

Math PLC Ideas

MODULE 1: PLC ACTIVITIES

1. Bring a favorite lesson or unit plan. As a group, or by trading with a partner, analyze it in terms of the 3 Key Shifts.

Where and in what ways does your plan incorporate Focus, Coherence and each of the three components of Rigor (procedural skills, conceptual understanding and fluency)? What do you notice?

Do you feel your plan incorporates these elements to a satisfactory degree, or are there areas to strengthen? What could be done to incorporate the 3 Key Shifts to a greater degree?

If you're analyzing a lesson plan, remember that in each lesson each of the three elements of Rigor may not be emphasized, but that over the course of a unit plan or sequence of lessons, each of these elements of Rigor should be roughly equally emphasized.

2. Coherence Map

Take a deeper dive into the standards by using the [Coherence Map](#) using it to analyze coherence in your students' experience.

Option A

Choose a standard you teach. Find it using the Coherence Map. Then toggle both backwards and forwards and familiarize yourself with the standards directly prior and subsequent to your chosen standard. What do you notice about what prior knowledge students need to successfully achieve the standard you teach? What do you notice about how what students learn in your class will need to serve as the basis of their learning moving forward? How might you incorporate review and extension activities in your class to help support a coherent experience for your students? Do this exercise with three standards you teach.

Option B

Choose a standard you teach. Find it using the Coherence Map. Then, take a deep dive into the resources the Achieve the Core Coherence Map provides related to this standard. Carefully read the text of the standard and explore the resources Achieve The Core has embedded for that standard which may include a sample task, an assessment item, the progression to which that standard belongs, and the standard's focus. Do this exercise with three to five different standards that you teach.

MODULE 2: PLC ACTIVITIES

1. Read through the 8 SMP and then discuss them as a group. What similarities and differences do you notice among the 8 SMP? What instructional implications do you see with each of the 8 SMP?

[Math Standards Handbook \(p.17\)](#)

2. Using the Standards of Mathematical Practice: Use this linked resource to guide you.
 - A. Use a favorite math lesson you teach to discover which SMPs are activated. As a seasoned instructor, you may use the SMP without explicitly calling them out. As a new instructor this practice can help shape your teaching mindset. Use the table provided to intentionally identify the practices. Are there any you rely too heavily on? Are there others that aren't used at all? Discuss your findings as a group. (Single lessons will not use all 8 SMP- within a unit they should all be used.)
 - B. Find a new and exciting lesson plan using the provided resources. In deciding what lesson plan to choose, you *may* want to choose a lesson plan for a content area your students have trouble with. Analyze it in terms of the 8 SMP using the linked form above. Then try the lesson during a class. In your PLC, share the lesson, your analysis of how it corresponds with the 8 SMP, how implementing the lesson went, and anything you'd do differently in implementing the lesson in the future.

3. Chapter Study. Book: [Mathematical Mindsets by Jo Boaler](#).

Chapter 2: The Power of Mistakes and Struggle. This chapter aligns itself with SMP 1: Make sense of problems and persevere in solving them. Read the second chapter of the book before meeting for your PLC.

In what specific ways can we change our student's math mindset about mistakes? How would you explicitly teach the benefit of mistakes made in math? How could you use mistake-promoting ideas in your class?

How might you change grading in your classroom? How might you change your language around testing and grading, so assessments are more about what the student has learned and what they still need to learn?

How can your classroom focus on process as being more important than product?

Discuss your specific plans to implement in the classroom.

Debrief: Have a deep discussion after your implementation of these ideas. What might you change? What positive effects did these changes have in your classroom?

4. Use [Illustrative Mathematics Document](#)

- a) Use the document as a deeper dive into the SMPs. Choose an SMP that your team feels is appropriate and most needed for your learners.
- b) Choose a content area driven by your CASAS statistics that shows the greatest need for improvement.
- c) Develop a lesson that speaks deeply to the focal area and the SMP(s) that best fit a task you have chosen as a group.
- d) Implement your lesson(s).
- e) Implement a common formative assessment for the focal area.
- f) Regroup to discuss student engagement and your formative assessments.
- g) Discuss improvements in your student's thinking.
- h) How might you alter your lesson and assessment next time you teach this math focus?
- i) Did your students realize any improvements in CASAS scores in your focused area?

MODULE 3: PLC ACTIVITIES

1. Identify a standard you need and use the coding to find additional resources for teaching.
2. Do more [versions of the card game](#) with your PLC members. After putting the levels in order, discuss how you could implement the standard in a multilevel classroom.
3. Dive deeper into an aspect of the standards by doing a [LINCS PD unit](#) with your PLC

MODULE 4: PLC ACTIVITY

In this PLC you will analyze a unit or course plan that is used in your department and assess how well it incorporates the Key Shifts, Standards for Mathematical Practice (SMP) and the Math Content Standards.

Identify where the Key Shifts, SMP and Math Content Standards are well supported throughout the unit/course plan.

Are there any that are not as well supported? What could you do to enhance the content so that all are well supported?

In this PLC, you will analyze a domain that your college covers across various levels and assess how well instruction incorporates the Key Shifts, Standards for Mathematical Practice (SMP) and Math Content Standards.

For example, you might analyze, “How well does our ratios and proportions instruction across the levels incorporate the Key Shifts, Standards for Mathematical Practice (SMP) and Math Content Standards?”

Are there aspects of the Key Shifts, SMP and Math Content Standards that could be better supported? How will we adapt the content to address that?

Worksheet is on the next page for your analysis.

OCCARS STANDARDS BASED REFLECTION WORKSHEET

This activity can be used by individuals and/or PLCs to reflect on the depth of instruction in a lesson or a unit.

Domain(s): _____

Level(s) addressed: _____

Standard(s) taught: _____

<p>1. Where in this lesson/Unit address Key Shifts?</p>	<p>1. Focus (greater in depth instruction of greater topics):</p> <p>2. Coherence (Linking topics within levels and connecting them to prior and upcoming learning):</p> <p>3. Rigor: (Pursuing conceptual understanding, procedural skill and fluency and application with equal intensity.)</p>
<p>2. Where in the lesson are the SMPs addressed?</p>	<p>SMP 1 Make sense of problems and persevere in solving them:</p> <p>SMP2: Reason abstractly and quantitatively:</p> <p>SMP3: Construct viable arguments and critique the reasoning of others:</p> <p>SMP4: Model with mathematics (Show your thinking):</p>

	<p>SMP 5: Use appropriate tools strategically:</p> <p>SMP 6: Attend to precision (check your work):</p> <p>SMP 7: Look for and make use of structure:</p> <p>SMP 8: Look for and express regularity in repeated reasoning:</p>
<p>3. How and where is each specific math learning standard(s) taught?</p>	

Modified from the Coherence Map: Student Achievement Partners