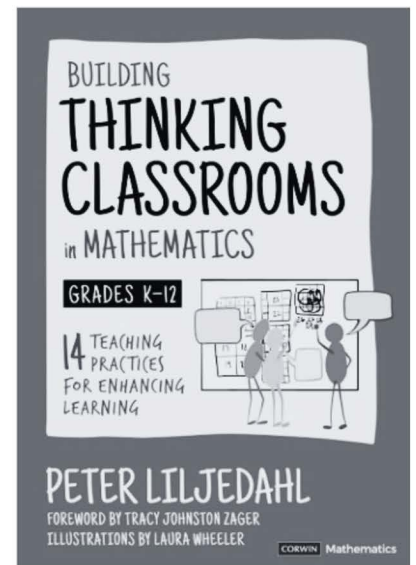


The Thinking Classroom

Originally developed in the 1990's, Thinking Classrooms is a method of teaching mathematics that encourages and enables students to explore concepts and be guided through material, rather than taught directly from a "top-down" method. Research was showing that many students quickly forgot or did not truly understand what they were taught in a lecture-style classroom, and were unable to apply the skills learned to different questions and situations. The "Thinking Classroom" model aims to get away from learning without understanding, by engaging students in active participation.



Things mathematicians do...

Notice Details	Explain Their Thinking	Persevere (Keep Trying)
Collaborate with Others	Think Creatively	Ask Questions
Take Risks	Communicate	Take Their Time
Draw Representations	Look for Patterns	Are Curious



What does class look like?

- Students will work collaboratively in random groupings to solve problems and work through concepts at vertical dry erase boards.
- Groups are given an open-ended task that requires them to draw on past knowledge and take risks to find new solutions using concepts they already know.
- Students will get stuck...experiment, try, fail, and apply their knowledge in order to get unstuck.
- New concepts are introduced in a "thin-slicing" method. This means that the teacher will guide students through the basic concept and then give more difficult questions that they can explore with the same ideas to solidify understanding.
- Work is done in groups, on whiteboards, so that students can ask classmates questions and have opportunities to share their knowledge.
- The teacher supports students to the minimum degree necessary.
- At the end of class, we come together to summarize and solidify the ideas that were discovered, and the teacher provides missed information so that all material is covered.



Why does this work?

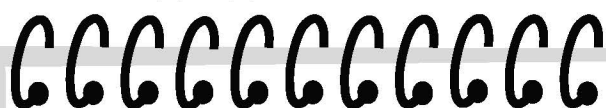
- Human beings are curious. When we discover something for ourselves, we are much more likely to internalize it and be able to apply it to different scenarios.
- Being able to do something is the basic level of understanding. Beyond this, being able to justify, explain, teach, and create the ideas learned enhances understanding even more.

In order to promote problem-solving skills and teamwork, I may not directly answer every question students ask. However, this does not mean they won't be supported. For instance, I will often provide a question or suggestion to help a group move forward or provide an extension when they are ready for more. Other student groups also have knowledge that can be shared and learned.

Note-Making

(Notes for your future forgetful selves)

After group tasks, we will work to make notes that will help students to understand and synthesize Math skills/concepts. Students will be able to use their notes during class-based assessments ONLY. It is in their best interest to do a thorough job with their notes. Students are responsible for their learning.



Check Your Understanding

Students will be given Check Your Understanding (CYU) questions throughout the unit. CYU questions will not be graded, but will offer an opportunity to work on concepts from class. CYU questions will include answers to know if they're on the right track. Worked solutions will be posted in Google Classroom within a couple days of distribution. There is a strong correlation between practice, mastery, and good grades. (This means practice is essential!!)

What we've found...



- students are coming for extra help and to upgrade their marks during recess/lunch
- students know exactly where they are struggling
- students are aware of how they are doing in the course
- all students get to know (and work with) the other students in the class
- integration of new students is supported through random groupings
- students develop flexibility around working with a variety of people
- thinking is not limited as students are exchanging ideas with different people daily

Random Grouping



As students enter the classroom, they will choose a playing card at random that will determine the group they will sit/work with during that class. Professional behaviour and language are expected in the classroom and with their group. At the beginning of each class, students will choose a new group with which to work to share new ideas and collaborate to increase understanding.