Louisiana Department of Education
Mentor Teacher Training

Module 3:
Understanding Instructional Shifts in Mathematics

Elementary Cohort

Facilitated by Learning Forward

Module 3 Outcomes

- Describe key shifts in mathematics standards and instruction (rigor, focus, and coherence), and how these shifts guide decisions about teaching and learning.
- Use effective questioning techniques in conversations related to mentees' growth and development.
- Plan and implement demonstration teaching as a coaching support.
- Articulate and plan for multiple models of co-teaching with mentees.

Module 3 Key Points

- The key shifts guide decisions about teaching and learning of the Louisiana Student Standards.
- Mentors employ demonstration teaching and co-teaching to support mentee growth and development.
- Mentors apply effective questioning skills to promote mentee reflection on practice.
- Mentors adapt their supports to align with mentee needs.

Module 3 Agenda

Morning	**Afternoon**
Welcome	Questioning
Reconnect with Module 2	Demonstration teaching
Key shifts in mathematics	Break
Rigor and focus	Co-Teaching
Coherence	Wrap-up/survey

Agreements

Make the learning meaningful
Engage mentally and physically
Notice opportunities to support the learning of others
Take responsibility for your own learning
Own the outcomes
Respect the learning environment of self and others

DEPARTMENT of EDUCATION
Louisiana Believes

learningforward
THE PROFESSIONAL LEARNING ASSOCIATION

National School Reform Faculty

Harmony Education Center

www.nsrfharmony.org

Text Rendering Experience

Developed in the field by educators affiliated with NSRF.

Purpose

To collaboratively construct meaning, clarify, and expand our thinking about a text or document.

Roles
A facilitator to guide the process.
A scribe to track the phrases and words that are shared.

Set Up
Take a few moments to review the document and mark the sentence, the phrase, and the word that you think is particularly important for our work.

Steps
1. First Round: Each person shares a *sentence* from the document that he/she thinks/feels is particularly significant.

2. Second Round: Each person shares a *phrase* that he/she thinks/feels is particularly significant. The scribe records each phrase.

3. Third Round: Each person shares the *word* that he/she thinks/feels is particularly significant. The scribe records each word.

4. The group discusses what they heard and what it says about the document.

5. The group shares the words that emerged and any new insights about the document.

6. The group debriefs the text rendering process.

Protocols are most powerful and effective when used within an ongoing professional learning community such as a Critical Friends Group® and facilitated by a skilled coach. To learn more about professional learning communities and seminars for new or experienced coaches, please visit the National School Reform Faculty website at www.nsrfharmony.org.

Key Shifts in Mathematics

Introduction

The Common Core State Standards for Mathematics build on the best of existing standards and reflect the skills and knowledge students will need to succeed in college, career, and life. Understanding how the standards differ from previous standards—and the necessary shifts they call for—is essential to implementing them.

The following are the key shifts called for by the Common Core:

1. Greater focus on fewer topics

   The Common Core calls for greater focus in mathematics. Rather than racing to cover many topics in a mile-wide, inch-deep curriculum, the standards ask math teachers to significantly narrow and deepen the way time and energy are spent in the classroom. This means focusing deeply on the major work of each grade as follows:

   - In grades K–2: Concepts, skills, and problem solving related to addition and subtraction
   - In grades 3–5: Concepts, skills, and problem solving related to multiplication and division of whole numbers and fractions
   - In grade 6: Ratios and proportional relationships, and early algebraic expressions and equations
   - In grade 7: Ratios and proportional relationships, and arithmetic of rational numbers
   - In grade 8: Linear algebra and linear functions

   This focus will help students gain strong foundations, including a solid understanding of concepts, a high degree of procedural skill and fluency, and the ability to apply the math they know to solve problems inside and outside the classroom.

2. Coherence: Linking topics and thinking across grades

   Mathematics is not a list of disconnected topics, tricks, or mnemonics; it is a coherent body of knowledge made up of interconnected concepts. Therefore, the standards are designed around coherent progressions from grade to grade. Learning is carefully connected across grades so that students can build new understanding onto foundations built in previous years. For example, in 4th grade, students must "apply and extend previous understandings of multiplication to multiply a fraction by a whole number" (Standard 4.NF.4). This extends to 5th grade, when students are expected to build on that skill to "apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction" (Standard 5.NF.4). Each standard is not a new event, but an extension of previous learning.

   Coherence is also built into the standards in how they reinforce a major topic in a grade by utilizing supporting, complementary topics. For example, instead of presenting the topic of data displays as an end in itself, the topic is used to support grade-level word problems in which students apply mathematical skills to solve problems.

3. Rigor: Pursue conceptual understanding, procedural skills and fluency, and application with equal intensity.

   Rigor refers to deep, authentic command of mathematical concepts, not making math harder or introducing topics at earlier grades. To help students meet the standards, educators will need to pursue, with equal intensity, three aspects of rigor in the major work of each grade: conceptual understanding, procedural skills and fluency, and application.

   Conceptual understanding: The standards call for conceptual understanding of key concepts, such as place value and ratios. Students must be able to access concepts from a number of perspectives in order to see math as more than a set of mnemonics or discrete procedures.

   Procedural skills and fluency: The standards call for speed and accuracy in calculation. Students must practice core functions, such as single-digit multiplication, in order to have access to more complex concepts and procedures. Fluency must be addressed in the classroom or through supporting materials, as some students might require more practice than others.

   Application: The standards call for students to use math in situations that require mathematical knowledge. Correctly applying mathematical knowledge depends on students having a solid conceptual understanding and procedural fluency.

   Common Core State Standards for Mathematics (CCSSM). (2010, June). Retrieved from Common Core State Standards: http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf

Reflection on Shifts in Mathematics

1. Identify one connection between the EngageNY lesson and the components of rigor.

2. What does it look like when we ask students to work on procedural skill and fluency versus conceptual understanding or application?

Looking for Evidence of Student Engagement in the Key Shifts

Focus	Evidence
☐ The learning goal(s) of the lesson supports grade level standard(s).	
Coherence	
☐ The lesson intentionally relates new concepts to students' prior skills and knowledge. ☐ Students set the foundation for future learning. ☐ Students access prior learning from major work in the grade in order to support new learning.	
Rigor	
Conceptual Understanding ☐ Students access concepts and ideas from a variety of perspectives. ☐ Students explain mathematical ideas behind a particular concept in a variety of ways. ☐ Students use examples and counterexamples to make and support conjectures applied to one problem to multiple situations. ☐ Students create and use a variety of models to analyze relationships. ☐ Students make use of patterns and structure to compose and decompose numbers, shapes, expressions, and equations. **Procedural Skills and Fluency** ☐ Students select tools (e.g. physical objects, manipulatives, drawings, diagrams, algorithms, or strategies) that are relevant and useful for the task or problem. ☐ Students communicate thinking using appropriate vocabulary, symbols and/or units in precise and accurate ways. ☐ Students look for patterns, generalizations, and shortcuts. ☐ Students are flexible in their use of procedures and skills to solve problems. **Application** ☐ Students decontextualize and contextualize quantities in problem situations. ☐ Students plan and choose a solution pathway when applying their mathematical knowledge to different situations.	

Note: To help educators look for evidence of grade-level-appropriate student engagement in mathematical tasks, these narrative descriptors are adapted from Illustrative Mathematics. (2014, February 12). *Standards for Mathematical Practice: Commentary and Elaborations for K–5 and 6-8*. Tucson, AZ. Available at http://commoncoretools.me/2014/02/12/k-5-elaborations-of-the-practice-standards

Diamond Reflection
Unpacking the EngageNY Lesson

Observations: How are the mathematics content standards evident in the lesson?

Reflections: How does student engagement in the SMPs help develop conceptual understanding, procedural skill and fluency and application skills?

Other thoughts and considerations

Interpretations: What instructional strategies and facilitator moves brought out the content and practice standards?

Decisional: What am I going to do based on my learning?

Coaching Questioning to Promote Thinking

Powerful questions:

- Invite the mentee to do the thinking.
- Build the mentee's capacity to think, solve problems, and make decisions, while statements reaffirm the mentor's perspective.
- Create a culture of deep thinking about practice.
- Require the mentee to examine events from multiple perspectives, e.g., from a student's perspective, from a critic's perspective, etc.
- Are open-ended, allowing for many possible answers. Plural form facilitates this intention: *goals* instead of goal, *causes* instead of cause.

Top 10 mistakes made when asking questions

1. Asking closed questions
2. Asking solution-oriented questions
3. Seeking "one true question"
4. Asking rambling questions
5. Asking interpretive questions
6. Asking rhetorical questions
7. Asking leading questions
8. Neglecting to interrupt
9. Interrupting
10. Asking "why"

From: *Coaching Questions: A Coaches Guide to Powerful Asking Questions* by Tony Stultzfus (2008)

<u>Task:</u>
Write five powerful questions about co-teaching.

Share them with a partner for review using the criteria above.

Classroom Supporter Role

Guiding questions:

- What are the three types of supports a classroom supporter provides mentees?
- How does a mentor choose which type of support to use with a mentee?
- What are the essential components of a demonstration lesson?
- Where does the classroom supporter role fall within the mentoring cycle connect?

Model/demonstrate **Co-teach** **Reflect**

New → **Comfortable**

Classroom Support Strategies	When to Use	Advantages	Disadvantages
Demonstration/ Modeling			
Co-teaching			
Reflection			

Partner Sharing

How do you decide which type of classroom support to use?
What factors do you consider?

Demonstration Lesson Planning Protocol

Determine what specific skills, knowledge, attitudes, or behaviors you want to showcase.

- Consider the mentee's growth goal and choose related areas.
- Specify where these areas are in Compass and/or Teacher Preparation Competencies.
- Discuss with teacher what effective practice is and is not.
- Describe how the mentor thinks about planning for these areas.

Plan how you will amplify what you will demonstrate in your teaching.

- Make it visible.
- Make it BIG.
- Make it obvious.

Preview the lesson with the teacher.

- Review the curriculum with the mentee to study the lesson plan for the upcoming demonstration.
- Study the lesson plan together and think aloud about what the mentor does as to implement the curriculum.
- Tie the content of the lesson to the student content standards and the student assessments.
- Consider modifications in the lesson plan for students who need them.

Assign the teacher the role of observer with a data template.

- Help the teacher know what to look for and how to record data about the teacher and student behaviors.
- Encourage the teacher to watch how students respond to the instruction. The mentor wants the teacher to see the interaction between what the teacher does and what students do.
- Give the mentee a template for recording data during the observation or create one with the together.

Debrief the visit.

- Ask the teacher to share what she/he observed using the data collected.
- Ask the teacher for data about the impact of the lesson on students.
- Ask the teacher to identify the process, sequence, or strategy used in the teaching.
- Encourage to teacher to identify the reasons, the process, sequence, or strategy is/is not successful with students.
- Ask the teacher to identify a generalization about the use of the curriculum and pedagogy.

Tips:

- All demonstration lessons are equal work for the mentor and the observing teacher.
- The purpose of the demonstration is **learning**. Amplify learning in the debriefing.

One or two demonstrations are great. Three demonstrations are too many on any one area. By practicing gradual release mentors accelerate the mentee's learning.

Demonstration/Model
Lesson Feedback Form

How did this demonstration or model lesson help you?

What did you see that was effective? Use the compass rubric and your data to describe what was effective about the teaching you observed.

What did you see that was ineffective? Use the compass rubric and your data to describe what was ineffective about the teaching you observed.

What will you integrate into your teaching? How will you do that?

What would you change/modify if you were teaching this lesson? Explain your reasons.

What parts of what I was demonstrating during this lesson still need further clarification?

What is/are the top learnings you are taking away from the demonstration lesson?

How can I support you as you begin to integrate what you are learning?

Learning Team Conversations

How do your past experiences with demonstration lessons compare to the three-part version we just discussed? What is the same and what is different? Moving forward what do you want to remember to get the most out of demonstration lessons?

Co-Teaching

Guiding questions:

- What is co-teaching?
- What are strategies for co-teaching?
- What are common agreements for co-teaching and why are they necessary?
- What is the process for co-planning and co-reflecting co-teaching?
- How do I prepare to co-teach with mentees?
- How does the gradual release of responsibility apply to co-teaching?
- How do I help mentees learn about models of co-teaching?
- What are common challenges in co-teaching?
- How do I avoid the challenges?

Co-teaching is . . .

"Two teachers working together in the same space to meet student needs."

Heck, T. & Bacharach, N. (2014). *Mentoring teacher candidate through co-teaching: collaboration that makes a difference*. St. Cloud, MN: Academy for Co-teaching & Collaboration.

"Two teachers (teacher candidate [mentee] and cooperating teacher [mentor]) working together with groups of students; sharing the planning, organizations, delivery and assessment of instruction, as well as the physical space."

Bacharach, N., Heck, T., Dahlberg, K. (2013). Researching the use of co-teaching in the student teaching experience. In Colette Murphy & Kathryn Scantlebury (eds.) *Moving forward and broadening perspective: Co-teaching in international contexts* (pp. 35–52). New York: Springer Publishing.

Worries and hopes of co-teaching

Worries/challenges	Hopes/benefits

Core Components of Co-Teaching

Co-teaching is deliberately planned, enacted, and analyzed. The core components of co-teaching--co-planning, co-teaching, and co-reflecting--are listed below:

Co-planning

- Assess readiness for co-teaching.
- Create agreements.
- Co-review/plan lesson and teacher learning outcome.
- Select best model for co-teaching to achieve student and teacher learning outcome.
- Revisit lesson to refine plan to integrate appropriate co-teaching strategy.

Co-teaching

- Co-teach.
- Gather data about student learning, teaching practices, unanticipated issues, and successes noted.

Co-reflection on co-teaching

- Reflect on co-teaching including student learning, adherence to agreements, application of co-teaching strategy, gradual release of responsibility, teaching practices, unanticipated issues, and successes noted.
- Determine next steps for co-teaching and mentoring in general.

Co-teaching partnership agreements

1. Values/beliefs/philosophy about teaching and learning

2. Professional goals
   - Mentee
   - Mentor
   - Feedback process

3. Communication/relationship
   - Frequency
   - Style
   - Method/mode
   - Clarity of purpose
   - “Slippery eggs”
   - Personal/cultural boundaries
   - Expectations
   - Interaction during instruction
   - Problem solving
   - Flexibility
   - Confidentiality
   - Consulting with others

4. Instruction
   - Content
   - Lesson outcome(s)
   - Pedagogy
   - Assessment method(s)
   - Resources
   - Student responsibilities/ behaviors
   - Responsibilities related to co-teaching strategies

5. Student behavior/classroom environment
   - Student behaviors/misbehavior
   - Classroom space
   - Instructional support materials

6. Logistics
   - Space
   - Resources
   - Time
   - Decision making
   - Emergencies/urgent issues
   - Professional deportment
   - Boundaries

Co-teaching strategies

Co-teaching strategies	Description	Examples/Possible uses
One teaches, one observes students		
One teaches, one assists		
Station teaching		
Parallel teaching		
Supplemental teaching		
Alternative or differentiated teaching		
Team teaching		

Heck, T. & Bacharach, N. (2014). *Mentoring teacher candidate through co-teaching: collaboration that makes a difference*, p. 52. St. Cloud, MN: Academy for Co-teaching & Collaboration.

Reflecting on Co-Teaching

- Review student learning outcome(s)
- Review teacher learning goal(s) (use compass rubric to clarify expected practice)
- Review data collected/available
- Analyze data to identify trends, patterns, and outliers
- Analyze the co-teaching strategy and instructional decisions and preparation for their effect on student learning and teaching practices
- Specify the interaction between teaching behaviors and student learning
- Analyze the effectiveness of co-teaching strategy for its appropriateness and effectiveness based on student learning data
- Formulate generalizations, conclusions, hypotheses, lessons learned, etc. from the experience that can be applied in future instruction
- Identify next steps for co-teaching and mentoring support related to mentee's professional growth goals
- Make requests to improve co-teaching agreements and processes for future co-teaching episodes

Worries/Challenges	Options
Partner is unprepared	Over prepare; set agreements; set high expectations; seek evidence of preparation

Planning Conversation for Instructional Shifts Practice

You will practice a planning conversation for conducting either a demonstration lesson or co-teaching to implement the instructional shifts. In trios, one person will be the mentor who coaches, be a mentee who is coached, and observe the planning conversation to provide feedback to the mentor.

Mentor:
You may choose to plan a demonstration lesson or a co-teaching lesson in which the mentee is practicing one or more of the instructional shifts. In the planning conversation, the focus will be on what is taught and how it models the shifts and how the lesson is taught and how the pedagogy reflects the shifts. In your planning, stress the importance of the shifts and how to know if they are occurring. You may use the protocols on pp. 10 or 14 for planning a demonstration lesson or you might alter them slightly for co-teaching. Practice applying listening, questioning, and paraphrasing.

Mentee:
Be thoughtful about applying the instructional shifts within your own classroom rather than trying to play the part of an inexperienced teacher to make this experience more authentic for the mentor.

Observer:
Note the mentor addresses the instructional shifts, how the mentor demonstrates questioning, listening, and paraphrasing, and other behaviors you noted that supported the mentee's thoughtful responses to the questions. Jot notes to provide specific examples to the mentor about the behaviors that supported the mentee's success. You will have 90 seconds to share your observations with the mentor so note specific examples to build the mentor's consciousness about his or her behaviors.

Goal Reflection

- Given what you have learned in the last few session, reflect on your progress toward the goals you wrote on our first day. Explain.
- How well do those goals serve you now? Explain.
- At this point in your learning, what changes do you want to change in your goals?

Module 3 Assignments

1. Finish reading Chapters 1-12 of *Taking the Lead.* **Bring your book to the next session.**

2. Reflect on past experiences with demonstration teaching and co-teaching. Consider how you can use what you learned to strengthen future opportunities to conduct demonstration lessons and co-teach. Identify specific changes you will make in the future to apply what you have learned. Be ready to describe the changes and how you will make them.

3. Review your grade-level/course curriculum for examples of the shifts and/or opportunities to apply the shifts. Bring/cite with evidence at least two examples. Be prepared to share those examples at the next session.

4. Review the Teacher Preparation Competencies in your subject area. Not those related to the shifts. Be prepared to discuss the competencies that mentees will meet if they have a deep understanding of the shifts.

5. Review Demonstrating ELA Content Knowledge distinction at https://www.louisianabelieves.com/resources/library/louisiana-mentor-teachers

Please complete the Module 2-3 survey at the bottom of your Mentor Teacher home page ….. https://bit.ly/2rU8Kfg