The McMaster Mentoring Action Program (MMAP) for Undergraduate Students in Science

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INTRODUCTION

Among the many challenges faced by students in higher education is the prospect of developing short- and long-term goals and establishing a purposeful course of action for their undergraduate studies. The questions "Why am I at University?", "What do I want to learn?", and "What am I doing next?" weigh heavily on each student. While there are many positive outcomes from peer-to-peer mentoring between undergraduate students (Rodger & Tremblay, 2003), there are also benefits to mentoring by people who have experiences beyond their undergraduate degree. These may be experiences that mentors have in reflecting on their own course of action and wondering what they might have done differently or observations on the many undergraduates with whom they have interacted during their career. Opportunities for mentorship by retired faculty and staff in the sciences are limited. The Council on Undergraduate Research recently published student perspectives on effective strategies for successful mentoring of undergraduate students (Pita et al., 2013). These strategies include availability and engagement of mentors, fostering a sense of community, and encouraging students to engage in endeavours in the broader community. An established mentorship program for science undergraduate students with retired faculty and staff will enable the building of constructive relationships and a sense of community that can impact undergraduate and post-graduate success. As mentors, retired faculty and staff at McMaster University will have the opportunity to have a lifelong impact on their students.

The *Forward With Integrity (FWI): The Emerging Landscape* report (2012) released by the FWI Advisory Group encourages the education of undergraduate students for capability via many avenues that include: accessibility to mentors, opportunities for reflection and encouraging students to explore learning interests and learning goals within and beyond their formal course work. Through this FWI application, we propose a two-year pilot of an undergraduate mentoring program **(McMaster Mentoring Action Program (MMAP) for Undergraduate Students in Science)** that will provide positive and constructive support to our undergraduates from a pool of interesting and engaging retired Faculty and Staff. We anticipate that we will be able to establish and expand this program as an annual resource for undergraduate students in Science.

PROPOSAL

The pilot launch of the mentoring program will be run for a total of 4 terms, or 4 workshop series (Fall 2015, Winter 2016, Fall 2016, Winter 2017), and we anticipate the involvement of 10 Faculty Mentors and 50 Student Mentees per term. Under the leadership of Dr. Betty-Ann Levy, a group of retired Faculty Mentors has already been recruited from the McMaster University Retirees Association (MURA). In the pilot project, student Mentees will be recruited from Level II of the Life Sciences Program, with an enrollment of about 400 students. In the Fall term, half of the students will receive invitations to participate in a workshop series, whereas the other half will serve as a control group. In the Spring term, the remaining half of the Level II students will be invited to participate in a second offering of the same workshop series.

Each series will include four meetings, held once per month over the course of the term. Each meeting will begin with a short interactive workshop hosted by a current Faculty member in the Faculty of Science. ***Workshops*** will be followed by ***Student-Mentor discussions***, in which Student Mentees and Faculty Mentors will engage in small-group discussions. Students will reflect upon their personal development in *Learning Portfolios* after each meeting. A series will culminate at the end of term with a ***Networking event.***

Phase 1: Implementation of the Workshop Series and Mentorship Program

Workshops

At the beginning of each workshop series, students will participate in an activity entitled "Letter to Yourself". Students will be asked to write a letter outlining their career action goals including academic and co-curricular plans. Students will submit their letters in sealed envelopes that will be held until the end of term. The authors of this proposal will facilitate four workshops that address goal planning and skills development. Reflections and plans for acting on short- and long-term goals will be embedded in Learning Portfolios and will form an important part of these workshops.

Workshop topics:

1. Time Management & Productivity (hosted by Dr. Ayesha Khan, PNB)
2. Professional Etiquette (hosted by Dr. Nikol Piskuric, PNB)
3. Networking (hosted by Dr. Rosa da Silva, Biology)
4. Mapping Your Personal Development (hosted by Dr. Kim Dej, Biology)

Student-mentor discussions

After each monthly ***Workshop***, students will proceed to a ***Student-Mentor discussion*** where they will continue their conversations with mentors in a small group environment. These students will have the unique opportunity to engage in discussions with their assigned Faculty Mentors in a 5:1, student to mentor ratio. The groups will remain constant through each workshop to allow students and mentors to build bonds. Students will gain insight on how these skills were important to the mentors as undergraduate and how the same skills continue to be important throughout life.

Learning Portfolios

Students will be given the option to use the Learning Portfolio (LP) tool to help them define and document individual goal-setting, self-directed learning, and outcomes as artifacts to demonstrate their development. This process of critical-inquiry will require students to generate specific and meaningful examples from their academic experiences as well as from their co-curricular activities outside of their core academic responsibilities. We will evaluate whether the occurrence of a reflective practice as documented through the LP has an impact on our measures of student engagement.

Culminating networking event

At the end of each year, students and mentors from will have the opportunity to meet people from other groups. Students will put into practice the skills that they have acquired as they meet other mentors and share their undergraduate plans and reflections with fellow mentees.

Phase 2: Evaluation of the Workshop Series and Mentorship Program

In addition to the mentoring program, we will launch a pedagogical study on "The effects of mentoring by retired faculty on the professional development and career action plans of undergraduate science students." This study will be proposed to the McMaster Research Ethics Board (MREB) and will allow us to compare the skills and attitudes of students who participated in the full mentorship program (workshops & discussions), with those that either participated partially in the program (only workshops) and those that were invited to the program, but chose to not participate at all. Student engagement will be measured utilizing the National Survey of Student Engagement (NSSE; revised 2013) survey instrument. We will recruit an undergraduate thesis student to collect and analyze survey data. We anticipate that the outcomes of this

project will be published in a pedagogical research journal and contribute to the discussion on the widely perceived need for an understanding of what constitutes effective mentorship in higher education.

RATIONALE

This pilot project will evolve into a mentorship program that will assist Science students towards planning their skill development in preparation for diverse career options after completing their undergraduate degree. It is expected that this mentoring program will create a cohort of students who will continue to network with each other and engage in peer-to-peer sharing of their career and personal development plans. This will ultimately contribute to fostering a sense of community amongst students participating in the mentoring program.

INTENDED OUTCOMES

As a result of this mentorship program, students will

1. Be able to communicate and articulate their strengths and weaknesses
2. Be able to develop an action plan towards skill development
3. Have increased confidence in following through with their plan of action
4. Balance academic and relevant co-curricular activities
5. Contribute to mentorship at McMaster after graduation

BUDGET

The requested funding will cover the cost of hosting 4 workshop series and student-mentor discussion groups over the course of 2 years.

Coffee, tea and cookies	($144 x 4 workshops) x 4 series	$2,304
Paid Parking for Faculty Mentors	(10 mentors x 4 workshops x $6) x 4 series	$960
Incentives for student survey completion	(1 @ $200 gift card + 5 @ $10 gift cards) x 4 series	$1,000
End of year networking event	(Food and beverages; $378 x 2 events)	$756
	TOTAL:	$5020

TOTAL FWI FUNDS REQUESTED: $5,000

If this pilot is successful, we anticipate that continued funding for this Mentoring Program will come from other sources, including MURA, the Alumni Association, the Faculty of Science, and Science Departments.

ANTICIPATED DATE OF COMPLETION

Program start date is September 2015. Preliminary results will be available in Spring 2016. Complete results from all four workshop-series will be available in the Summer of 2017.

References

Forward with Integrity: The Emerging Landscape (2012) Prepared by The FWI Advisory. Group.http://www.mcmaster.ca/presidentsoffice/documents/AG_Report_FWI_Emerging_Landscape_11Jul12.pdf

National Survey of Student Engagement (revised 2013). The Trustees of Indiana University. http://nsse.iub.edu/nsse-update/

Pita M, Ramirez C, Joacin N, Prentice S and C Clarke (2013) Five effective strategies for mentoring undergraduates: students' perspectives. *Council on Undergraduate Research Quarterly*. 33:11-15.

Rodger S and PF Tremblay (2003) The effects of a peer mentoring program on academic success among first year university students. *The Canadian Journal of Higher Education*. 33:1-18.

FWI Proposal:
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This proposal is endorsed by:

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Dr. Robert Baker Date
Dean of the Faculty of Science