

Opportunities for McGill Undergraduates to Learn about Research

Survey Report

Background

McGill's strategic academic plan: Achieving Strategic Academic Priorities¹ reaffirms the University's long-standing commitment to research and research-based learning. This extends to undergraduate education and was the theme of the 2011 Joint Board Senate meeting "The role of research in the undergraduate educational experience." This report is in response to the request of meeting attendees to find out more about the types of research experiences that are currently available to students.

In Winter 2013, Teaching and Learning Services (TLS) conducted a survey in partnership with Student Services (Assessment) to answer the following questions:

- What types of research experiences do McGill undergraduate students have?
- Which students take advantage of these opportunities?
- What are students' perceptions of these experiences and do they see the benefits?

The goal of this survey was to provide information to promote further discussion about the role of research in the undergraduate experience at McGill University.

Profile of Respondents

We sent email invitations to 4,000 2nd and 3rd year undergraduate students to complete an anonymous online survey. Of the 412 students who responded, 66.5% were female and 78% were Canadian (37% Quebec, 41% rest of Canada). Table 1 provides a breakdown of participants by academic discipline; note that students from Continuing Education, Dentistry, Law, and Medicine were not included in the survey.

¹ Achieving Strategic Academic Priorities (ASAP) 2012, p. 33: "Strategy 2.5: McGill will continue to extend opportunities for undergraduate research."

Academic Discipline²	n	%
Engineering	50	12%
Faculty of Engineering and the School of Architecture		
Health Sciences	77	18%
Faculty of Medicine Schools (Nursing; Physical and Occupational Therapy) and Departments (Anatomy and Cell Biology; Biochemistry; Microbiology and Immunology; Pharmacology and Therapeutics; Physiology)		
Sciences	91	22%
Faculties of Agricultural and Environmental Sciences, Science, and the School of Environment		
Humanities	50	12%
Faculties of Arts (Art History and Communication Studies; English; French Language and Literature; History and Classical Studies; Languages, Literatures, Cultures; Philosophy), Music, and Religious Studies		
Social Sciences	130	31%
Faculties of Arts (Anthropology; Computer Science; Economics; Geography; Institute for the Study of Development; Institute for Study of Canada; Linguistics; Mathematics and Statistics; McGill School of Environment; Political Science; Social Work; Sociology), Education, Management, and Science (Psychology)		
Interfaculty, B.A. & Sc.	23	5%
OVERALL	421	100%

Table 1: Number of Participants by Academic Discipline

Definition of research

Research is often conceived of as an individual activity aimed at making an original contribution to the field. However, this perception of research limits the experience to a minority of students, especially at the undergraduate level. All students should have the opportunity to engage with research and learn about the processes of knowledge production in the course of their undergraduate education.^{3,4} We therefore propose a broader conception of research and scholarship that opens up rich possibilities by using both in-class and out-of-class experiences to teach students about research. Our definition of research at the undergraduate level, created by McGill's Inquiry Network, encompasses any experience in which students:⁵

² Academic discipline groupings presented in this report are consistent with Statistics Canada's Classification of Instructional Programs (CIP).

³ Kuh, G. D. (2008). *High-impact educational practices: What they are, who has access to them, and why they matter*. Washington, DC: Association of American Colleges and Universities.

⁴ Healey, M., & Jenkins, A. (2009). Developing undergraduate research and inquiry. *The Higher Education Academy*.

⁵ Slapcoff, M., & Harris, d. (2014). The Inquiry Network: A model for promoting the teaching-research nexus in Higher Education. *Canadian Journal of Higher Education* 44 (2), p. 68-84.

- I. Develop an awareness that knowledge is dynamic, not static.
- II. Become familiar with the methods used to gather, organize, analyze, interpret, and evaluate data and source material.
- III. Learn to use discussion and writing not only as mechanisms for reporting on work but also as processes to help them develop and communicate their thinking.

Cultivating students' understanding of research in class

This section provides examples of how professors help students develop an understanding of research as part of coursework. Integrating research into coursework is an effective means of communicating to students the value of attending a research-intensive university while improving student engagement and learning.

Figure 1 below represents some of the ways in which professors can raise students' awareness of the many dimensions of research. 90% of respondents heard their instructor talk about research in one of these ways; note that respondents could choose more than one option.

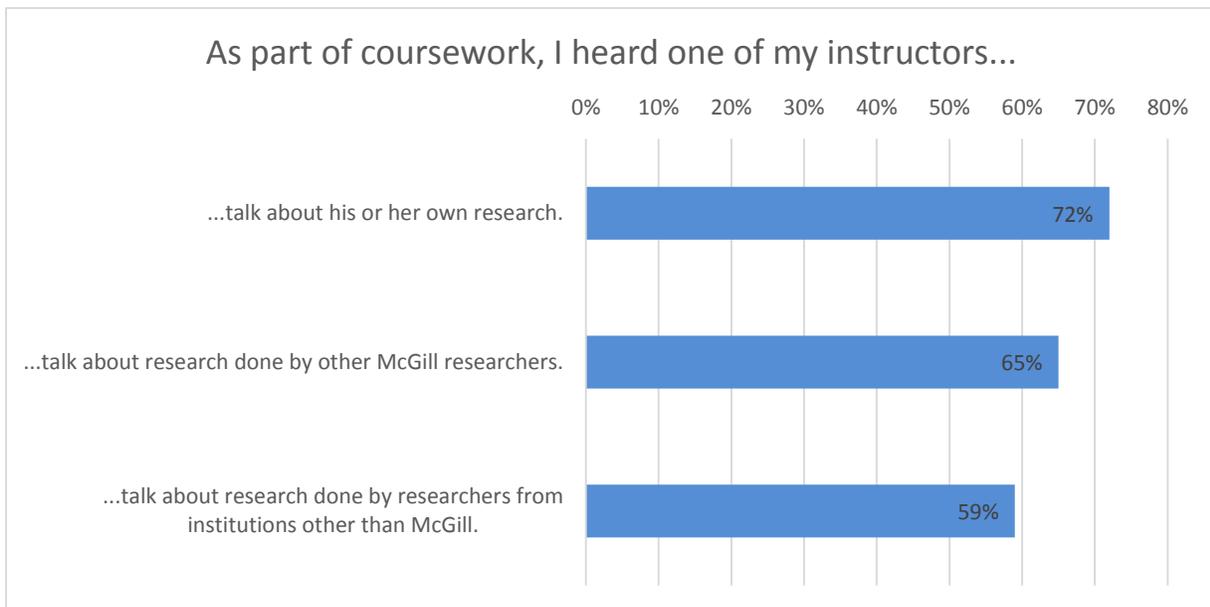


Figure 1: Learning about research as part of coursework

Figure 2 below represents some of the ways in which professors support students in developing skills necessary for research.

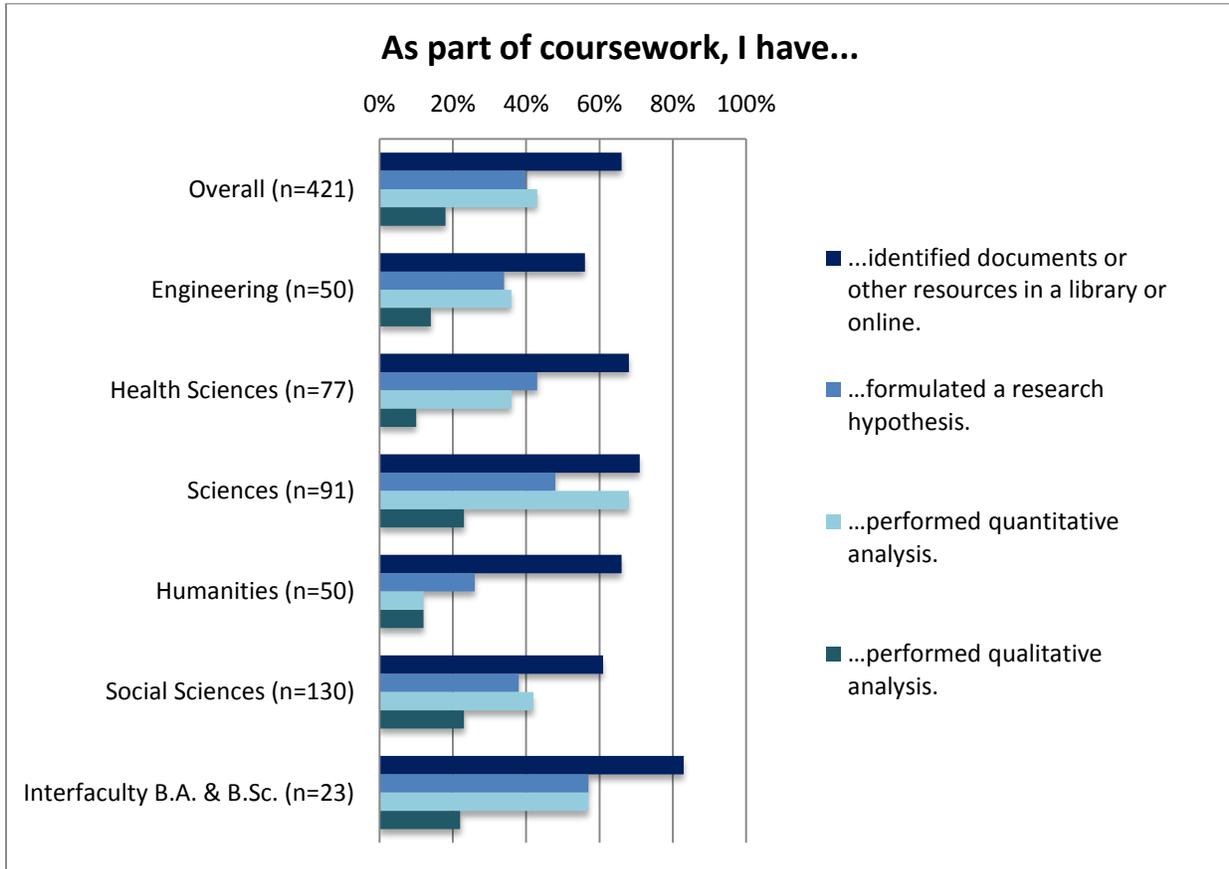


Figure 2: Developing research skills as part of coursework

Figure 3 represents some of the ways in which professors support students in developing skills in the communication of knowledge and ideas, an integral part of research.

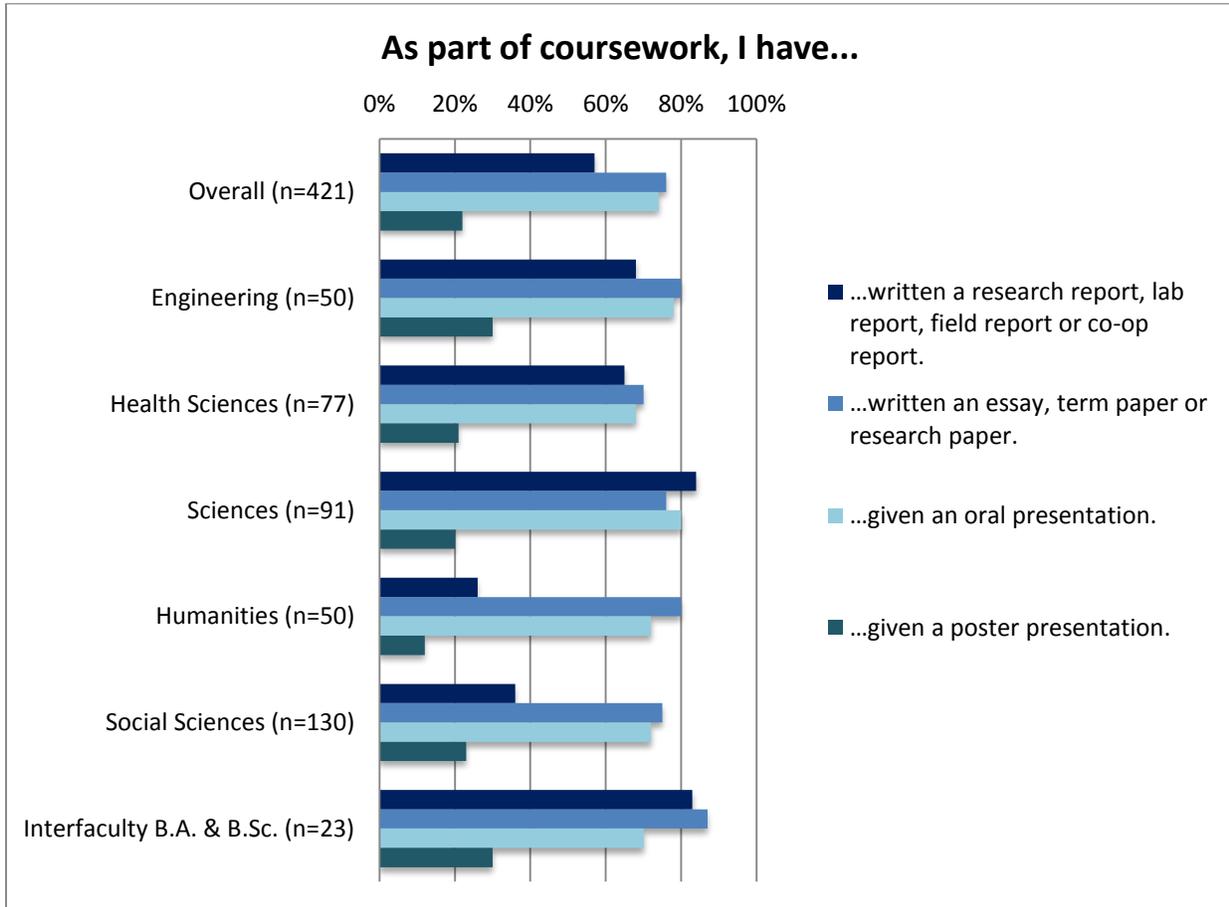


Figure 3: Communicating knowledge and ideas as part of coursework

For more information on the ways that students engage with research as part of coursework, please see Appendix A, Tables 1.1 to 1.3.

Research culture – both in and out of class

McGill is a student-centered research-intensive university. As such, research is woven into the University's culture and leads to a multitude of possibilities for students to explore. These experiences range from attending a conference presentation to participating in fieldwork. In this section, we look at ways in which McGill students engage with the distinct research culture of the University, both in and outside the classroom. Please see Figures 4, 5 and 6 on the following pages.

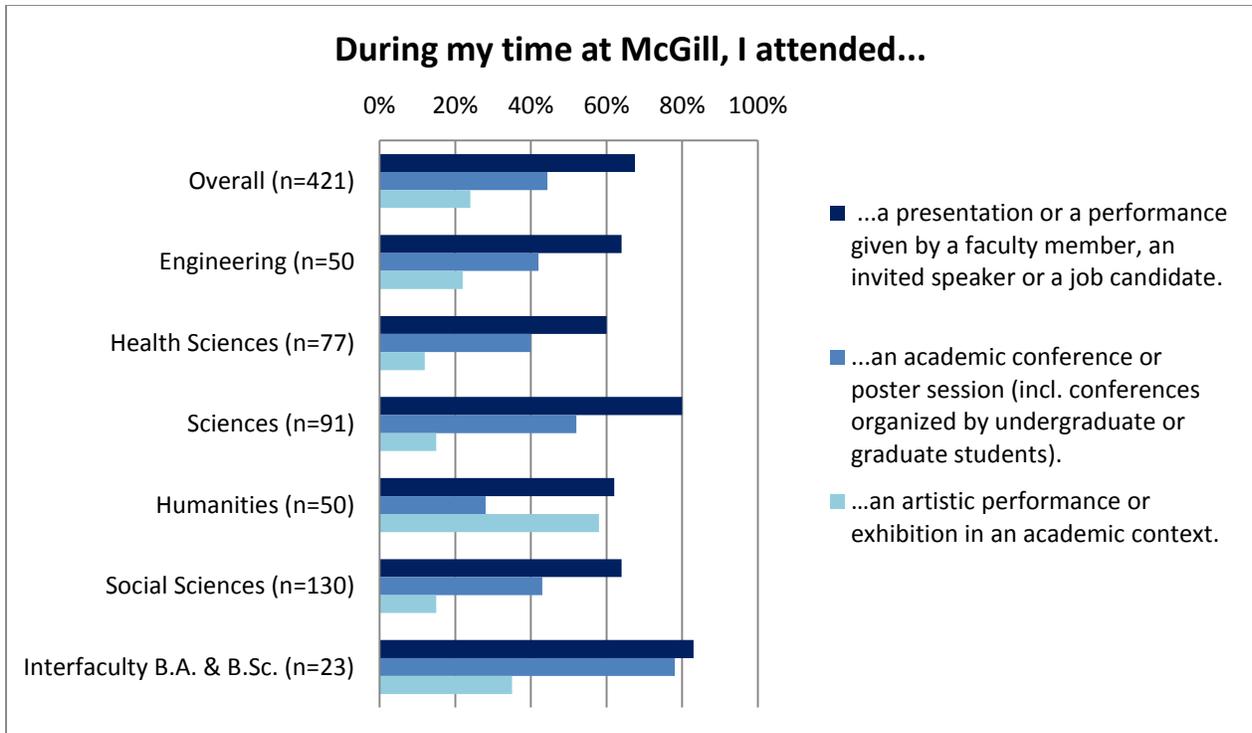


Figure 4: Learning about research

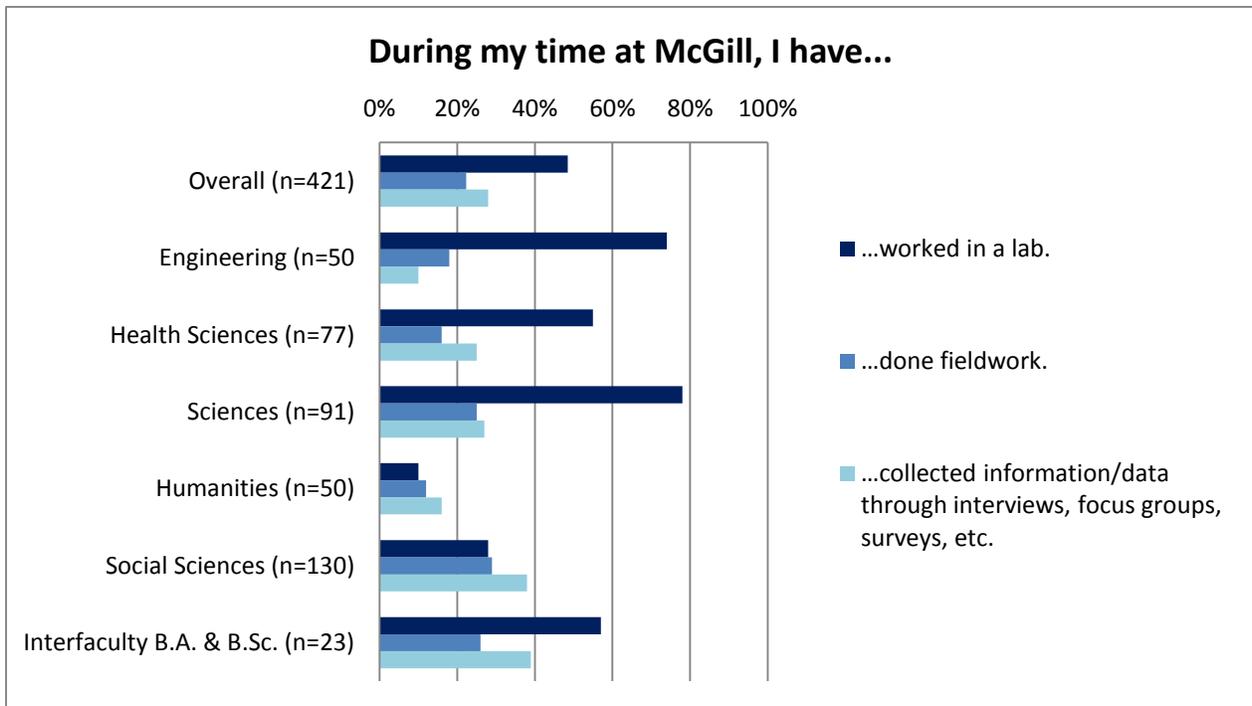


Figure 5: Developing research skills

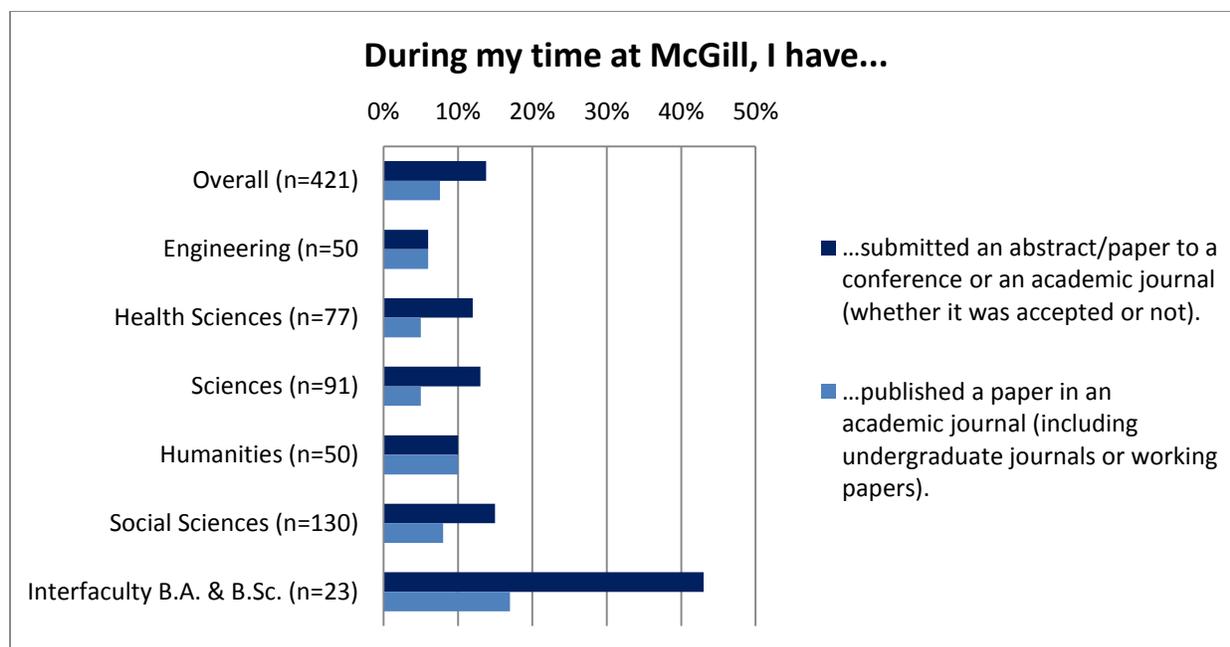


Figure 6: Communicating knowledge and ideas

As shown in Table 2 below, 54 % of the respondents (n=227 students) participated in activities that provided them with opportunities to apply their research skills.

During my time at McGill, I participated in...	Overall (%) (n=227)
a. ...an internship, stage, student placement or co-op.	27%
b. ...an independent study course.	25%
c. ...a summer research program.	15%
d. ...a research assistantship.	14%
e. ...a community-based project.	10%
f. ...applied student research (e.g., related to sustainability).	2%
g. Other	7%

Table 2: Applying research skills

For more information on the ways that students engage with the research culture of the University, please see Appendix B, Tables 1.1 to 1.4.

Gains

We asked the students who participated in at least one of the activities in Table 2 above (54% of total, n=227) about their experiences and the perceived gains. The responses are summarized in Figures 7 and 8 below.

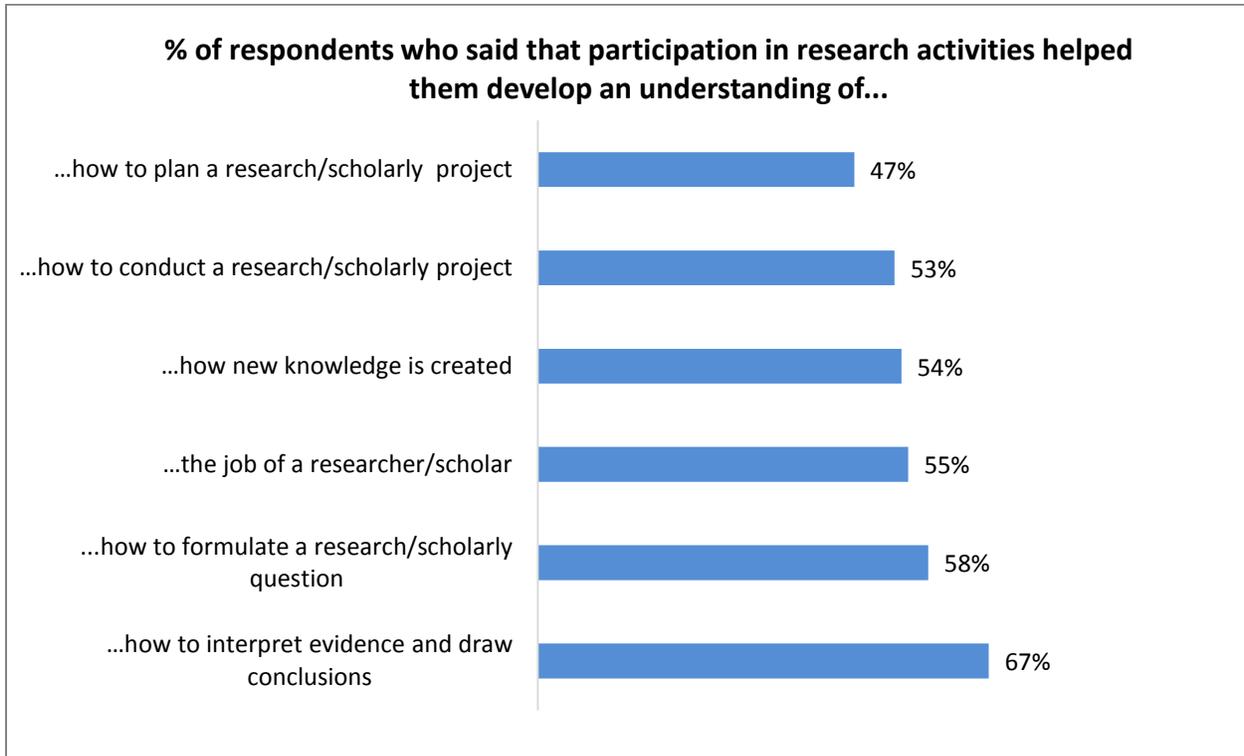


Figure 7: Gains related to developing understanding/knowledge (n=227)

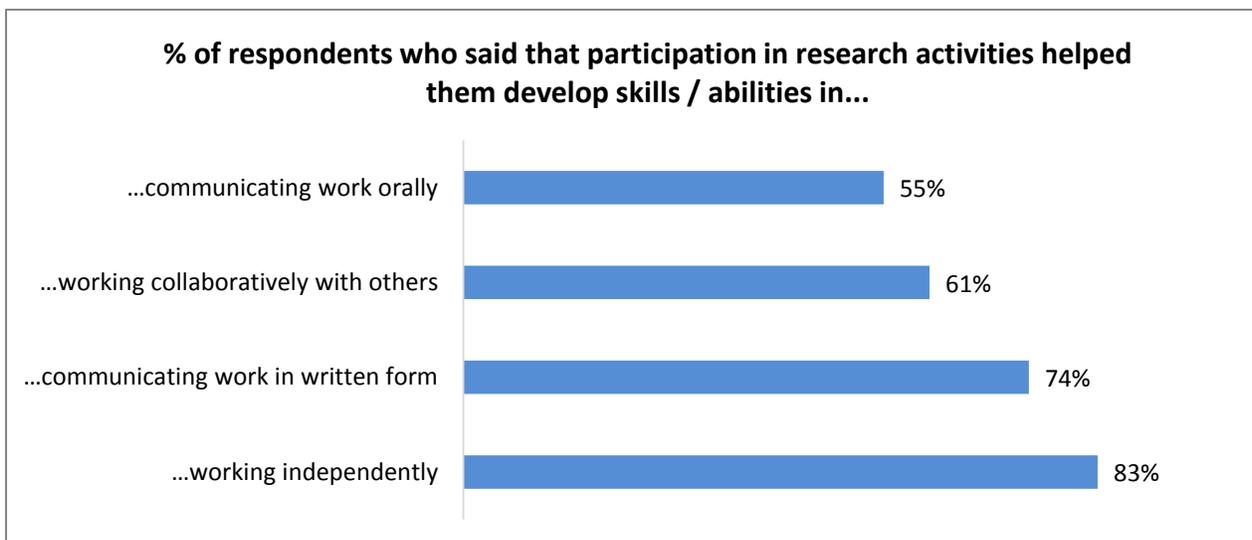


Figure 8: Gains related to skills/abilities (n=227)

Recommendations

Based on the results of this survey, the following actions are recommended:

- Individual instructors continue to: 1) raise students' awareness of the many research-oriented opportunities McGill has to offer and, 2) develop ways to engage students with research as part of coursework.
- Departments, programs and Faculties repeat this survey with their own constituencies to establish a more detailed picture of their students' experience, and identify areas for improvement.
- The University engage the community a dialogue about how to ensure that every McGill undergraduate benefits from the research culture of McGill.

Appendix A: In-classⁱ

1.1. Learning about research: During your time at McGill, which of the following have you done as part of a course?

		Overall % (n=421)	Engineering (n=50)	Health Sciences (n=77)	Sciences (n=91)	Humanities (n=50)	Social Sciences (n=130)	Interfaculty B.A. & B.Sc. (n=23)
a)	<i>Heard one of your instructors talk about his or her own research (e.g., how the instructor made a certain discovery; what's involved in publishing a paper; what's involved in preparing a performance or an artistic presentation).</i>	72%	66%	84%	82%	56%	65%	78%
b)	<i>Heard one of your instructors talk about research done by other McGill researchers.</i>	65%	46%	79%	77%	56%	56%	74%
c)	<i>Heard one of your instructors talk about research done by researchers from institutions other than McGill.</i>	59%	34%	65%	73%	52%	55%	74%

1.2. Developing research skills: During your time at McGill, which of the following have you done as part of a course?

		Overall % (n=421)	Engineering (n=50)	Health Sciences (n=77)	Sciences (n=91)	Humanities (n=50)	Social Sciences (n=130)	Interfaculty B.A. & B.Sc. (n=23)
a)	<i>Identifying documents or other resources in a library or online (e.g., journal articles, books, recordings, documentaries).</i>	66%	56%	68%	71%	66%	61%	83%
b)	<i>Formulating a research hypothesis.</i>	40%	34%	43%	48%	26%	38%	57%
c)	<i>Performing statistical/quantitative analysis.</i>	43%	36%	36%	68%	12%	42%	57%
d)	<i>Performing qualitative analysis (this refers to any analysis that is not quantitative: e.g. ethnographic research, linguistic analysis, interview coding)</i>	18%	14%	10%	23%	12%	23%	22%

1.3. Communicating knowledge and ideas: During your time at McGill, which of the following have you done as part of a course?

		Overall % (n=421)	Engineering (n=50)	Health Sciences (n=77)	Sciences (n=91)	Humanities (n=50)	Social Sciences (n=130)	Interfaculty B.A. & B.Sc. (n=23)
a)	<i>Keeping some form of journal to document your progress (e.g., a lab notebook, a field notebook, a design notebook, a practice notebook, a diary).</i>	41%	56%	35%	55%	32%	32%	39%
b)	<i>Contributing to a website, blog, wiki, forum, discussion board to communicate your progress/knowledge.</i>	22%	12%	16%	16%	24%	32%	22%
c)	<i>Writing a research report, lab report, field report or co-op report.</i>	57%	68%	65%	84%	26%	36%	83%
d)	<i>Writing an essay, term paper or research paper.</i>	76%	80%	70%	76%	80%	75%	87%
e)	<i>Writing a literature review.</i>	37%	26%	30%	45%	28%	40%	48%
f)	<i>Giving an oral presentation.</i>	74%	78%	68%	80%	72%	72%	70%
g)	<i>Giving a poster presentation.</i>	22%	30%	21%	20%	12%	23%	30%

ⁱ Academic discipline legend:

Engineering = Faculty of Engineering and the School of Architecture.

Health Sciences = Faculty of Medicine Schools (Nursing, Physical & Occupational Therapy) and Departments (Anatomy & Cell Biology, Microbiology & Immunology, Pharmacology & Therapeutics, Physiology).

Humanities = Faculties of Arts (Art History & Communication Studies, English, French, Language & Literature, History & Classical Studies, Languages, Literatures, Cultures, and Philosophy), Music and Religious Studies.

Sciences = Faculties of Agricultural and Environmental Sciences, Science and the School of Environment.

Social Sciences = Faculties of Arts (Anthropology, Computer Science, Economics, Geography, Institute for the Study of Development, Institute for Study of Canada, Linguistics, Mathematics & Statistics, McGill School of Environment, Political Science, Social Work, Sociology), Education, Management, and Science (Psychology).

Appendix B: Research culture – both in and out of classⁱ

1.1. Learning about research: During your time at McGill, which of the following have you done?

		Overall (%) (n=421)	Engineering (n=50)	Health Sciences (n=77)	Sciences (n=91)	Humanities (n=50)	Social Sciences (n=130)	Interfaculty B.A. & B.Sc. (n=23)
a)	<i>Attended a presentation or a performance given by a faculty member, an invited speaker or a job candidate.</i>	68%	64%	60%	80%	62%	64%	83%
b)	<i>Attended an academic conference or poster session (including conferences organized by undergraduate or graduate students).</i>	44%	42%	40%	52%	28%	43%	78%
c)	<i>Attended an artistic performance or exhibition in an academic context.</i>	24%	22%	12%	15%	58%	15%	35%

1.2. Developing research skills: During your time at McGill, which of the following have you done?

		Overall (%) (n=421)	Engineering (n=50)	Health Sciences (n=77)	Sciences (n=91)	Humanities (n=50)	Social Sciences (n=130)	Interfaculty B.A. & B.Sc. (n=23)
a)	<i>Working in a lab.</i>	49%	74%	55%	78%	10%	28%	57%
b)	<i>Doing fieldwork.</i>	22%	18%	16%	25%	12%	29%	26%
c)	<i>Collecting information/data through interviews, focus groups, surveys, etc.</i>	28%	10%	25%	27%	16%	38%	39%

1.3. Communicating knowledge and ideas: During your time at McGill, which of the following have you done?

		Overall (%) (n=421)	Engineering (n=50)	Health Sciences (n=77)	Sciences (n=91)	Humanities (n=50)	Social Sciences (n=130)	Interfaculty B.A. & B.Sc. (n=23)
a)	<i>Submitting an abstract/paper to a conference or an academic journal (whether it was accepted or not).</i>	14%	6%	12%	13%	10%	15%	43%
b)	<i>Publishing a paper in an academic journal (including undergraduate journals or working papers).</i>	8%	6%	5%	5%	10%	8%	17%

1.4. Applying research skills: During your time at McGill, which of the following have you done?

		Overall (%) (n=421)	Engineering (n=50)	Health Sciences (n=77)	Sciences (n=91)	Humanities (n=50)	Social Sciences (n=130)	Interfaculty B.A. & B.Sc. (n=23)
a)	<i>An independent study course (may be called majors project, honours project, advanced lab, independent research, seminar or technical project depending on the program).</i>	25%	22%	21%	37%	24%	21%	30%
b)	<i>A research assistantship.</i>	14%	12%	16%	22%	6%	12%	9%
c)	<i>An internship, stage, student placement or co-op.</i>	27%	48%	26%	23%	12%	28%	30%
d)	<i>A summer research program.</i>	15%	20%	13%	31%	2%	6%	30%
e)	<i>Applied student research (e.g., related to sustainability).</i>	2%	4%	1%	2%	0%	2%	0%
f)	<i>A community-based project.</i>	10%	8%	13%	3%	10%	13%	9%

ⁱ Academic discipline legend:

Engineering = Faculty of Engineering and the School of Architecture.

Health Sciences = Faculty of Medicine Schools (Nursing, Physical & Occupational Therapy) and Departments (Anatomy & Cell Biology, Microbiology & Immunology, Pharmacology & Therapeutics, Physiology).

Humanities = Faculties of Arts (Art History & Communication Studies, English, French, Language & Literature, History & Classical Studies, Languages, Literatures, Cultures, and Philosophy), Music and Religious Studies.

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Social Sciences = Faculties of Arts (Anthropology, Computer Science, Economics, Geography, Institute for the Study of Development, Institute for Study of Canada, Linguistics, Mathematics & Statistics, McGill School of Environment, Political Science, Social Work, Sociology), Education, Management, and Science (Psychology).