Student Research Toolkit

Student Research Toolkit

FANSHAWE COLLEGE CENTRE FOR RESEARCH & INNOVATION (CRI)

Contents

Research Toolkit

Welcome to the Student Research Toolkit, created by the Centre for Research & Innovation (CRI) at Fanshawe College.

The content in this toolkit is intended to function as:

- An onboarding and training resource for students who are hired by CRI. This includes students hired as Research Assistants on funded projects, co-op students, and work-study students.
- Practical and useful advice for students who wish to learn more about research in the college sector, including current and future research opportunities.

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Applied Research in a College Setting

College researchers engage in research across many disciplines and with a variety of objectives.

   Much of the funding that is made available to colleges is in support of applied research partnerships with industry and community organizations.

   Applied research seeks to solve a specific problem or provide innovative solutions to issues affecting a sector, group, or community.

   Watch the video below for a more thorough explanation of applied research.

Video from [Mohawk College](#) © Used with permission.

If you would like to read about successful research projects that have taken place at Fanshawe in recent years – many involving student researchers – visit the [CRI page of the Fanshawe College partnership website](#).

Research Partnerships

In a college setting, research partnerships can take many forms. Often, research activities do not occur in isolation, but may, in fact, cycle through different types of engagement with the same partner and/or at different stages of a research project.

Partner-Based Research

- Projects are jointly carried out by a college and an external partner.
- The goal is for an industry partner to solve an identified challenge through access to the talent and research infrastructure at the college.
- Typically, grant monies are leveraged to help fund the collaborative research project, with the external partner providing a matching contribution (comprised of cash and/or in-kind support).
- This often results in intellectual property that the business commercializes.

Capstone-in-Class

- These are also known as a culminating project or experience.
- They often involve external partners as part of the experiential learning process.
- Typically, projects such as student research are delivered without grant funding.
- The activity is considered part of the classroom/program-related work.

Internships

- Internships enable industry to solve a challenge by adding a talented student to the team for a finite period of time.

Contract

- Contract research partnerships require the industry partner to pay cash for the R&D rather than leveraging grant funds.

Benefits of Applied Research

We can think of applied research in college as conferring three kinds of interrelated benefits for partners, faculty, and students.

"Benefits of applied research" by Sanaz Habibi, CC BY-NC-SA 4.0
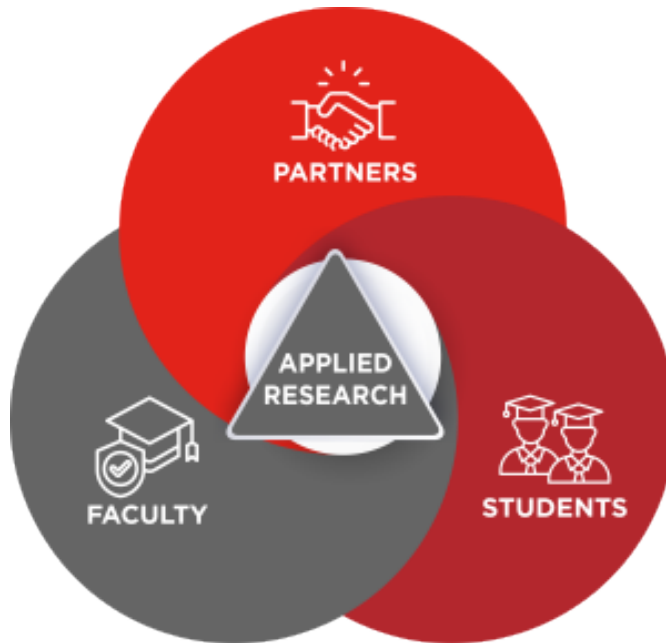
1. Research partnerships often lead to improved processes, the creation of new products, and the integration of new technology. Through these collaborations, industry partners gain access to highly-skilled researchers and cutting-edge college facilities.
2. Faculty can lead research projects and gain skills and experience which will inform their teaching practice and enhance the curriculum.
3. Training and mentoring experiences can prepare students to work as professionals in their field.

Common Questions

Hopefully we have helped you understand our local research context. At this point, you may have specific questions about how you, as a student, can become involved in a research project – or possibly even lead one.

Q: Let's start with the Centre of Research & Innovation. What is CRI?

A: CRI is the central administrative office for funded research at Fanshawe College.

- We provide access to funding opportunities for college employees (e.g. government grants)
- We help researchers prepare proposals, build project budgets, and administer funds if the application is successful.
- We provide training to prospective researchers, including students.

Q: How does CRI involve students in research activities?

A:

- Many projects involve students as Research Assistants. This means that CRI will hire a student and pay an hourly wage for project work. This toolkit outlines key project roles, including the RA role, so you can have an idea of responsibilities and common tasks that successfully take a project from start to finish.
- We also hire co-op and work study students to work in our various [Research Centres and Facilities](). For instance, a student may work in a lab and assist a technician or faculty researcher in that setting.
- Occasionally we provide in-class instruction as well, particularly for programs that have capstone projects.

Q: Are there specific skills that I need?

A: As our focus is on supporting projects that are research-driven and innovative, curiosity and creativity are valuable skills to have. Additionally, we value data and digital literacy skills, good time management and organization and, of course, social and emotional skills that will help foster an inclusive research environment.

Aside from that, most funded projects include time in the budget for student training, so you will have a chance to pick up many valuable skills along the way.

Q: How can I express interest in working with CRI as a student?

A: There is an online form available on the CRI website which you are welcome to complete. When a student opportunity becomes available (e.g. a research project provides funding for a student position), if you are considered a good match, you may be contacted for an interview.

[You can find that form here.]()

When a co-op position becomes available it is posted on the [Career, Co-Op and Employment Services page]().

Q: Can a student receive funding to lead a project?

A: Much of the funding that is made available to colleges is for affiliated researchers, usually faculty members. The internal funding program offered by CRI also requires an applicant to be an employee.

Students typically work on projects as Research Assistants. While a Research Assistant does not lead the project, they may be involved in research design, data collection and analysis, and knowledge dissemination. These experiences can prepare you for research after college, and even enable you to serve as a Principal Investigator yourself in the future.

If you have or are thinking about starting a small business, [LEAP Junction]() runs a Business Incubator

Program that provides seed funding to Fanshawe students and alumni. This program could result in a collaboration with CRI and potential additional funding for you.

Separate from Fanshawe, Mitacs helps college, undergraduate and graduate students, and postdoctoral fellows access funding.

Q: I may want to get involved in a research project but don't feel quite ready yet. What steps can I take to build my knowledge and skill set?

A: Hopefully this toolkit will provide you with a good foundation, but there are other options as well.

Each semester, CRI offers a series of research webinars. Students are welcome to attend, so contact CRI if you would like to be added to our mailing list. We can also share resources we have created (in addition to the ones listed in this toolkit) or direct you to external options.

Mitacs has created several training resources, free of charge, for eligible students.

CRI is continually creating new resources, so check in with us if you don't see what you need in this toolkit. As well, if you have an idea for a research topic, resource, or training session that you feel would be useful, we would love to hear from you.

MODULE 2: WHAT GOES INTO PLANNING A RESEARCH PROJECT

Module Overview

- [Key Project Roles](#)
- [Developing Your Research Framework](#)
- [Research Project Vocabulary](#)
- [Research Agreements](#)

Key Project Roles

A research project will often involve different people and entities working together. To successfully carry out a project from start to finish, it is important that everyone has a clear understanding of their roles and responsibilities.

Grant Administration

The Centre for Research & Innovation (CRI)

At Fanshawe College, CRI provides access to funding sources, including government grants and industry partnerships, to support various research initiatives.

At times, CRI will assist in the drafting of a proposal and/or submit an application on behalf of an affiliate researcher (in the case of an institutional grant, for instance).

When an application is successful, the research funds are administered by CRI. This includes the hiring of project participants and ensuring (with the PI) fiscal, legal, and ethical compliance.

The Research Team

Principal Investigator (PI)

The Principal Investigator is the project lead. The PI has the subject and/or technical expertise to execute the project and guide all research activities and participants to project completion.

CRI may hire a college researcher to work on a specific project with an industry partner. Alternatively, a college researcher may approach CRI with a project idea and potential partner in order to explore funding prospects.

At Fanshawe, for HR and Budget purposes, a PI is hired as a "Research Associate".

Co-Investigator

Some grants allow for one or more Co-Investigators. While the PI will serve as the key contact on the application, Co-Investigators share in the responsibility of executing all tasks and ensuring project success.

Partner

The public, private sector, or community organization that is driving the need for the research project. It is typically expected that the owner and/or staff members will actively collaborate on the project with the college and researchers. As well, a partner is expected to cover at least a portion (25%, 50%, or more) of project costs, such as faculty course release, student wages, technical and/or support staff wages, equipment, supplies, travel, and overhead costs. Sometimes, an "in kind" contribution is sufficient.

Collaborator

This is usually an optional role. A Collaborator is someone who contributes to the intellectual direction of the project and actively engages in specific research activities. A Collaborator typically does not have access to grant funds and may be engaged for a finite period of time.

Research Assistant

At Fanshawe, students are typically hired to serve as Research Assistants. For HR and Budget purposes, different pay bands are assigned depending on the nature of the project work, the research environment, and the ability to work independently. (Additional information on RA Rights and Responsibilities is available in [Module 4](#).)

Developing Your Research Framework

When a researcher submits a proposal for funding, it is expected that all aspects of the project will be assessed. Research design is the framework of research methods and techniques chosen by a researcher to ensure successful completion of the project. Clear articulation and justification of those selected methods could persuade a potential sponsor to fund the project.

   While not all projects follow a perfect linear sequence, these are key project activities:

1. Clarify your Research Focus and determine the goal of your research
2. Scan Existing Information to identify previous research and/or gaps in the field
3. Plan your Research Methods
4. Collect, Analyze & Interpret Data
5. Share your Findings
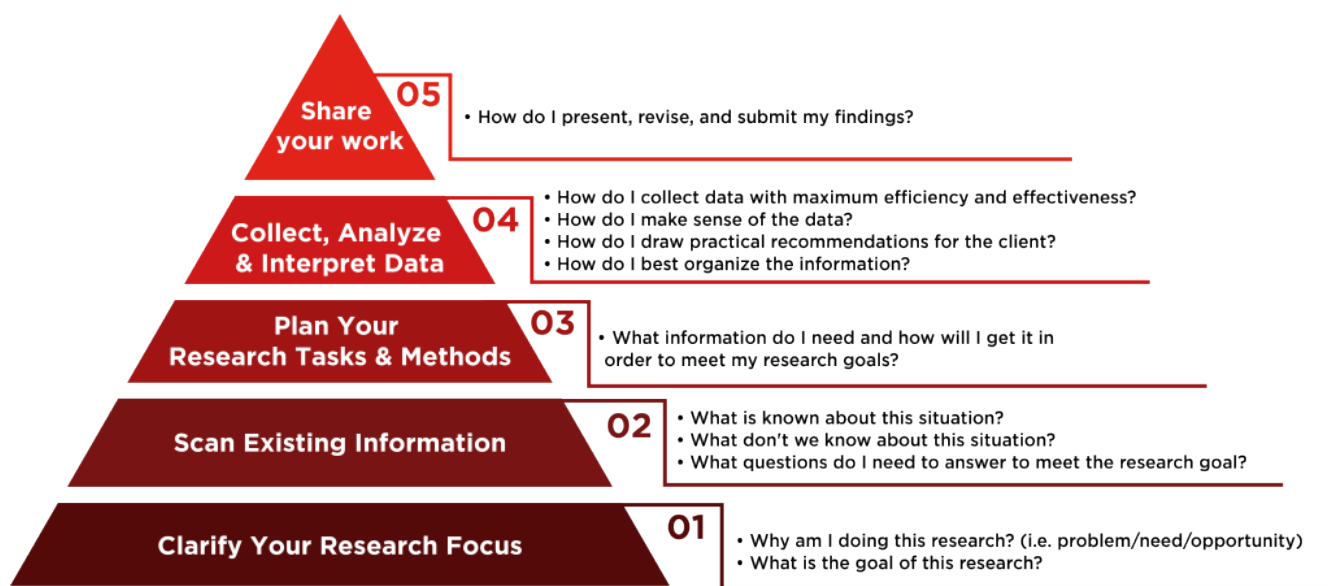
Developing your Research Framework by Sanaz Habibi [CC BY-NC-SA 4.0](#)

This dropdown contains the text of the above image

01. Clarify Your Research Focus

- Why am I doing this research? (i.e problem/need/opportunity)
- What is the goal of this research?

02. Scan Existing Information

- What is known about this situation?
- What don't we know about this situation?

- What questions do I need to answer to meet the research goal?

03. Plan Your Research Tasks and Methods

- What information do I need and how will I get it in order to meet my research goals?

04. Collect, Analyze & Interpret Data

- How do I collect data with maximum efficiency and effectiveness?
- How do I make sense of the data?
- How do I draw practical recommendations for the client?
- How do I best organize the information?

05. Share Your Work

- How do I present, revise, and submit my findings?

Further Learning: Research Project Planning at Fanshawe

If you would like to do a deeper dive into this topic, there is a module called Research Project Planning for Beginners in Fanshawelearns.

This and other resources can be found in the [CRI Research Playlist](#).

If you are not a college employee (e.g. a student who has been hired by CRI), you may not be able to access this content. Contact CRI for assistance.

Research Project Vocabulary

The following is an overview of the terminology used by researchers, funders, and research administrators. If you are going to serve as a Research Assistant on a project or draft a grant application for funding yourself, it is important to familiarize yourself with these terms.

Budget Justification
A narrative explanation of each component of the budget to "justify" the cost in terms of the proposed work and outcome.

Cash Contribution

In many instances, a granting agency requires that an external partner provides a cash contribution to support the direct costs of the research project. While these may vary in size, cash contributions are typically 25-50% of the costs. Cash contributions may be paid directly to the college or the funder (who then allocates the grant money to the college).

Commercialization

The process of introducing a new or improved product, process, or production method into the commercial market.

Deliverables

A tangible or intangible good or service developed as a result of a project. The intent is often to deliver this good or service to a partner.

Full-Time Equivalent (FTE)

This is a common term used as part of a grant application process. FTE refers to the number of hours required to be considered Full Time.

   For example, if two research assistants work for 10 hours/week, that is considered to be a .50 FTE, or 20 hours of a 40-hour work week.

   FTE can also be used to refer to the number of employees on staff.

Funding Ratio

An informal way of referring to the ratio of grant cash to partner cash. Common breakdowns include 25%/75%, 30%/70%, and 50%/50%.

Grant

An award, usually financial, is given by one entity (such as a company, foundation, or government) to another entity (such as an institution or an individual) to facilitate a goal.

Highly Qualified Personnel (HQP)

Most grants will want to know how your project will help enhance the knowledge, skills, and experience gained by students, research assistants, and college staff. The people imparting the skills are generally referred to as HQPs.

Industry Sector
Typically refers to an area of business. Some grants may require the applicant to specify the North American Industry Classification System (NAICS) code.

In-Kind Contribution

A non-financial contribution is provided by a partner organization, the college, or the researcher. It generally takes the form of cash-equivalent goods or services and can include time contributed to the project.

Letter of Intent (LOI)

A short proposal that informs a funding agency that you will submitting a full application for funding. Some funding agencies will evaluate LOIs before allowing you to move to the next application stage. Some applied research offices may also ask you to submit an internal LOI before you apply for external funding, especially if the funding agency allows for only a limited number of applications from each college.

Notice of Intent (NOI)

A short proposal that informs a funding agency that you will be submitting a full application for funding. Unlike LOIs, NOIs are not normally evaluated.

Overhead/Administration

Ongoing expenses not directly attributed to the research project work. Every college and/or research office will have a percentage of the project cost that will be used to calculate overhead costs such as the cost of grant application support, project reporting, invoicing, finance, operations, etc. Most grants and funding programs will set a max percentage or dollar figure for overhead.

Partner

The public, private sector, or community organization that is driving the need for the research project and whose staff/owner will actively collaborate with the college and researchers on the project. In most situations, there is a contractual agreement between the college and the external partner to stipulate roles and responsibilities of the participants, ownership of Intellectual Property, etc.

Principal Investigator

The leader of a research team who is responsible for the leading the research and directing the actions and executing of the research team. Sometimes referred to as the "Research Lead".

Project Plan/Work Plan

This is a description of all stages of the project, broken down week by week or month by month. It is commonly prepared during the grant application process and factors in management of resources, partner communications, and risk management.

Research Contract

An agreement to perform research for a sponsor under specified conditions in exchange for payment of direct and indirect costs.

Research Ethics Board

A committee which is affiliated with the college, but which operates independently to ensure that a research study that uses human or animal participants adheres to ethical guidelines and ensures that the rights of study participants are protected.

Research Proposal

A document or set of documents that is submitted to an organization with the intent of securing funding for a research project.

Research Question

A question that the research project aims to answer. In the case of applied research, the question is usually linked to a specific concrete partner objective, such as "Can this new packaging increase the shelf life of our product?"

Scope

Refers to the combined objectives and requirements needed to complete a project. Accurately defining the scope of a project and determining what is "in scope" or "out of scope" will help keep the project on track in terms of cost and time.

Small- and Medium-Sized Enterprises (SMEs)

These are businesses whose personnel numbers fall below certain limits (often 5-500 employees).

Sponsor

An individual, company, institution, or organization which takes responsibility for the initiation, management, and/or financing of a research project. Also referred to as "funder" or the "funding body/organization".

Subject Matter Experts (SMEs)

The same SME acronym used for businesses can also be used to refer to subject matter experts. SME is a broad term which can refer to project researchers, technicians, external experts and more.

Supplemental Funds

The process of using two or more grants to fund research projects. Some grants have a process in place that will allow combining grants such as MITACS + NSERC. Some funders may refer to it as joint or complementary funding.

Resource: Glossary of Research Terminology

CRI has created a PDF version of this Glossary of Research Terminology if you would like to download it for easy reference.

Research Agreements

Another important part of project planning is making sure that everyone's contributions are recognized and that participants are properly compensated and/or protected.

You are encouraged to have these discussions early in the project planning stage, to ensure that everyone is on the same page and to avoid potential disagreements later.

The type of agreement usually depends on the nature of the research, the funding that is made available, and the intended outcome of the project.

Intellectual Property

Intellectual property refers to any intellectual creation, such as literary works, artistic works, inventions, designs, symbols, names, images, computer code, etc. Intellectual property law exists to protect the creators and covers areas of copyright, trademark law, and patents.

At Fanshawe, ownership of IP rests with the creator. Ownership as a concept revolves around the ability to "publish" or "exploit" IP. This means that, ideally, there is a tangible outcome of a research project. For instance, a non-profit organization may create a new policy, or a local business may bring a new product to market (with the intention to "commercializes" the IP). Typically, if an industry partner funds a project, they will own the IP.

If you are hired to work as a Student Assistant on a project, you may need to sign a Non-Disclosure Agreement (addressed in Module 4.) in order to ensure protection of arising IP.

It is important to note that colleges do not receive funding to assist with the commercialization of IP.

At Fanshawe, different considerations apply to Teaching and Learning resources compared to funded research outcomes. A student generally owns the content they create as part of coursework.

You are encouraged to review Fanshawe's Intellectual Property Policy and its Commercialization Policy. The Centre for Research & Innovation can help researchers navigate college IP policies and facilitate access to resources and external supports.

As well, colleges do not receive funding to assist with the commercialization of IP. As such, it is very unlikely that a college will have facilities (such as a Tech Transfer office) or personnel with the expertise to provide guidance in this particular area. We can, however, direct researchers to external support.

> ### Further Learning: Intellectual Property at Fanshawe
>
> If you would like to do a deeper dive on this topic, there is a free online module called Intellectual Property in Applied Research. This module also looks at IP from a student Research Assistant perspective.

Data Sharing Agreements

In the early stages of project development, consideration should also be given to how the research data will be shared at the end of the project. For instance, if you are planning to conduct research with human

participants, it is important to obtain permission to share project outcomes and, potentially, the data itself if appropriate.

Please review the [Research Data Management section of this toolkit](#) for more information on this topic.

MODULE 3: GRANT WRITING FOR SUCCESS

Module Overview

- [Elements of a Grant Application](#)
- [Sponsor Review Criteria](#)
- [How to Write an Abstract](#)
- [Creating the Project Budget](#)
- [Additional Application Criteria](#)

Elements of a Grant Application

This section will be helpful if you wish to seek funding for a project or if you need to draft a grant application as part of coursework.

Common elements of a grant application include:

- **Summary** – Includes a brief (one-page or less) overview of the project. There are no specific content guidelines and confidential information should not be included.
- **Specific Aims/Objectives** – Includes a page of specific guidelines focusing on project goal and expected outcomes. It should include 2-4 aims or objectives.
- **Research Plan/Project Description** – The page limit varies, but this section should focus on what will be done to obtain the desired project outcome, as well as a description of the experiments or methods to achieve the outcome.
- **Budget** – The details of what goes into a budget will be discussed in-depth in the chapter Creating the Project Budget.

While a sponsor may provide applicants with a specific template to use, applications generally follow this structure:
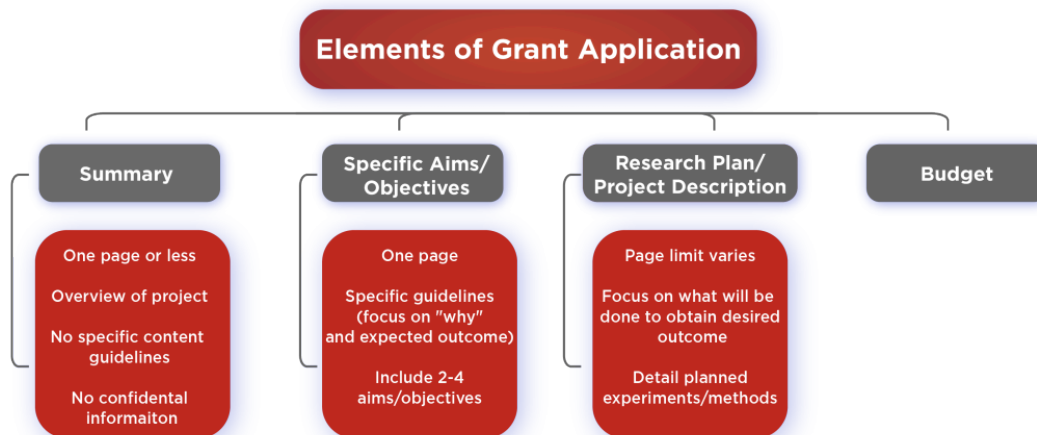
"Elements of a Grant Application" by Sanaz Habibi, CC BY-NC-SA 4.0

Sponsor Review Criteria

The funding agency will identify their mission, priorities, and the problems they wish to address with funding, and specific application requirements. In general, however, reviewers will review your application in order to seek answers to the following questions:

- Why is this project significant enough that it should be funded? Why does the research matter?
- What is new about the research objective? Is it filling any gaps? What will be its impact?
- What is the approach the researchers will take to answer the research question?
- Who are the key personnel and do they have the subject matter and/or technical expertise and experience to pull off the project?
- What is the research environment? Will protocols be in place to ensure the safety, privacy, and/or mentorship of project members and participants?
- Does the project fit the budget?
- How will the project work be evaluated by the researchers? How will success be measured?
- How will the researchers share their findings?

Resource: Grant Review Rubric

This example of a simple Grant Proposal Scoring Rubric demonstrates common sponsor expectations and essential application criteria.

This dropdown contains a plaintext version of the sample rubric linked above.

Criterion	4: Exemplary	3: Adequate	1: Needs Improvement	0: Insufficient Evidence	Comments Notes
Innovation	Project represents the implementation of a new insight or idea, with potential benefits of change made clear.	Project represents local implementation of emerging innovation or trend, with potential benefits specified.	Project represents practice(s) commonplace within field, or an adoption of a change with well-established benefits.	No innovation described or specific potential improvement defined.	
Justification	Strong rationale and significance of proposed work. Addresses specific need(s) common among peer institutions.	Rationale or significance of project trends toward the too-specific or too-general, but overall argument holds.	Weak presentation of institutional or community need, or tenuous argument for grant's ability to address need.	Unconvincing or no evidence of need presented, or grant proposal does not address stated need.	
Relationship to Organizational Strategic Vision and/or Community's Goals	Project outcomes or activities align with both organizational vision and goals of greater community.	Project elements align with goals of either the organization or its greater community, but not both.	Project tangentially but not directly related to organizational strategic vision or community goals.	No explicit relationship between project and the agenda of its organization or community.	
Feasibility	Personnel, project activities timeline, and budget expenditures congruent with project description and outcomes.	Deficiencies or over-estimations exist in personnel, timeline, or budget within tolerable range, outcomes appear achievable despite gaps or leaps.	Project's assembled personnel, timeline, or budget expose weakness in plan design. Outcomes unlikely to be achieved in project's current form.	Insufficient information about personnel, project activities timeline, or budget expenditures to gauge feasibility.	

How to Write an Abstract

You may be asked to submit an Abstract as part of a funding application. Many conferences also request researchers to submit an Abstract to a committee as part of the presenter selection process. Regardless of whether your Abstract is for research that has not yet happened or for a completed research project (part of knowledge dissemination), the following advice applies.

Key Elements	Common Mistakes	Tools and Tricks
• What, why, and how? • Needs, goals, aims, and outcomes • No preliminary data	• Inconsistency • Going over space limitations • Interdependency	• Create an outline • Create a logical flow • Have the abstract reviewed by someone who has not read the full proposal • Have the abstract reviewed by an expert and a non-expert from the field • Edit with the Audience in mind

Creating the Project Budget

Each sponsor will outline what expenses are eligible/ineligible and what cash and/or in-kind contributions may be required.

While the preparation of a rough, preliminary budget should be one of the earliest planning activities, the Budget which is submitted to a potential funder should strive for as much accuracy as possible.

A key part of the application is also the Budget Justification. In 1-3 pages, you will explain how you arrived at your numbers and why these amounts are necessary for successful project completion. Aim for fiscal prudence if possible and definitely do not go over budget.

Budget caps on specific categories differ as well. Read the eligibility funder guidelines very carefully.

Budget Considerations

Key Elements	Common Mistakes	Tools and Tricks
• Personnel • Travel • Equipment • Subcontractors and/or consultants • Materials, supplies, and other costs • Indirect costs	• Inconsistencies • Under/over-estimating time commitments and costs • Lack of detail • Exceeding budget caps • Inaccurate project period length • Including unnecessary personnel	• Justification should follow the budget • Carefully read and follow all instructions on allowable or unallowable costs • Create Templates • Provide a budget template to any subcontractor • Relate the costs to the aims and approach of the study • Double check that all budget expenditures are compliant

Resource: Sample Budget Template

This is the Budget Template utilized for the Research & Innovation Fund (RIF).

This version contains sample data to demonstrate its use.

This dropdown contains a plaintext version of the above template

Project Name:	
Project Start Date:	
Project End Date:	

Salaries	Hours/wk	Rate	Weeks	Total
PI (name, role, school)		*		$ –
PI (name, role, school)		*		$ –
Student 1		**		$ –
Student 2		**		$ –
Student 3		**		$ –
Student 4		**		$ –

Total Salaries	$ –

Equipment & Materials		Unit Cost	Units	Total
item		$ –		$ –
item		$ –		$ –
item		$ –		$ –
item		$ –		$ –
item		$ –		$ –

Total Equipment & Materials	$ –

Travel		Rate	Units	Total
mileage				$ –
hotel				$ –
meals				$ –

Total Travel	$ –

Networking/Knowledge Dissemination				Total
item				$ –
item				$ –
item				$ –

Total Networking/KD	$ –

Subtotal	$ –
HST (If applicable)	$ –
Total	$ –

Additional Application Criteria

Equity, Diversity, and Inclusion (EDI)

Many Canadian funding agencies have committed to achieving a more equitable, diverse, and inclusive research ecosystem.

An applicant may be prompted to describe EDI considerations in relation to the **research design**, **team composition**, **recruitment practices** that will be employed, **training** that will be provided, and efforts that will be employed to create an inclusive **research environment**.

If you plan to submit a grant application, you will want to review the Resource below.

If you have been hired as a student Research Assistant, it is expected that the PI will strive to create an inclusive research environment and provide you with training and mentorship. ([Module 4](#) will address Research Conduct – Rights and Responsibilities. in more detail.)

Resource: EDI Handbook

The Centre for Research & Innovation has created an [EDI Handbook for Researchers](#). This resource includes specific strategies researchers can use when drafting a grant application and includes numerous links to resources for further learning on the topic of EDI.

This handbook and other materials can be accessed from the [CRI Research Playlist](#).

If you are not a college employee (e.g. a student who has been hired by CRI), you may not be able to access this content. Contact CRI for assistance.

Resource Data Management (RDM)

Increasingly, funding agencies and journals are requiring applicants to submit **Data Management Plans (DMPs)** as a condition of funding or publication. RDM refers to the processes applied through the lifecycle of a research project to guide the **collection**, **documentation**, **storage**, **sharing** and **preservation** of research data.

If you plan to submit a grant application, you may need to submit a Pre-Award DMP. You will want to utilize the Resource below.

If you have been hired as a student Research Assistant, the Principal Investigator may invite you to view or even collaborate on the ongoing development of the project's DMP.

(Data Management Planning will also be addressed in [Module 4](#).)

Resource: Data Management Assistant

If the funder requires a Data Management Plan, you can use a free online tool called the [Data Management Assistant](#).

MODULE 4: RESEARCH CONDUCT - RIGHTS AND RESPONSIBILITIES

Module Overview

- Standards of Conduct
- Research Integrity
- Research Safeguards
- Training and Mentorship

Standards of Conduct

> *"In order to maximize the quality and benefits of research, a positive research environment is required. For researchers, this implies duties of honest and thoughtful inquiry, rigorous analysis, commitment to the dissemination of research results, and adherence to the use of professional standards."*
>
> – [Tri-Agency Framework: Responsible Conduct of Research](#)

All project team members are expected to adhere to professional, ethical, and legal standards of conduct. This section provides an overview of key standards of conduct in research to ensure that you, your team members, and any research participants you may come in contact with, are apprised of all rights and responsibilities.

- Research Integrity
- Scholarly Exchange
- Research Safeguards
- Protection of Research Participants
- Training and Mentorship

Further Reading: Fanshawe Policy on Scholarship Research & Creative Activity

[Fanshawe College Policy A201](#) provides useful guidance in navigating standards of conduct.

Research Integrity

Honesty

- Use funds only in the manner stipulated by the research contract.
- Accurately report data, results, methods, and procedures.
- Strive to avoid or minimize bias or self-deception.

Transparency

- Disclose the methods, materials, assumptions, analyses, and other information utilized to achieve research objectives.
- The use of Generative AI falls within this category.

Review: AI Guidelines in Research

Fanshawe College's AI Framework includes content related to the use of AI in funded research. These AI in Research Guidelines are based on current government guidance and may be subject to change. Researchers are encouraged to connect with CRI for assistance.

Conflicts of Interest

- Avoid situations whereby you or project participants may have a personal advantage or interest in the research outcome.
- This may compromise results and/or create the perception of compromised results.
- Personal, interpersonal, or financial relationships may create conflicts of interest.
- Economic and/or academic interest (e.g. an individual holds dual roles at an institution) may also compromise the integrity of the research.

Research Safegaurds

Openness in Research

- You are encouraged facilitate access to interested persons to the underlying data, processes, and research findings, when and/or if appropriate to do so.
- This openness should be balanced with the need for safeguarding of data that should not be shared, such as confidential info, proprietary content, etc. (Additional guidance on this is provided in Module 5.)

Data Management

- Keep good records of research activities, such as data collection, research design, and communication between project participants.
- Optimize the potential for data sharing by utilizing strong metadata and persistent identifiers.

Further Learning: Data Management Planning in the College Context

If you would like to do a deeper dive into this topic, there is a module called Data Management Planning in the College Context in Fanshawelearns.

This and other resources can be found in the CRI Research Playlist.

If you are not a college employee (e.g. student who has been hired by CRI), you may not be able to access this content. Contact CRI for assistance.

Protection of Project Participants

- Treat all potential participants with respect from the time you request their possible participation (even if they decline to be involved) to the end of the project and beyond.
- Inform participants of the intended outcomes of the project, potential risks, and their ability to withdraw at any time.
- Seek permission to share research findings and deposit datasets which are anonymous and/or de-identified.
- Research Ethics Board (REB) approval may be a condition of funding.

Resource: Informed Consent Guidelines

These guidelines are used by Fanshawe for the creation of Informed Consent Documents.

Confidentiality

- Ensure that confidential and/or sensitive information is safeguarded.
- Put in place protection measures to ensure the privacy of research participants.
- Do not share any proprietary information that has the potential to be commercialized.
- It is common for partner-based research contracts to include **Non-Disclosure Agreements**

Resource: Sample Non-Disclosure Agreement

This sample Non-Disclosusre Agreement template demonstrates the permissions and waivers that are typical of an NDA.

Further Learning: Tri-Council Course on Ethics

The Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans is a free online course which provides guidance that applies to all research involving human participants, including their data and/or biological materials. Completion of the TCPS 2 CORE may be a condition of funding. TCPS 2 CORE consists of nine modules and a knowledge consolidation exercise:

1. Module A1 – Introduction
2. Module A2 – Scope of TCPS 2
3. Module A3 – Risks and Benefits
4. Module A4 – Consent
5. Module A5 – Fairness and Equity
6. Module A6 – Privacy and Confidentiality
7. Module A7 – Conflicts of Interest
8. Module A8 – Research Ethics Board Review
9. Module A9 – Research Involving Indigenous Peoples

10.   Knowledge Consolidation Exercise

Training and Mentorship

Health & Safety

- It is essential that you take all precautions to ensure your health and safety and that of all project team members and participants.
- Mandatory training is provided to all individuals who are hired by CRI to work on funded research projects and/or in our research centres.
- This includes procedures related to laboratory safety and/or potentially hazardous biological materials, if applicable.

Mentorship

A mentor may be a faculty researcher working with a student. At the same time, a more experienced student researcher can provide guidance to a fellow student.
   Mentorship on a project takes many different forms and can include:

- Facilitating access to training and/or professional development opportunities
- Establishing a safe, equitable, and inclusive research environments, practices and norms (The EDI section of Module 3 provides more content on this topic.)
- Providing appropriate supervision during the research process

As a student researcher, you can expect that your supervisor (e.g. Lab Manager, Principal Investigator, industry partner) will:

1. Establish clear expectations
2. Make the steps of the research process explicit
3. Incorporate routine checks for understanding
4. Provide appropriate supervision while also fostering increasing independence
5. Address gaps in learning and/or development needs
6. Model professionalism and expect professional behaviour in return
7. Help you develop both technical skills and soft skills (communication, adaptability, resilience, teamwork, etc.)

Resource: CRI Principle Investigator/Research Assistant Agreement

CRI encourages researchers to utilize this CRI Principal Investigator/Research Assistant Agreement template so that all project participants have a clear sense of roles and responsibilities.

MODULE 5: WHAT GOES INTO CLOSING A RESEARCH PROJECT

- The Final Report
- Deposit into a Repository

The Final Report

There are many activities that go into "closing" a project. For funded projects, this often includes the submission of timesheets and expense reports, wrap-up meetings with industry partners, and determining the best ways to share the research findings.

The Final Report is a common condition of funding, particularly for partner-based applied research projects. Capstone projects and other curriculum-based research projects often require this as a final student submission.

A Final Report typically includes:

- Summary with key points on what you did and what you found.
- Introduction explaining what this research does and why.
- Background providing necessary and relevant information (such as equipment used, methodology, etc.)
- Limitations of the study or challenges you may have experienced.
- Findings and Recommendations:
  - What should your partner do based on your findings?
  - Why is it important? Provide a rationale for your recommendations.
  - How might the recommendations be implemented?

- Appendices – such as references.

Resource: CRI Final Report Template

This Final Report Template is utilized by CRI as a condition of funding. This can serve as an example for you. A funder may provide you with a different specific template to utilize.

Deposit into a Repository

The Current Research Landscape

Increasingly, funding agencies and journals are requiring researchers to share the data that supports their findings. Depending on the context, a researcher may make available all digital **research data**, **metadata**, and **codebooks**.

This does NOT mean that ALL data should be shared openly.

> "Grant recipients are not required to share their data. However, the agencies expect researchers to provide appropriate access to the data where ethical, cultural, legal, and commercial requirements allow…"
>
> -Government of Canada. (2021). Tri-Agency Research Data Management Policy.

It is very important to identify when data can be shared and when it is essential to restrict access. There are many instances when you may determine that access to your data should be restricted.

- You may be in possession of sensitive data (e.g. it contains personal identifiers).
- There may be commercial constraints (e.g. it is proprietary data and/or you have signed an NDA).
- You did not receive consent from project participants to share the data.
- Your research is embargoed for a period of time.
- A Data Sharing Agreement was not established.

Share whenever possible. Restrict when necessary.

CRI staff can provide guidance in this area. We can assist with the **data curation** process, for instance.

Repository Options

A repository is a centralized storage location (usually cloud-based) where all the files and resources of a project are kept.

During the deposit process, there are usually templates provided that enable you to use standardized data and provide rich descriptions of your datasets which will make it easier for other researchers to find your research online.

Fanshawe College has two institutional repository options available to you:

1. **FIRST** – This is used to showcase the academic output of employees and students. It is an open repository, meaning that anyone (including members of the public) can search FIRST and read journal pre-prints, employee dissertations, student capstone projects, and so on.
2. **BOREALIS** – This is intended to host datasets (research data, metadata, codebooks) specifically. This institutional data repository has additional benefits:

   - Researchers can set permission levels. For instance, you make certain data sets open but restrict access to specific files (e.g. sensitive data).

- There are templates which enable you to create rich descriptions and use standard metadata standards to help others find your research online.
- It is hosted on Canadian servers and is a stable and secure environment for long-term preservation.

Resource Borealis Quick Guide

If you would like to learn more about how to deposit in Borealis, there is a [Fanshawe Borealis Quick Guide](#) that will assist you in use of the service.

At this time, deposit into Fanshawe's Borealis repository is limited to faculty researchers. Contact CRI if you would like to inquire about a potential student deposit.

Further Learning: Data Deposit from a College Perspective

If you would like to do a deeper dive into this topic, there is a module called [Data Deposit from a College Perspective](#) available via eCampusOntario.

MODULE 6: PROMOTING YOUR WORK AND YOURSELF

Module Overview

- [The Power of Persistent Identifiers](#)
- [Conferences and Poster Presentations](#)
- [Other Ways to Share your Work](#)

The Power of Persistent Identifiers

You have put in a lot of time and effort into your research project. You want to make sure that other people can find your research.

Persistent Identifiers are an integral component of this process.

What is a PID?

It is made up of an **ID**entifier, a string of unique characters that identify an object.

This identifier is **P**ersistent – It will never be assigned to anything/anyone else and will exist as long as the organization or agency which records the PID remains.

Two types of PIDs that we encourage student researchers to learn about are:

- **Digital Object Identifiers (DOIs)** – A repository like Borealis will automatically assign your work a DOI when you deposit it. This is a way to ensure that researchers will find your research when they are using search engines like Google or repository registries like re3org.com and LUNARIS. You can also embed DOIs into digital portfolios and social media profiles so researchers can instantly find your work.
- **ORCID IDs** – You are encouraged to sign for a free Research Identifier. When people click on your ORCID ID, they will instantly see your academic profile and published research. Visit ORCID to learn more. Add your ORCID ID to your email signature and LinkedIn Profile to showcase your work instantly.

Conferences and Poster Presentations

A conference is a great way to present your research. It is very common for a conference committee to require prospective presenters to submit an Abstract. A conference abstract is:

- A brief, clear summary of the information you plan to present on.
- A way for reviewers to identify the basic premise of your research quickly and accurately, so they can determine if it is relevant to the audience (for instance, conferences often have an overriding "theme").

(Refer to Module 3 for tips on how to write an Abstract.)

   A poster presentation is another common way for researchers to showcase their work. CRI has created a poster template that you may wish to use, available on the portal or upon request.

Other Ways to Share your Work

There are many ways to make your research experiences known. These include traditional methods, such as conference presentations and journal articles. You are encouraged to explore non-traditional avenues of self-promotion as well. Here is a short list of knowledge dissemination options to consider:

- Request to add your work (e.g. capstone project) to Fanshawe's open repository, FIRST. You may need your professor to sponsor your project.
- Submit a proposal to speak at a college event. For instance, Fanshawe hosts a "Research Week" each year, showcasing various research activities at the college.
- A print or online trade journal may be interested in publishing your work.
- Utilize social media channels such as LinkedIn. (Be sure to review the Persistent Identifiers content in this module.)
- Include an ORCID ID in your email signatures so people can quickly access your research bio.

Feel free to ask CRI staff for more ideas. We are always happy to showcase the work of our researchers on our internal and external websites.

Please remember, though, that if you have signed a confidentiality agreement, you may be limited in what you share. In this instance, you may want to connect with the project leads or CRI for guidance.

If there is additional content that you feel would enhance this toolkit and be useful for student researchers, we would welcome hearing from you at research@fanshawec.ca.

Appendix 1: AI in Research Guidelines

AI in Research Guidelines

Accountability and Responsibility

- Accountability rests with the researcher/author/grant applicant and/or research administrator.
- Be aware of and adhere to any applicable policies and guidelines of the funding body and/or institution.
- Obtain necessary permissions if required.
- Human oversight is mandatory, including ensuring the accuracy and appropriateness of AI-generated results to the best of one's ability.

Research Design and Implementation

- Clearly document AI methodologies, datasets, and algorithms used.
- Implement strategies to identify and mitigate biases in AI systems.

Informed Consent

- Obtain informed consent from participants before collecting or analyzing their data with the assistance of AI tools. Special consideration should be given to security issues relating to data analysis by AI tools.
- Safeguard personal data and ensure compliance with relevant privacy regulations.

Peer Review

- For Fanshawe employees performing peer review as part of their duties to protect the privacy and potential intellectual property of applicants, AI tools may not be used in the review process (e.g. Research & Innovation Fund (RIF), Research Ethics Board (REB), etc.)

Transparency

- If required, disclose the use of AI tools in the application and/or research process.
- This may be a conversation with a manager, project collaborators (co-investigators, industry partners, classmates, etc.)
- This may be formal disclosure (to the funding body, industry partner, publisher, instructor, etc.) in the form of a citation or acknowledgement.
- Disclosure may include citation/reference/footnotes/acknowledgement or inclusion of prompts used.

Data Privacy and Security:

- It is the responsibility of the researcher to ensure compliance with relevant privacy regulations (e.g. institutional, federal, funder).
- To the best of your ability and abiding by current protocols, safeguard the personal data of project participants and industry partners.
- Do not enter confidential, personal, or proprietary data.

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The content in this toolkit was drafted by Donna Sevenpifer, faculty at the Centre for Research & Innovation (CRI) at Fanshawe College. It was adapted from:

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This resource was guided by policies and recommendations of the Canada Research Coordinating Committee (CRCC) and the Tri-Agency Council (CIHR, NSERC, and SSHRC).

There has been excellent work in support of college research in recent years. A notable resource is the [Intro to Applied Research online workshop](#)created by Mohawk College, which inspired the creation of this toolkit.

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Version History

This page records changes made to the open textbook since its initial publication. If the change is minor, the version number increases by 0.1. If the change involves substantial updates, the version number increases to the next whole number.

Version	Date	Change	Affected Web Rage
1.0	February 11, 2025	Publication	N/A