

MEMORANDUM

September 27, 2018

Quality Assurance,

The Faculty of Mathematics endorses the Final Assessment Report of the Mathematics/Teaching (BMath) September 2018 report.

The proposed actions and timelines are reasonable, and address the recommendations of the original report.

Regards,



Stephen M. Watt
Dean, Faculty of Mathematics



Final Assessment Report

Mathematics/Teaching (BMath)

September 2018

Summary of the Program Review:

In accordance with the University's Institutional Quality Assurance Process (IQAP), this final assessment report provides a synthesis of the external evaluation and the internal response and assessments of the Bachelor of Mathematics in Mathematics/Teaching delivered by the Faculty of Mathematics. A self-study (Volume I) was submitted to the Associate Vice-President, Academic on October 6, 2017. The self-study presented the program descriptions and learning outcomes, an analytical assessment of the program, including the data collected from student surveys along with the standard data package prepared by the Office of Institutional Analysis & Planning (IAP). The CVs for each full-time faculty member in the Department were included in Volume II of the self-study.

Two arm's-length external reviewers were selected from Volume III of the self-study. Dr. Timothy Sibbald, Associate Professor in the Schulich School of Education, Nipissing University, and Dr. Gerda de Vries, Professor in the Department of Mathematical and Statistical Sciences, University of Alberta were ranked and selected by the selected by the Associate Vice-President, Academic as well as one internal reviewer (Dr. Eric Helleiner, Professor of Political Science).

Reviewers appraised the self-study documentation and conducted a site visit to the University on November 16 and 17, 2017. The visit included interviews with the Vice-President Academic and Provost; Associate Vice-President, Academic; Dean of Mathematics; Associate Dean, Undergraduate of Mathematics; Director of Mathematics/Teaching, Faculty members, staff and current undergraduate students. The review team also had an opportunity to meet with representatives from the library and Co-operative Education.

This final assessment report is based on information in many cases copied from the self-study, the external reviewers' report and the program response.

Program characteristics:

The co-operative Mathematics/Teaching plan combines academic studies in mathematics, teaching experience in secondary schools, professional training, and other work experience. A graduate of this program will have demonstrated significant quantitative abilities in algebra, calculus, geometry, probability, statistics, computer science and mathematical education, as well as an aptitude for teaching.

The Mathematics/Teaching program exists in three different forms. First, Mathematics/Teaching exists as a stand-alone plan within the Faculty of Mathematics. Students can enrol in and graduate from the Mathematics/Teaching plan. Second, there is a stand-alone Pure Mathematics Teaching plan. Third, Mathematics/Teaching exists as an optional addition to most other undergraduate plans within the Faculty of Mathematics. Each of these programs is available as co-op only and are second-entry, requiring admission usually at the second-year level.

Summary of strengths, challenges and weaknesses based on self-study:

Strengths:

- Students get direct, relevant experience in their intended profession.
- Students earn Honours degrees in Mathematics, which includes a minimum of 26 mathematics courses. This extensive mathematics background is good for mathematics education in the secondary schools.
- Non-teaching work terms give experiences that inform the students' teaching.

Challenges:

- Changes in teacher education programs in Ontario, and the resulting loss of Queen's University as a partner institution for the Bachelor of Education, takes away the attraction of doing two degrees at one time.

Weaknesses:

- The number of schools who hire co-op work term students needs to be expanded. Public/Separate school boards no longer hire students on co-op terms and so we rely on private schools for work term opportunities. While this is not intrinsically a bad thing, a wider variety of opportunities (locations) would be beneficial.

Program response to external reviewer recommendations:

Recommendations

1. The Teaching option [now known as Mathematics/Teaching] should be continued and succession planning should begin in a manner that allows for an overlap with existing faculty. This will allow existing practices to be understood and relationships with existing schools to be continued.

Response

A Director for Mathematics/Teaching was appointed in Summer 2018. Discussions will be scheduled with current personnel about their interest and availability in supporting the program going forward. The CEMC Director and Dean of Mathematics will then discuss a succession plan.

2. Modification of the existing MTHEL course should be considered, such as changing the orientation from teacher/textbook-centered approaches to student-centered approaches.

Response

First reconfirm the goals, objectives and key priorities of Mathematics/Teaching. Then review the content and delivery of MTHEL 206A. Consider soliciting external expertise.

3. Addition of a second MTHEL course should be considered. For example, bringing the students back together to debrief their placements would be beneficial. In effect, the first MTHEL course is taken, the placements are done, but there is no opportunity for students to reflect on their teaching experience within their cohort. Having a mechanism whereby students could share, and reflect on how their co-op placements connected to the concepts taught in the first MTHEL course would be worthwhile and enrich the educational experience.

Response

Consider creation of a second MTHEL course or creative alternative (seminar, facilitated online discussions, etc.) after establishing goals, objectives and key priorities of Mathematics/Teaching. Give strong consideration to incorporating student reflection and sharing of experiences.

4. The Teaching Option should be advertised as such in the Calendar (on first glance, it currently appears to be available only through the stand-alone Mathematics/Teaching program), so that more students recognize the opportunity to individualize or add extra value to their degree.

Response

Revise text in Calendar to make it clear that Mathematics/Teaching can be done on its own or in conjunction with almost any other Faculty of Mathematics undergraduate plan.

5. Further increase in enrolment may be achieved through the use of statistics to show that there is a need for mathematics teachers. In conjunction with this, broadening the placements to clearly include grades 7-10 and/or placements in community colleges may help address a need for more placement options. Lastly, having an arrangement for direct

admission into a Faculty of Education would also provide additional motivation for students to consider adding the teaching option to their degree.

Response

Discuss these issues and ideas after reconfirming goals, objectives and key priorities of Mathematics/Teaching.

Implementation Plan:

	Recommendations	Proposed Actions	Responsibility for Leading and Resourcing (if applicable) the Actions	Timeline for addressing Recommendations
	Reconfirm goals, objectives and key priorities for the program.	Through consultation with CEMC Director, Dean of Mathematics, and current program personnel, the Director of Mathematics/Teaching will reconfirm goals, objectives and key priorities for the program.	Director of Mathematics/Teaching	June 2019
1.	The Teaching option should be continued and succession planning should begin in a manner that allows for an overlap with existing faculty. This will allow existing practices to be understood and relationships with existing schools to be continued.	A new Director for Mathematics/Teaching will be found for a fixed-term appointment. Discussions will be scheduled with current personnel about their interest and availability in supporting the program going forward. The CEMC Director and Dean of Mathematics will then discuss a succession plan.	CEMC Director and Dean of Mathematics	A new Director was appointed summer 2018.
2.	Modification of the existing MTHEL course should be considered, such as changing the orientation from teacher/textbook-centered approaches to student-centered approaches.	First establish the goals, objectives and key priorities of Mathematics/Teaching. Then review the content and delivery of MTHEL 206A. Consider soliciting external expertise.	Director of Mathematics/Teaching, recent/future MTHEL 206A instructors and CEMC leadership	Spring 2020, with partial process by Spring 2019
3.	Addition of a second MTHEL course should be considered. For example, bringing the students back together to debrief their placements would be	Consider creation of a second MTHEL course or creative alternative (seminar, facilitated	Director of Mathematics/Teaching, recent/future MTHEL 206A	Spring 2020, with partial process by Spring 2019

	beneficial. In effect, the first MTHEL course is taken, the placements are done, but there is no opportunity for students to reflect on their teaching experience within their cohort. Having a mechanism whereby students could share, and reflect on how their co-op placements connected to the concepts taught in the first MTHEL course would be worthwhile and enrich the educational experience.	online discussions, etc.) after establishing goals, objectives and key priorities of Mathematics/Teaching. Give strong consideration to incorporating student reflection and sharing of experiences.	instructors and CEMC leadership	
4.	The Teaching option [now known as Mathematics/Teaching] should be advertised as such in the Calendar (on first glance, it currently appears to be available only through the stand-alone Mathematics/Teaching program), so that more students recognize the opportunity to individualize or add extra value to their degree.	Revise text in Calendar to make it clear that Mathematics/Teaching can be done on its own or in conjunction with almost any other Faculty of Mathematics undergraduate plan.	Director of Mathematics/Teaching	End of 2018
5.	Further increase in enrolment may be achieved through the use of statistics to show that there is a need for mathematics teachers. In conjunction with this, broadening the placements to clearly include grades 7-10 and/or placements in community colleges may help address a need for more placement options. Lastly, having an arrangement for direct admission into a Faculty of Education would also provide additional motivation for students to consider adding the teaching option to their degree.	Discuss these issues and ideas after establishing goals, objectives and key priorities of Mathematics/Teaching.	Director of Mathematics/Teaching, Mathematics/Teaching personnel and CEMC leadership	Ongoing, beginning in Fall 2018

The Department Chair/Director, in consultation with the Dean of the Faculty shall be responsible for monitoring the Implementation Plan.

Date of next program review: _____ **2022-23**
Date

Signatures of Approval:



Chair/Director

27 Sept 2018

Date

AFIW Administrative Dean/Head (*For AFIW programs only*)

Date



Faculty Dean

2018-10-11

Date



November 21, 2018

Associate Vice-President, Academic
(For undergraduate and augmented programs)

Date

Associate Vice-President, Graduate Studies and Postdoctoral Affairs
(For graduate and augmented programs)

Date