



TDSB MATHEMATICS ACTION PLAN



SETTING THE CONTEXT

Mathematical skills, knowledge and processes play a crucial part in developing active and informed citizens in a society where data and technology continue to play greater roles. In recognition of this, it is important that all students' learning opportunities are mathematically rich, meaningful to students, and serve to expand their understanding of the world around them. The Toronto District School Board is committed to ensuring that mathematics teaching and learning meets this objective.

The [Multi-Year Strategic Plan](#) identifies goals and actions that guide the work of the system, schools and classrooms to support students' development of mathematical thinking, procedural fluency and conceptual understanding. The [Vision for Learning](#) illustrates that deep learning practices, supported by technology, are vital for modern learners to view mathematics as worthwhile

and themselves as effective math learners and doers. Through the TDSB's commitment to equity, inclusion and anti-oppression, mathematics instruction should reflect the voices, identities, abilities, lived experiences and expertise of students through an [Inclusive Design](#) approach. It is also through this commitment that systemic barriers to high-quality mathematics education are identified, addressed and eliminated.

The TDSB Mathematics Plan has been created through consultations with various stakeholders and in alignment with the board's vision, mission and values. It provides more specific directions to the system, schools, and classrooms for actions and ongoing improvement efforts in the service of developing students' mathematical skills and thinking.

DRIVING QUESTIONS



The seven questions below guided the discourse amongst various stakeholders across the TDSB and the eventual development of the TDSB Mathematics Plan. School teams are invited to use the following questions to begin local discourse on improving mathematics teaching and learning within the context of this system plan:

- What barriers might be preventing our underserved students from achieving the expected outcomes in mathematics?
- How do we know we are building educator content knowledge and pedagogy in mathematics?
- How might we differentiate assessment and instruction to support learners with special education needs in mathematics classrooms?
- What evidence will indicate impact?
- What's working/not working with respect to capacity building in mathematics?
- What does the evidence indicate about the actual impact? How do we know?
- How do we build coherence and embed differentiation in professional learning to improve achievement?



SYSTEM GOALS

Based on the [Multi Year Strategic Plan](#), which reflects the TDSB's commitments to equity, achievement and well-being, the following system goals in mathematics have been identified:

- Increasing teacher and leader capacity in [mathematics knowledge for teaching](#) and the effective implementation of [research-informed instructional](#) and [intervention practices](#).
- Increasing teacher and leader capacity in supporting mathematics learning for students with special education needs in the most inclusive learning environment
- Improving academic outcomes in mathematics for Black and Indigenous students through professional learning and the use of effective evidence-based practices
- Ensuring all students in Grade 2 will have the required foundational skills and concepts in mathematics through an engaging classroom program
- Supporting the majority of our students to study Grade 9 and 10 Academic mathematics courses
- Providing all students with deep learning opportunities, supported by technology, leading to the strengthening of global competencies and improved achievement

SHARED BELIEFS AND BARRIERS



Some Shared Beliefs:

- All students are capable of high levels of achievement in mathematics.
- All students are entitled to the most enabling learning environments possible.
- Transforming student learning in mathematics is a shared responsibility.
- The most effective professional learning builds educator capacity, provides opportunity for job-embedded learning, results in permanent changes to practice and supports student achievement.

Some Barriers:

- Deficit views of underserved students lead to some students not held to high expectations of success, which further exacerbates and perpetuates a cycle of marginalization.
- Disproportionately high numbers of underserved students are streamed to Applied and Locally Developed courses in Grade 9 and continue to experience high rates of underachievement and poorer educational outcomes.
- The disconnect between understanding different ways of knowing and doing mathematics across cultures and reflecting this math diversity in classrooms and professional practice.
- Some professional learning foci do not yet enhance teachers' content knowledge, math teaching skills, and student engagement.



KEY MONITORING ACTIONS

- Superintendent of Education (SOE) and school administrator observations regarding mathematics knowledge for teaching in schools and classrooms.
- Utilize a SOE monitoring tool to monitor school-based practices in relation to Inclusive Design.
- Utilize [math developmental continua](#) to determine the progress of student learning, particularly with Grade 2 students and foundational math skills.
- Utilize the process of [collaborative analysis of student math thinking](#) to assess students' and educators' learning over time.
- Develop measurements to assess the effectiveness of digital tools and the quality of their implementation.
- Gather educator reflections on self-efficacy in math knowledge for teaching and leading.
- Assess participants' reactions to and learning from professional development sessions.
- Monitor the enrollment of TDSB mathematics AQ courses and their impact on educators' math knowledge for teaching.
- Monitor the number of students underachieving in numeracy receiving accommodations and/or modifications in their math curriculum as identified by students' Individual Education Plan.
- Monitor the percentage of students enrolled in academic, applied and locally developed math courses in secondary schools.
- Gather student feedback (e.g., focus groups) on mathematics learning and the changes they are experiencing over the implementation of this plan.
- Gather classroom educator, school leader, family and community feedback on the content and implementation of this plan

INDICATORS OF SUCCESS



- Students will experience a greater sense of belonging to school, as well as the joy of mathematics. Students will come to understand and appreciate the relevance of mathematics in their lives and see themselves as effective mathematics practitioners, leading to enhanced self-efficacy.
- Effective professional learning will enhance teacher capacity in terms of content knowledge and pedagogical practices, including the use of accommodations and modifications, and achievement scores will improve for all learners, including students from historically marginalized groups.
- All students will experience deep learning opportunities, supported by technology, leading to improved achievement.
- EQAO assessments will indicate an improvement in Mathematics (Grade 3, 6, and 9 Applied and Academic).
- A greater proportion of students will access post-secondary programs.
- Teacher and Principal/Vice-Principal participation rates will increase in mathematics AQ courses.
- Improvements would be observed through - student achievement data including report cards and EQAO, classroom observations, Superintendent of Education school visits, web analysis, surveys (AQ courses), focus groups, professional learning feedback.
- Ministry of Education funds for mathematics will be used to support the building of content knowledge and instructional capacity.



KEY SYSTEM STRATEGIES AND ACTIONS

BUILDING CAPACITY AND CONTENT KNOWLEDGE

CLASSROOM EDUCATORS

- Apply professional learning to program planning, instruction, and assessment practices to enhance mathematics teaching and learning.
- Implement, through professional inquiry, the use of tools and representations to support the development of students' conceptual understanding and procedural fluency.
- Engage in system, school- and self-directed professional learning grounded in research.

SCHOOL LEADERSHIP TEAMS

- Develop data-informed school improvement plans and professional learning needs as a staff focusing on enhancing mathematics teaching and learning for underachieving and underserved students.
- Engage in job-embedded collaborative inquiry as teams of educators, including support staff and administrators with the strategic support of learning coaches, to build capacity and collective efficacy.
- Provide ongoing opportunities for educators to collaborate in job-embedded professional learning (e.g. observations, co-planning, co-teaching, and debriefing).

- Align resources to support school improvement efforts related to mathematics.

- Engage in research-based mathematics [resources](#), such as the [Guides to Effective Instruction](#), [Paying Attention to Mathematics Education](#), and [Ministry monographs](#).

SYSTEM/LEARNING CENTRE LEADERS

- provide professional learning opportunities that build on existing mathematical ideas as a resource for learning math content, and inclusive instructional and assessment practices (e.g., Universal Design for Learning, differentiated instruction).
- Provide professional learning on early numeracy development for system leaders and school teams.
- Use an Inclusive Design approach to professional learning with a focus on leadership capacity and critical practice.
- Consult with external mathematics educators and researchers.
- Establish strategic school clusters to engage staff in relevant job-embedded professional learning.
- Support the use of digital tools to develop students' mathematical thinking and enhance engagement.
- Support Learning Coaches as they work collaboratively with Student Success Transitions Counsellors, and classroom teachers to close learning gaps for all students.
- Enrol school teams in TDSB mathematics Additional Qualifications courses.
- Engage as system leaders in [Ministry of Education learning sessions](#).
- Monitor the effectiveness and impact of professional learning on teacher practice and well-being, student achievement and well-being, and equitable outcomes.

ENSURING COHERENCE

CLASSROOM EDUCATORS

- Apply professional learning and implement initiatives aimed at addressing the goals of the school improvement plan.
- Utilize math tools, resources, and instructional approaches that are supported by the system and grounded in research.
- Ensure assessment practices and instruction are aligned with the Ontario mathematics curriculum and related Ministry of Education policy documents.

SCHOOL LEADERSHIP TEAMS

- Ensure goals within the school improvement plan are aligned with Learning Centre and system math plans.
- Explore as a staff the TDSB [Mathematics/Numeracy K-12 Expected Practices](#).
- Provide feedback regarding the direction and implementation of system and Learning Centre math plans to the Leadership, Learning and School Improvement department and Learning Centre leadership.

SYSTEM/LEARNING CENTRE LEADERS

- Develop a TDSB math team representing a diversity of roles and voices to co-develop and monitor a system-wide mathematics plan.
- Align math plans and professional learning amongst TDSB Mathematics and Numeracy Department, Learning Centers and other TDSB departments to transform student learning.
- Identify students who are underserved, their strengths and areas of improvement to inform professional learning.
- Establish exploration classrooms in each learning centre to support consistent adoption of evidence-based instructional strategies and math digital tools.
- Organize system-wide conferences (e.g. Eureka!, STEM Equity) that mobilize knowledge and expertise across schools and learning centres.
- Discuss and examine math improvement efforts in schools during Learning Network meetings.
- Update resources on internal and external TDSB math websites.
- Create a monthly Mathematics Communication that goes out to the system to share system messages, math research, links to articles, resources, and links back to our math webpage.

DIFFERENTIATING ASSESSMENT AND INSTRUCTION

CLASSROOM EDUCATORS

- Develop teaching that uses students' existing mathematical ideas as a resource for learning.
- [Differentiate](#) assessment (observations, conversations, products) to inform program development, and instruction (e.g. guided group, parallel tasks, math centres) to respond.
- Use math tools, beyond paper, pencil and calculator (e.g. digital tools, [concrete](#) and [virtual manipulatives](#)) to deepen students' conceptual understanding, enhance learning experiences and improve performance.
- Develop students' learning profiles by identifying strengths and areas of growth, and utilize profiles to inform instruction.
- Provide students with opportunities to engage in deep learning opportunities supported by technology.

SCHOOL LEADERSHIP TEAMS

- Track students over time at the school level so that effective instructional strategies are passed on from year to year and educators can build a network of supports.
- Support educators with the development of learner profiles to inform differentiated instruction and assessment planning.
- Ensure that throughout the school year, students are provided with the accommodations they need to demonstrate the full extent of their understanding.
- Ensure students are accommodated during EQAO assessments in a manner that aligns with the [EQAO's revised assessment and accommodations policies](#) and their Individual Education Plan, if applicable.
- Recognize opportunities to support student learning of mathematics that exist outside of the math classroom - including technological education and other experiential learning opportunities

SYSTEM/LEARNING CENTRE LEADERS

- Review existing mathematics assessment tools and provide professional learning on their effective use.
- Provide ongoing professional learning opportunities on developing effective learner profiles with respect to mathematics and effective teaching strategies in response to students' strengths and areas of growth.
- Support teachers in developing an understanding of which tools, models and representations to select and when to use them in order to reveal, push and or develop mathematical thinking.
- Model effective differentiation during professional learning sessions in authentic contexts (e.g. demonstration classrooms, job-embedded learning opportunities).
- Promote the Technological Education curriculum for all students to support deep learning and the hands-on application of mathematical thinking.

CHALLENGING STREAMING AND PROMOTING INCLUSION

CLASSROOM EDUCATORS

- Review the effective use of [Universal Design for Learning](#).
- Ensure that teaching practices reflect high expectations, students' identities and lived realities while honoring and developing students' voice and expertise.
- Implement mathematics lessons that are culturally relevant and responsive, as well as regularly incorporate issues of social justice in mathematics learning.
- Build positive relationships and learning spaces that focus on inclusive instruction tied to high expectations, in an environment that develops their identity as mathematical thinkers and increases student confidence in math.

SCHOOL LEADERSHIP TEAMS

- Welcome all students, while providing open, inclusive and enabling learning spaces.
- Encourage and support the inclusion of students with special education needs in regular classes.
- Engage in ongoing examination of mathematics curriculum and courses of study through the critical integrative approach to inclusive schools, including integrating multiple centres of knowledge.
- Monitor disproportionate representation of underserved student identities in non-academic math programming and in-risk situations regarding mathematics achievement.

SYSTEM/LEARNING CENTRE LEADERS

- Provide support and professional learning necessary to effectively challenge streaming and promote inclusion from K-12, in areas including but not limited to:
 - Students' acquisition of required [foundational math skills and concepts by Grade 2](#), designed with the Early Years Department.
 - [Universal Design for Learning and differentiated instruction](#), designed in collaboration with special education consultants.
 - [Supporting students with learning disabilities in math](#), with a focus on Junior and Intermediate grades.
 - An Academic Math Strategy that outlines professional learning for ACLs and secondary math teachers, supports for students and parents/caregivers and cross-panel collaboration, developed with Learning Centre math teams.
 - A network of excellence in inclusive mathematics whereby school teams can visit classrooms where inclusion is effectively closing achievement gaps for students with special education needs.
- Examine critically the mathematical needs of students with special education needs (e.g. how can assistive technology and manipulatives be used to enhance students' math experiences?).
- Collaborate with the Urban Indigenous Education Centre to develop professional learning on mathematics through Indigenous perspectives and ways of knowing.
- Provide system-wide professional learning on teaching mathematics for social justice and using culturally responsive and relevant pedagogy in mathematics.
- Monitor and report on rates of special education needs identifications, student achievement and credit accumulation in academic mathematics courses, student choice in math for Grades 11 and 12, and post-secondary enrollment by demographic groups.

ENGAGING PARENTS, FAMILIES AND COMMUNITIES

CLASSROOM EDUCATORS

- Honour student and parent voice by acting on explicit information/feedback gathered about mathematics programming.
- Utilize community resources to learn about different cultural ways of knowing and doing mathematics and provide opportunities for experiential and transdisciplinary learning opportunities with mathematics that enhance students' development of global competencies.
- Plan responsive instruction that honours students' identities, abilities, lived experiences and expertise by building collaborative partnerships with families and the wider community.

SCHOOL LEADERSHIP TEAMS

- Host school-wide math-focused learning opportunities that engage parents and caregivers as partners.
- Increase awareness of multiple post-secondary pathways in mathematics to parents/caregivers and students.
- Facilitate sessions to enhance parents' and caregivers' understanding of [Ontario Ministry curriculum](#) and [Focus on the Fundamentals of Math documents](#).

SYSTEM/LEARNING CENTRE LEADERS

- Implement Learning Centre-based math-focused parent symposia that enhance capacity and lead to increased parental engagement.
 - Partner with community and social agencies to create expanded opportunities for innovation and external support.
 - Promote resources, including [provincial parent resources](#) and [online support](#), on the TDSB external webpage to support parents and staff.
- ### SYSTEM/LEARNING CENTRE LEADERS
- Seek ongoing feedback from various stakeholders regarding elements of the TDSB Mathematics Plan.
 - Provide math updates through communications at all levels (system, Learning Centre, school and classroom).