Interdisciplinary Cooperation in Teaching and Learning at Memorial University

Report of the Working Group on Interdisciplinary Cooperation

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Submitted by the Working Group on Interdisciplinary Cooperation: Nicholas Hartmann, Donna Hardy-Cox, Marion MacLeod, Peter Mezo, Caroline Porr, Linda Rohr, Sharon Barter Trenholm, Ellen Waterman (chair)

Statement of Principles
Interdisciplinary cooperation promotes the values of collegiality and collaboration among faculty and students and therefore contributes to good citizenship. Meaningful interdisciplinary teaching and learning brings together expertise from different fields in a way that retains and clarifies the fundamental building blocks of a given discipline while articulating its complementarity with one or more other disciplines. Tracing a common thread (a theme or issue) through these different viewpoints leads to valuable synergies among the disciplines and professional skills. At its best, by utilizing the strengths of each area, interdisciplinary cooperation leads to the optimal creation of something far greater than any one area could produce alone.

We believe that interdisciplinary cooperation is a valuable asset at Memorial University, and one that should be fostered and developed as an integral component of student education. In order for this to happen, however, University administration must place explicit value on interdisciplinary cooperation and establish institutional supports and rewards to acknowledge and sustain the commitment by faculty who teach in interdisciplinary contexts.

Defining Interdisciplinary Cooperation

Interdisciplinary cooperation:

- entails intentionally wanting to know and understand another’s discipline;
- involves cooperation, good communication, listening, and trust;
- requires a personal commitment to learn the terminology and frames of reference of another discipline;
- demands new skills, such as negotiating across these lines;
- fosters understanding, humility, curiosity, and respect;
- necessitates learning to embrace the other’s perspective;
- promotes knowledge of one’s own disciplinarity, enculturation, and beliefs.

Interdisciplinary cooperation includes the following dimensions:

- interprofessional education;
- students’ experiential learning in co-ops, internships, community-engaged projects;
- working across academic disciplines;
- working between academic and professional/community contexts;
- working across the sub-disciplinary fault lines within a unit;
- diversity of background, age and experience.
Relationship to the Teaching and Learning Framework Discussion Paper

We believe that interdisciplinary cooperation in teaching and learning addresses many of the fundamental principles outlined in the Discussion Paper (15 February 2011). For example, we seek to produce graduates from Memorial who are supportive collaborators with particular regard to diversity of interests and who communicate effectively with others. We seek to attract and inspire students who will become versatile, adventurous leaders. Such students, we hope, will “help push the boundaries of a multitude of disciplines and professions.”

Interdisciplinary efforts support the Learning Paradigm and Key Components of student centred learning and teaching practice. For example interdisciplinary cooperation “facilitates student engagement and active learning – encourage[s] student engagement by providing a variety of ways to learn, appropriate to their discipline” and “incorporates an experiential component where appropriate.” Students should be provided opportunities to apply concepts and principles acquired through formal classroom teaching to real-life community and practice setting experiences during their tenure at MUN.

In relationship to a supportive institutional culture – interdisciplinary cooperation holds promise to be a “mechanism that will support and enhance the connections that exist between teaching, research and community engagement.”

We have focused our discussions primarily on four questions.

- What is meaningful interdisciplinary teaching and learning?
- What kinds of competencies do students and teachers need in order to engage in meaningful interdisciplinary teaching and learning?
- What outcomes do we expect from the interdisciplinary teaching and learning experience?
- What are the barriers (institutional, ideological) to interdisciplinary teaching and learning in the academy?

Question 1: What is meaningful interdisciplinary teaching and learning?

Interdisciplinary teaching and learning engages with the tenets of all good teaching and learning as described by Leblanc (1998). The mere presence of interdisciplinarity is not, in itself, a guarantee of engaged teaching and learning, but must be “passionate, motivating, relevant, meaningful and memorable.”

If done poorly, there is a risk that interdisciplinary education may reduce the depth of knowledge in a single discipline. One of the heralded strengths of interdisciplinary education is that it improves critical thinking skills (Ivanitskaya, Clark, Montgomery, & Primeau, 2002). However, much of the critical thinking literature refers to the need for education and training to be domain specific in order to achieve the largest improvement in critical thinking (e.g., Renaud & Murray, 2008). Some domains are naturally interdisciplinary and may thus benefit from an early introduction of an interdisciplinary
approach, whereas other domains that exist within a single discipline, may stand to benefit from a delayed interdisciplinary approach, after a strong single-subject knowledge base has been established.

Effective interdisciplinary cooperation depends on an institutional culture of respect for diverse points of view and support of exploration and risk taking. It requires “strong, visionary leadership and very tangible institutional support--resources, personnel and funds” and an “overarching vision that transcends the entire organization and has the actions to back that up”; that is, valuing contributions of everyone from full professor to part time instructor.

A good interdisciplinary course has focused goals or desired outcomes: a dilemma, an issue, a major theme that drives interdisciplinary cooperation from the outset. The common thread is such that it incites learners representing diverse disciplines to establish a spirit of collaborative inquiry and the theme, or subject matter, motivates constant consensus-taking to achieve tasks and to accomplish synergistic resolution.

There are several different teaching/learning models that may be employed in interdisciplinary courses: team teaching, modules within a larger program with consultation from different faculty, field and study abroad experiences, and community involvement (co-ops, internships). The model should be appropriate to the student level and context. Interdisciplinary courses position the teacher as a facilitator of discovery rather than as a deliverer of information or “sage on stage”. Problem-based learning that relies on teamwork and group learning as students work through scenarios may prove the most effectual for fostering interdisciplinary cooperation.

Example 1. Interdisciplinary programs require supports for students to fill in knowledge gaps. Ethnomusicology graduate programs embrace students from many backgrounds: music, anthropology, sociology, social work, indigenous studies, etc. Ethnomusicology is informed by aspects of all these areas, but that does not mean that students are equipped with the capability to tackle each of these areas with the same level of competence. We need to create opportunities (for example by providing flexible electives, directed readings, peer mentoring) for students to fill the gaps in their disciplinary competencies even as they undertake their interdisciplinary education.

Example 2: Interprofessional education at MUN provides a model of successful interdisciplinary cooperation. Interprofessional education has been successfully used at Memorial through the Centre for Collaborative Professional Health Education. Interprofessional education occurs when two or more students from the professional schools learn with, from and about each other to improve team collaboration and quality of care. The model uses intensive short units where students from different schools and faculties (nursing, pharmacy, social work, medicine) work together to address a health and social service phenomenon. Taken together, these modules provide students with an enhanced understanding of the contributions each of the professions makes to health care
services delivery. The focus in this model is on the needs of service users and carers and operates on the principle that the healthcare sector and system are complex, requiring the techniques, skill sets, theories and principles of multiple professional practice disciplines. Rather than a blurring of boundaries, this approach emphasizes the distinct contributions and requirements of each participating profession. Cross-professional understanding and cooperation leads to more effective care. “Participants, whatever the differences in their status in the workplace, are equal as learners. They celebrate and utilise the distinctive experience and expertise that participants bring from their respective professional fields” (Centre for the Advancement of Interprofessional Education, n.d.).

Example 3: The longstanding practice of cooperation among sub-disciplines within a field provides a model of interdisciplinary cooperation but also exposes some fault lines. In the fine and performing arts, students pursue applied, theoretical, historical, and pedagogical approaches to the discipline, beginning to specialize in years 3 and 4 of their undergraduate degrees. Typically, faculty have common roots in the same sub-disciplinary suite of competencies at the undergraduate level but have focussed their expertise quite specifically at the graduate level. In practice there is a spectrum of approaches within such professional schools from fierce demarcating of territory and competition for students within the unit, to high degrees of mutual respect and cooperation. Fostering sub-disciplinary cooperation promotes understanding of and respect for diverse specializations within a field. It is important that students be well informed about the various options and we may need more flexible pathways through such degree programs if we want to promote exploration, risk taking, and critical understanding.

In the sciences, sub-disciplinary pathways are taken from the beginning of study as students enrol in chemistry, physics, biology, etc. Meanwhile, trends in science research have moved towards high degrees of interdisciplinary cooperation as exemplified by the “buffet” approach to research laboratories where a number of different kinds of research may be practiced in one facility, encouraging cross-pollination of ideas. Initiatives such as the development of interdisciplinary minors in science and models such as the biology “stack” courses at Bonne Bay Marine Institute (where students work in the field and develop multiple skill sets) signal an interest in more interdisciplinary cooperation within the sciences.

Question 2: What kinds of competencies do students and teachers need in order to engage in meaningful interdisciplinary teaching and learning?

Our efforts to define interdisciplinarity demonstrated how differently language is understood from different disciplinary backgrounds. If we are to build clear, strong competencies within the interdisciplinary environment, we need to focus on a number of issues:
Teachers require particular, interdisciplinary and often interprofessional communication skills.

Students must be given ample opportunities to hone their own communication skills and demonstrate their understanding of the different but complementary elements that comprise interdisciplinary work.

Managing conflict with others is a critical skill set--teachers must be equipped with advanced intrapersonal and interpersonal communication competencies to manage their own reactions and to address divergent beliefs, ideas, and opinions effectively.

In some situations, there may also be a need to consider which teachers and students have the attributes to engage effectively. Are there prerequisites that speak to teacher/student attributes? Do they require inherent qualities of curiosity, humility and respect from the outset or are these predicted as potentially some of the benefits of participating?

In team teaching and experiential learning situations the roles of team members must be clarified and leadership must be truly collaborative.

Interdisciplinary cooperation requires a student-centred approach to teaching and learning.

Effective interdisciplinary courses will provide students with:

- exposure to different (even divergent) points of view;
- training in how to access and assess information from a wide variety of sources;
- assignments that require students to synthesize information from different disciplines;
- critical thinking skills.

Students will need to develop skills in team work, problem solving, and cooperation. Experiential learning is better than information delivery in fostering these skills.

**Question 3: What outcomes do we expect from the interdisciplinary teaching and learning experience?**

Effective interdisciplinary cooperation in teaching and learning should produce positive outcomes for students and teachers in the cognitive, affective, and psychomotor domains as follows:

- cognitive domain: expansion of knowledge and understanding, discernment;
- affective domain: earned respect, suspension of judgment, an attitude of acceptance, desire to embrace diverse approaches;
- psychomotor domain: intrapersonal control of own reactions, self awareness, interpersonal communication techniques and strategies.

These outcomes are only possible after transformative learning has occurred. A major goal of education is to prepare autonomous and responsible thinkers. Autonomous thinking is “is essential for full citizenship in democracy and for moral decision making
in situations of rapid change. The identified learning needs of the workforce implicitly recognize the centrality of autonomous learning” (Mezirow, 1997, p. 7). These outcomes are also related to critical thinking which “is a liberating force in education and a powerful resource in one's personal and civic life” thus good education develops critical thinking skills and nurtures the associated dispositions “which are the basis of a rational and democratic society” (Facione, 1990, p. 2).

**Question 4: What are the barriers (institutional, ideological) to interdisciplinary teaching and learning in the academy?**

There are many successful interdisciplinary programs at MUN including the graduate programs in Ethnomusicology and in Humanities, seven interdisciplinary majors and six interdisciplinary minors in Arts; the Interdisciplinary PhD program; five interdisciplinary Science graduate programs, and the Interprofessional Practice Based Learning program. Regular opportunities for encouraging and showcasing of interdisciplinarity are necessary and an example already in place is the annual Aldrich Interdisciplinary Conference and Lecture series. There are also many committees and working groups that successfully work together to benefit existing programs and promote student achievement, for example the Interdisciplinary Committee on Ethics in Human Research (ICEHR).

However, there remain significant barriers to developing interdisciplinary programs. Such initiatives must overcome resistance to crossing discipline boundaries ideologically, practically, and financially. This suggests both a need to promote a culture of risk taking and exploration, and a careful determination of which areas are best suited to interdisciplinary initiatives. The challenge becomes how to determine areas of interdisciplinary cooperation that are most fruitful.

Closer research/teaching links may benefit interdisciplinary teaching and learning at Memorial by engaging both undergraduate and graduate students in large interdisciplinary research teams. The question remains at what stage, and how teacher-directed need students’ interdisciplinary first steps be?

A major barrier to collaborative initiatives is scheduling, since undergraduate students in particular have densely scheduled requirements. Interdisciplinary initiatives may need to take advantage of online, flexible forums and evening or weekend classes.

We need to recognize and assess the degree to which our students are already engaged in self-directed interdisciplinary learning. For example, the geography student in the Spanish class, and the chemistry student who plays in the university orchestra. While taking diverse electives is not an obvious form of interdisciplinarity, the principle of gaining diverse knowledge sets is built into the university’s requirements for such electives in all undergraduate degree programs. We need a broader, more complex model of interdisciplinary teaching and learning. We might build interdisciplinary alliances with relationships already formed but not officially acknowledged/fostered.
Recommendations

1. Overcoming barriers to interdisciplinary cooperation between academic units and professional/community organizations

Institutes have an important role to play in building bridges between academic units and professions/community groups. We recommend that when investing in units like the Harris Institute and the Labrador Institute, the University build supports for interdisciplinary cooperation; for example, increasing opportunities for faculty and students from different units to work together on short and long term projects.

We also recommend that the University find meaningful ways to acknowledge the value of tradition bearers and other community members who contribute to interdisciplinary teaching and learning at Memorial.

2. Overcoming barriers to interdisciplinary cooperation between academic units

In the past, interdisciplinarity has often been evaluated as “diffuse” and lacking in rigour compared to work done within a single discipline. We need a paradigm shift in our approach to interdisciplinary cooperation. Interdisciplinary cooperation needs to be valued explicitly within the University’s mission statement, and through tenure and promotion processes.

We need to value the stretching and pulling (productive tensions) that come with cross-talk dialogue and debate. We need to state plainly that collaboration is a core value so that it creates a positive culture around team work, cooperation, and interdisciplinary working relationships as opposed to competition. We cannot expect collaboration to be fostered in our students if it is not supported philosophically as well as materially by the institution.

3. Sustaining initiatives in interdisciplinary cooperation

Too often, initiatives in interdisciplinary cooperation depend on one or two individuals with a particular vision. Such initiatives are vulnerable because they lack core institutional support. We recommend that at least some interdisciplinary initiatives be institutionalized by creating areas of inter-unit ownership and support. These structures are necessary to effectively deliver interdisciplinary courses and programs (Chandramohan & Fallows, 2009). Mechanisms need to be put into place to allow faculty to teach in interdisciplinary contexts and students need to be allowed sufficient flexibility in their programs to be able to take such courses.

We recommend that the University build on existing mechanisms for interdisciplinary cooperation, including: cross-appointments; adjunct
appointments and professional associates; co-op work placements and internships; Harris centre regional tours; Labrador Institute; student volunteer bureau.

4. Enriching student experience through interdisciplinary cooperation

We recommend that any cornerstone experience for first year undergraduate students should be interdisciplinary in nature. Successful initiatives have been explored in other universities, and Memorial might usefully look at models, including: the Foundational Year at King’s College; the Semester in Dialogue at Simon Fraser University; the Faculty in Residence program at the Université de New Brunswick; and the Living/Learning Centres at Indiana University.

5. Ensuring the integrity of initiatives in interdisciplinary cooperation

Appropriate interdisciplinary cooperation depends on context and a variety of models may be deemed necessary to complement student learning at different stages of their undergraduate and graduate educations. We also require mechanisms for evaluating the success of initiatives in interdisciplinary cooperation and we should be prepared to change and renew programs over time.
References


