Designing Instructional Tasks to Increase Student Engagement and Learning in Math

Through this Knowles Academy course, math teachers will work in small, collaborative groups as they learn to increase the cognitive demand of their lessons and provide more opportunities for students to talk about mathematics—tactics that lead to an increase in student engagement.

This sustained professional development course is designed to support teachers who aim to provide their students with a connected and conceptual understanding of math content. Through an introductory three-day, in-person workshop; a one-day, concluding in-person workshop; and ongoing coaching, this course will help math teachers provide increased opportunities for students to learn by increasing their use of high cognitive demand tasks and mathematical talk in their classrooms. Teachers will become more closely acquainted with the disciplinary practices described by the Common Core State Standards and Next Generation Science Standards, as well as the 5 Practices for Orchestrating Productive Mathematics Discussions. Using these resources as a framework, teachers will learn to engage students in authentic mathematics in ways that are aligned with the changing landscape of education in the U.S.

**Course Objectives:**
- Identify the cognitive demands of tasks and consider how the tasks influence students’ opportunities to learn
- Outline the content of an upcoming unit and consider how the tasks in their textbook/curriculum support students’ opportunities to learn
- Plan lessons using a cognitively demanding task
- Gain experience considering the alignment of the mathematical goal and the task, and other enactment factors, by providing feedback on other teachers’ lessons
- Analyze data from lessons, including other participants’ lessons and their own, to reflect on students’ opportunities to learn mathematics
- Develop strategies to analyze and support the mathematical talk in their classroom

**Date:** August 1–3, 2018; November 2018
**Time:** 8:30 a.m.–4:00 p.m. (coffee and lunch will be provided)
**Location:** Moorestown, NJ
**Price:** $800

Optional Graduate Course Credit Available - Additional Fees Apply

“Learning about how to incorporate high cognitive demand tasks that challenged my students but also allowed them to talk through their thinking was a powerful improvement in my classroom. Knowles showed me how to transition theory to action by providing the research and then strong examples of their use within a math classroom that was similar to mine.”

Riley Germanis, Math Teacher
Decatur High School, Federal Way, WA
Agenda:
Teachers will receive ongoing coaching that is initiated by a three-day, in-person workshop and concluded by a one-day, in-person workshop.

Day 1: Tasks in the Curriculum:
Exploring Cognitive Demand
• Engage in mathematical tasks as learners
• Explore the cognitive demands of mathematical tasks
• Modify tasks to increase cognitive demand
• Analyze current unit for cognitive demand

Day 2: Tasks in Our Lesson Plans:
Supporting Opportunities to Learn
• Revisit cognitive demands of tasks
• Explore and understand the 5 Practices for Orchestrating Productive Mathematics Discussions

Day 3: Tasks in Our Lesson Plans:
Supporting Our Students’ Opportunities
• Establish conditions for critical friendship
• Plan a lesson using the 5 Practices
• Organize and plan for collecting and analyzing data from that lesson

Between Workshops
• Teach the lesson planned on Day 3
• Analyze data and reflect on the lesson with other participants

Day 4: Tasks in Enactment: Supporting Student Discourse
• Explore mathematical talk in classrooms frameworks
• Examine cases of mathematical talk in classrooms
• Reflect on the talk that happens in your own classroom
• Plan a lesson that focuses on talk for your classroom

The Knowles Teacher Initiative supports the efforts of high school mathematics and science teachers to improve education in their classrooms and beyond. We are committed to supporting a national network of mathematics and science teachers in developing as leaders and collaborators, facilitating exploration and innovation, and ultimately improving mathematics and science education in the U.S. Visit www.knowlesteachers.org to learn more.