



# Using Collaborative Teacher Inquiry to Support Students with LDs in Math

Viewers' Guide



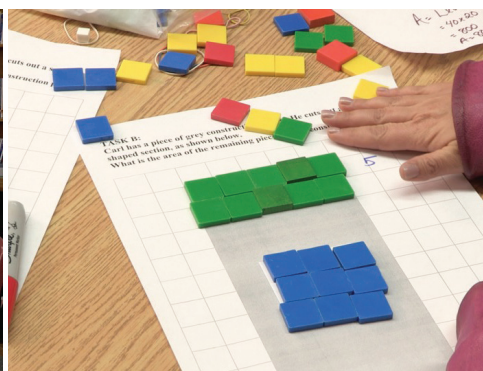
# Using Collaborative Teacher Inquiry to Support Students with LDs in Math

## Viewers' Guide

This video provides an overview of collaborative teacher inquiry (CI) and how it can be used to facilitate and investigate new ways of supporting students with learning disabilities (LDs) in the area of math. This video features an interview with a Special Education Consultant, a Student Achievement Consultant, and a Grade 7/8 Classroom Teacher. Each participant discusses the importance of CI and how it might be used to support the learning of students with LDs in the area of math.

This viewers' guide provides viewers with the opportunity to reflect on their thoughts and practices relating to CI, both individually and as a group. The viewers' guide includes the following sections:

- *The Collaborative Teacher Inquiry Concept Map* is a pre-viewing activity that allows viewers to record what they know about collaborative teacher inquiry (CI), how they might use CI to support students in the classroom, and to reflect on how they can improve their use of CI to better support students with LDs in math.
- *Guided Viewing = Key Takeaways* is a viewing activity that uses guiding questions which allow viewers to record key ideas to concepts explored throughout the video.
- *Deepening Your Understanding of Strategies to Support Students with LDs in Math* is a post-viewing activity that allows viewers an opportunity to explore resources available on the LD@school website and to reflect on their professional practice, as it relates to supporting students with LDs in math.
- *Math Manipulatives in the Classroom* is an application activity that provides viewers with an opportunity to collaborate with colleagues to generate a list of age/grade appropriate concrete manipulatives that could be used in each of the strands in the Ontario math curriculum.
- *Appendix A* identifies key messages from the video that a facilitator may use to initiate additional discussions and to ensure that all key concepts are understood.



# Collaborative Teacher Inquiry Concept Map

## Pre-viewing Activity

Prior to watching the video, complete the first three boxes “What Collaborative Teacher Inquiry (CI) means to me”, “Why is CI important”, and “How I use CI to support students with LDs in math”. Once you have viewed the video, return to this activity and respond to the query in the final box, “How might I more effectively use CI to support students with LDs in math”. When you have completed the graphic organizer below, you may want to discuss your recorded points with a partner or in a small group.


What Collaborative Teacher Inquiry (CI)  
means to me:

Why CI is important

Collaborative  
Teacher Inquiry

How I use CI to support students  
with LDs in math:

How might I more effectively use  
CI to support students with LDs in math:



## Guided Viewing = Key Takeaways

### *Viewing Activity*

While watching the video, use the graphic organizer below to record takeaway points in answer to the guiding questions.

**What are some areas that LDs in math may effect?**

**What are the steps of a CI process?**

**What are some ways that math manipulatives might be used?**

**What can educators use to inform their choice of strategies for individual students?**

**What were some of the positive results of using a CI process?**

# Deepening Your Understanding of Strategies to Support Students with LDs in Math

## Post-viewing Activity

The video on CI to support students with LDs in math is but one of many resources available on the LD@school website, [www.LDatSchool.ca](http://www.LDatSchool.ca). Using the search function on the LD@school website, enter the term, “numeracy” in the search field; “dyscalculia” is a secondary search term to try. After reviewing the resources in each category, consider the reflective question below as it relates to your current and future instructional practices:

### Examples of Evidence-based Summaries:

- Math Heuristics
- Verbalization in Math Problem Solving

**Reflective question:** How could the strategies identified in these summaries help my students with LDs who are experiencing difficulty solving math word problems?

### Examples of Practice-informed Summaries and Articles:

- Numeracy & LDs
- Using Apple Technology to Support Learning for Students with Sensory and Learning Disabilities
- Assistive Technology for Students with Learning Disabilities: Information, Tools and Resources for Teachers

**Reflective question:** How could I use assistive technology to support my student(s) with LDs in math?

### Example of a Multi-media Resource:

- Understanding Developmental Dyscalculia: A Math Learning Disability (Webinar given by Dr. Daniel Ansari)

**Reflective Question:** How does developmental dyscalculia impact learning? What supports, accommodations and interventions could I use to support a student with this diagnosis?



# Math Manipulatives in the Classroom

## *Application Activity*

As discussed in the video, the use of manipulatives can help students with LDs in math understand concepts and demonstrate their learning. In the classroom, manipulatives can be used to introduce, practice or provide remediation for a concept. Think about a student, or group of students, with LDs in math, with whom you work. In a small group or with a partner, collaborate to generate a list of age/grade appropriate manipulatives that could be used for each of the strands in the Ontario math curriculum (one example is provided for each strand):

### **Number Sense and Numeration:**

- Counters (can be used to teach one-to-one correspondence, ordinal numbers, and basic addition and subtraction).
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### **Patterning and Algebra**

- Pattern blocks (can be used to create, find, or extend patterns).
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### **Geometry and Spatial Awareness**

- Geoboards (can be used to identify simple geometric shapes and describe their properties and to develop spatial sense).
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### **Measurement**

- Tiles (can be used to find the area or the perimeter of an object).
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### **Data Management and Probability**

- Number cubes or dice (can be used to find the experimental probability of rolling a certain number or a combination of numbers).
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## Appendix A:

### Key Messages and Concepts in Using Collaborative Teacher Inquiry to Support Students with LDs in Math

- There are various types of LDs and each student experiences them differently.
- With the right supports and accommodations in place, all students with LDs can succeed in the classroom, including math.
- LDs take different forms and have varying impacts on students' learning in math, depending on the students' areas of strengths and needs. LDs may affect students' abilities with estimating quantities, memorizing number facts and understanding visual-spatial relationships in math.
- An engaged CI is one strategy to better support students with LDs in math.
- CI is a facilitator-guided process where educators investigate an area of their practice, develop and implement strategies for student improvement, record observations, and then meet regularly to discuss results and next steps.
- The facilitator should work collaboratively with all educators in both general and special education settings.
- CI meetings help educators and special education teachers to help create a toolbox of strategies.
- The Individualized Education Plan (IEP) documents instructional strategies for students with special education needs.
- Math manipulatives could be a useful strategy to help a student struggling with LDs in math.
- Using math manipulatives may help students understand complex operations and concepts.
- Adding math manipulatives may involve a change in teaching practice. Manipulatives may also increase student engagement, as well as instill greater confidence and a shift in math mindsets.
- CI meetings could also increase educators' confidence and provide them with an opportunity to tailor their instructional practices to meet the needs of all learners.
- CI may not only lead to better strategies for supporting students with LDs, but may also spark a change in educators' big-picture thinking.
- Educators should know and understand the strengths and needs of their students with LDs, as well as recognise what they need in order to support them.
- Accommodations for students with LDs may also benefit other students.



## Relevant Resources

- **Click here** to access the article from the Capacity Building Series “Collaborative Teacher Inquiry” on the Ontario Ministry of Education website ([www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS\\_Collaborative\\_Teacher\\_Inquiry.pdf](http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_Collaborative_Teacher_Inquiry.pdf)).
  - **Click here** to access a tip sheet for teachers on manipulatives management, produced by the Ontario Ministry of Education ([www.edu.gov.on.ca/eng/studentsuccess/lms/files/ManipulativesManagement.pdf](http://www.edu.gov.on.ca/eng/studentsuccess/lms/files/ManipulativesManagement.pdf)).
  - **Click here** to access a webinar produced by the Ontario Teachers’ Federation, “Using Manipulatives for Problem-Solving in the Junior Classroom” ([www.OTFFEO.on.ca/en/learning/pd-calendar/events/using-manipulatives-problem-solving-junior-classroom/](http://www.OTFFEO.on.ca/en/learning/pd-calendar/events/using-manipulatives-problem-solving-junior-classroom/)).
  - **Click here** to access the mathematics resource document produced by EduGains, “Paying Attention to Mathematics Education: K – 12” ([www.edugains.ca/resourcesLNS/MathResources/MathematicsResourceInventory.pdf](http://www.edugains.ca/resourcesLNS/MathResources/MathematicsResourceInventory.pdf)).
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Thank you for watching Using Collaborative Teacher Inquiry to Support Students with LDs in Math and for using this viewer’s guide.

At this time, we invite you to share your thoughts and comments relating to this video; the feedback we receive will assist in the development of future videos and future content for the LD@school website. Please share your thoughts and comments by completing our short survey through this link:

➤ [https://www.surveymonkey.com/r/Collaborative\\_Teacher\\_Inquiry](https://www.surveymonkey.com/r/Collaborative_Teacher_Inquiry).

## Here is an opportunity to help out other educators!

Do you have any information on collaborative teacher inquiry to support students with LDs that you would like to share with LD@school? Or do you know of a specific strategy, practice or approach that has worked well in supporting the needs of students with LDs at school?

➤ **Click here to send your ideas to [info@LDatSchool.ca](mailto:info@LDatSchool.ca).**

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