Module 5
Participant Guide

Focus on Sustaining Change

Connecticut Core Standards for Mathematics

Grades K–5

Systems of Professional Learning

Connecticut Core Standards Systems of Professional Learning

The material in this guide was developed by Public Consulting Group in collaboration with staff from the Connecticut State Department of Education and the RESC Alliance. The development team would like to specifically thank Ellen Cohn, Charlene Tate Nichols, and Jennifer Webb from the Connecticut State Department of Education; Leslie Abbatiello from ACES; and Robb Geier, Elizabeth O'Toole, and Cheryl Liebling from Public Consulting Group.

The Systems of Professional Learning project includes a series of professional learning experiences for Connecticut Core Standards District Coaches in English Language Arts, Mathematics, Humanities, Science, Technology, Engineering, Mathematics (STEM), and Student/Educator Support Staff (SESS).

Participants will have continued support for the implementation of the new standards through virtual networking opportunities and online resources to support the training of educators throughout the state of Connecticut.

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- Sustaining Change

Post-Assessment, Session Evaluation, and Wrap Up

Introductory Activity

Introductory Activity

Pre-Assessment–CCS-Math

Instructions: Check the box on the scale that best represents your knowledge or feelings about implementing the Connecticut Core Standards for Mathematics (CCS-Math) in your classroom.

Self-Assessment Questions	Strongly Disagree	Disagree	Agree	Strongly Agree
	1	2	3	4
I have a deep understanding of how to support teachers in my school or district through the change process.				
I am able to facilitate conversations that will engage individuals and groups in meaningful reflection around the CCS-Math.				
I am familiar with the components of the EQuIP Rubric and its role in assessing written lesson and unit development and alignment.				
I know how to collaboratively design CCS-Math lessons and provide feedback to the teacher as to the quality of the lesson design.				
I have a deep understanding of the CCS-Math instructional shifts and can provide colleagues with professional support aligned to the shifts.				
I am able to facilitate collaborative conversations and professional learning for my colleagues related to the key components of the modules throughout the Connecticut Core Standards System of Professional Learning series.				

Section 1

Section 1: Identifying and Understanding Teacher Needs

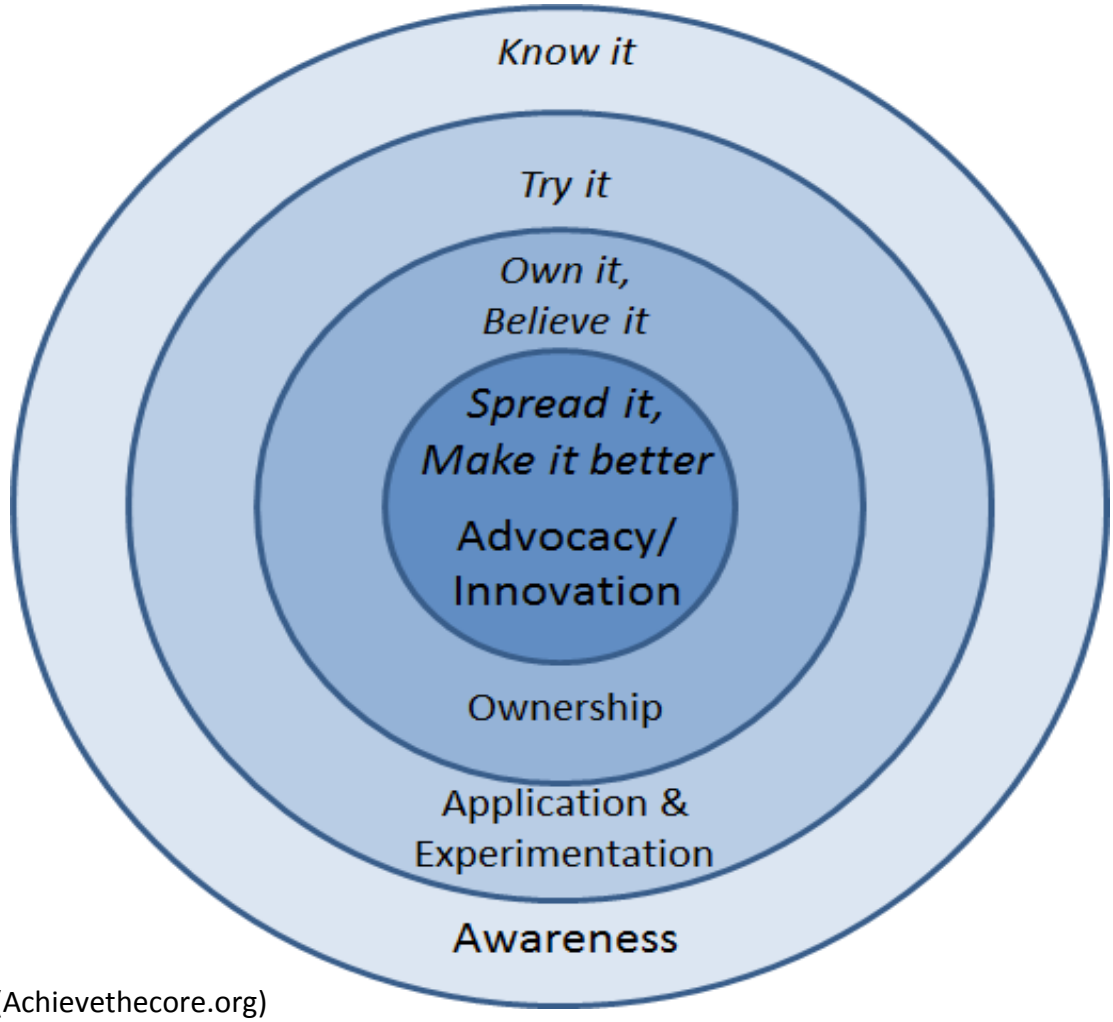
Summary Statements

***Instructions**:* Create a summary statement for each of the modules. The summary statement should depict what you want to see in your own classroom and in your school when everyone is effectively addressing the key ideas from each module.

Module 1: Focus on the Practice Standards
Module 2: Focus on the Content Standards
Module 3: Focus on Teaching and Learning
Module 4: Focus on Designing Learning
Overall Vision for Mathematics Teaching and Learning

Stages of Change

***Instructions**:* Use the chart below to reflect on where the teachers in your school are now with their implementation of the CCS-Math.



(Achievethecore.org)

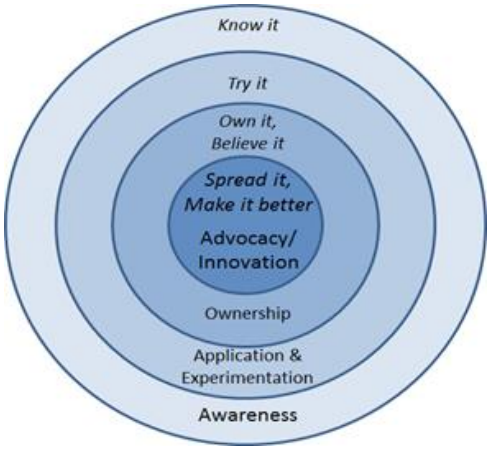
Where are the teachers at your school now with their overall implementation of the CCS-Math?

Implementation Plan

***Instructions**:* Use the implementation plan below to determine where teachers are now, what they need, how their needs will be met, and what you need in order to provide teachers with support in each area.

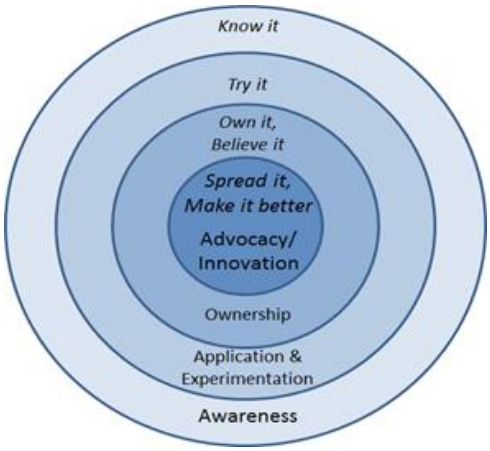
Area 1: Understanding the Standards

- **Do teachers understand the structure of the Standards?**
- **Have teachers looked at the Standards and made connections between and across grade levels?**
- **Do teachers understand the importance of the Practice Standards?**
- **Have teachers created or reviewed 'I Can' statements for the Practice Standards?**
- **Have teachers been introduced to the Progressions Documents?**

Where are teachers now?	What do teachers need?
 (Achievethecore.org)	
How will their needs be met?	**What do you need in order to provide support to teachers in this area?**

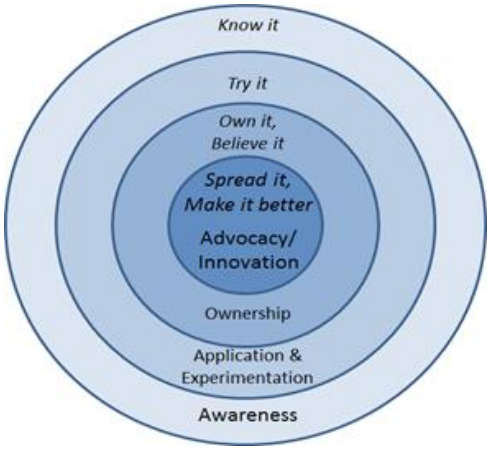
Area 2: Content Knowledge

- Do teachers understand the depth and progression of the content that they are required to teach?
- Do teachers understand the habits of mind described by the Standards for Mathematical Practice?

Where are teachers now?	What do teachers need?
 (Achievethecore.org)	
How will their needs be met?	**What do you need in order to provide support to teachers in this area?**

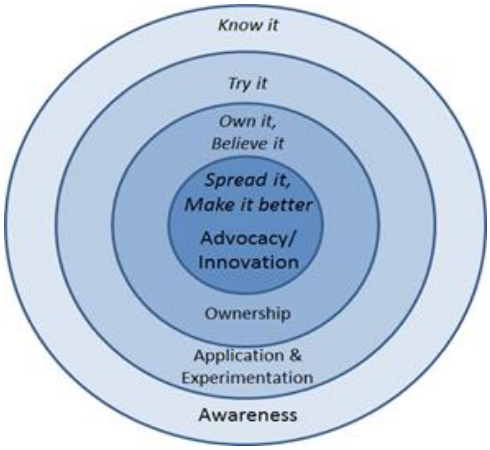
Area 3: Instructional Practice

- Do teachers understand and are they able to teach using effective questioning strategies?
- Do teachers understand the importance of rigor and productive struggle and how to structure and provide learning opportunities at appropriate levels?
- Do teachers support students' use of multiple approaches and multiple representations?
- Do teachers understand and are they able to provide multiple entry points into the mathematics, thus making the learning accessible to all students?
- Do teachers understand how, when, and why to have students work collaboratively and to promote rich mathematical discourse?
- Do teachers understand how the nature of instructional tasks affects all of these points?

Where are teachers now?	What do teachers need?
 (Achievethecore.org)	
How will their needs be met?	**What do you need in order to provide support to teachers in this area?**

Area 4: Designing CCS-Math Learning

- Do teachers understand the idea and importance of unit or chapter planning?
- Do teachers know how to create learning targets that are related and progress towards a larger big idea?
- Do teachers pre-assess students' prior knowledge before planning lessons?
- Do teachers understand and do they implement a formative assessment process within their lessons?
- Do teachers' lessons address the instructional shifts required by the Standards?
- Do teachers incorporate the classroom practices necessary to help students develop the depth of understanding required by the Standards?

Where are teachers now?	What do teachers need?
 (Achievethecore.org)	
How will their needs be met?	**What do you need in order to provide support to teachers in this area?**

Section 2

Section 2: Modes of Support

Modes of Support

***Instructions**:* When directed, read the following descriptions of possible modes of support that can be used with teachers. Then, use the information here to create a poster that describes your assigned mode of support and how the use of that mode can benefit teachers' implementation of the CCS-Math.

Modeling: The coach offers to teach a demonstration CCS-Math lesson. The coach may target in the lesson an area that the teacher has identified as something he/she is struggling with, e.g., effectively getting a particular concept across to students, formative assessment practices, etc. The teacher is often assigned a focus for their observation of the modeled lesson. Sometimes other teachers at the same level will also be given the opportunity to observe the lesson. It is important to meet with teachers both before and after a demonstration lesson to discuss the various elements of the lesson and its impact on student learning.

Co-Teaching: This is a form of action research, where a teacher and the CCS-Math coach together investigate a question related to mathematics instruction. Exploring questions together is at the heart of co-teaching. Examples: "How can I help my students express their thinking more clearly in writing?", "What scaffolding can I provide to help students who are having difficulty solving these problems?" (Felux & Snowdy, 2006). The coach and teacher present the lesson together, switching off on the lead at various points. A pre-lesson conference and a post-lesson conference are essential to reap the benefits of this mode of support.

Co-Planning: The coach provides support for lesson creation. Each person brings ideas and suggestions to be considered for the lesson that may address the mathematical content, the use of a variety of teaching and problem-solving strategies, expectations for students, assessment strategies or ways in which the lesson might be extended or adapted to meet student needs. The co-planned lesson should be more effective than a lesson either person might have created individually.

Coaching Conversations: The coaching cycle can be presented as a three-phase process: *planning, data-gathering,* and *reflecting* (Bay-Williams, J., McGatha, M., 2014). Coaching conversations will occur in the *planning* and *reflecting* phases. In the p*lanning* phase, the coach's role is to support the teacher in effective CCS-Math lesson design. Through the coaching conversation in the *reflecting* phase, the questions asked by the coach support the teacher in reflecting on the lesson in critical ways. The coach and teacher will process the classroom experience and gain insights from sharing and analyzing the data gathered.

Analyzing Student Work: The coach and teacher make thoughtful decisions about next steps in teaching and the learning needs of their students based on evidence in student work–evidence that highlights student misconceptions and what the students do and do not know. The analysis should focus on both class and individual student needs. The coach may provide suggestions on constructive feedback that would move a student forward in his/her thinking.

Notes on the Modes of Support

***Instructions**:* Use the space below to record notes on each mode of support as they are presented by each small group.

Modeling
Co-Teaching
Co-Planning
Coaching Conversations
Analyzing Student Work

Section 3

Section 3: Supporting Meaningful Reflection

The Role of the Coach

Instructions: Use the space provided to record notes on the role of the coach in a CCS-Math implementation.

Role of the Coach	Notes
Advocate vs. Evaluator	
Partner or Collaborator vs. Expert	
Advisor vs. Director	

Posing Questions

***Instructions**:* Use the space provided to take notes on tips for posing questions within a coaching conversation.

Think about the wording of these questions:

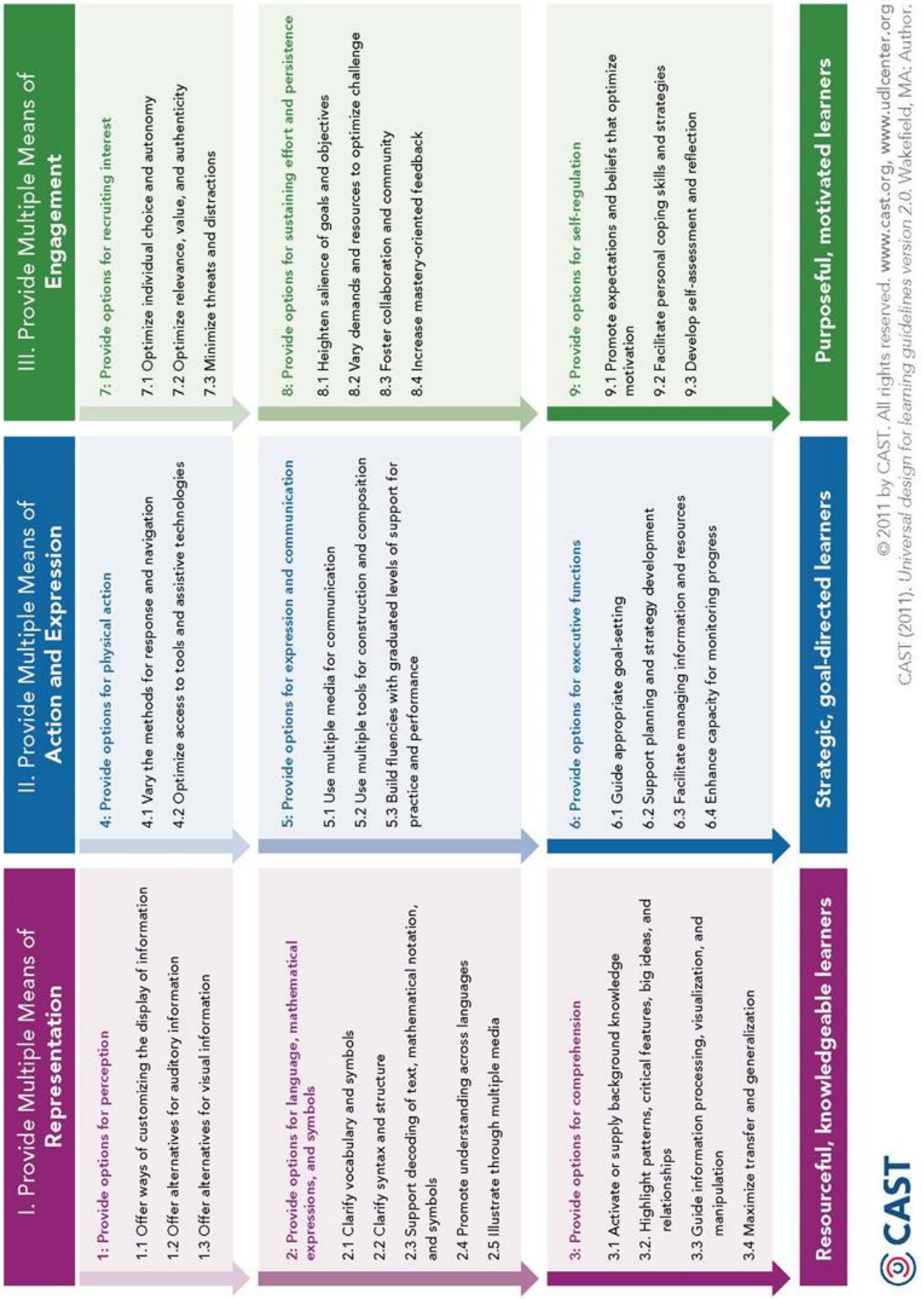
- What are some connections between this learning target and what your students have learned before?
- What formative assessment strategies could you use to see if students are understanding the concept?
- How did the lesson go compared to how you had planned it?

Tips for Posing Questions	Notes
• Use plurals in your questions • Embed tentative language ("might", "some") • Ask open-ended questions • Use verbs to elicit higher-order thinking ("compare," "predict," "evaluate") • Presume positive intentions in your questions • Use an approachable voice to signal inquiry vs. interrogation	

Forming Questions on a Lesson Design

***Instructions**:* Look over the lesson designed by the "coachee," asking questions for clarification as necessary. Record below two questions about the lesson design and/or the intended implementation of the lesson that you will use to move the thinking of the "coachee" forward.

Purposeful Questions


I. Provide Multiple Means of Representation
1: Provide options for perception
1.1 Offer ways of customizing the display of information
1.2 Offer alternatives for auditory information
1.3 Offer alternatives for visual information
2: Provide options for language, mathematical expressions, and symbols
2.1 Clarify vocabulary and symbols
2.2 Clarify syntax and structure
2.3 Support decoding of text, mathematical notation, and symbols
2.4 Promote understanding across languages
2.5 Illustrate through multiple media
3: Provide options for comprehension
3.1 Activate or supply background knowledge
3.2. Highlight patterns, critical features, big ideas, and relationships
3.3 Guide information processing, visualization, and manipulation
3.4 Maximize transfer and generalization
Resourceful, knowledgeable learners
II. Provide Multiple Means of Action and Expression
4: Provide options for physical action
4.1 Vary the methods for response and navigation
4.2 Optimize access to tools and assistive technologies
5: Provide options for expression and communication
5.1 Use multiple media for communication
5.2 Use multiple tools for construction and composition
5.3 Build fluencies with graduated levels of support for practice and performance
6: Provide options for executive functions
6.1 Guide appropriate goal-setting
6.2 Support planning and strategy development
6.3 Facilitate managing information and resources
6.4 Enhance capacity for monitoring progress
Strategic, goal-directed learners
III. Provide Multiple Means of Engagement
7: Provide options for recruiting interest
7.1 Optimize individual choice and autonomy
7.2 Optimize relevance, value, and authenticity
7.3 Minimize threats and distractions
8: Provide options for sustaining effort and persistence
8.1 Heighten salience of goals and objectives
8.2 Vary demands and resources to optimize challenge
8.3 Foster collaboration and community
8.4 Increase mastery-oriented feedback
9: Provide options for self-regulation
9.1 Promote expectations and beliefs that optimize motivation
9.2 Facilitate personal coping skills and strategies
9.3 Develop self-assessment and reflection
Purposeful, motivated learners
CAST
© 2011 by CAST. All rights reserved. www.cast.org, www.udlcenter.org
CAST (2011). Universal design for learning guidelines version 2.0. Wakefield, MA: Author.

Reflecting on the Coaching Conversation

***Instructions**:* Answer the questions below as you reflect on the coaching conversation in which you just engaged.

1. What are some challenges you had in posing questions during the coaching conversation?

2. Would you change the wording of the questions you asked? If so, how?

Lenses for Gathering Data

***Instructions**:* Record possible lenses that could be used by the Core Standards Coach for data collection during a classroom observation, sorting them by category as you go.

Observation Lens Examples	
Content	• Clear directions/explanations • Appropriate use of vocabulary • High level of cognitive demand • Connections to prior knowledge • Formative assessment integrated throughout lesson
Classroom Management	• Smooth transitions • Management of cooperative groups • Involving all students in tasks and discussion • Use of materials
Student Engagement	• Students are engaged in productive struggle • Student access to mathematics • Appropriate challenge for all students • Student engagement in Mathematical Practices • Individuals in groups are participating
Discourse	• Teacher asks a variety of questions, including higher-order questions • Students are given opportunities to explain their thinking • Wait time

Data Gathering Tool

***Instructions**:* Use this tool to record data for your chosen observation lens as you watch the Teaching Channel video *Reasoning About Multiplication & Division:* https://www.teachingchannel.org/videos/multiplication-division-in-the-core.

Data Collection	
TEACHER: **Drew Crandall**	**Grade: 3**
Topic of Lesson: **Reasoning About Multiplication and Division** (Math.3.OA.B.5)	
Observation Lens:	
Observation Notes:	

Classroom Observation Feedback

***Instructions**:* Record possible feedback that can be provided to the teacher during a coaching conversation based on a lesson observation.

Classroom Observations Feedback	
TEACHER: **Drew Crandall**	**Grade: 3**
Topic of Lesson: **Reasoning About Multiplication and Division** (Math.3.OA.B.5)	
Commendation:	
Question to engage teacher in critical reflection about student learning:	
Suggestion to move the teacher's thinking forward:	

Section 4

Section 4: Supporting Professional Growth

Strategies for Ongoing Professional Support

Instructions: Review the strategies on the following pages and then use the information to answer the reflection questions about how this could be implemented in your school. Be sure to address any needed modifications.

Note to Group: As you review each of the following strategies for providing ongoing professional support, think about the different needs that can be met through each strategy and how you can promote these strategies back at your school. Many of these strategies focus on a whole school approach to sharing with and learning from each other. This can be tricky because many schools do not take this whole school focus resulting in individual teachers being nervous about asking for help or sharing what they are doing with the whole school. However, if the environment is created under the central message that we are all learning and everyone has something important to offer, the sum of the knowledge presented and gained is much stronger than what happens on an individual level. This is very similar to the classroom environment that is needed for students to persevere with solving challenging mathematics tasks. Students need to feel that they are supported, that they can share thinking that may need modification, ask questions when they do not know, and feel free to learn from mistakes. This is the same kind of environment that is needed for teachers to continue learning with their peers. Keep this in mind as you review and determine how each of the strategies presented can be modified to meet the needs of all teachers.

Additional notes from the discussion on Strategies for Ongoing Professional Support

PROVIDING RESOURCES	
What is this?	Teachers will need ongoing support through receiving resources such as lesson plans, instructional strategies, problems/tasks, CCS-Math implementation updates, ideas for implementing the Standards for Mathematical Practices, etc.
Example of needs that can be addressed	
Discussion Notes	
Reflect on how this tool can be used in your school. Be sure to address any needed modifications.	

FOCUS OF THE MONTH	
What is this?	Based on a needs assessment or survey of teachers, select an area each month and make it the CCS-Math focus for new resources, professional discussions, etc. Every month then becomes an in-depth look at a content, practice, or instructional area where all teachers share something, practice something, or generate solutions for, and so forth. The focus can be discussed, examined, and shared either face-to-face or virtually.
Example of needs that can be addressed	
Discussion Notes	
Reflect on how this tool can be used in your school. Be sure to address any needed modifications.	

TEACHER PRESENTATIONS	
What is this?	To continue with the belief that all teachers have something to share, each grade level, pair of teachers, etc., can be given time during the year, perhaps one group/pair during a whole faculty meeting, to share ideas, strategies, lessons, and so forth with the all of the teachers in the school. Teachers would present and then open the floor for feedback, ideas, possible solutions, etc.
Example of needs that can be addressed	
Discussion Notes	
Reflect on how this tool can be used in your school. Be sure to address any needed modifications.	

WHOLE SCHOOL HELP WANTED BOARD	
What is this?	In between faculty, grade-level, or professional learning community meetings, teachers should be provided with a way to solicit help, answers, and/or ideas around a central problem or situation that is occurring in their classroom instruction. This is one of those areas that needs a safe environment for participation. One way to accomplish this is to ask teachers to submit questions anonymously and have one person post these to a secure site, such as on Edmodo (which you will learn about later), and allow all teachers to discuss and provide assistance. Or, these questions can be offered up at faculty meetings for group discussions.
Example of needs that can be addressed	
Discussion Notes	
Reflect on how this tool can be used in your school. Be sure to address any needed modifications.	

Opportunities for Collaboration

Instructions: Review the strategies below and then use the information to answer the reflection questions about how this could be implemented in your school. Be sure to address any needed modifications.

Note to group: As you consider and discuss each of the opportunities for collaboration below, think about how each of these can creatively be set up to support the implementation of the CCS-Math at your school. Things to keep in mind when creating opportunities for teachers to collaborate:

- Set Norms – Make sure that all teachers share an understanding of the purpose of the collaboration, how the work will happen, how responsibilities will be assigned, how everyone is accountable to the whole group, and so forth.
- Identify the Focus – In order to make the most out of each opportunity for collaboration, be sure that there is a specific focus with an attainable outcome identified. This allows everyone to stay on track and the important work to get done.
- Identify a Leader – The coach does not always need to be the assigned leader. Each group can have a revolving leader, giving each person a share of the responsibility.
- Preparation – Each person should bring something to share to each group meeting, either face-to-face or virtual. This is similar to allowing students' individual think time before a group works on a problem. Here, every teacher in a group does some personal work before the meeting so that everyone brings something to add to the overall discussion.

Additional points to keep in mind discussed during small group work:

Opportunity	What teachers will do	Discussion Notes	Reflect on how this tool can be used in your school. Be sure to address any needed modifications.
Co-Plan Lessons	Teachers can plan lessons together either face to face or virtually. They can think through the content, practices, and how to modify the lesson in order to meet the needs of all students.		
Student Work Review	Teachers can review student work to examine how different students solved problems, how their thinking has evolved, representations that they have used, etc.		
Sharing Solution Strategies	Similar to student work review, here teachers can share how they anticipate students solving a particular task, why they might solve it that way, and how they would present the work to the whole class.		

Opportunity	What teachers will do	Discussion Notes	Reflect on how this tool can be used in your school. Be sure to address any needed modifications.
Sharing Problems	Teachers can share rich problems that they have found so that one teacher is not responsible for finding all problems.		
Content Discussions	Teachers can engage in rich discussions about the content they are responsible for teaching, The can watch tutorials together, review the Progressions Documents and the Standards, and so forth in order to deepen their own content knowledge.		
Instructional Practice Review	Teachers can find and/or model instructional practices that they have either used in the past or consider using in the future in order to share and receive feedback.		

Opportunity	What teachers will do	Discussion Notes	Reflect on how this tool can be used in your school. Be sure to address any needed modifications.
Peer Feedback	Teachers can provide respectable peer feedback on lesson plans and/or lesson implementations.		
Co-Research	When a topic comes up that needs further investigation, a group of teachers can research the topic and then come together to share their ideas and/or findings.		

Additional Notes:

Tools for Collaboration and Communication

Instructions: Review the tools below and then use the information to answer the reflection questions about how this could be implemented in your school. Be sure to address any needed modifications.

Note to group: As you access and discuss each of the tools below, think about how each of these can creatively be used to support the implementation of the CCS-Math at your school. Most of these were originally designed to be used by a teacher with his or her students. This is a good thing because of the level of security that is involved. With that being said, each can also be used by a group of teachers, or a coach and a group of teachers, etc. As you review, keep in mind the teacher needs that you have identified. How can these tools be used to provide support for those needs to be met? For example, resources for videos, lesson/unit plans, Progressions Documents, suggestions for instructional strategies, etc., can be organized on a Symbaloo board. Or, a grade level may choose to set up an environment on 81dash or Edmodo in order to discuss a lesson that has been co-planned using Google Docs and to provide video or student work for discussion based on that lesson. Or, a coach could create a blog on Kidblog that is accessible only by a specific group of teachers on which the coach would blog about ideas, resources, lesson implementations, requests for ideas, and so forth. The possibilities are there, you just have to think about how to make them work for your situation and your teachers.

Tool	81dash
Location	http://81dash.com/about.php
Tool Summary	81dash allows groups to set up a secure chat environment and provides a dashboard for sharing files, taking notes, and keeping track of important tasks.
Discussion Notes	
Reflect on how this tool can be used in your school. Be sure to address any needed modifications.	

Tool	Symbaloo
Location	http://www.symbalooedu.com/
Tool Summary	Symbaloo allows for the organization and sharing of resources in one place so that they can be easily used by those who have been given permission to access the board.
Discussion Notes	
Reflect on how this tool can be used in your school. Be sure to address any needed modifications.	

Tool	Edmodo
Location	https://www.edmodo.com/
Tool Summary	Allows a group to connect in a secure, social media environment in order to ask questions, discuss ideas, share resources, review videos, etc.
Discussion Notes	
Reflect on how this tool can be used in your school. Be sure to address any needed modifications.	

Tool	Google Apps for Education
Location	http://www.google.com/enterprise/apps/education/
Tool Summary	Provides secure tools such as Google Drive, Google Docs, Google Workspace that teachers can use to collaborate on designing learning, solve problems, review and comment on student work, and so forth.
Discussion Notes	
Reflect on how this tool can be used in your school. Be sure to address any needed modifications.	

Tool	Kidblog
Location	http://kidblog.org/home/
Tool Summary	Kidblog is an online, secure blogging site where each person, normally a teacher and students but in this case can be a coach and teachers, can each provide commentary on a particular topic, post videos or student work for discussion, review work, videos, resources, or lessons, and so forth in a secure location accessible to only those provided access by the teacher/coach.
Discussion Notes	
Reflect on how this tool can be used in your school. Be sure to address any needed modifications.	

Section 5

Section 5: Sustaining Change

Additional Ideas for Support

***Instructions**:* Use the space below to record any additional notes on providing teachers with support during their CCS-Math implementation.

Understanding the Standards
Content Knowledge
Instructional Practices
Designing CCS-Math Learning
Addressing Challenges

Closing Activities

Closing Activities

Post-Assessment–CCS-Math

Instructions: Check the box on the scale that best represents your knowledge or feelings about implementing the CCS-Math in your classroom.

Self-Assessment Questions	Strongly Disagree	Disagree	Agree	Strongly Agree
	1	2	3	4
I have a deep understanding of how to support teachers in my school or district through the change process.				
I am able to facilitate conversations that will engage individuals and groups in meaningful reflection around the CCS-Math.				
I am familiar with the components of the EQuIP Rubric and its role in assessing written lesson and unit development and alignment.				
I know how to collaboratively design CCS-Math lessons and provide feedback to the teacher as to the quality of the lesson design.				
I have a deep understanding of the CCS-Math instructional shifts and can provide colleagues with professional support aligned to the shifts.				
I am able to facilitate collaborative conversations and professional learning for my colleagues related to the key components of the modules throughout the Connecticut Core Standards System of Professional Learning series.				

Session Evaluation

Thank you for attending today's session. Your feedback is very important to us! Please fill out a short survey about today's session.
The survey is located here: http://surveys.pcgus.com/s3/CT-Math-Module-5-K-5

References

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Video

Teaching Channel. *Reasoning About Multiplication and Division*. Retrieved from https://www.teachingchannel.org/videos/multiplication-division-in-the-core

Resources for Planning Lessons

- Illustrative Mathematics – http://www.illustrativemathematics.org
- Achieve the Core – http://achievethecore.org
- Smarter Balanced – http://smarterbalanced.org
- Mathematics Assessment Project – http://map.mathshell.org/materials/index.php