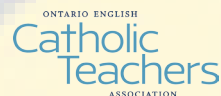
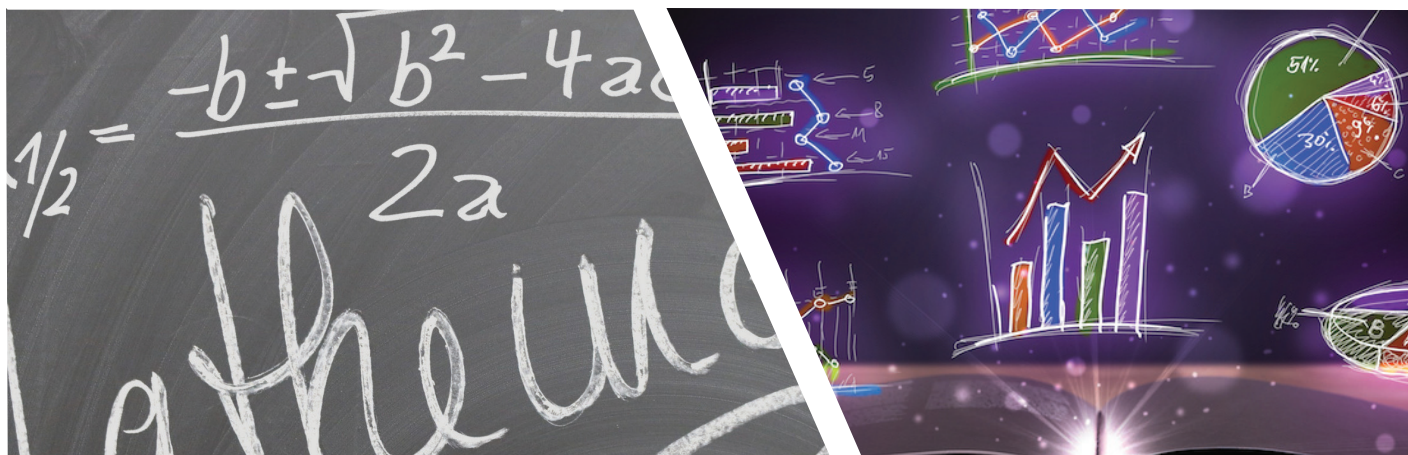


A MEASURED RESPONSE TO IMPLEMENTATION

Feedback on the proposed
revised mathematics curriculum
(Grades 1-8)

June 2020





“OTF and its Affiliates share the Ministry of Education’s belief that a periodic review of the mathematics curriculum (Grades 1-8) is part of an approach that ensures that teachers and students in Ontario’s publicly funded schools have access to current research-based and experience-informed promising practices in mathematics.”

Introduction

OTF and its Affiliates share the Ministry of Education’s belief that a periodic review of the mathematics curriculum (Grades 1-8) is part of an approach that ensures that teachers and students in Ontario’s publicly funded schools have access to current research-based and experience-informed promising practices in mathematics.

We also share a belief that students should explore the curriculum in ways that reflect both their own and others’ identities and that respond to their respective interests, strengths and needs.

Teachers and educators in Ontario’s publicly funded school system remain committed to a trajectory of continuous improvement in order to ensure that their students receive age and stage appropriate opportunities to learn and apply their mathematical knowledge and skills to tackle authentic, real-world tasks, issues and problems.

Teachers and educators need access to ongoing and sustained professional learning opportunities, combined with resources, to successfully adapt to changes in the mathematics curriculum and to integrate them into their programs and practices.

The Ministry of Education provided an opportunity in the guise of two brief, one-hour meetings in late May and early June, six days apart, for staff from OTF and its four Affiliates to offer feedback on the draft curriculum document. The bulk of the first meeting consisted of Ministry officials providing an overview of the curriculum process and a preview of the contents and structure of the draft curriculum document. In the second meeting, OTF and its Affiliates provided Ministry officials with a synthesis of the most pressing issues and concerns about the revised curriculum and the Ministry of Education’s anticipated implementation process.

Given the restrictions placed on the scope of the feedback and the compressed timelines for providing input, OTF and its Affiliates do not believe that two brief conversations constitute a meaningful consultation.

The feedback that follows is provided subject to the following understandings:

- The Ministry of Education signalled that the curriculum review process was already in its very last phases.
- The Ministry of Education emphasized that the content of the draft revised mathematics curriculum was in the fact-checking stage; therefore, there was little occasion to make substantive changes to strands and expectations.
- The Ministry of Education set out a narrow and overly ambitious timeline of six working days for providing input and feedback.
- The Ministry of Education provided an incomplete version of the draft curriculum document.

Front matter, strands and expectations

The front matter of this curriculum document, like any other curriculum document, provides key information that signals the thrust of the curriculum and enables students, teachers, administrators and parents, caregivers and guardians to gain an understanding of what changes have occurred and why. In this respect, the front matter occupies a critical function in situating the curriculum. It will take a great deal of time for teachers to become familiar with the new curriculum and to understand and internalize the significant changes for their programs, assessment and instructional practice.



For example, the new emphasis on integration, assessment, evaluation and reporting of social-emotional learning across the mathematics curriculum represents a marked departure from the current iteration of the mathematics curriculum.

The reduction in the number of expectations is a positive step towards uncluttering an over-crowded math curriculum. Furthermore, the revised math curriculum develops students' fundamental and foundational understanding of arithmetic without sacrificing a deeper understanding and appreciation for the wonders of mathematical thinking and the applications of mathematical concepts. This balanced approach will allow access points for students and support an age appropriate, developmental continuum for students. In addition, the opportunity for teachers and students to make connections between the discipline and real-world contexts remains intact.

“ ... the opportunity for teachers and students to make connections between the discipline and real-world contexts remains intact. ”

Nevertheless, it is unclear whether expectations have been grouped together and folded into previous expectations. If this is the case, there would be no reduction in what is expected related to the new expectations. There are also significant changes in both the nature and sequencing of strands and expectations from the previous iteration of the mathematics curriculum. Some of these are outlined below:

- Strand A (Social-Emotional Learning Skills (SEL) in Mathematics and the Mathematical Processes): This strand more explicitly highlights the mathematical processes and spirals these understandings with SEL skills into new models of instruction, assessment and evaluation. While it is clear, from the front matter, that teachers will be expected to manage this integration, it is not clear how this would be operationalized authentically and successfully in the classroom.
- Strand C (Algebra): The Algebra strand is more focused on algebraic thinking and reasoning than patterning and the addition of new specific expectations related to coding concepts and skills represents a significant departure from previous curricula.
- Strand E (Spatial Sense): The Geometry and Spatial Sense and Measurement strands have now been combined into a single strand.
- Strand F (Financial Literacy): This strand and its expectations also represents a significant new focus of learning in mathematics for both students and teachers.

Many of the changes in strands and expectations represent a substantive change for students and, by extension, for teachers. These changes will represent new learning for teachers and require significant shifts in program development, instructional practice and pedagogy, particularly for those with a less extensive background in mathematics, coding and

financial literacy. Consequently, teachers will require access to comprehensive supports for effective implementation to occur.

Assessment, evaluation and reporting issues warrant special and careful attention since these all have a bearing on teachers' program and instructional decisions as they exercise their professional judgement. For example, to help inform their professional judgement, teachers would benefit from greater clarity about the degree of emphasis for each strand in the new mathematics curriculum, both within and among Grades 1-8. It is important for teachers to understand that not all strands are equal across the grades in the new curriculum. Therefore, different strands may require different emphasis throughout the Grades 1-8 continuum and within each grade.

“*Assessment, evaluation and reporting issues warrant special and careful attention ...*”

A gap analysis chart would help to dispel uncertainties about the new versus previous iteration of the math curriculum. Furthermore, a gap analysis would guide and support the development of both age and stage appropriate teaching and learning resources and professional learning and in-service opportunities for teachers and educators.



Implementation timelines, mechanisms and resourcing

At the time this response was submitted, Ontario remained under a provincial government-mandated state of emergency. Since March 2020, students and teachers, indeed the whole publicly funded education system in Ontario, has been upended by local, national and international events. OTF and its Affiliates are keenly aware, based on past experience, that successful implementation of any revised or new curriculum is heavily contingent on the intersection of many factors and variables.

Since April, teachers have had to rapidly pivot and respond rapidly, often without sufficient support, to unprecedented changes in teaching and learning practices and formats. The move from bricks and mortar schools to wholly remote and distant learning contexts and platforms has never before occurred either at this velocity or in this scope. Anxiety and stress levels for students, their families, and teachers remain real and significant.

Against this backdrop, the Minister has signalled publicly the intention of his Ministry to release the revised mathematics curriculum in the coming weeks in preparation for a mandatory implementation in September 2020. If this occurs, it will be a shock to the system and to all those who have already endured upheaval in their professional vocation and for those in their care in their personal lives, too. Proceeding with this course of action would be unwise.



OTF and its Affiliates, as well as the wider math community, have recognized and underscored for years that, with respect to elementary teachers, some of whom may not be math subject/discipline specialists, there is a need to support teacher professional learning to foster deeper mathematical conceptual understanding and pedagogical expertise. Sustained professional learning helps equip teachers with the tools to effectively help their students develop their own understanding of the mathematical concepts and skills. Single-session webinars are not enough to support an understanding of the breadth and depth of changes in this revised curriculum.

Implementation is a marathon, not a sprint; it is a process, not an event. Hence, it is unreasonable to expect that teachers will be ready to implement a new mathematics curriculum, especially when the trajectory of the pandemic remains uncertain and that the timelines and plans for a re-entry to physical schools and classrooms in the fall—a mere two and half months from now—remains unclear.

“ *Implementation is a marathon, not a sprint; it is a process, not an event.* ”

Consequently, the following considerations, which exist under normal circumstances, are even more important given that Ontario is still in the grips of a global pandemic.

Pursuing an accelerated timeline for release and mandatory implementation will represent a missed opportunity to get it right the first time. Teachers will need access to multiple formats of ongoing and sustained support to build their awareness about the changes in the revised mathematics curriculum and to adapt their program and practice/pedagogy to operationalize the curriculum.

In lieu of a rush to release the revised math curriculum, followed by a hurried mandatory implementation, a more effective approach would be to adopt a two-year implementation plan and period that is sensitive to the current, lived realities of teachers, students and their families.

A staggered (optional) implementation, akin to a pilot project, would provide lead time to develop effective and engaging professional learning opportunities for teachers with time to reflect on, and consolidate, their learning. It would also support the development of a rich array of teaching and learning resources for teachers and students. This extended time would enable teachers to internalize the changes in content and approach and to experiment with the revised curriculum and pedagogical approaches to help determine what works and what does not. Furthermore, it would provide necessary time and space for teachers to be able to address their students' potential learning gaps, many of which may have widened due to circumstances during the pandemic.

Resources and supports will be needed to ensure successful implementation. Dedicated funding from the Ministry must be provided to support ongoing,



authentic professional learning opportunities that draw on current academic research and capitalize on the expertise of practising teachers as well as discipline experts. Teachers will also require access to practical resources, aligned to the revised curriculum, that foster understanding about new connections and concepts. The development and deployment of these types of supporting resources for teachers and students will take more lead time than the two and half months before September 2020.

We know, from our prior experience, that teachers are most engaged in their own learning when they have choice and agency—the same principles we accord to students and their learning.

“ *... teachers are most engaged in their own learning when they have choice and agency ...* ”

Successful implementation of revised curricula occurs when professional learning

- provides clarity about what is new and different in the curriculum,
- is teacher-directed and led,
- responds to the current realities in which teachers find themselves and is job-embedded,
- is differentiated and responds to teachers' strengths and needs,

- fosters opportunities for teachers to collaborate and network with their same-division and cross-divisional colleagues,
- adds to a repertoire of effective pedagogical knowledge and skills, and
- occurs within a reasonable time frame that allows teachers to build and consolidate new learnings and to transfer them to their own contexts and students.

Conclusion

OTF and its Affiliates are committed to building and supporting student success in mathematics, one among many curriculum areas that will prepare students to successfully navigate life and work in the 21st century.

To support teachers and educators in Ontario's publicly funded schools, the Ministry of Education should acknowledge the unprecedented circumstances in which all Ontarians currently find themselves and respond appropriately.

Teachers and educators will require sufficient time, dedicated resources, and sustained professional learning opportunities to learn about the changes in the revised mathematics curriculum (Grades 1-8) and to adjust their program and practices accordingly.

Creating the right conditions for a successful implementation plan for the revised mathematics curriculum (Grades 1-8) will ensure that both teachers and students enjoy the success they deserve.



Recommendations

We strongly encourage the Ministry of Education to heed the counsel of OTF and its Affiliates and to adopt the following series of five connected recommendations:

1. Delay release of any new or revised curricula until after the uncertainties and circumstances, caused by the COVID-19 pandemic, are resolved.
2. Delay mandatory implementation of the revised mathematics curriculum (Grades 1-8); instead, provide a two-year window for implementation.
3. Develop a gap analysis for teachers that highlights the similarities and differences between the revised and current generation of the curriculum and provides a grade-by-grade visual representation of the emphasis on different strands to support and inform teachers' professional judgement about how long to focus on each strand in each grade.
4. Earmark dedicated funding for the development of rich, practical teaching and learning resources, anchored to the revised curriculum, to support teachers, educators and students.
5. Earmark dedicated funding to support professional development opportunities for teachers and educators that both familiarize them with key changes in the revised mathematics curriculum (Grades 1-8) and engage them in authentic in-service to support adoption of replicable, promising practices in mathematics pedagogy.