

## Report on FWI project activities

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### **Building an international undergraduate research network via videoconferenced activities within a student-led research symposium**

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#### **Project summary extract (from proposal):**

Undergraduate students within the Faculty of Science's Integrated Science Program (iSci) plan, run, and participate in an annual student research symposium *Synthesis*, as a cross-level capstone activity within iSci (duration: ten days in April). This proposal aims to strengthen links with iSci's sister program, Interdisciplinary Science (IScience) at the University of Leicester, UK, by introducing IScience student participation into the existing iSci *Synthesis* structure. McMaster and Leicester students would be able to share research, discuss their educational experiences, and participate in joint research activities which would then be presented at *Synthesis* to both learning communities.

#### **Summary of activities**

In the winter term of 2012/13, I formed a project committee of a faculty member (myself), a librarian (Andrew Colgoni, then Science Fluencies Librarian), staff (Geneviève Van Wersch, iSci Instructional Assistant and Sarah Robinson, iSci Administrator), and two students. One of the student members, Stephanie Taylor (then in iSci Level II and planning to go on the Leicester exchange in her third year), was appointed to a McWork post specifically to assist the project. This post was funded by the FWI grant. The other student member (Daniel Heggie) was a University of Leicester student on exchange to McMaster. He agreed to serve on a voluntary basis because as an exchange student he was not eligible for a paid position. The committee's goals for that term were to integrate a cross-institutional activity into the McMaster *Synthesis* symposium in April 2013. The symposium is student-led, but Geneviève Van Wersch and Sarah Robinson maintain oversight of the organisation on behalf of the iSci Program.

The activity was chosen in consultation (led by Stephanie and Daniel) with both student bodies during the winter term. The student members also tested out three different videoconferencing systems

(Google+, Adobe Connect, and H.232 protocol IP-based dedicated links) for several different modalities of communication. These modalities are:

1. A student from Leicester presenting to the McMaster student body (with provision for audience to interact with the presenter). The McMaster students would all be in the same room.
2. A presentation in McMaster being conferenced to the Leicester student body (with provision for audience to interact with the presenter). The Leicester students would be in dispersed locations (*Synthesis* takes place during the UK Easter holiday).
3. A round-table or panel discussion with participants in many different locations.

For our trial run, we decided on attempting the most technically demanding scenario: the third modality. In March 2013, Stephanie and Daniel surveyed the two student bodies to determine potential topics and participants. A further thirteen students were recruited as primary participants and the event took place on April 4 2013. A total of twenty-five students (approx. 75% from McMaster, 25% from Leicester) took part in the two-hour event. The chosen system was Leicester's Adobe Connect software. The chosen topics of discussion were:

- how students learn interdisciplinary science material
- student views on current science topics
- research collaboration opportunities
- "non-traditional" aspects of iSci/IScience education.

Over the summer of 2013, Stephanie Taylor continued in her position as project assistant. Her main outputs over this period were:

- writing up instructions for using the three different videoconferencing systems (Google+, Adobe Connect, and H.232 protocol IP-based dedicated links) in each of the three different modalities
- writing a schedule of tasks for future student organisers of video-conferenced events both within and outside of *Synthesis*
- creating a set of informational documents that can be shared with exchange students or potential research or discussion partners giving background information about the iSci program and *Synthesis*
- collating ideas for research interactions between iSci and IScience students including fieldwork opportunities, remote lab interaction

These documents have been added to the structure of future *Synthesis* symposia.

- I visited the University of Leicester in July 2013 (FWI funds were not used for this visit – I was attending a nearby conference) and met with colleagues in the IScience program (now being re-

named Natural Sciences). In addition to continuing the activities described above, we also confirmed the following additional points of interaction between the student bodies:

- The IScience model journal *JIST* (the Journal of Interdisciplinary Science Topics) which runs in a Term 2 credit-bearing course in Leicester, is now open to iSci students to submit short articles for peer review. The module is run by Cheryl Hurkett, one of the IScience teaching fellows in Leicester.
- The new iSci student journal *iScientist*, which takes extended articles dealing with results from original research, will be open to contributions from Leicester students. The editor-in-chief is Andrew Colgoni.
- Students from either program engaged in pedagogical research will be able to invite students and instructors from the other University into their study populations in order to perform comparative research projects using subjects from both programs. Oversight is provided by me in McMaster and Dylan Williams in Leicester.
- The on-going program of exchanging “guest lectures” via videoconference will be continued and, where appropriate, extended to include more instructors from both programs.

The project’s goal of investigating collaborative research opportunities is ongoing. A planned meeting of interdisciplinary science courses (the iSPHERE group, founded by the iSci program and containing primary institutional members University of Alberta, Dalhousie University, UBC, and University of Leicester), in July 2013 has this on its draft agenda. The opening of the iSci teaching laboratory in the General Sciences Laboratory in September 2013 will greatly facilitate our ability to communicate directly during research. Equipment including field camera (purchased by the FWI project), projection screens, networked microscopes, and (planned) VC cameras in the lab itself will allow our students to share procedures and results with students in the field and in other institutions.

### **Ongoing challenges**

Increase opportunities for interaction with non-iSci students:

The ISCI/ARTSSCI 3IE1 modules (open to iSci and Arts & Science students – and hoping to include more McMaster programs in future), *Synthesis* High School workshop (local high school students), and MOOSE orientation week (involving iSci, Arts & Science, Social Sciences, Kinesiology) are good examples of how iSci activities are being offered to participants outside the program. We would like to explore more ways of involving students not physically present in some of these activities.

Perform collaborative student research with participants outside McMaster:

We would like to pilot a collaborative research project involving students in the member universities of iSPHERE. This endeavour will start being planned in July 2013.