

Forward with Integrity
RESEARCH TASK FORCE
POSITION PAPER

Leah Allan
Neera Bhatnagar
Eric Brown
Catherine Connelly
Tim Davidson
Mark Embrett
Heather Fisher
Gianni Parise
Noah Shenker
Chris Sinding
Anne Snider
Pamela Swett



EXECUTIVE SUMMARY

Guided by the assertion that strength in research forms a foundation to support McMaster's mission, the research task force has developed a series of recommendations that aim to reinforce and enhance research excellence at McMaster, build a strong culture and community of research and strengthen the relationship between research and the education of graduate and undergraduate students. The task force has been mindful of the diversity of the scope and scale of the infrastructure and resources required to facilitate excellent research across campus, and presents recommendations that will generate diverse implementation strategies.

The task force has recommended ways to support and enhance the culture of research at McMaster, including forming a decentralized network that brings some research support services closer to researchers, and the development of collaborative research structures and opportunities for cross-disciplinary dialogue. In order to sustain existing research strengths, the task force has recommended a review and restructuring of indirect cost allocation as well as intellectual property policies. Ways to reinforce the link between excellent research and the student experience have also been proposed. As the research and teaching landscapes continue to evolve, the McMaster community must take the opportunities and meet the challenges that arise with the same creative and analytic spirit that fuels our individual research agendas.

TABLE OF CONTENTS

INTRODUCTION	3
Goals	3
Goal #1: To reinforce and enhance research excellence at McMaster	3
Goal #2: To consider how research might enhance the other aspects of <i>Forward with Integrity</i>	4
Challenges to Enhancing the Research Culture	4
Time and Resources	4
Planning and Communication	4
Research Administration.....	5
Linking Teaching with Research	5
TASK FORCE RECOMMENDATIONS.....	6
1. Decentralization and Networking	6
a. Research Administration	6
b. University Advancement.....	7
2. Collaborative Research Structures	7
a. Overlay interdisciplinary research institutes on the University’s organizational structure	7
b. Communities of Practice	8
3. Review and Restructure Overhead and Intellectual Property Arrangements	8
4. Create Opportunities for Dialogue.....	9
5. Integrate Research and Education	10
a. Research in the Classroom	10
b. Student Researchers outside the Classroom	11
CONCLUSION.....	12
CITATIONS	12
APPENDIX I: SUMMARY OF RECOMMENDATIONS OF THE RESEARCH TASK FORCE	13

INTRODUCTION

The research task force has been guided by the conviction that research excellence is essential to the mission of the University. The task force recognizes that the process and outcomes of excellent research can appear in many forms and may enrich society in different ways, but maintains that truly excellent research distinguishes itself. The group also recognizes that the scope and scale of the infrastructure and resources needed to facilitate excellent research can vary greatly, even within disciplines. The task force seeks to suggest opportunities to support and develop exceptional research programs across the University, recognizing that an enhanced campus-wide research culture will advance McMaster's mission. The task force asserts that enhancing the research culture at McMaster will require responsiveness, connectedness, and efficiency among the structures, processes and people who make research happen. The task force views research excellence as a foundation upon which an outstanding undergraduate experience can be constructed, and as a way to enrich our local and global communities. As such, excellent research is central to much of the vision of *Forward with Integrity*.

The task force was encouraged by the feedback it received in the Open Forums and in the proposals and documents submitted by faculty and staff. This input is viewed as a sign that there is concern about the sustainability of McMaster's status as an excellent research University, but the nature of the feedback also indicates that there is an appetite for change and innovation along the lines of what *Forward with Integrity* and the research task force are proposing. The task force also acknowledges the assistance of Prof. Mary Law, of the School of Rehabilitation Sciences, who served as a facilitator for a series of task force meetings.

Goals

In response to *Forward with Integrity*, the research task force focused its discussion and subsequent recommendations on two separate but linked goals:

Goal #1: To reinforce and enhance research excellence at McMaster

In light of our collective commitment to research excellence, and in recognition of the highly competitive nature of the external environment upon which McMaster's reputation depends, the task force feels it is critical to reflect on the current state of research, research administration, and research infrastructure. This reflection, along with discussions with researchers across campus, has generated some concern that McMaster must do more to facilitate and sustain the development of excellent research programs across the University. The recommendations of the task force related to Goal #1 therefore focus on strategies to strengthen research administration, support collaboration across disciplines, and ensure greater agility in recognizing and addressing emerging areas of research where McMaster could play a leadership role.

Goal #2: To consider how research might enhance the other aspects of *Forward with Integrity*, particularly the undergraduate student experience

The task force has identified the engagement of undergraduate students in research programs as a significant opportunity to enrich the undergraduate student experience. The group is mindful of ways in which the undergraduate teaching will necessarily change in the coming years. We view students' engagement in research as a potentially distinguishing feature of the McMaster undergraduate experience. The active participation of undergraduate students in research is viewed as an investment in the development of research capacity among potential graduate students, as well as a way to improve research literacy in the workforce and the general public.

Challenges to Enhancing the Research Culture

Time and Resources

Academic researchers are increasingly under pressure to find the time and resources necessary to further their research agendas. Many on campus are faced with extremely high costs to keep their projects moving forward. Others require less money, but struggle to find adequate time amidst their teaching and service duties and worry that research that cannot demonstrate a direct economic impact has little resonance outside their disciplines. These are real concerns, which amplify the opinion held in many departments across campus that research conducted in some areas is valued more highly than others. Limited opportunities for cross-faculty dialogue and collaboration make it difficult to overcome these divisions and foster respect and productivity. McMaster's research landscape is complex and diverse, but all researchers share the common goal of pursuing new knowledge.

McMaster's ability to face mounting external pressures hinges in part on its ability to challenge the isolation of scholars and the individual research entrepreneur model, which can lead to the ineffective deployment of personnel as well as the inefficient use of time, space and other material resources. It is critical that creative and innovative strategies be developed to help overcome these real or imagined divisions in order to foster interdisciplinary dialogue and collaboration, among and between both faculty and students.

Planning and Communication

The task force heard many stories that suggest there is insufficient institution-wide communication and strategic planning in research. These include, in some cases, duplication of services and infrastructure that support research intensity. This lack of coherent planning is not only inefficient, it undermines and weakens the collective research enterprise of the University and as a result has the effect of making research appear to be distant and inaccessible to students.

If McMaster is hoping to maintain its vision as a full-service, student-centred research university despite pressures to focus on either undergraduate teaching or research alone, the University community will need to work collaboratively and creatively. There is also a belief among researchers that there is a continuing need for strong voices in discussions with provincial and federal governments and granting bodies around a series of structural concerns, including research overheads, the funding of new ventures without considering their long-term sustainability, and the loss of research diversity in light of centrally mandated priorities.

Research Administration

Many McMaster researchers believe that the current support around obtaining and managing research funds could be improved (e.g., reducing the time required for paperwork and approvals processes). There is a feeling that the development of support staff with discipline-specific, or at least Faculty-specific, skills in the preparation of successful proposals would have the potential to significantly increase McMaster's success rate in external competitions, as would the encouragement of broader adoption of the internal peer review processes that are employed in some areas. On the operational side, some researchers point to administrative processes that could be substantially improved or streamlined. Many also show a strong desire to participate more closely in what is currently perceived to be the 'closed' world of Advancement.

Linking Teaching with Research

With regard to the integration of research and teaching, flexibility is key. Some instructors cite administrative roadblocks to creative course delivery. Others have not yet seen the potential benefits of straying from their traditional lectures. Those who do seek to connect their research more closely to the undergraduate curriculum are concerned that their students are lacking a basic level of research fluency. Despite these concerns, researchers on campus are passionate about their work and committed to addressing these issues. The task force welcomed the proposals that were submitted to us by scholars in several Faculties, as well as the reminders of ongoing initiatives, as evidence of the ingenuity that already exists on campus for tackling some of these concerns.

TASK FORCE RECOMMENDATIONS

Forward with Integrity asserts the intention of McMaster to strive to maintain its position as a research intensive university, suggesting this position and its inherent commitment to research excellence will form the necessary foundation to support strategies designed to improve the undergraduate experience and to contribute to the community. The scope of consideration for these efforts is intended to be international, not only in recognition of the increasingly international makeup of the University community itself but also in recognition of the responsibility of the University to foster “global citizenship” [1]. In the case of research, which by its nature is international in scope, McMaster needs to be highly competitive and to seek partnerships across the globe.

The members of the research task force and others who contributed feedback following publication of *Forward with Integrity* in September 2011 have taken the opportunity to articulate a range of strategies to ensure McMaster’s research strength and position is sustainable and to facilitate stronger connections between research and education. These ideas are meant to stimulate further dialogue and consideration. A summary of the recommendations is provided in the Appendix. In some instances, the task force intends that these ideas be considered as building blocks and therefore should be considered complementary or sequential in terms of implementation. In other instances these ideas may represent choices. As the implementation strategy for *Forward with Integrity* unfolds, the issues of complementarity, sequencing and selection will become increasingly important.

1. Decentralization and Networking

a. Research Administration

The establishment of Associate Deans of Research in each Faculty is seen as a positive step towards a more decentralized model of research administration. The Associate Deans will draw on a deeper knowledge of research in each Faculty and provide greater ability to support individual researchers as well as identify, support and strengthen key areas of research excellence. This should not be interpreted as a “siloing” of research but rather a deepening of strength in research administration. The Associate Deans should work as a collective, with the VP Research, in order to ensure that synergies across campus are maximized. **It is recommended that the Associate Deans with the VP Research form a “University Research Council”, meeting regularly to discuss research issues across all Faculties.** Most importantly, to address a perceived lack of institution-wide strategic planning in research, the University Research Council should be charged with working closely with researchers across campus to support a world-class, interdisciplinary research culture.

The work of the University Research Council should be complemented by a network of research administrators who are knowledgeable not only about grant and contract requirements but also have enough discipline-specific knowledge to be proactive in supporting

research development in their own Faculties and an ability to work across disciplines [2]. This campus-wide network of research administration should have a strong mandate to understand and address the needs of current researchers, recognize and develop new and leading research ideas, and identify and actively foster external partnerships. The networks should oversee grant proposals more closely to avoid duplication (of instrumentation, for example) and ensure efficient and effective use of resources (equipment, key personnel) available within existing facilities.

The recommendation to decentralize should not be confused with a recommendation to duplicate infrastructure and bureaucracy. Faculty seek faster responses to straightforward research administrative needs such as receiving funds and opening research accounts, paying invoices, processing travel expenses, or issuing RFPs for minor expenditures. **Creating a more robust research administration should be complemented by a more streamlined and accessible research administration.**

b. University Advancement

It is also recommended that **University Advancement activities become better integrated with the research enterprise of the University**, with some fundraising efforts deferred to individual Faculties. There is a current perception that Faculties, Associate Deans and Department Chairs are unable to access Advancement or influence fundraising priorities. It is suggested that fundraising efforts could lead to more successful outcomes if McMaster was to put in place a network of fundraising staff embedded in Faculties. Parts of this network are already in place, but it is suggested that an integrated network of staff working with the central Advancement office and with each other would better couple advancement activities with those who would benefit from a focus on raising funds for specific Faculty-determined priorities as well as cross-Faculty collaborations.

2. Collaborative Research Structures

In order to address the concerns regarding isolation, siloing, and lack of collaboration, the task force considered a number of internal and external structures and strategies that might lead to improvements in these areas. The following are two examples of structural strategies that could complement traditional Faculty or disciplinary structures, in effect providing an academic matrix for the campus.

a. Overlay interdisciplinary research institutes on the University's organizational structure

Borrowing from the model of the Canadian Institutes of Health (CIHR), **new interdisciplinary research institutes could galvanize McMaster researchers around thematic and leading edge areas of research.** There is ample evidence that answering “big” questions requires interdisciplinary collaboration. There are already several successful interdisciplinary research groups, centres and institutes on campus. Interestingly, the task force also received suggestions for additional interdisciplinary efforts; this suggests that there is keen interest and

appetite within the McMaster community for organizing interdisciplinary academic structures to support both research and the education of graduate and undergraduate students. Further development of an Institute framework for McMaster will require examination of existing centres and institutes in order to ensure that these meet objectives of relevance, sustainability and research excellence. **Indeed, such an examination should be frequent and on-going in context of a 'Governing Council' of research institutes.** In addition to encouraging collaboration and dialogue that crosses traditional structures of Departments and Faculties, the institute model will provide a unique opportunity for McMaster to regularly review its assets and seize opportunities to build internationally competitive research and training efforts.

b. Communities of Practice

Another collaborative framework idea that the task force believes is worthy of consideration is **the establishment of (up to) 3-year multidisciplinary research-based communities of practice (CoP).** Proposals should be solicited from across campus for short-term research projects that respond to contemporary concerns or topics that are of interest to a broad element of the McMaster research community. The theme projects could be organized virtually, or could involve a faculty team and community partners coming together in a shared space. Theme projects should deliberately and necessarily integrate students and contribute to undergraduate learning; their activities should engage the campus and the community, and their outputs should be both scholarly and community-relevant. An advisory board should define criteria and oversee selection; the existing Arts Research Board and the newly reconstituted Science and Engineering Research Board might fulfill this role. Similar initiatives elsewhere have generated a wide range of University legacies: a series of policy papers, an edited volume, a series of journal articles, an artistic installation, or a major grant proposal to secure external funding.

3. Review and Restructure Overhead and Intellectual Property Arrangements

In many resource intensive research endeavours, the indirect costs of research are not adequately supported by either Tri Council grants or other sources of research funding. It is understood that indirect costs of research funding are allocated according to a formula implemented almost 10 years ago. Beneficiaries of these indirect costs of research include the VP Research, Libraries, Faculties and the university budget framework (heat, water etc.). **It is strongly recommended that the allocation formula for indirect costs be reviewed and justified,** especially given the upcoming new budget model. There is a sense that a reallocation of indirect costs with a heavier emphasis on funds disbursed to the VP Research or individual Faculties could allow for a greater internal level of research support.

While the task force is mindful of the constraints imposed by external funding agencies, evidence, or at least opinion, exists across campus that insufficient planning has led to suboptimal long-term performance of areas of research that, when launched, held much promise in terms of dynamic new research programs. There are examples where capital investment has not been matched with operating strategies, or where unrealistic overhead

costs prohibit researchers from seeking external partnerships with non-governmental agencies. Faculty leading research intensive programs are concerned that they are “chasing grants” in order to maintain their facilities and personnel.

The task force recommends that the proposed review of overhead needs and allocations include **the development of strategies to maximize the ability of research intensive areas to operate effectively and over longer time periods**. The task force recognizes that external advocacy activities, in collaboration with other research intensive universities, which seek to encourage the modification of the policies of external funding agencies could play an important role. The anticipated net effect of this work will be a strengthening of and increased sustainability for programs of research, a freeing up of researchers to participate in undergraduate education, and an enhanced ability of researchers to communicate their findings to their faculty colleagues and to students.

The task force received some rather diverse opinions on **the effectiveness of the Joint Intellectual Property Policy** of the University and the affiliated hospitals in fostering collaboration with external partners and the commercialization of discoveries. It heard anecdotes that suggest that the policy has impeded attempts to engage external partners, but it also had its attention drawn to the soundness of the core principles that underlie the policy. The differences between these perspectives, and the statement of quinquennial review in the policy itself, suggest that a review of the trade-offs that were made when the policy was established would be quite timely.

4. Create Opportunities for Dialogue

The currency of the University is ideas, which are often facilitated by dialogue and relationships. **The task force recommends creating more opportunities for informal conversations between researchers and between researchers and students**. The sharing of ideas is a stimulating exercise and an essential ingredient in research and should be fostered both within and across disciplinary boundaries. Members of the task force and others commented on the lack of opportunity for informal dialogue and relationship building within the University community as well as with those outside the traditional boundaries of the University who might enrich McMaster’s collective thinking.

One mechanism to support opportunities for dialogue is the development of community spaces on campus in which people could meet and foster collaboration. The Italian piazza or the English commons are both examples of communal meeting spaces that are fluid in use, accessible to all, and which help ensure the community remains a community by having a gathering place. The natural translation of this concept onto a university campus might be the libraries. The libraries are dispersed across the campus, are not owned by disciplines or departments, and are equally available to all. The McMaster libraries have already become more diverse and dynamic in their approach to knowledge management and dissemination. This transformation could set the stage for additional types of opportunities for knowledge exchange for the campus as a whole.

Another possibility for collaborative dialogue, both formal and informal, might be the University Club. This space already serves for both formal academic events and informal meals and discussions. The President's Office, MUFA, SGS and the office of the VPR should all be encouraged to host social events that could provide opportunities for scholars to meet and share ideas. A campus-wide interactive calendar would be a first-step in building better lines of communication.

5. Integrate Research and Education

The integration of research and education is fundamentally important to ensure sustainable research excellence on campus for a number of reasons. This integration relays the excitement of knowledge creation and discovery to students at an early stage in their academic experience and deliberately builds their capacities for disciplined inquiry; by so doing it enhances the opportunity for students to explore and consider more advanced academic training at the graduate level. In addition, it helps to ensure that education remains current and dynamic at a time when students and faculty no longer need to be constrained by the traditional mechanisms of relaying knowledge through lectures. Finally, it holds the potential to energize and knit together the university as a whole and to create a more exciting academic community of scholarship.

The task force focused on challenging how research is integrated into the educational experience and how students can transfer their knowledge and experiences to their peers. Recommendations are divided into two categories. The first contains methods for incorporating research into the classroom through reconstruction of the notion of a "course" and the addition of a mandatory research course. The second offers a method for incorporating students at every level of education into the dynamic research occurring on campus by eliminating the horizontal and vertical silos between departments and levels of education.

a. Research in the Classroom

The task force feels it is important to expose students to research on campus early in their academic careers. A research question is seldom answered completely within a year, and requires a broad set of competencies to be addressed meaningfully. As such, the earlier students are exposed to research problems, the more fully they can engage and acquire the necessary skills to participate in the research enterprise. **We propose the creation of a level II research course in each academic discipline, which should be mandatory for all students.** The content of the course should have different manifestations based on the research needs of a particular academic discipline. The goal is to provide students the foundational ideas and skills required to participate in higher level research and enable them to engage more fully in their subsequent courses as well as in their non-academic pursuits upon graduation.

An undergraduate course typically consists of a professor lecturing for two to three hours per week, accompanied perhaps by a lab component and/or a tutorial. The material being taught is

complemented by a textbook that covers approximately the same content as is provided in lecture. In an era when information is increasingly accessible online and in an environment where other universities are moving to an open-source approach to learning, **it is proposed that McMaster consider how its courses are structured and taught.** It has been suggested that the primary role of the lecturer is to share the excitement of knowledge creation and discovery, hence courses should be structured so that they emphasize and reward working through challenging problems and encouraging students to develop advanced capacities for independent and collaborative inquiry. The most important skill the lecturer brings to the classroom is not his or her ability to provide the basic content, but to challenge the students to consider the material in new ways.

This shift in the role of a course in undergraduate education will need to be a gradual one because it requires modification to the requisites of courses and how students are assessed. This must be viewed as a challenge and opportunity, not an obstacle. Fundamental knowledge and skills in the earlier years of a student's undergraduate education are essential, but as this base grows, the learning environment should evolve to ensure continuous challenge and growth. Course developers should be encouraged to innovate in these ways.

Furthermore, some **reconsideration of how researchers can contribute to the academic mission is required.** Some of the possible contributions the task force has considered include guest lectures, research projects or TED-style lectures. Where it is beneficial to the program in question, Chairs and Deans should recognize alternative methods of contributing to the academic mission. Both faculty and students can benefit from this flexibility.

b. Student Researchers outside the Classroom

The task force recommends that research for course credit become standard practice across campus. This recommendation builds upon the previous recommendation of a mandatory research skills course. The task force recognizes two manifestations of this idea, both of which already occur on campus. Students can either engage in unique, self-selected research, supervised by a faculty member (or advanced doctoral student) or focus on a research project that is defined by the supervisor as part of a larger research portfolio. The latter option holds a lot of potential for students in their first or second year, as they are unlikely to have developed a unique research interest by that point. They can support faculty in their research while also gaining valuable skills and working toward their degree. In third and fourth year, self-selected study opportunities might require or benefit from department-level seminars that support students conducting independent studies through common challenges. As well, departments are encouraged to consider research pathways for students, identifying certain courses or skill sets as prerequisites for a third or fourth year independent study. By recognizing the importance of actively engaging in research for course credit, the university can support the principle of research excellence on campus.

Related to this is **the development of increased opportunities for cross-positional research involving undergraduate and graduate students** interacting with post-doctoral fellows and

faculty, in areas on campus where this does not already occur. Research in many cases is not an isolated process, and the task force recommends recognizing and/or crediting graduate students that participate in undergraduate student education and research projects. This would facilitate the sharing of information, skills and experience between these levels of study.

CONCLUSION

The research task force asserts that research excellence is essential to the mission of the University, and forms a foundation for much of the vision of *Forward with Integrity*. As the research landscape evolves, McMaster has the opportunity to reinforce its reputation for distinction in knowledge creation, discovery and innovation. The recommendations in this position paper aim to reinforce and enhance research excellence at McMaster, build a strong culture and community of research and strengthen the relationship between research and the education of graduate and undergraduate students. The task force recognizes that the scope and scale of the infrastructure and resources needed to facilitate excellent research vary greatly across campus, and hence we expect that responses to our proposals will generate a rather diverse set of actions. The members of the task force look forward to observing and contributing to the development of those responses.

CITATIONS

[1] Patrick Deane, *Forward with Integrity: A Letter to the McMaster Community*, 2011.

[2] Rosemary Deem, *Herding the Academic Cats*, Perspectives: Policy and Practice in Higher Education, 2010.

APPENDIX I: SUMMARY OF RECOMMENDATIONS OF THE RESEARCH TASK FORCE

Goal #1: To reinforce and enhance research excellence at McMaster

Decentralization and Networking

1. The Associate Deans and VP Research should form a University Research Council, charged with working closely with researchers across campus and with each other to support a world-class, interdisciplinary research culture.
2. The work of the University Research Council should be complemented by a network of research administrators who are knowledgeable not only about grant and contract requirements but also have enough discipline-specific knowledge to be proactive in supporting research development in their own Faculties and an ability to work across disciplines.
3. Creating a more robust research administration should be complemented by a more streamlined and accessible research administration.
4. University Advancement activities should be better integrated with the research enterprise of the University, with some fundraising efforts deferred to individual Faculties. An integrated campus-wide network of Advancement staff should collaborate with the central Advancement office to raise funds for specific Faculty-determined priorities as well as cross-Faculty collaborations.

Collaborative Research Structures

5. Borrowing from the model of the Canadian Institutes of Health (CIHR), new interdisciplinary research institutes should be considered as a construct to galvanize McMaster researchers around thematic and leading edge areas of research. If this model is endorsed, a Governing Council should be implemented for support.
6. The University should encourage the establishment of multidisciplinary research-based Communities of Practice (CoP). CoP proposals should be solicited from across campus for short-term research projects that respond to contemporary concerns or topics that are of interest to a broader element of the McMaster research community. An advisory board, potentially the existing Arts Research Board and newly reconstituted Science and Engineering Research Board, should oversee the CoP process.

Review and Restructure Overhead and Intellectual Property Arrangements

7. The allocation formula for indirect costs should be reviewed and justified in order to ensure maximum benefit to research. It is expected that improving the sustainability of research programs will enable senior researchers to strengthen connections between their programs and undergraduate education and the community.
8. McMaster, in collaboration with other research intensive universities, should be proactive in advocating for the modification of policies of external funding agencies for the benefit and sustainability of research.

9. The Joint Intellectual Property Policy of the University and the affiliated hospitals should be reviewed in order to maximize collaboration with external partners and the commercialization of discoveries.

Goal #2: To consider how research might enhance the other aspects of *Forward with Integrity*, particularly the undergraduate student experience

Create Opportunities for Dialogue

10. Using existing campus facilities such as the libraries and University Club, create opportunities for informal dialogue and relationship building between researchers and between researchers and students as well as with those outside the traditional boundaries of the university who might enrich McMaster's collective thinking.

Integrate Research and Education

11. Create a mandatory level II research course in each academic discipline.
12. Seek innovative ways to restructure undergraduate courses to enable faculty to emphasize and reward working through challenging problems and encouraging students to develop advanced capacities for independent and collaborative inquiry.
13. Seek innovative and flexible ways for researchers to participate in undergraduate courses.
14. Research for course credit should become standard practice for undergraduate students.
15. Cross-positional, or team-based research strategies should be developed that allow undergraduate, graduate, and faculty to work together, with credit assigned to participants for their contributions.