let kids do the explaining.”

“Students can explain better to each other and help each other. Students are able to own up to their answers and it is easier for them to remember” than when taught by the teacher.
Incorporating the Process Standards: Reasoning

“There is no right or wrong way, as long as they can justify their thinking.”

“How do you know?”

“Show us.”

“Prove it.”

“Convince me.”

“I can prove you wrong!”
Making Connections

Problem Solving
Thinking
Strategies
Representations
Concepts
Seeing the Big Picture, Overtime

“She can see the vertical alignment and build a continuum of learning in our building.”
Greatest Accomplishments

Opening Doors

“One teacher has him, and then everyone wants him.”

“This has worked beautifully. Some have originally sought me out, and others by the word of mouth.”

“The one teacher that is most outspoken in the building… one that would definitely not be for the MCP way… she has the most buy-on… the program has spoken for itself and the approach.”
Greatest Accomplishments

Ah-ha’s on Strategies

“We are beginning to see a carryover of these principles into other subjects.”

“Greater emphasis is being placed on the process.”

“When teachers come back to you, and are still talking the talk, and doing stuff even when I’m not there.”
Greatest Accomplishments

Increased Expectations

“At first, students were frustrated because no one was going to help them, or give them the answer. Now it has evolved into students thinking outside the box, using a variety of strategies building confidence levels”

Moving from an “I can’t to a yes, you can” culture.
Greatest Accomplishments

Student Engagement/Excitement
Students who “normally won’t talk, speak up.”
“Drag them from math”
“Just five more minutes”
“Attitudes turn around”
Fewer discipline issues
Greatest Challenges/Barriers

Role Perceptions
Need for Clearly Communicating and Implementing Roles
Aligned with the Position

Assignments
“too many hats,” “spread a little thin”
Coaches “need to be in one building.”
Greatest Challenges/Barriers

**Time**

Planning & Debriefing

**Scheduling**

“Everyone has math at the same time in the building.”

“Schedules had already been developed. And, many teachers were teaching math at the same time. And, they didn’t want to change their schedule for the year.”
The Power of The Program

From Implementing to Advocating…

“I hope to continue the program. If they had taught math like this when I was a student, I would have liked it more.”

“MCP is not just a luxury, but a necessity.”

“Every teacher needs a coach.”
ODE/MCP Assurances

Ann Carlson, ODE
Questions?