Developing Mathematical Discourse in the Secondary Classroom

Explore how to make students effective practitioners of mathematics and teach them how to explain their mathematical understandings, engage in mathematical discussions with their peers, deliver sound mathematical arguments and critiques, and communicate using academic mathematics language. Participants develop strategies for engaging students in rich mathematical discourse in alignment with Standards for Mathematical Practice. They also learn how to develop students’ mathematical communication skills during their instruction.

OUTCOMES:
By the end of the workshop, participants will be able to:

• Define rich mathematical discourse.
• Identify opportunities during instruction that allow for rich mathematical discourse.
• Develop strategies for promoting mathematical discourse in a variety of classroom situations.
• Describe the importance of developing students’ mathematical language skills.
• Demonstrate how to use effective questioning techniques to engage students in rich mathematical discourse.

AGENDA:
(See the following page for extended agenda.)

Introduction
Section 1: Mathematical Communication
Section 2: Discourse around a Rich Problem
Section 3: Get Students Talking
Section 4: Going Deeper: Strategies That Promote Productive Mathematical Discourse
Section 5: Teaching for Mathematical Proficiency
Reflection and Closing
<table>
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<tr>
<th>SECTION</th>
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| Introduction                    | 35 minutes | Welcome  
Agenda  
Activity: Telephone Math  
Outcomes                                                                                   |
| 1: Mathematical Communication   | 55 minutes | Section 1 Big Questions  
Discourse Think Aloud  
Communication Standards in Mathematics  
Activity: Mathematical Practices in Famous Trios  
Definition of Mathematical Discourse  
Activity: I Spy  
Small-Group and Whole-Class Discussions  
Video: The Role of Mathematical Discourse in the CMP2 Classroom  
Phases of a Classroom Discussion  
Revisit the Section 1 Big Questions |
| Break                           | 10 minutes | Section 2 Big Questions  
All-Sports Ticket Survey Problem  
The Teacher’s Role and the Student’s Role in Classroom Discourse  
Revisit the Section 2 Big Questions |
| 2: Discourse around a Rich Problem | 55 minutes | Section 3 Big Questions  
Recognizing the Concerns of Teachers  
Overcoming Obstacles  
Activity: Blogging  
Establishing Ground Rules with Students  
Video: Classroom Conversation: A Way to Begin  
Activity: Participate in a Classroom Conversation  
Revisit the Section 3 Big Questions |
| 3: Get Students Talking         | 60 minutes | Section 4 Big Question  
Effective Questioning  
Choosing Effective Questions  
Activity: Choosing Effective Questions  
Classroom Strategies for Mathematical Discussions  
Classroom Video Observation  
Video: Sharing Gas Costs  
Reflect: Something Old, Something New  
Revisit the Section 4 Big Question |
| Lunch                           | 30 minutes | Section 5 Big Question  
Standards for Mathematical Practice Card Sort (SMP Card Sort)  
Activity: SMP Card Sort—Part 1  
Activity: SMP Card Sort—Part 2  
Self Evaluation  
Revisit the Section 5 Big Question |
| Break                           | 10 minutes | Section 6 Big Question  
Teaching for Mathematical Proficiency  
Activity: SMP Card Sort—Part 3  
Activity: SMP Card Sort—Part 4  
Self Evaluation  
Revisit the Section 6 Big Question |
| Reflection and Closing          | 10 minutes | Do Now!  
Outcomes Review  
Closing                                                                                     |
| Total                           | 6 hours  |                                                                                                                                            |