

Thinking Through a Lesson Protocol TTLP

The main purpose of the TTLP protocol is for a teacher or grade level team to think deeply about a specific lesson before teaching it - beyond the structural components associated with lesson planning (e.g., listing the materials you will need, describing the way students will be grouped, determining teacher actions during the lesson) to a deeper consideration of how you are going to advance students' mathematical understanding during the lesson. This is not to say that structural components of a lesson are not important, but rather that a focus on structural components alone is *not sufficient* to ensure that students learn mathematics.

Part 1: Selecting and Setting up a Mathematical Task

- What do you want students to know and understand about mathematics as a result of this lesson?
- Previous Experience
 - In what ways does the task build on students' previous knowledge?
 - What definitions, concepts, or ideas do students need to know in order to begin to work on the task?
 - What questions will you ask to help students access their prior knowledge?
- What are all the ways the task can be solved?
 - Which of these methods do you think your students will use?
 - What misconceptions might students have?
 - What errors might students make?
- What are your expectations for students as they work on and complete this task?
 - What resources or tools will students have to use in their work?
 - How will the students work—independently, in small groups, or in pairs—to explore this task? How long will they work individually or in small groups/pairs? Will students be partnered in a specific way? If so, in what way?
 - How will students record and report their work?
- How will you introduce students to the activity so as not to reduce the demands of the task?
 - What will you hear that lets you know students understand the task?

Part 2: Supporting Students' Exploration of the Task

- As students are working independently or in small groups:
 - What questions will you ask to focus their thinking?
 - What will you see or hear that lets you know how students are thinking about the mathematical ideas?
 - What questions will you ask to assess students' understanding of key mathematical ideas, problem solving strategies, or the representations?
 - What questions will you ask to advance students' understanding of the mathematical ideas?
 - What questions will you ask to encourage students to share their thinking with others or to assess their understanding of their peer's ideas?
- How will you ensure that students remain engaged in the task?
 - What will you do if a student does not know how to begin to solve the task?
 - What will you do if a student finishes the task almost immediately and becomes bored or disruptive?

Part 3: Sharing and Discussing the Task

- How will you orchestrate the class discussion so that you can accomplish your mathematical goals? Specifically:
 - Which solution paths do you want to have shared during the class discussion? In what order will the solutions be presented? Why?
 - In what ways will the order in which solutions are presented help develop students' understanding of the mathematical ideas that are the focus of your lesson?
 - What specific questions will you ask so that students will:
 - make sense of the mathematical ideas that you want them to learn?
 - expand on, debate, and question the solutions being shared?
 - make connections between the different strategies that are presented?
 - look for patterns?
 - begin to form generalizations?
- What will you see or hear that lets you know that students in the class understand the mathematical ideas that you intend for them to learn?
- What will you do tomorrow that will build on this lesson?

Thinking Through a Lesson Protocol (TTLP)

Domain _____ Standard Code: _____ Name _____

Lesson _____ Date _____

PART 1: SELECTING AND SETTING UP A MATHEMATICAL TASK

What are your mathematical goals for the lesson? (i.e., what do you want students to know and understand about mathematics as a result of this lesson?)	
<ul style="list-style-type: none">• What are your expectations for students as they work on and complete this task?• What resources or tools will students have to use in their work that will give them entry into, and help them reason through, the task?• How will the students work—independently, in small groups, or in pairs—to explore this task?• How will students record and report their work?	
How will you introduce students to the activity so as to provide access to <i>all</i> students while maintaining the cognitive demands of the task?	Launch 1:

Adapted from: Smith, Margaret Schwan, Victoria Bill, and Elizabeth K. Hughes. "Thinking Through a Lesson Protocol: Successfully Implementing High-Level Tasks." *Mathematics Teaching in the Middle School 14* (October 2008): 132-138.

PART 2: SUPPORTING STUDENTS' EXPLORATION OF THE TASK

<p>As students work independently or in small groups, what questions will you ask to—</p> <ul style="list-style-type: none">• help a group get started or make progress on the task?• focus students' thinking on the key mathematical ideas in the task?• assess students' understanding of key mathematical ideas, problem-solving strategies, or the representations?• advance students' understanding of the mathematical ideas?	<p><u>Getting Started Questions:</u></p> <p><u>Focus Questions:</u></p> <p><u>Assessing Questions:</u></p>
<p>How will you ensure that students remain engaged in the task?</p> <ul style="list-style-type: none">• What assistance will you give or what questions will you ask a student (or group) who becomes quickly frustrated and requests more direction and guidance is solving the task?• What will you do if a student (or group) finishes the task almost immediately? How will you extend the task so as to provide additional challenge?	<p><u>Assistance:</u></p> <p><u>Extensions:</u></p>

PART 3: SHARING AND DISCUSSING THE TASK

How will you orchestrate the class discussion so that you accomplish your mathematical goals?

- Which solution paths do you want to have shared during the class discussion?

In what order will the solutions be presented? Why?

- What specific questions will you ask so that students will—
 1. make sense of the mathematical ideas that you want them to learn?
 2. expand on, debate, and question the solutions being shared?
 3. make connections among the different strategies that are presented?
 4. look for patterns?
 5. begin to form generalizations?

- What will you see or hear that lets you know what students in the class understand the mathematical ideas that you intended for them to learn?

Solution Path:

Specific Questions:

Evidence: What will you see or hear?