Contributing to a Culture of Coaching for Mathematical Practices

John Sutton
Arlene Mitchell
Clare Heidema

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Research Contributors

Principal Investigators
Elizabeth A. Burroughs, Montana State University
John Sutton, RMC Research Corp.
David Yopp, University of Idaho

Contributing Researchers
Mark Greenwood, Megan Higgs, and Jennifer Luebeck (Montana State University);
Clare Heidema, Dan Jesse, Brandie Good, and Arlene Mitchell (RMC Research Corp.)

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Welcome!

In this session, you will learn about:
- a definition of a mathematics coach;
- the multiple roles of a mathematics coach;
- characteristics of a coach;
- the instructional coaching cycle; and
- setting expectations to create a culture of coaching for your school.
Introductions

- Pair up with someone, preferably someone you do not know yet.

- Spend **two** minutes introducing yourselves to each other. Jot down notes if you want.
  
  - Name
  - School & Grade Level(s)
  - Something that probably makes this person unique in this room

- (If in a workshop setting) When the two minutes are up, introduce your partner to the full group.
Rationale and Coaching Roles
Mathematics classroom coaching is gaining popularity as a school-based effort to increase teacher effectiveness and student achievement.
Coaching is a promising model for enhancing K-8 mathematics teachers’ abilities to provide quality mathematics education.

Coaching can be implemented at any point in a teacher’s career (as opposed to mentoring).
The National Mathematics Panel (2008) reports that schools across the nation are using mathematics specialists, including mathematics coaches.

What makes for effective coaching in mathematics is being researched at various sites across the United States.
Mathematics Coaching

- Studies are demonstrating what types and depths of knowledge effective mathematics coaches hold.

- Implementing mathematics coaching involves cost and logistical effort for schools and districts.
How do you define “coaching?”

What images and phrases come to mind when you think of a coach?

Reflect for a few minutes… list your ideas… then we’ll share thoughts as a group.
Coaches have many names…

…and many responsibilities.
Ten Roles for Coaches
(Killion, 2009)

- Data coach
- Resource provider
- Mentor
- Curriculum specialist
- Instructional specialist
- Classroom supporter
- Learning facilitator
- School leader
- Catalyst for change
- Learner
Underneath the titles and tasks, there are certain characteristics that are shared by all good coaches.
Characteristics of a Coach

- Stands alongside teacher.
- Doesn’t do the work for teacher.
- Supports teaching efforts, even if he/she is not necessarily an “expert.”
- Knowledgeable of classroom situation, its challenges and how to overcome them.
What teachers appreciate about coaches . . .

- Oversight of curriculum fidelity and pacing
- Gathering, analyzing, and sharing data
- Finding resources and answering questions
- Team building and facilitating discussion
- Helping with parents, resources, administration
- Reducing the workload
What teachers desire from coaches . . .

- One-on-one work
- Observation and feedback
- More observation and feedback
- Modeling lessons and strategies
- Help with: differentiation, cultural relevance, student engagement, assessment
A mathematics coach is an on-site professional developer who enhances teacher quality through collaboration focusing on research-based, reform-based, and standards-based instructional strategies and mathematics content that includes the why, what, and how of teaching mathematics.
COACHING KNOWLEDGE DOMAINS

Mathematics Content Knowledge

Knowledge of Student Learning

Coaching Knowledge

Knowledge of Teacher Learning
Coaches know about mathematics content and . . .

- Communication
- Student Learning
- Teacher Practice
- Teacher Learning
- Leadership
- Assessment
- Teacher Development

Coaching Knowledge

Relationships
**Effective Coaching Practice**

A coach should:

- Ask reflective questions
- Provide feedback
- Share materials and resources
- Maintain confidentiality
A coach should use a coaching cycle:

- Gather information before the lesson
- Observe a complete lesson
- Collect and document evidence
- Debrief and reflect after the lesson
BOUNDARIES OF COACHING

A coach generally does not:

- Evaluate teachers.
- Take over during a lesson.
- Impose specific lessons or instructional strategies.
- Tutor struggling students.
- Perform the support services of an aide.
To make the most of coaching…

- …focus on instructional issues.
- …focus on mathematics content.
- …follow a coaching framework.
- …follow a coaching schedule.
- …work collaboratively with your teachers and school administrator(s).
The coach is not the only one responsible for partnership, relationship, and collaboration.

Coaches are only as effective as their teachers will allow.
COMPLEXITY OF COACHING

- Coaching is a collaborative process that is done with teachers, not to teachers.

- Coaching is a joint effort from both the coach and the teacher(s) involved.

- Coaching support is useful only if the teacher and coach are prepared, and willing to listen, internalize, and respond accordingly.
A commitment to creating a collaborative and rewarding coaching relationship will help maximize the benefits of coaching.

- A wise consumer of coaching makes the most of this educational investment.
- Consumer of coaching addresses the teacher’s role in coaching process.
Discuss with a neighbor:

**What might be the expectations from teachers who are being coached in order to make coaching effective and collaborative?**
CONSUMER OF COACHING FRAMEWORK

- Feedback
- Reflection
- Classroom expectations
- Content
- Structure
- Communicating needs
Effective coaching requires feedback.

An effective consumer of coaching asks the coach for targeted feedback.
Coaching is a reflective process.

An effective consumer of coaching is open to reflection and is an active participant in the reflective process.
Effective coaching requires teachers to communicate their expectations for coaches as the lesson transpires.

An effective consumer of coaching tells their coach what kind of classroom interaction he/she desires.
Effective coaching is content-based.

An effective consumer of coaching is willing to examine her or his own mathematics content knowledge.
Effective coaching is structured and involves at least three components:

- a pre-lesson conference,
- a lesson observation,
- and a post-lesson conference.

*Effective consumers of coaching help coaches schedule the 3-part cycle.*
Effective coaching requires teachers to communicate their needs.

An effective consumer of coaching tells the coach what he/she needs.
Consumers of coaching are able to:

- assess their own needs;
- assess their performance;
- ask for help from others;
- provide context as needed;
- listen to and hear ideas;
- overcome anxious feelings;
- assess and communicate needs;
- assist in scheduling.
Coaches and teachers need to keep administrators informed of their activities and help them identify ways to be supportive.

How can coaches and administrators (and other school personnel) support each other in the mathematics coaching process?
Administrator Support

- Acknowledge the significance and value of coaching to improved practice and student learning.
  - Advocate to the school community for coaching as a professional learning model.

- Support time commitment for coaching.
  - Ask about progress and what each are learning, in general terms.

- Communicate clear expectations to everyone for shared responsibilities.
  - Cultivate a positive, productive relationship among teachers and coaches.
# Culture of Coaching

<table>
<thead>
<tr>
<th>School Leaders</th>
<th>Mathematics Coach</th>
<th>Teacher</th>
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<tbody>
<tr>
<td>- Commit to implement coaching as a professional development model</td>
<td>- Ask reflective questions of teachers</td>
<td>- Communicate specific instructional needs to coach</td>
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<td>- Set aside time for coaching within the daily schedule</td>
<td>- Provide feedback to teachers</td>
<td>- Ask for specific types of support from the coach</td>
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<td>- Share goals and beliefs of coaching to entire school</td>
<td>- Share instructional materials and resources</td>
<td>- Listen to hear ideas being presented</td>
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<td>- Articulate clear expectations for coaching</td>
<td>- Maintain confidentiality with teachers about coaching sessions</td>
<td>- Take shared responsibility for cultivating a positive and productive coaching relationship</td>
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<tr>
<td>- Budget appropriate resources (time and personnel) to support coaching</td>
<td>- Use a structured approach for coaching:</td>
<td>- Set aside appropriate amount of time for coaching sessions</td>
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<td>- Make mathematics coaching a priority</td>
<td>- Gather information before the lesson</td>
<td>- Be open to try new instructional practices</td>
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<td>- Observe complete lesson</td>
<td>- Make mathematics coaching a priority</td>
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<td>- Collect and document evidence from lesson</td>
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Coaching and Mathematical Practices – An Example

- Match vignettes to math practice (no large group discussion on placement) - Matching cards to SMP
- Design chart for SMP
  - Teacher action
  - Student action
  - Growth mindset
- Carousel walk to add perspectives or ask questions to clarify
#3. Construct viable arguments and critique the reasoning of others.

Teacher:
- ask clarification questions
- require explanation & justification
- select appropriate problem that will create the desired discussion
- use clear and consistent academic vocabulary

Student:
- disagree appropriately
- listen to others' arguments before responding
- successfully restate and "add on"
- make conjectures

Evidence:
- accepting peer correction
- compare efficiency of solutions
- be able to explain someone else's solution
- determine other situations that might apply
Posting Mathematical Practices

(a) Attend to precision

**Teacher**
- model precisely
- encourage & expect class discussions including routines for respectful disagreement
- math word wall use
- trial & error activities
- high expectations for student work

**Student**
- use clear definitions when speaking & writing
- use appropriate symbols
- accurate use of measures, labels, symbols
- show multiple representations
- careful formulated explanations
- calculate accurately

**Mindset**
- students willing to take risks and share thinking
- willing to re-do work or keep working
- perseverance
- check the reasonableness of answers

**(b) Attend to precision**

**Teacher**
- model precisely
- encourage & expect class discussions including routines for respectful disagreement
- math word wall use
- trial & error activities
- high expectations for student work

**Student**
- use clear definitions when speaking & writing
- use appropriate symbols
- revision
- accurate use of measures, labels, symbols
- show multiple representations
- careful formulated explanations
- calculate accurately

**Mindset**
- students willing to take risks and share thinking
- willing to re-do work or keep working
- perseverance
Posting Mathematical Practices

7 Look for and make use of

Teacher
- select worthwhile appropriate problem situations
- model numeric concepts geometrically
- provide manipulatives
- time to think/ explore talk
- encourage explanation
- opportunities to collaborate
- present slight variations of an initial problem
- recognize students prior knowledge

Student
- try multiple strategies
- perseverance
- test hypotheses
- think flexibly
- model with appropriate tools
- build on prior knowledge
- collaboration
- explaining demonstrating

Structure
- Growth Mindset
- trying multiple strategies
- persevereance
- test hypotheses
- think flexibly
- provide manipulatives
- time to think/ explore talk
- encourage explanation
- opportunities to collaborate
- present slight variations of an initial problem
- recognize students prior knowledge
- think aloud mathematical connections
Coaching and Mathematical Practices – An Example

- Videos -- talk about SMP #4 (model)
- EDC descriptions for SMP
  - Tool: Student “look for” card
  - Rubric for SMP implementation
- Design chart for SMP
- Revisit vignette cards for placement
- Large group discussion
We appreciate you joining us today!
Thank you!

http://www.math.montana.edu/~emc

John Sutton, sutton@rmcres.com
Arlene Mitchell, mitchell@rmcres.com
Clare Heidema, cheidema@comcast.net