Thinking Like Mathematicians (TLM): Challenging All Grade ‘3 students is a 5-year project (2017–2022). The project addresses important educational issues related to instructional and curricular differentiation for all students, developmental identification strategies for all students, and the necessity of meeting the academic needs of students from all cultural groups, all language groups, all economic strata, and all students with gifts and learning challenges.

This project provides grade 3 students in general education ‘classrooms access to high quality mathematics curriculum that incorporates these principles of differentiation. The curriculum is challenging and engaging, but responsive to students’ needs, and it uncovers and promotes students’ talents. It also offers teachers the necessary guidance to implement high quality curriculum organized in a lesson plan format. The project was a multisite randomized ‘control trial that occurred in five states.

### The Unit

**Description of Thinking Like Mathematicians (TLM)**

**Strategies**

1. **Focusing and Funneling Questions** (Zrike & Connolly, 2015)

   **Focusing Questions:**
   - Open-ended questions
   - Enables students to justify responses based on their own thinking
   - Responsibility lies with the students

   **Funneling Questions:**
   - Close-ended questions
   - The student is guided through a series of questions built around how the teacher would solve the problem
   - Responsibility lies with the teacher
   - Examples: What unit label should you include after your answer?

   Can you round that number up to the nearest 10?

2. **Talk Moves** (Chapin et al., 2009)

   **Move**
   - **Revoicing**
   - **Wait Time**

   **Sample dialogues** were used throughout the unit to support teachers with questioning techniques. (Cole et al., 2015, p. 138)

3. **Listening Orientation Framework** (Gilson & Little, 2016)

   - How do teachers listen?
   - How do teachers listen to promote or hinder student participation?
   - Teachers tend to listen through many factors: questions asked by their students, their relationships with them, and their teaching style

### References


