

In our knowledge based economy built on innovation and continuous technological change, we need to prepare our students to be creative problem solvers that are adequately equipped to thrive in a world that we have not seen. We need a meaningful and challenging curriculum that provides opportunities for all students to become comfortable and accomplished with mathematical literacy.

We need to promote the mathematical literacy of the many, not the few.

There is a large and growing body of educational research telling us that there are better ways to teach and learn than the traditional method of show and tell. Now that we've had time to see what is working and what isn't with the curriculum implemented by the Ontario Government in 2000, we need to revise it to minimize gaps and redundancies.

All math teachers are being challenged to organize their math programs to focus on the big ideas in mathematics as students progress from K to 12. The curriculum has shifted its focus towards 'higher order' thinking such as analysis and synthesis of information. It's not what you can memorize; it's what can you do with what you know and how it's related to what else you know. It's this kind of shift that we need in order to produce mathematically literate students who will be ready for the future.

The current MCB4U course is not entirely a calculus course. Rather it consists of three roughly equally sized strands: Advanced Functions, Underlying Concepts of Calculus, and Derivatives and Applications. In simplest terms, the proposed revisions removes only the expectations related to limits and determining derivatives (from Derivatives and Applications), adds more expectations relating to trigonometric, exponential and logarithmic functions, and reorganizes the expectations under new headings. This makes the proposed MCB4U course a natural extension of two courses, the grade 11 course that precedes it as well as the grade 12 College Technology course, accessible from the Applied stream. The proposed course has more content in it than any fourth math course in the country and will still adequately prepare students for future studies in Calculus.

The national standard is to teach calculus in a separate fifth math course. Ontario universities are prepared to begin their first year courses where the secondary curriculum ends. Students will not be "missing" anything when they begin university.

Let our students really flex their mathematical muscle and learn to think like mathematicians. Mathematicians persevere to solve complex problems, using unsuccessful attempts as stepping stones to solutions. They collaborate and study the work of others, and prove to others and themselves that their solutions are correct. The real problems our students will face won't come with practice exams and answers at the back of the book.

It is preferable for students to take a fifth and/or sixth university math course in secondary school for many reasons. The damage was done when OAC Calculus was no longer approved as a fifth course and the damage will continue if a fifth course is not created. Leave limits and differentiation out of MCB4U!

Kathryn Stewart
Int/Sr Math Curriculum Consultant
York Region District School Board