

Becoming a Consumer of Mathematics Coaching: Expectations and Responsibilities

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Research Partners



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SESSION AGENDA

- Overview of Examining Mathematics Coaching (EMC) project
- Coaching practices
- Framework for consumers of coaching
- Tools to maximize coaching effectiveness

Who is in the Audience?

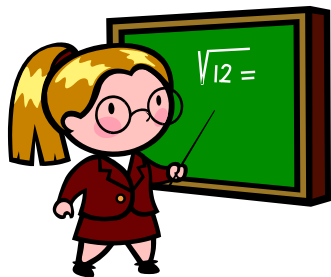
- Classroom Coach ...
- Teacher being coached....
- Administrator
- Interested in coaching ...



MATHEMATICS COACHING

Mathematics classroom coaching is gaining popularity as a school-based effort to increase teacher effectiveness and student achievement.



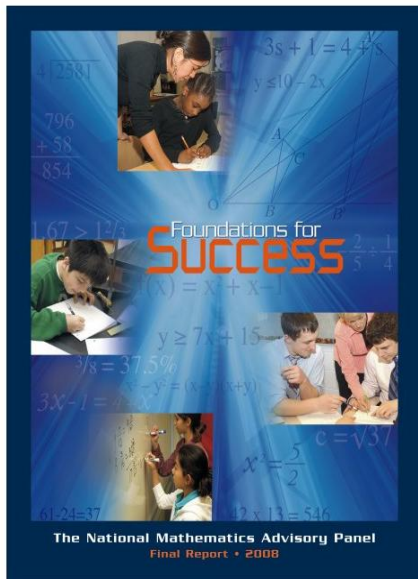


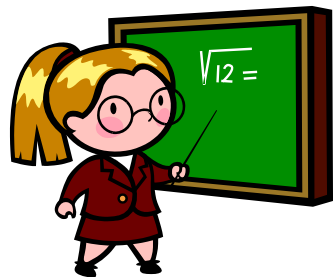
WHY STUDY COACHING?

- Coaching is a promising model for enhancing mathematics teachers' abilities to provide quality mathematics education.
- Coaching can be implemented at any point in a teacher's career (as opposed to mentoring).

WHY STUDY COACHING?

The National Mathematics Panel (2008) reports that schools across the nation are using mathematics specialists, including mathematics coaches, yet there is **limited research proving what makes coaching effective.**

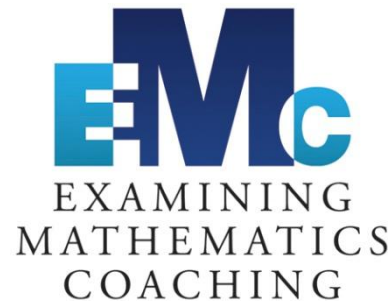




WHY STUDY COACHING?

- There is limited understanding of coaching effectiveness, especially in mathematics.
- Moreover, no studies have demonstrated what types and depths of knowledge effective coaches hold.
- At the same time, implementing coaching involves considerable cost and logistical effort for schools and districts.

EXAMINING MATHEMATICS COACHING PROJECT



EMC is a five-year research and development project funded by NSF examining the effects of a coach's “knowledge for coaching” on a diverse population of K-8 teachers.



CONTRIBUTORS & OTHER PERSONNEL



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- James Burroughs, Project Director



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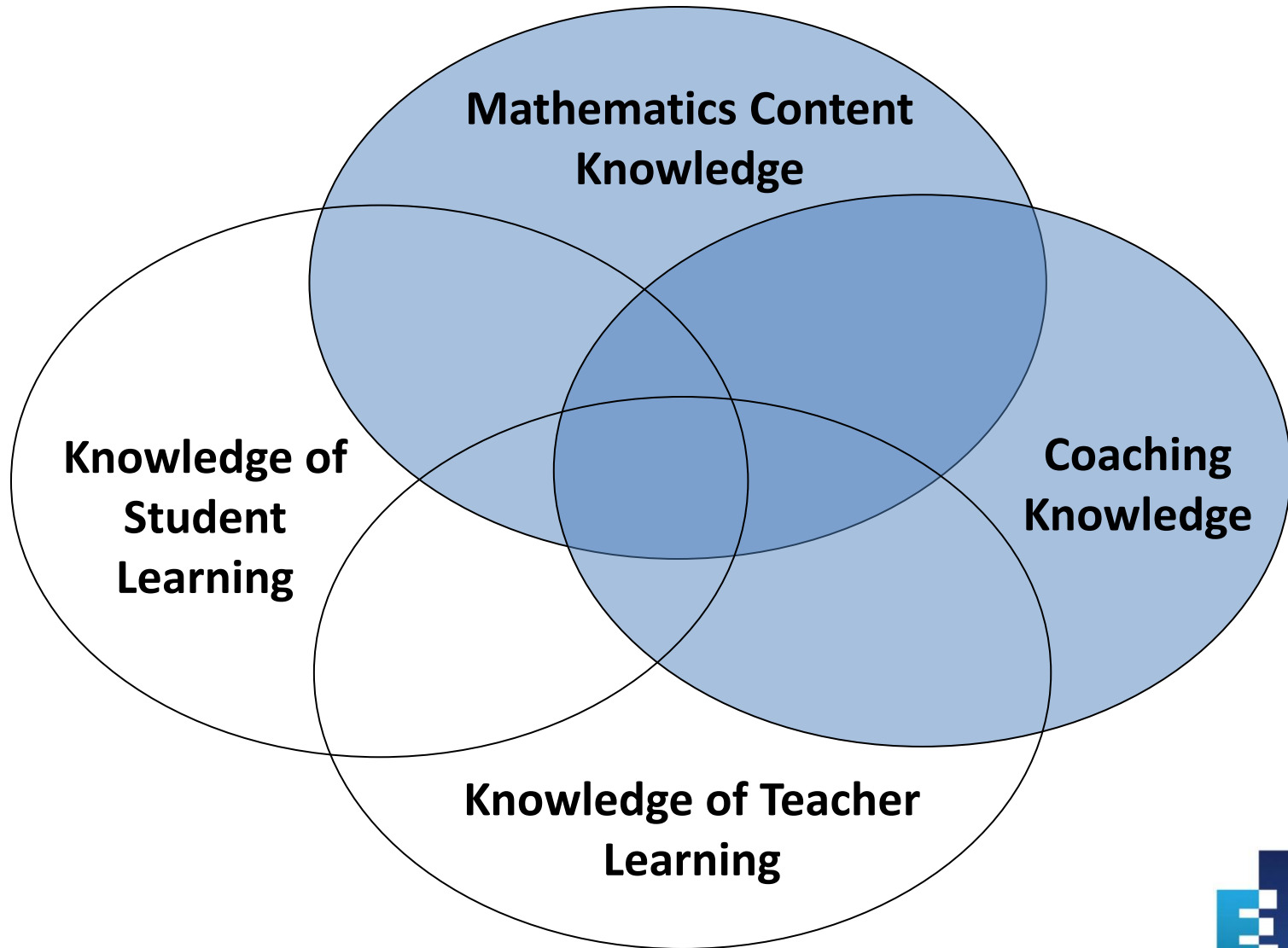
Funded under *NSF Award No. 0918326. Any opinions expressed herein are those of the authors and do not necessarily represent the views of the National Science Foundation.*



THE EXAMINING MATHEMATICS COACHING PROJECT (EMC)

- Investigating knowledge that contributes to successful coaching in two domains:
 - Coaching knowledge
 - Mathematics content knowledge
- The influence of these knowledge domains is examined in two ways:
 - investigating correlations between assessments of coach and teacher knowledge and practice in each domain.
 - investigating causal effects of targeted professional development for coaches.

KNOWLEDGE DOMAINS



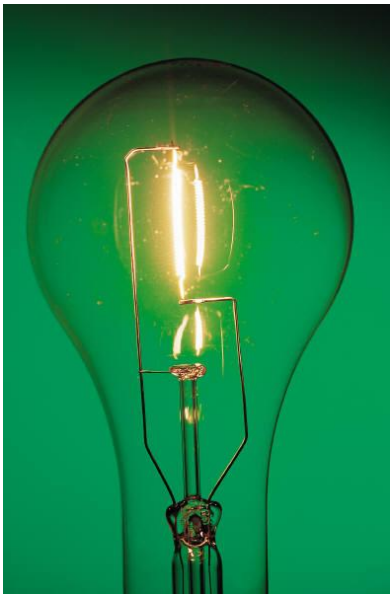


EMC RESEARCH HYPOTHESIS

- Effectiveness is linked to several domains of knowledge.
- Coaching knowledge and mathematics content knowledge contribute significantly to a coach's effectiveness.
- Effectiveness is measured by the positive impact on teacher practice, attitudes, and beliefs.

MATHEMATICS COACHING DEFINED

With the person next to you, or with a couple of people around you, take a moment and share your thoughts about the skills a mathematics coach needs by completing the following sentence starter:



A mathematics coach is ...

Ten Roles for Coaches

(Killion, 2009)



- Data coach
- Classroom supporter
- Resource provider
- Learning facilitator
- Mentor
- School leader
- Curriculum specialist
- Catalyst for change
- Instructional specialist
- Learner

MATHEMATICS COACHING DEFINED

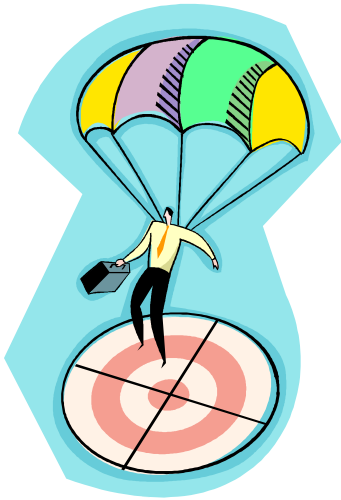
A mathematics coach is an **on-site professional developer** who enhances teacher quality through **collaboration** focusing on **research-based, reform-based, and standards-based instructional strategies and mathematics content** that includes the **why, what, and how** of teaching mathematics.



EFFECTIVE COACHING PRACTICE

A coach should:

- Ask reflective questions
- Provide feedback
- Share materials and resources
- Maintain confidentiality
- Use a coaching cycle:
 - Gather information before the lesson
 - Observe a complete lesson
 - Collect and document evidence
 - Debrief and reflect after the lesson



EMC COACHING MODEL

Coaching Cycle	<ul style="list-style-type: none">•Pre-conference of at least 15 minutes focused on planning for upcoming lesson with emphasis on teacher's stated goals, objectives, and needs•Observation or model of a lesson•Post-conference of at least 30 minutes reflecting on planned teacher actions <p>Coaching will focus on aspects of standards-based teaching as defined by NCTM process and content standards, not on generic pedagogy such as classroom management</p>
Content Focus	Number and Operation; Ratio and Proportion
Frequency	Three teachers per coach provide data points for research. Teachers are coached at least 8 times per academic year with at least four of those times within the content focus.
Quality Assurances	<p>Coach and teacher reflection instruments, coach skill inventory, and teacher needs inventory ensure consistent implementation of coaching across schools</p> <p>Self-identified teacher needs are used in planning and goal setting, and progress toward these goals is monitored and reflected on by coaches.</p>

BOUNDARIES OF COACHING

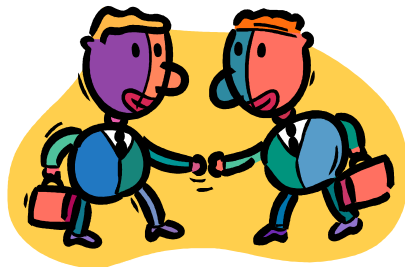
A coach generally does not:

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



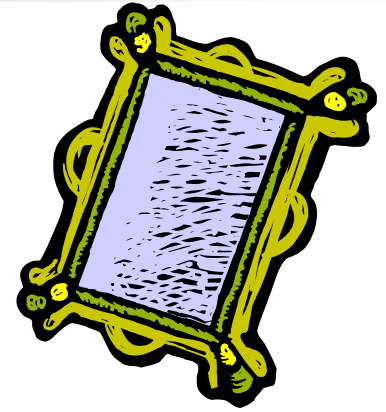
COMPLEXITY OF COACHING

- 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.





WHAT'S MISSING FROM THE PICTURE?



- Burden of the **partnership, relationship,** and **collaboration** is on the coach only.
- Coaches are only as effective as their teachers will allow.



BECOMING CONSUMERS OF COACHING

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.

BECOMING CONSUMERS OF COACHING

Discuss with a neighbor:

*What might be the expectations
for teachers
who are being coached
in order
to make coaching
effective and collaborative?*



CONSUMER OF COACHING FRAMEWORK



- Feedback
- Reflection
- Communicating needs
- Classroom expectations
- Content-based
- Structure

FEEDBACK

- Effective coaching requires feedback.

An effective consumer of coaching asks the coach for targeted feedback.



REFLECTION

- Coaching is a reflective process.

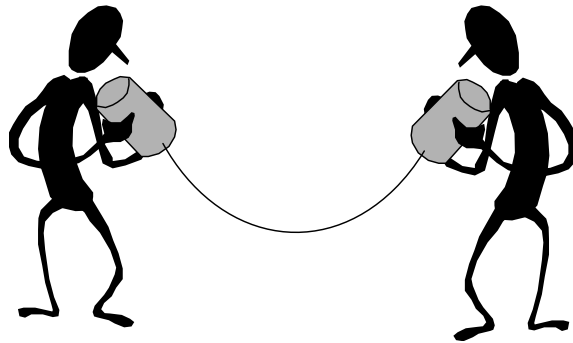
An effective consumer of coaching is open to reflection and is an active participant in the reflective process.



COMMUNICATING NEEDS

- Effective coaching requires teachers to communicate their needs.

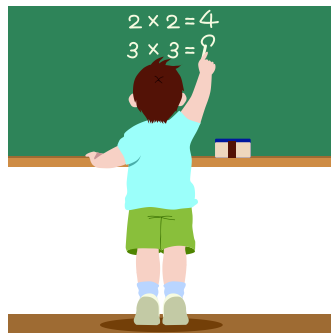
An effective consumer of coaching tells the coach what he/she needs.



CLASSROOM EXPECTATIONS

- Effective coaching requires teachers to communicate their expectations for coaches as the lesson transpires.

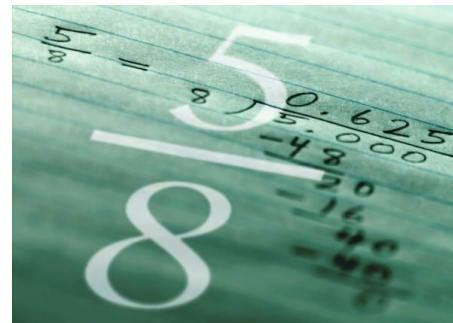
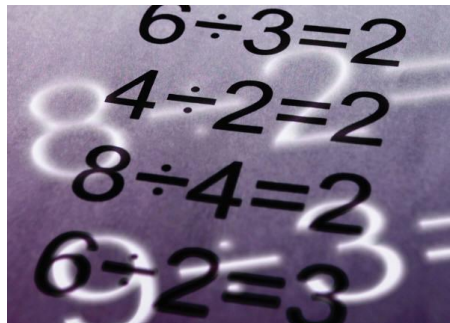
An effective consumer of coaching tells their coach what kind of classroom interaction he/she desires.



CONTENT

- Effective coaching is content-based.

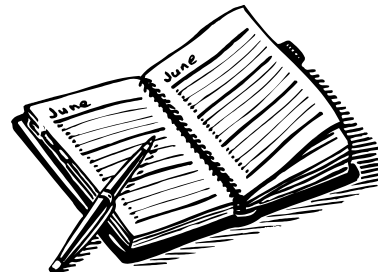
An effective consumer of coaching is willing to examine her or his own mathematics content knowledge.



STRUCTURE

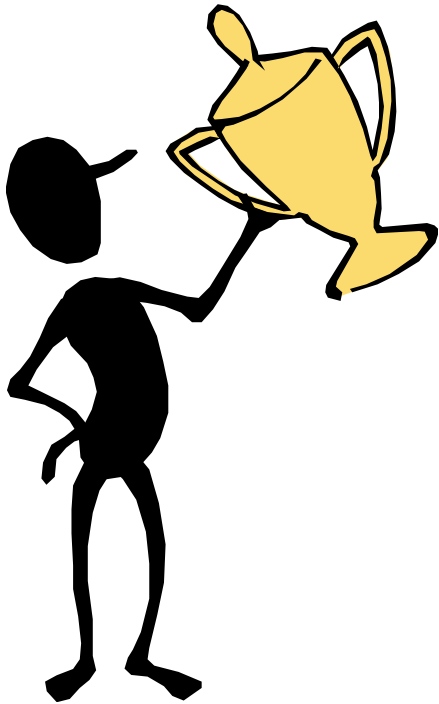
- Effective coaching is structured and involves at least three components: a pre-lesson conference, a lesson observation, and a post-lesson conference.

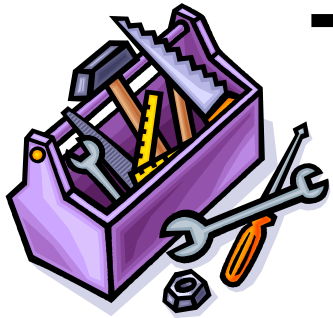
Effective consumers of coaching help coaches schedule the 3-part cycle.



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.





TOOLS TO SUPPORT COACHING

The Examining Mathematics Coaching (EMC) project has developed and refined tools to help coaches and teachers in the coaching process.

- Coaching Skills Inventory
- Teacher Needs Inventory
- Reflections (Coach and Teacher)

EMC

COACHING SKILLS INVENTORY

...is intended to measure
a coach's perspective
on his/her own
level of effectiveness or confidence
with various coaching responsibilities.





EMC

COACHING SKILLS INVENTORY

Areas explored include:

- Coach/Teacher relationships
- Coaching skills
- Mathematics content
- Mathematics-specific pedagogy
- General pedagogy
- Background & practices as an educator

EMC COACHING SKILLS INVENTORY

I. Coach/Teacher Relationships

	Not at All Effective				Very Effective
	1	2	3	4	5
1. How effective do you feel observing lessons and giving teachers feedback?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. How effective do you feel creating environments where teachers reflect openly on their instructional practices?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. How effective do you feel helping teachers set goals and objectives aimed at improving their instruction?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. How effective do you feel creating an environment of open discussion and constructive criticism with teachers?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

EMC

TEACHER NEEDS INVENTORY

...is designed to help the teacher take ownership of the coaching process.

The responses are used by the coach as a tool to help focus the coaching and increase effectiveness.





EMC

TEACHER NEEDS INVENTORY

Areas explored include:

- Teaching conceptual/inquiry-based lessons
- Classroom environment
- Conceptual understanding of mathematics
- Mathematics content knowledge
- Classroom management

EMC TEACHER NEEDS INVENTORY

IV. MATHEMATICS CONTENT KNOWLEDGE

	Not at all Confident					Regarding this topic, ...			
	1	2	3	4	5	Very Confident	<i>I would not like to partner with my coach.</i>	<i>I'm not sure I would like to partner with my coach.</i>	<i>I would like to partner with my coach.</i>
15. How confident are you with the mathematics you teach?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. How confident are you with the mathematics beyond the mathematics that you teach, meaning the next grade level?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. How confident do you feel planning lessons that include fraction concepts?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. How confident do you feel planning lessons that include number sense and operations?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

EMC TEACHER NEEDS INVENTORY

How confident do you feel using cooperative learning?

Not at all
confident

Very
confident

1

2

3

4

5

I would not like to partner with coach on this topic.	Not sure if I would like to partner with coach on this topic.	I would like to partner with coach on this topic.
[]	[]	[]

EMC COACH & TEACHER REFLECTIONS

... are tools for monitoring and logging coaching interactions.

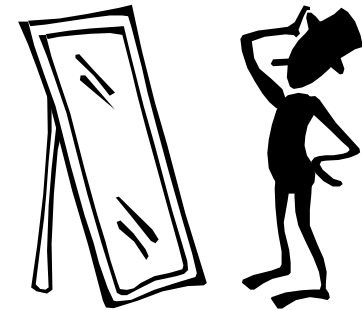
- Quantity, quality, and duration of coaching sessions
- Coaches and teachers' perceptions of coaching's impact on instruction



EMC COACH & TEACHER REFLECTIONS

Areas explored include:

- Interactions with the coach / teacher
- Frequency of various activities:
 - pre-lesson conference,
 - observation,
 - post-lesson conference,
 - modeling a lesson, etc.



EMC COACH & TEACHER REFLECTIONS

Areas also explored:

- Mathematics content
- Mathematical concept and inquiry
- Classroom environment/culture
- Reflection and planning
- Impact on teacher practice



EMC COACH REFLECTION & IMPACT

Mathematics Content

	Not at All				To a Great Extent
	1	2	3	4	5
a. The teacher and I discussed significant and worthwhile mathematical content.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. The teacher and I discussed mathematical content at the grade level(s) she/he teaches.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. The teacher and I discussed ways to increase the level of cognitive demand of the mathematical content being taught.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. The teacher and I discussed mathematical content beyond the grade level(s) she/he teaches.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

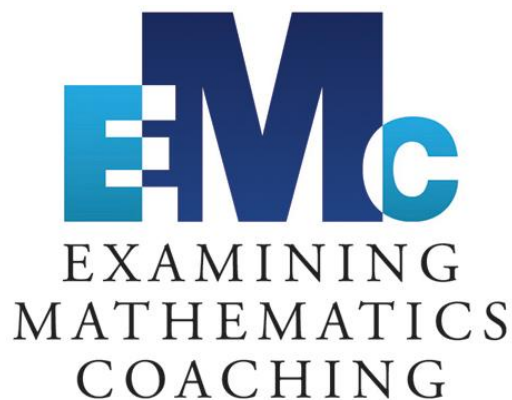
EMC TEACHER REFLECTION & IMPACT

Reflection and Planning

	Not at All				To a Great Extent
	1	2	3	4	5
o. My coach and I set goals and objectives aimed at implementing ideas and addressing issues we discussed.	0	0	0	0	0
p. My coach and I were reflective about my students' learning.	0	0	0	0	0
q. My coach and I were reflective about my teaching practices.	0	0	0	0	0

BECOMING A CONSUMER OF MATHEMATICS COACHING: EXPECTATIONS AND RESPONSIBILITIES

- Questions ???
 - Insights ...
 - Ideas ...
- Comments ...



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