

**Integrating the Teaching and Learning of Mathematics & Technological Education  
for the Highly Skilled Workforce**

*A Challenge for Ontario Educators*

**Objective**

To increase achievement in mathematics and interest in mathematics learning among students enrolled in grade 9 and 10 applied mathematics by integrating content from a technological education course and a grade 9 or 10 applied mathematics course which are team-taught or taught in tandem by a mathematics and technological education teacher.

**How to make it happen?**

The Ministry of Education invites school-based teams of mathematics and technological education teachers to propose the development of an integrated course delivery model consistent with the objective above beginning during the summer of 2017 and into the 2017-18 school year. It is expected that the integrated course content will continue to be developed and adjusted through the school year.

Proposals must be endorsed by the teachers’ school principal and the head of guidance.

Teachers will agree to document integrated course content in a manner that can be shared with other teachers.

Teachers will also agree to cooperate with a Ministry of Education evaluator to assess the impact of the course on student learning, achievement, and engagement and interest in mathematics.

**Ministry Support**

EDU will provide up to $8,000.00 to school-based teams of teachers to support the integrated course development which will be used for a combination of compensated time over the summer (on July 11-12, 2017 for two teachers per school team at a rate of $350 per day) and release time during the school year (at a rate of $250 per day for occasional teachers).

Additional funding will be available to reimburse travel and accommodation as per the Government Travel and Hospitality Directive.

Teachers will enter into a Service Contract with the Ministry of Education for the purpose of compensation for summer work. District school boards are to invoice the ministry for release time during the school year.

Up to ten teams of two teachers will be supported; based on the merits of the proposals, larger school-based teams of more than two teachers may be supported with the consequence that fewer teams will be supported over all.

**Suggested Timetable Structure for Pilot**

* Two credit program (Grade 9 Applied Mathematics MFM1P and Grade 9 Exploring Technologies TIJ 1O or Grade 10 Applied Mathematics MFM 2P and one full credit of a Grade 10 Technology course which may be delivered as a full or a combination of two half credits from any of the ten broad based technology credits such as Construction, Manufacturing, Green Industries, Hospitality and Tourism, Transportation.
* Students move as a cohort.
* Ideally, mathematics and technological education courses to be scheduled back to back (Example: Periods 1 & 2 or 3 & 4).
* Where the mathematics and technological education classes cannot be timetabled back to back, the teachers will deliver mini-lessons that draw on the content of both disciplines.
* Where possible, both the mathematics and technological education class are delivered in the same environment.

**Program and Student Monitoring and Reporting**

Teachers will report on student achievement and engagement and interest in mathematics – specifics to be provided but could include:

* Credits attempted, credits achieved
* Students’ average marks for both courses
* Percentage of students achieving a mark of 70% or above in one or both courses
* Level of student engagement and interest in mathematics
* Evidence of student products, teacher observations and conversations
* Attendance

All schools teams will be required to share their learning with Ontario educators to provide program highlights, resources that have been developed, lessons learned and report on program and student outcomes. Presentations to board, trustees and school staff, parent information or curriculum nights regarding pilot highlights / student testimonials are encouraged. Additional funding will be available for teams who are asked to share at provincial mathematics and technological education learning conferences.

Students enrolled in the pilot program will be tracked for one year beyond completion of the program to monitor future success in mathematics and their pathways.

Students will take a pre and post course survey to monitor variance/changes in students’ interest in and sense of efficacy towards mathematics (Survey instrument to be provided by the Ministry and likely to be delivered online.)

**Community Partnerships:**

Teachers are encouraged to seek community support to add to the richness of the student’s learning experience. Valuable activities that may serve to engage and support students may include but is not limited to:

* Community / industry / parent guest speakers
* Field trips
* Google Hangout / Skype exchanges.

**Application:**

The application deadline is May 4, 2017.

**Questions:**

**If you have any questions, please contact** [**TechnoMathHSW-MHQ@ontario.ca**](mailto:TechnoMathHSW-MHQ@ontario.ca).