My Mathematical Approach

My mathematics program is grounded in the belief that every student can see themselves as a capable, flexible, and confident mathematical thinker. My goal is not simply for students to get answers, but for them to develop mathematical understanding, problem-solving stamina, procedural fluency, communication skills, and a positive mathematical identity.

My approach is aligned with the Ontario Mathematics Curriculum, the York Region District School Board Mathematics Strategy, and YRDSB priorities related to curriculum fidelity, knowing the mathematics learner, High-Impact Instructional Practices, equitable assessment practices, and centering students who have historically and currently experienced barriers in mathematics. Mathematics learning in my classroom is designed to be accessible, challenging, collaborative, joyful, and connected to students' lived experiences.

I continue to value the work of Dr. Marian Small and the use of Big Ideas in mathematics instruction. At the same time, my math program has evolved to reflect current priorities in Ontario mathematics education, including social-emotional learning, mathematical modelling, coding, financial literacy, data literacy, culturally responsive pedagogy, Universal Design for Learning, differentiated instruction, and assessment as, for, and of learning.

A Comprehensive Math Program

My math block reflects the spirit of YRDSB's Comprehensive Math Program, which connects three essential components: the Environment, the Learners, and the Learning.

The Environment matters because students need to feel safe, valued, and willing to take mathematical risks. I work intentionally to build a classroom where students can ask questions, make mistakes, explain their reasoning, challenge ideas respectfully, and learn from one another. Community Circles help us build trust, establish norms for collaboration, and develop the kind of talk community where mathematical discourse can flourish.

The Learners matter because effective math instruction begins with knowing students. I use ongoing assessment, observation, conversation, student work, reflection, and conferencing to understand students' strengths, needs, interests, identities, and entry points. This allows me to plan instruction that is responsive rather than one-size-fits-all.

The Learning matters because students need a balance of rich problem solving, explicit instruction, guided practice, purposeful consolidation, and opportunities to apply their thinking in meaningful contexts. My goal is to help students understand mathematics deeply, use strategies flexibly, communicate their thinking clearly, and transfer learning across strands and real-world situations.

Structure of the Math Block

A typical math block may include the following connected components:

Warm-Up / Minds-On: Students begin with accessible thinking routines such as number talks, estimation, visual patterns, Solve Me-style puzzles, Which One Doesn't Belong?, mental math, or other low-floor/high-ceiling tasks. These warm-ups help build fluency, confidence, flexibility, and mathematical discourse.

Mini Lesson / Explicit Instruction: Short, focused direct instruction is used to introduce or strengthen key concepts, model strategies, connect representations, address misconceptions, and highlight important mathematical vocabulary. Explicit instruction is balanced with opportunities for students to think, talk, represent, practice and apply.

Rich Tasks and Meaningful Problems: Students engage in meaningful problem-solving tasks that promote reasoning, collaboration, multiple strategies, perseverance, and justification. These tasks may connect to real-world contexts, cross-curricular learning, financial literacy, coding, data literacy, or mathematical modelling.

Investigation and Practice: Students may work independently, with partners, in small groups, or in flexible groupings. They use manipulatives, diagrams, digital tools, whiteboards, math journals, oral explanations, and symbolic notation to represent and refine their thinking. Practice is purposeful and connected to understanding, not simply repetition.

Consolidation and Reflection: The lesson ends by bringing student thinking together. We compare strategies, name important mathematical ideas, address misconceptions, co-construct success criteria, and reflect on next steps. Community Learning Circles may be used to help students reflect on what they learned, how they learned it, and how their thinking changed.

High-Impact Instructional Practices

My instruction draws on current High-Impact Instructional Practices in mathematics, including learning goals, co-constructed success criteria, descriptive feedback, direct instruction, problem-solving tasks, teaching about problem solving, tools and representations, math conversations, small-group instruction, deliberate practice, and flexible groupings.

These practices are not used in isolation. I select instructional approaches based on the learning goal, the evidence I gather from students, and the needs of the class. Some lessons require explicit modelling. Others require exploration, discussion, or investigation. Strong math instruction requires professional judgment, careful sequencing, and responsiveness to student thinking.

I also incorporate elements of Building Thinking Classrooms, including collaborative problem solving, visible student thinking, flexible grouping, and vertical non-permanent surfaces when appropriate. These routines help students become more willing to begin, revise, explain, justify, and learn from one another.

Assessment in Mathematics

Assessment is woven throughout the math block. I use assessment for learning to determine where students are and what they need next. I use assessment as learning to help students reflect on their own strategies, confidence, misconceptions, and growth. I use assessment of learning to evaluate achievement after students have had meaningful opportunities to learn, practice, receive feedback, and demonstrate understanding.

Evidence of learning is collected through triangulation of assessment: observations, conversations, and products.

- Observations: watching how students solve problems, use tools, collaborate, persevere, take risks, and apply strategies.
- Conversations: listening to students explain their thinking, justify choices, ask questions, use mathematical vocabulary, and respond to feedback.
- Products: reviewing written work, exit tickets, quizzes, math journals, digital tasks, projects, performance tasks, and assessments.

This balanced approach provides a more accurate picture of student learning than tests alone. It also supports equity by allowing students to demonstrate mathematical understanding in multiple ways. Tools such as conferencing notes, checklists, student reflection, traffic light self-assessment, and success criteria help students understand where they are, where they are going, and what next steps will move their learning forward.

Equity, Access, and Mathematical Identity

A strong math program must be inclusive, culturally responsive, and barrier-free. I plan with Universal Design for Learning, differentiated instruction, accommodations, manipulatives, visual supports, oral language opportunities, small-group instruction, assistive technology, and digital tools when appropriate.

I am intentional about challenging the idea that only some students are math people. Students need to see mathematics as creative, useful, beautiful, social, and connected to their lives. This includes honouring students' identities, cultures, languages, strengths, interests, and lived experiences.

In alignment with YRDSB equity commitments, I work to ensure that math instruction and assessment are bias-aware, anti-oppressive, anti-racist, and responsive to students who have historically been underserved or marginalized, including Black students, Indigenous students, Multilingual Language Learners, students with special education needs, and students who may experience barriers to achievement or belonging. This includes ongoing reflection on dismantling anti-Black racism in curriculum, assessment, classroom discourse, and access to high expectations.

When students struggle, I respond early through ongoing assessment, targeted small-group instruction, accommodations, and intervention planning. Resources such as the PRIM / Pre-Referral Intervention Manual, IEP accommodations, student learning profiles, consultation with support staff, and collaboration with families help guide responsive next steps.

Math Tools, Manipulatives, and Digital Resources

Manipulatives and digital tools are important because they make mathematical thinking visible. Students use concrete, visual, symbolic, oral, and digital representations to explore concepts and communicate understanding.

Tools may include base-ten blocks, fraction strips, pattern blocks, algebra tiles, number lines, hundreds charts, geoboards, grid paper, virtual manipulatives, coding platforms, financial literacy simulations, data tools, student whiteboards, math journals, and board-supported resources such as Math UP where appropriate.

I continue to value online math resources, games, puzzles, and virtual manipulatives, but these are selected with intention. The purpose is always to support curriculum expectations, deepen conceptual understanding, build procedural fluency, encourage mathematical reasoning, and provide students with multiple entry points into the learning.

Learning Goals, Success Criteria, and Rubrics

Students learn best when they understand what they are learning, why it matters, and how they can improve. For this reason, I use learning goals and co-constructed success criteria to make expectations clear and transparent.

Rubrics, checklists, exemplars, conferences, descriptive feedback, student self-assessment, and peer discussion help students understand the qualities of effective mathematical communication, reasoning, problem solving, and application.

Rather than using rubrics only at the end of learning, I use them as part of the learning process. Students revisit criteria, reflect on their progress, set goals, and use feedback to improve. This helps students become more independent, reflective, and confident mathematics learners.

Sources

- York Region District School Board - Mathematics page
- York Region District School Board - Board Improvement Plan for Math
- York Region District School Board - Mathematics Strategy PDF
- Ontario Ministry of Education - High-Impact Instructional Practices in Mathematics
- Ontario Ministry of Education - Growing Success: Assessment, Evaluation, and Reporting in Ontario Schools
- Ontario Curriculum and Resources - Mathematics