Louisiana Department of Education
Mentor Teacher Training

Module 3:
Co-Teaching, Culturally Responsive Teaching, and Louisiana Student Standards for Mathematics

Elementary Cohorts

Facilitated by Learning Forward

Mentor Teacher Training

Module 1 Agenda

Outcomes

1. Establish a community of learners and conditions for learning that creates a sense of safety, support, and risk-taking.
2. Gain understanding of the roles, responsibilities, expectations, and certification requirements for mentors and set goals for their own learning based on a personalized assessment.
3. Develop understanding about the available guidebooks for their respective content areas and protocols for using the guidebooks in conversations with resident teachers about their respective content and content-specific pedagogy.

Content

1. Course and module overview
2. Learning teams
3. Mentor distinction criteria and self-assessment
4. Mentor roles and responsibilities
5. Standards, teacher-preparation competencies, and curriculum alignment

Module 2 Agenda

Outcomes

1. Determine partnership agreements that solidify a productive mentoring relationship with resident and novice teachers.
2. Use deep listening to analyze the causes of resistance and address it.
3. Apply criteria for determining which mentoring stances to take to support residents and novice teachers, factors influencing decisions to choose a stance, and strategies for shifting stances for gradual release.
4. Apply the classroom supporter role to develop content-specific pedagogical competencies of resident and novice teachers to prepare for and reflect on effective Tier 1 instruction.
5. Examine stages of the mentoring cycle to provide classroom-based support for resident and novice teachers.
6. Apply protocol for classroom-observation planning conversations.

Content

1. Partnership agreements
2. Mentor stances
3. Deep listening
4. Dimensions of classroom support role
5. Mentor cycle
6. Demonstration teaching
7. Protocols for planning classroom observations

Module 3 Outcomes

Mentor teachers will:

1. Refine processes for co-teaching with resident/new teachers.
2. Apply understanding of gradual release of responsibility for co-planning for co-teaching.
3. Develop an understanding of cultural responsive coaching for building mentoring relationships and for developing capacity for culturally responsive teaching and learning in classrooms.
4. Understand the key shifts in the Louisiana Student Standards in Mathematics, their rigor, and the critical role the shifts play in implementation of the standards.

Module 3 Agenda

8:30-12:00

1. Review and revisit Modules 1 & 2
2. Reflection on assignments
3. Co-teaching

12:45-4:00

1. Culturally responsive mentoring for culturally responsive teaching and mentoring
2. Shifts and rigor in Louisiana Student Standards in Mathematics

Agreements

1. **M**ake the learning meaningful
2. **E**ngage mentally and physically
3. **N**otice opportunities to support the learning of others
4. **T**ake responsibility for your own learning
5. **O**wn the outcomes
6. **R**espect the learning environment and the use of personal technology

Reflections on assignments

- Take-aways from readings in Chapters 2-13 *Taking the Lead: New Roles for Teachers and School-based Coaches*

- Partnership agreements

Planning conferences

Successes	Challenges

Co-Teaching

Guiding questions:

- What is co-teaching?
- What are the strategies for co-teaching?
- What are the common agreements for co-teaching and why are they necessary?
- What is the process for co-planning and co-debriefing co-teaching?
- How do I prepare to co-teach with residents/new teachers?
- How does the gradual release of responsibility apply to co-teaching?
- How do I help residents/new teachers learn about models of co-teaching?
- What are the 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 [resident] 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.

Benefits of co-teaching

Worries	Hopes

Core components of co-teaching

The core components of co-teaching--co-planning, co-teaching, and co-reflecting--are discussed 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 readiness factors

Mentors	Resident/mentee

Co-teaching partnership agreements

Topic	Notes
1. Values about teaching and learning	
2. Professional goals • Resident teacher • 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 • Other resource personnel	
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 resident professional growth goals
- Make requests to improve co-teaching agreements and processes for future co-teaching episodes

Co-teaching challenges and solutions

Challenges in co-teaching	Solutions/approaches/ideas

- Revisit the guiding questions to reflect on what you learned about co-teaching.
- What are your next steps to strengthen your co-teaching practice to support both student and resident teacher/novice teacher learning?

Culturally Responsive Teaching

Guiding questions:

- What does it mean to be culturally responsive?
- How do I implement culturally responsive teaching in my classroom?
- How do I mentor a resident teacher to be culturally responsive in his or her teaching?
- How do I mentor in culturally responsive ways?

> I am increasingly aware of my prejudice, my (unadmitted) racism, my unresolved feelings about foreigners in my country, and all of the sentiments I hold dear about what it means to be American, and what those who are not native to this country "should" be doing to fit in. I am one of those people who have thought, if not actually said, that once they are in the United States, they need to speak English. So, now, I am ashamed that I have been so closed to the real experiences and fears that families confront when in a strange land where [knowledge of] the language, customs, traditions, and social expectations are so different, yet so necessary... (adapted from personal communication, May 20, 2009).

Evans, L. & Gunn, A. (2011 December). It's not just the language: Culture as an essential element in pre-service teacher education. *The Journal of Multiculturalism in Education*. http://dspace.nelson.usf.edu/xmlui/bitstream/handle/10806/3570/Evans_Gunn_it%27s_not_just_the_language.pdf?sequence=3

Definition of culturally responsive teaching

Create a placemat for your team.

- Divide it into sections so each person can contribute to the placemat.
- Leave room at the center for collective work.
- Write individual definitions of culturally responsive teaching.
- Read each one aloud and note commonalities.
- Record common elements in the center section.

Self-Assessment of Culturally Responsive Classroom

Complete the self-assessment based on your current practice. Be as honest as possible. Your responses will be private. Respond based on your current, rather than preferred, practice.

Environmental style	**1** Learning about culturally responsive teaching	**3** Initiating culturally responsive teaching practices	**5** Applying culturally responsive teaching practices
Display classroom visuals that represent all students' cultural groups			
Structure learning centers that capitalize and focus on the different modalities/intelligences			
Establish routines and daily schedule to provide structure for learning			
Understand the history and experience of different cultural groups in your school and community			
Establish classroom behavior expectations that include appreciation for, respect of, and inquiry about student culture and family backgrounds			

Interactional style	**1** Learning about culturally responsive teaching	**3** Initiating culturally responsive teaching practices	**5** Applying culturally responsive teaching practices
Establish positive relationship with each student			
Interact equitably with each student in a manner that respects his or her culture, language, academic, and family background			
Ensure all students understand their role in the performance of the task when using cooperative groups			
Tend to heterogeneous grouping by race, gender, and/or ability unless the task specifically demands another type of grouping			
Engage all students in each lesson			
Encourage formality with role definition and appropriate behavior and etiquette			
Allow students to help each other or to work together even when reading text			
Use, teach, and reinforce student language that conveys high expectations for student success			
Use, teach, and reinforce student language that conveys respect for student cultural and family background			

Instructional strategies for cognitive styles	1 Learning about culturally responsive teaching practices	3 Initiating some culturally responsive teaching practices	5 Fully applying culturally responsive teaching practices
Provide a global view of the learning task as well as a step-by-step plan for what groups or individual do to accomplish it when giving an assignment			
Operate in the classroom as a guide and facilitator rather than a "performer" in front of an audience			
Apply strategies so that student engagement is more than asking and responding to questions or worksheets			
Model and schedule opportunities for students to practice content, skills, processes, etc. collaboratively and independently in different intelligences modalities/before assessing their learning or requiring them to demonstrate their learning			
Limit your presentation to 5–10 minutes when using lecture to convey information and incorporate visuals, examples, and models of the content you are teaching			
Integrate a variety of ways to help students process and internalize information that has been presented			
Employ a variety of ways to assist students to think about and understand information when using video, text readings, or guest speakers, to share information			
Use tools such as anchor charts, thinking maps, checklists, or other learning aids to facilitate student success			
Include visual representations, illustrations, pictures, or other graphical displays to support student learning			

Instructional design for cognitive style responsiveness	1 Learning about culturally responsive teaching practices	3 Initiating some culturally responsive teaching practices	5 Fully applying culturally responsive teaching practices
Understand, respect, and integrate into instruction individual student learning preferences, interests, language level, academic level, family background, and culture			
Plan each lesson carefully so that it highlights the cultures of students in your classroom and school community			

Plan lessons that include specific activities, themes, or concepts that include materials or information to demonstrate connections across disciplines			
Use fine or performing arts (e.g. art, music, literature, drama, role playing, physical movement) to facilitate student learning of content			
Use text that highlights different interests and cultures of students within your classroom			
Design learning tasks that both allow all students to succeed as well as be cognitively challenged just beyond their comfort level			
Plan and use when needed reinforcement, re-teaching, and/or additional guided practice for students who need extended support to achieve the lesson outcomes			

Assessment style	**1** Learning about culturally responsive teaching practices	**3** Initiating some culturally responsive teaching practices	**5** Fully applying culturally responsive teaching practices
Provide criteria in student-friendly language and developmentally appropriate examples of success for student work			
Use formative assessment to make instructional decisions and to ensure student achievement of learning outcomes			
Ensure assessments are free of cultural bias			
Allow students to represent their learning in multiple ways			
Include both qualitative and quantitative data in assessment of individual student learning			
Include both qualitative and quantitative data in assessment of your own teaching practice			
Use timely, constructive feedback to help students know where they are in relationship to the criteria for success and what they do to move along the progression			

Personal style	**1** Learning about culturally responsive teaching practices	**3** Initiating some culturally responsive teaching practices	**5** Fully applying culturally responsive teaching practices
Acknowledge personal biases related to race, ethnicity, gender, SES, language, academic ability, interests, family background, culture, etc.			

Ask others to provide evidence about behaviors or language that may convey "unknown" or unintentional bias			
Act to eliminate personal biases			
Offer evidence to others about their behavior or language that may convey "unknown" or unintentional bias			
Challenge assumptions that convey bias toward students, staff, families, or community members			
Hold and state high expectations for the success of each student within own class and school			
Seek opportunities within the school community to gain a deeper understanding of culture of the students attending the school			
Engage with community organizations that serve students within the school			
Communicate with parents, families, and guardians in culturally appropriate ways to support student academic, social, behavioral, and emotional success			

Adapted from Shade, B., Kelly, C., & Oberg, M. (1997). *Creating culturally responsive classrooms* (pp. 12-15). Washington, DC: American Psychological Association.

Walk and talk with a learning partner

- Which areas are strengths? How did these areas become strengths for you?

- Which areas are opportunities for your growth? What are your top priorities so you can support the success of all students in your class?

- What might be some next steps for you?

Culturally responsive teaching in action

Principles of culturally responsive teaching

- ✓ Communication of high expectations
- ✓ Learning within the context of culture
- ✓ Student-centered instruction
- ✓ Culturally mediated instruction
- ✓ Curriculum that reflects and honors students' cultures)
- ✓ Teacher as facilitator
- ✓ Positive perspectives on parents and families

Identify what these principles look like and sound like in action in a classroom.

- Create a T-chart (looks like and sounds like) when your assigned principle is in practice.
- Be specific and actionable—what will someone hear and see that is actionable by a teacher within the classroom
- Be ready to share your work.

Principles of Culturally Responsive Teaching

Principles	Practices in action	
	Looks like	Sounds like
1. Communication of high expectations		
2. Learning within the context of culture		
3. Student-centered instruction		
4. Culturally mediated instruction		
5. Curriculum that reflects and honors students' cultures		
6. Teacher as facilitator		
7. Positive perspectives on parents and families		

How to become a culturally responsive teacher*

- Develop cultural awareness
- Appreciate the value of diverse views
- Avoid imposing your own values on others
- Examine your own teaching for cultural bias
- Build on students' cultural strengths
- Discover your students' primary cultural roles
- Incorporate culture into your teaching
- Learn what you can about various cultures
- Accept your own naiveté
- Enjoy the learning opportunity

*North Carolina Department of Education; National Institute for Urban School Improvement, NCCRESt; Equity Alliance at ASU.

Next actions to extend culturally responsive teaching within your classroom

Culturally responsive mentoring

Culturally proficient coaching [mentoring] intends for the person being coached to be educationally responsive to diverse populations.
Lindsey, D., Martinez, R., Lindsey, R. (2007). *Culturally proficient coaching: Supporting educators to create equitable schools*. Thousand Oaks, CA: Corwin.

Read the blogs on coaching for equity. Identify practices that mentors can apply to advance equity and culturally responsive teaching in residents'/novice teachers' classrooms. Be ready to share what you learn with your triad colleagues.

Notes:

Coaching for Equity, Part 1

Coaching for Equity, Part 2

Coaching for Equity, Part 3

"Mentors do not need to be the same cultural or social background as their mentees, but they must pay close attention to the implications of the differences" (p. 21)
Crutcher, B. Mentoring across cultures. *Education Digest, 73*(40), 21-25.

While recognizing that their cultural "differences are a necessary part of their daily interactions, the mentor and mentee must be able to connect as human beings. This is the first and most important step in getting beyond the barriers and boundaries" (p. 161) of culture.
Johnson-Bailey, J. (2012). Effects of Race and Racial Dynamics on mentoring in S. Fletcher & C. Mullen, eds. *The Sage handbook of mentoring and coaching in education* (pp. 154-168). Los Angeles, CA: Sage.

What are the potential implications for cross-cultural mentoring?

Five guidelines for cross-cultural mentoring:

- Willingness to extend beyond normal mentoring expectations;
- Understanding of the psychological and social effects of culture;
- Cultural competence;
- Understanding of privilege; and
- Acceptance of the risk and possible discomfort implicit in mentoring across cultural lines.

Johnson-Bailey, J. & Cervero, R. (2004). Mentoring in Black and White: The intricacies of cross-cultural mentoring. *Mentoring & Tutoring: Partnership in Learning, 12*(1), 7-21.

Coaching for Equity blogs

In 2015, Elena Aguilar, a leadership coach and the author of The Art of Coaching: Effective Strategies for School Transformation*, published a series of three blogs as part of a "Coaching for Equity" series in* Education Week Teacher*. Excerpts and links to full blogs are provided in accordance with EdWeek's online content usage guidelines.*

How to Coach for Equity in Schools, Part 1

Published February 20, 2015.

Recently, I suggested that all coaches should be coaches for equity--that it is our moral obligation and that if we aren't coaching for equity we are complicit in reproducing an inequitable system. I want offer some concrete ways in which we can coach teachers and leaders within our education system to build more equitable classrooms and schools.

Read the full blog at:
http://blogs.edweek.org/teachers/coaching_teachers/2015/02/how_to_coach_for_equity_in_sch.html

How to Coach for Equity, Part 2

Published September 20, 2015.

Some time ago, I wrote the first blog in a series on How to Coach for Equity. I suggested that there are five components to an equity-centered coaching approach: 1) There's what you see in schools 2) and where you look when you're in classrooms and schools 3) And then there's who you listen to and how you listen; 4) cultivating your self-awareness is an essential element of coaching for equity, and finally, 5) there's what you say about what you see and hear.

Read the full blog at:
http://blogs.edweek.org/teachers/coaching_teachers/2015/09/how_to_coach_for_equity_part_2.html

Coaching for Equity, Part 3: What We Do

Published October 14, 2015.

In a series of blogs, I've explored five components to an equity-centered coaching approach: 1) What you see in schools and 2) Where you look when you're in classrooms 3) Who you listen to and how you listen; 4) How you cultivate your self-awareness, and 5) What you say and do about what you see and hear. This post explores the last component: what an equity-driven coach says and does.

Read the full blog at:
http://blogs.edweek.org/teachers/coaching_teachers/2015/10/coaching_for_equity_part_3_wha.html

Louisiana Student Standards for Mathematics

LDOE: Math Content
Grades K–5, Module 1

MATHEMATICS CONTENT MODULES

Module 1: Setting the foundation for implementing the curriculum

Session 1: Rigor of the LSSM

Grades K-5

"Ultimately, college and career readiness demands students know more than just content, but demonstrate that they know how to learn and build upon that content to solve problems. They must develop versatile communication skills, work collaboratively and work competitively in a school or work environment."

(Office of the State Superintendent of Education, n.d.)

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P-00.3

Key shifts of the LSSM

Save the last word for ME

Math Content Module 1, Session 1
Grades K-5
7

Looking at the content

Gr K-5 Math Task – Standard Sort

Task	Standard

With your group:

- Match the task to the grade-level/course standard.
- Create a poster as shown.
- Be prepared to justify your reasoning.

Math Content Module 1, Session 1
Grades K-5
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P-00.4

Key shifts

Rigor

Pursuing with equal intensity
conceptual understanding, procedural skills
and fluency, and applications

Math Content Module 1, Session 1
Grades K-5

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Identifying the components of rigor

Gr K-5 Math Task – Standard Sort

Task	Standard	Component of Rigor
		Conceptual understanding because...
		_____ because...
		_____ because...
		_____ because...
		_____ because...

On your poster:

- Identify the component of rigor that is evident in the task.
- Justify your reasoning.
- Choose a new reporter to be prepared to share out for your group.

Math Content Module 1, Session 1
Grades K-5

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P-00.5

What skills do employers value most?

What implications does this have on planning and instruction?

How do the implications connect to the key shifts of the LSSM?

Attention
- Ability to manage time and prioritize
- Follow-through

Curiosity & Commitment
- Willingness to learn after they graduate college
- Problem solving

Grit & Agility
- Ability to overcome setbacks
- Changes directions quickly and effortlessly
- Goals-driven

Humility
- Ability to ask for help when in need and admit what they don't know
- Team player mentality

Math Content Module 1, Session 1
Grades K–5

(Beaton, 2017)

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Session 1 reflection

Identify one connection between the sample EngageNY problems and the components of rigor.

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

Math Content Module 1, Session 1
Grades K–5

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P-00.6

National School Reform Faculty
Harmony Education Center
www.nsrfharmony.org

Special permission has been received to reproduce this protocol. The NSRF offers more than 300 protocols and activities, plus coaches' and administrators' trainings to improve teaching practice and student achievement. See http://www.nsrfharmony.org or call 812-330-2702 for details.

Save the Last Word for ME

Developed by Patricia Averette.

Purpose
To clarify and deepen our thinking about articles we read.

Roles
Timekeeper/facilitator, who both participates and keeps the process moving.
The process is designed to build on each other's thinking, and not to enter into a dialogue.
Participants may decide to have an open dialogue about the text at the end of the 30 minutes.
Timing is important; each round should last approximately 7 minutes.

Total Time
approximately 30 minutes.

The Protocol
1. Create a group of 4 participants. Choose a timekeeper (who also participates) who has a watch.

2. Each participant silently identifies what s/he considers to be (for him or her) the most significant idea addressed in the article, and highlights that passage.

3. When the group is ready, a volunteer member identifies the part of the article that s/he found to be most significant and reads it out loud to the group. This person (the *presenter*) says nothing about why s/he chose that particular passage.

4. The group should pause for a moment to consider the passage before moving to the next step.

5. The other 3 participants each have 1 minute to respond to the passage — saying what it makes them think about, what questions it raises for them, etc.

6. The first participant then has 3 minutes to state why s/he chose that part of the article and to respond to — or build on — what s/he heard from his/her colleagues.

7. The same pattern is followed until all four members of the group have had a chance to be the presenter and to have "the last word."

8. Optional open dialogue about the text and the ideas and questions raised during the first part of the protocol.

9. Debrief the experience. How was this a useful way to explore the ideas in the text and to explore your own thinking?

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.

CL-03.1

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