The Applied Student Research Toolkit
A practical guide for impactful student research
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What is Applied Student Research?

Applied Student Research (ASR) provides an opportunity for students to address the needs of their community in a hands-on way, bridging the gap between theories taught in the classroom and their practical application.

Research projects are designed to find solutions to real-life challenges and actionable recommendations are implemented to create sustainable change.

The Importance of Systems Thinking

ASR projects employ systems thinking to tackle complex sustainability issues on campus. Systems thinking is the holistic process of analysis that focuses on how a system’s parts interrelate and influence each other over time. A simple way to understand systems thinking is to think of an ecosystem in which individual elements such as water, air, plants and animals interact as part of a greater system. This way of thinking is beneficial in research because it helps the researcher understand problems within their larger context.

The Benefits of Applied Student Research

- Teaching students how to make real-world impacts
- Providing a testing ground for sustainable ideas, concepts and solutions
- Using readily available resources to solve problems on campus
- Fostering collaboration between students, faculty and staff

This toolkit is designed to help you, the student, complete an impactful ASR project. It lays out the step-by-step process of preparing, conducting and completing your project and provides resources for every part of the journey.
Prepating Your Project

Initiation of a Project

An ASR project can be initiated in many ways. You may already have a group of friends who are interested in working together on a specific issue. Alternatively, you may have a project idea and are seeking to recruit a project team and other relevant stakeholders. You may even discover an idea and team through a McGill Systems Project, otherwise known as an M(x)P.

An M(x)P is a group that uses ASR to make campus more sustainable by taking charge of initiatives within their area of focus. The x represents the group’s area of expertise. There have been four active groups at McGill: the McGill Food Systems Project, the McGill Energy Project, the McGill Spaces Project and the McGill Waste Project. If you are interested in any one of these topics, it may be worthwhile to see what projects these groups already have on the go!

Choosing a Topic and Research Question

Choosing a topic and research question is a very important part of planning your project, if not the most important. Your research topic is a subject or issue that you want to explore and a research question is the specific question that your research will answer. You should do a significant amount of background research before defining your topic and your research question. It is also helpful to reach out to stakeholders at this point in the project as they will be able to help you define community needs.
Example Topics and Questions

**Topic #1**: Student evaluation and responses towards alternative learning strategies  
**Research Question #1**: What are the most preferred alternative learning strategies of students?

**Topic #2**: Use of GIS to identify effective distribution of water fountains on campus, compared with areas of high water demand.  
**Research Question #2**: Which areas on campus have the highest demand for water?

When choosing a topic and research question, it is important to be realistic about the scope of your project given available resources. Defining a precise topic, objective and scope is critical to the success of your project. The following key questions will help you choose an appropriate topic and research question:

- What issues are important to me?  
- What specific skills can I bring to a project?  
- What existing projects need support?  
- What sort of solutions are needed?  
- What similar projects have already been completed?  
- What is my timeline?
Preparing Your Project

Finding the Right Stakeholders

Here is a suggested list of potential community partners and clients that you might be interested in collaborating with. This is not an exhaustive list; there are many other groups on campus and in the community who may benefit from your work.

- Office for Social Equity and Diversity Education (SEDE)
- Food & Dining Services
- First Peoples’ House
- McGill Athletics
- Procurement Services
- Academic Units
- Utilities and Energy Management
- Residences
- Libraries
- Post-Graduate Students’ Society (PGSS)
- Students’ Society of McGill University (SSMU)
- IT Services
- McGill Bookstore
- First-Year Office
- Logistics and Macdonald Campus Operations
- Printing and Mail Services
- Career Planning Services
- Campus Life and Engagement
Glossary of Stakeholder Terms

**Clients:** Clients can be individuals or groups from the community that benefit from the research. Their role includes helping guide the direction of the student’s work, contributing resources and reviewing the students’ final report.

**Partners:** Partners also provide support to the project, but do not receive a recommendation.

**Example:** A student hopes to provide a recommendation for a new student residence physical activities program by collecting data about student behaviour from the McGill Gym. Their research questions is: *What types of physical activities do students living in residence enjoy most?* In this scenario, McGill Residences is the **client** but support is required from the McGill Gym. The McGill Gym is therefore a partner in the project.

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Preparing Your Project

Research Methodology

This step requires technical knowledge of research and, therefore, will be developed with the help of your supervisor. You will also refine your research methodology according to your client’s needs and available resources. At the end of this process, make sure your research methodology and the questions that need answering are aligned with your client’s needs and expectations.

The main question you should ask in this step is: What outputs need to be created with my project? In other words, you should try to incorporate what your end product will look like, and how it will be used, to the way that you will be conducting your research.

The most common methods of data collection used in ASR are:

1. Surveys
2. Case Interviews
3. Field Data Collection/Monitoring
4. Benchmarking / Analysis
Creating a Student Project Team

When choosing a student team, here are some tips to keep in mind:

1. Having a big team is not necessarily most effective. Depending on the scope of your project, you may be able to complete it individually. However, student teams of 2-4 members are common.

2. It can be helpful to have team members from different academic backgrounds and profiles because projects are often interdisciplinary and require a variety of skill-sets. Drawing on different perspectives can add depth to your project, thus making it stronger overall.

3. Identify the role of each team member at the beginning and designate one project member as the person responsible for the delegation of tasks and internal communication. You may include the role of each team member in the ASR Agreement.

Receiving Course Credit for Your Project

An ASR project requires a large time and work commitment. That said, you can receive credits for your project if you register through a designated research course. These include:

- Independent studies
- Thesis Research
- Design Projects
- Honours Theses
- Internship Projects
- Research Projects

If you are hoping to complete a project for course credit, speak to your faculty supervisor and remember to register in advance for the right courses during the registration period.
Finding a Supervisor

Finding a project supervisor can be a challenge for some students. A supervisor is a member within the McGill community with expertise and experience in the subject-matter area. Most supervisors are professors, but many staff members also supervise projects depending on their expertise. If you would like to receive course credit, you will likely need to have a faculty member involved. In some cases, projects are co-supervised by a faculty and staff members.

Strategies for Finding a Faculty Supervisor:

1. **Match your topic to a professor’s personal research**
   Most professors perform research as part of their work at McGill. Identifying a professor’s area of expertise and finding a professor with similar research interests can be an effective strategy for finding an appropriate supervisor.

2. **Show dedication**
   Supervisors will look for dedication in students, over anything else. They care about students who are not only passionate, but also determined and motivated to complete the project.

3. **Reduce the workload for supervisors**
   Approaching a potential supervisor with a clearly outlined proposal, timeline and other records of your work can reassure the supervisor that he or she does not have to put as great of an effort in guiding you. Creating a self-evaluation rubric in advance and filling it out at the end of the project may also reduce the workload for your supervisor.
Research Ethics Approval

If your research will involve humans, you will have to seek ethics approval. The Research Ethics Board Office of McGill is responsible for all ethics applications. It is your responsibility as a researcher to verify and plan accordingly for ethics approval. You should plan for a minimum of three to four weeks before your application is approved. Learn more about the research ethics application process here.

Covering Potential Research Costs

Although most projects are completed without the need of any financial resources, your project may involve some expenses. Some potential sources of funding include:

- Arts Research Internship Award
- Science Undergraduate Research Award
- Integrated Management Student Projects Fund
- Student Services Innovation Fund

Creating an Effective Timeline

Planning in advance and creating an effective timeline is crucial to the success of your project. Many students do not see the end of their project because they did not have an accurate timeline in place. Some projects may be completed over one semester, while other projects may be more long-term. Some elements to consider when defining your timeline are:

- The planning period
- Course registration
- Ethics application and approval
- Your supervisor’s schedule
- Course completion deadline
- Your course load
- Summer months + holidays
Preparing Your Project

Drafting the Final Agreement

The success of a project depends on how well you organize, plan, and communicate the project. Good project planning can enable stakeholders to better understand what is involved in the project, carefully calculate project costs and level of efforts, and assess what potential resources and supports may be available and what risks and challenges may be encountered and how to address them. It is important that every stakeholder involved in the project understand that they are accountable for the project and that they are aware of their responsibilities. That said, outlining and signing an “ASR Agreement” may be a good strategy to keep all stakeholders committed to the project.

Checklist:

- Contact information of all parties involved
- Tasks and responsibilities of all parties involved
- Deadlines
- Project topic
- Project research question
- Expected outcomes or impacts
- Deliverables to be submitted throughout the project
- Schedule of meetings
- Signatures
Communication with Stakeholders

It is important to maintain communication with stakeholders throughout the entirety of your project. Below are three strategies for maintaining effective communication:

1. Set up regular communication points
   Whether this happens in the form of monthly meetings, phone calls, or emails, keep your stakeholders updated regarding your progress of your ASR.

2. Send follow-up emails
   After meeting with your stakeholders, send a summary follow-up email that outlines what was discussed and what your next steps are. Having a digital record of communication is useful to reference when needed.

3. Make every interaction count
   Always remember that your stakeholders might be quite busy. That said, make every interaction count by scheduling in accordance with their availabilities and preparing for meetings in advance.
Elements of Project Success

Making Recommendations

When making recommendations at the end of your project, consider the following things:

1. Your suggestions or recommendations must help with decision-making and/or propose tangible and realistic solutions to your research question.

2. It can be helpful to have team members from different academic backgrounds and profiles because projects are often interdisciplinary and require a variety of skillsets. Drawing on different perspectives can add depth to your project, thus making it stronger overall.

3. Identify the role of each team member at the beginning and designate one project member as the person responsible for the delegation of tasks and internal communication. You may include the role of each team member in the ASR Agreement.

4. Provide alternatives to your recommendation: By having numerous possibilities for your recommendation, you can increase flexibility and increase the chances for implementation overall.

Publishing the Final Report

It is of utmost importance to maintain the institutional memory of ASR projects conducted at McGill so our community and learn and grow. After completing your final report, you can publish it on the McGill Office of Sustainability’s Living Lab Database. Publishing your work allows you to share it with other students who may be interested in your research topic or may be interested in taking on a project of their own.
Instructions to publish report

1. Have each team member complete and sign a Waiver Form.
2. Send completed forms to asr@mcgill.ca, along with a copy of your final report. Indicate the broad categories that your research relates to: for example, energy or food systems.
3. Now with your permission, the McGill Office of Sustainability will publish your report onto the Living Lab Database.

Presentation to Clients

Now that you have completed your research and have determined appropriate recommendations, it is the time to share your final results with clients. There are a couple of things to consider when presenting to your client:

1. Reserve your venue and send your invitations in advance, paying attention to the accessibility of the venue and their availabilities.
2. During your presentation, explain what the next steps are.
3. Ask for feedback and suggestions from your client. This is an opportunity for you to learn about the research process, which you can improve upon in the future.
4. Provide your contact information so that your client can contact you for further information.
Implementing Recommendations

After having presenting the results to your client, they might decide to adopt your recommendations within their organization using their own resources. If your client is a member of the McGill community, you may wish to help them apply for funds from the Sustainability Projects Fund (SPF) to get the initiative off the ground. The SPF is a great resource for students, faculty, and staff to implement the recommendations of ASR projects together.

Community Outreach

Other members of the community may be interested in learning about your project. Consider sharing your results at research symposiums, in a student newspaper or a scholarly journal.
Resources

McGill Library Living Lab Database: The Living Lab Database is a compilation of past ASR project reports that you can go to for reference, or to get ideas for your ASR project.

McGill Living Lab Wiki: The main goal of the wikisite is to act as a resource for McGill stakeholders to use McGill as a living lab. This site serves as a digital resource for all applied sustainability research, projects, and learning at McGill. It consists of lists of three main categories: Courses, Faculty, and Topic Experts.

Systems Thinking: What is Systems Thinking?

Deciding a Topic / Research Question: Topic Experts List

Doing ASR for Credit: Course List (Applied Learning Courses), Course List (Sustainability-Related Courses)

Finding a Supervisor: Faculty List, General Strategies

Developing the Rubric for Assessing your ASR Project: Evaluation Rubric

Research Ethics Board: Website

Preparing Potential Research Costs: Arts Research Internship Award; Science Undergraduate Research Award; Integrated Management Student Projects Fund; Student Services Innovation Fund

Writing the Final Report: McGill Writing Center; Developing Conceptual Maps; Conceptual Outline Guideline

Implementing your Recommendations: The Sustainability Projects Fund (SPF)