

## Facilitation Guide – NCM1.4 Quadratic Functions

The purpose of this facilitation guide is to support your use of the NC<sup>2</sup>ML Content and Pedagogy Modules and NC<sup>2</sup>ML Research-Practice Content & Pedagogy Briefs in Professional Learning Community (PLC) meetings or other Professional Learning contexts. Each module/brief pair has a separate guide designed specifically to support the content within. The guide includes suggestions for activities to complete prior to the session as well as suggestions for next steps to carry out after the session to support continued growth as teachers implement new strategies in their classrooms. We encourage you to engage in conversations and group activities that best meet your group's needs.

### Central Task: Fundraiser Task

#### Module Overview

The content modules are designed to provide artifacts to reflect on and focus your discussions around, specific to the mathematics in the unit of focus. Each module takes about 1 hour to complete and includes an overview of the standards within the unit - how they are different from the previous

standards and how they connect to prior and later math courses - in the form of a brief video clip; a central instructional task that could be implemented within the unit, student work on the central task, video clips of NC teachers discussing the central task (e.g., how they used it in their classrooms, things they might change about the way they implemented it, strategies students used to solve the task), and research on student thinking about the mathematics in the unit that should inform lesson plans. A typical content module outline is as follows:

#### Thinking Ahead: Students' Mathematical Thinking

Each module opens with a few questions designed to have you reflect on student thinking related to the mathematics in the unit. Embedded google forms are used for this portion of the module so that your "pre-thinking" remains anonymous.

#### Engaging with the Central Task

A task appropriate to be implemented within the unit is shared. You are encouraged to take time to complete the task and think about how you might use it prior to moving on in the module.

#### Conversations with colleagues: Implementing the Central Task

Brief video clips of NC teachers discussing the task itself and the prompts posed in the online discussion you just participated in.

#### Analyzing Student Work on the Central Task

Sample work from students that have engaged with the task is shared. This work intentionally highlights common strategies and misconceptions.

#### Conversations with Colleagues: Analyzing Students' Work

Brief video clips of NC teachers discussing the student work and instructional decisions they might make as a result.

## Research on Students' Mathematical Thinking related to the Unit Content

Discussion of what we know from research about students' learning of the content within the unit. This may include video clips and/or sample student work related to new tasks.

*There are discussion questions between each of the activities within the module to guide your online and face-to-face collaborations around the big ideas presented in the module.*

### Suggestions Using the Content Modules in PLC Settings

**The content modules work very well as a springboard for work within a PLC on a specific unit.** Ideally, they get you thinking, and then together you can dig into the ideas a bit more deeply. It is recommended that a unit content module is completed prior to planning for that particular unit. Specific suggestions include:

- Prior to planning a unit complete the associated content module and read the associated brief. Both are linked on the unit resources page in canvas.
- If you are watching the videos as a group, a set of small speakers and a projector would be helpful.
- It is suggested that if you plan to work through a content module during a PLC meeting everyone complete the central task and read through the brief prior to the meeting. This will not only save time in the meeting by streamlining your discussion, but it also will ensure that there are more strategies brought to the table to consider than if the group works on the task together.
- There are discussion prompts throughout the module and within the briefs. Use these to guide your group's' discussion. Feel free to emphasize the issues that are of particular interest to you and your context.
- If you are working as a group, please make sure at least one member of the group enters responses to the online discussion forums. This ensures that teachers across the state have ways to connect with others around common issues.
- Read through other's responses to the online discussion. There are likely some great ideas and questions to add to your discussion and unit planning.



#### ALSO SEE RESEARCH-PRACTICE BRIEFS:

#4 *NCM1.4 Quadratic Functions*

## Conversations with Colleagues: Unit Standards Overview

Brief video clips of mathematics teacher leaders and teacher educators highlighting the important big ideas in each unit, how the unit builds from previous courses/units, suggested connects, and how standards within the unit are different from previous standards.

### LEARN MORE

Join us as we journey together to support teachers and leaders in implementing mathematics instruction that meets needs of North Carolina students.

### NC²ML MATHEMATICS ONLINE

For more information on accessing Canvas learning modules or additional resources please visit <http://nc2ml.org/>

### SUGGESTED CITATION

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