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Dr. Julie Amador, Regional Director
Associate Professor of Mathematics Education
Julie teaches elementary/middle school mathematics and technology education at the University of Idaho, in the College of Education, Health and Human Science's department of Curriculum and Instruction. She researches lesson study and how teachers design and enact lessons, with a strong emphasis on what teachers notice about student thinking.

Dr. Abe Wallin
Regional Math Specialist
Abe teaches courses on mathematical thinking and provides curriculum and teaching support to area school districts. He has been working on designing a K-5 curriculum, assessment writing, and development of mathematical tasks with local teachers. In addition, Abe continues to conduct research on the use of video clubs with mathematics teachers.

Jode Keehr
Program Coordinator
Jode’s background is in design, advertising, and public relations. She is currently a graduate student in the human factors/experimental psychology doctoral program at the University of Idaho. Her current research looks at the effect of video speed and interruptions on learning performance.

Chris Chilton
Administrative Specialist
With years of experience in video, design, and audio, Chris supports local teachers with multimedia data collection and works on various projects for the center. He holds a bachelor's degree in electronic media and film from Eastern Washington University in Cheney, Washington.
As an elementary resource teacher, I see my students struggle in the area of mathematics for a variety of reasons; for example, language impairments or a lack of strong executive functioning skills. One of the primary struggles I have had since the transition to common core is finding a way to teach higher level thinking skills; specifically, how to imbed the Standards for Mathematical Practices in my instruction. When students do not understand the language in a math problem, or how to organize their language to express their thinking, how can I teach them the mathematical practices, which tend to rely heavily on a student’s ability to process information? For years, I have attempted to make my focus on the practices more deliberate by adding tangible examples so that my students with special needs could understand them. How do you take an abstract idea like the practices and make them real for students who often feel overwhelmed and shut down?

When I was presented with an opportunity to join a book club centered on Routines for Reasoning: Fostering the Mathematical Practices in All Students (Kelemanik, Lucenta, & Creighton, 2016), I thought, “Why not?” The title alone states routines and mathematical practices for all students. I figured it may be a good way to develop some strategies for supporting my students. What I did not realize at the time was that it was going to completely change the way I teach math.
The book opens with an overview of the Standards for Mathematical Practice and the principles that guide these practices. Early in my reading I found the following statement: “Rather than being a barrier to those who ‘can’t,’ in particular ELLs and students with learning disabilities, the practices actually provide access and opportunity for all students to engage successfully with mathematics” (Kelemanik, Lucenta, & Creighton, 2016, p. 2). This sentence contradicted my entire mindset on the math practices. I avoided teaching them because I felt they were out of my students’ reach. The students I work with are easily overwhelmed, struggle to organize information, and have difficulty maintaining their focus long enough to remember mathematical steps. I hadn’t seen how engaging in the mathematical practices would be possible.

The authors use the first chapter to outline the eight Standards for Mathematical Practice, provide a structure for understanding how to prioritize the practices (See Figure 1), explain how the practices are connected, and provide student examples for how this may look in the classroom. This provided me with a way to conceptualize the standards for myself. Although I knew what the standards were, I had not internalized them to this degree before reading this chapter.

The chapters that follow focus on specific routines for math practices two, seven, and eight: reasoning abstractly and quantitatively, thinking about mathematical structure, and repeated reasoning. They tell you how to follow the routines, what they might look like, and give examples of their use in classrooms. Following these routines establishes a framework for your math lessons, providing students with familiarity and consistency they can rely on, which is particularly important for students with special needs. This gave me the tools I needed to get started with my groups right away. I didn’t need to spend much time figuring out how to apply the routine to my teaching.

Also, participating in book club was another way that helped me quickly incorporate these routines into my teaching. Our book club was made up of the elementary resource teachers in our district. We all have similar difficulties when it comes to teaching the math practices. When we met each month, we discussed our current chapter, brainstorming how to best implement the routine in our classrooms: How did we think it would work? What problems did we foresee? Then we talked about the previous chapter and routine we had implemented and the impact it had on our students. What did we learn? What did we want to change? By having these conversations, we were able to learn from one another and develop ideas to try in our own classrooms.

Honestly, this book can be overwhelming at times. There are so many great ideas to try that I’ve found myself wondering where to start. I have learned to take chunks from the routines and start to incorporate them. I started by having a group meeting with all of the students in my resource room. We discussed the work of mathematicians and how they think. The students’ conversation about what it means to be a mathematician was eye-opening. During this meeting we created an anchor chart with their ideas and some of mine. I used this opportunity to identify mathematical behaviors like finding quantities, drawing diagrams, identifying patterns, and using math tools. This allowed me to introduce the concepts they would see later, and to have them conveniently located.
on the anchor chart which we could all reference along the way.

Next, I started teaching my students to look for quantities, or things they can count and measure, in story problems and then draw diagrams to show those quantities. Through this routine I introduced a variety of mathematical tools they can use to show their thinking in the diagrams. This process alone has resulted in my students making significant progress. Now, instead of looking for numbers and key words, they focus on quantities and their subsequent meaning.

I have noticed them thinking about what those numbers mean and what they should do with them. They instantly draw diagrams and use tools they have learned in class and my room. This routine spurred a lot of discussion about how the answer is not what matters in this process. They know that I want to see what they are thinking. I am not looking for an answer, I am looking for quantities to be highlighted and diagrams that show what they are thinking. We found by focusing on these two things, often the answer just came out naturally.

I have two students who refuse to do math work. Put a story problem in front of them and they will distract themselves until the end of class. They know math is a weakness for them, and they were sure they couldn’t get the answer. After several weeks of using this routine with them I have seen
their mindsets change. By taking the pressure off having to find the answer, they are more willing to attempt problems. They are problem solving, and trying to draw their diagrams without any additional prompts. One of these students used to average zero percent on his story problem assessments, now he is averaging 50 percent. The differences I saw in my students from implementing just the first routine has made me a believer in this material.

While I know I haven’t implemented the routines exactly as they were introduced in the book, I do know I have changed the way I teach math. This has been a learning process for me along the way as well. Looking back, I can see tremendous growth in math scores, as well as mindset in my students and I know this material is worth it. I do have to adapt some things, because I am not certain how to apply the routine or because my students struggled. For example, some of the book’s thinking questions and reflection starters are confusing for my students. The language used is not familiar language . . . yet. This time around, I have not used that component of the routines. However, I do plan to continue reading these chapters modifying and changing my routines until I am incorporating these as well.

Through this process, I have learned that my students are so much more capable than I thought. It just takes time, practice, and routine to make it happen. I would recommend this book to any teacher that teaches math. Even if you take only one thing away from this book, that one thing is likely to change the way you teach math.

Misty Humpherys is a special education teacher in the Post Falls School District. She runs a resource room for students in grades first through fifth. She has been in this field for seven years and with the Post Falls School District for five of those. The students she teaches range in their ability levels and areas of academic needs. She shares, “One of the struggles I have had since the transition to common core is finding a way to teach higher level thinking skills, and the standards for mathematical practices. These skills and strategies are not concrete things you can teach to students. I have struggled at how to make them more visual and concrete so that students with special needs can see how they work, and learn how to use them.”

Instructional coaches from multiple districts have collaborated throughout the year through regular Professional Learning Community meetings. These gatherings have afforded coaches an opportunity to share knowledge of district-specific initiatives and to discuss practices with other instructional leaders. This work will continue in the 2018-2019 school year. Next year’s work will emphasize shared practice between coaches through direct observation of others in an attempt to grow and adapt skills together. These meetings are open to all instructional leaders, although the focus will continue to be in the area of mathematics. If you are interested in joining this group, please contact Abe Wallin (wallin@uidaho.edu) for more details.
More than 50 teachers from Region One registered for one of the three book clubs using *Routines for Reasoning* (Kelemanik, Lucenta, Creighton, 2016) during the academic year. Building on this work, the Idaho Regional Mathematics Center will continue exploring the routines with local students in the 2018-2019 school year. We invite you to consider joining us.

This year-long professional development opportunity will consist of an initial, two-day training followed by face-to-face meetings between August 2018 and March 2019. Participants will be asked to read the book prior to the first meeting on August 16th. This summer’s two-day academy (August 16th and 17th) will be an in-depth examination of the Standards for Mathematical Practice and the specific routines from the book. Teachers will be provided with examples of the routines and how to use them at various grade levels. In addition, teachers from across the region teaching the same grade levels will be partnered in grade-level teams; these groups will cooperatively develop classroom materials and lessons. Teachers will create research questions related to these routines which they will examine during the year.

Between September 2018 and March 2019, teachers will meet face-to-face three times. These meetings will provide opportunities for reflection on the implementation of the routines, discussion of modifications made, and to analyze data teachers have collected. At the culmination of this project, each team of teachers will be asked to create a presentation of their results, which then can be shared with others who may be considering using the routines for reasoning in their classrooms. The Idaho Regional Mathematics Center will also be collecting data on the overall experience of teachers as they implement the materials.

Everyone is welcome to participate in this action-research project providing the following conditions can be met: the participant (1) has read the book *Routines for Reasoning*, (2) can attend the August PD training, and (3) agrees to use the content from the book in his or her classroom and collect data throughout the year from his or her students. Stipends and credits will be available to teachers completing these requirements.

For more information, email us at irmc@uidaho.edu, call us at (208) 292-2514, or visit us online at www.uidaho.edu/irmc-events.
We gratefully acknowledge contributions and support from Idaho’s State Legislature and the Idaho State Department of Education, making these programs possible.

We Are Here To Support You

The Regional Mathematics Center is open year round. We are able to meet with teams of teachers during the summer months as well as during the school year. If your district is in need of mathematical support, please contact us. We are happy to work with teachers and administrators in developing instructional plans, conducting assessment reviews, or addressing other concerns at no cost.