



INDIGENOUS YOUTH IN STEM PROGRAM



ENGINEERING DESIGN & SOCIAL CHANGE

For more information please contact our Project Partners

Julie Olivier

Engineering Outreach, University
of Ottawa

613 562-5491

jolivie3@uottawa.ca

Doug Dokis

Senior Advisor, InStem Program
Actua

705 845-0126

doug.dokis@actua.ca

Nancy Henry

Instructional Coach, FNMI
Education, Ottawa-Carleton
District school board

613- 596-8211 ext 8159

nancy.henry@ocdsb.ca



uOttawa

Faculté de génie
Faculty of Engineering



OTTAWA-CARLETON
DISTRICT SCHOOL BOARD



Youth · STEM · Innovation
Jeunesse · STIM · Innovation

Ontario
Trillium
Foundation



Fondation
Trillium
de l'Ontario

An agency of the Government of Ontario
Un organisme du gouvernement de l'Ontario

PROJECT OVERVIEW

This exciting new project based program is a partnership between Actua, University of Ottawa's Engineering Outreach program, and Aboriginal Resource Centre, and the Ottawa Carleton District School Board.

Open to all students, participants will learn about STEM (Science, Technology, Engineering, Mathematics) by applying engineering, Indigenous Science and Western Science principles to real world issues. By creating a learning environment that is grounded in Indigenous worldviews, values, teachings, and knowledge, students will have an opportunity to be active participants in the ongoing design of the program, and build new relationships with other students throughout their high school journey. Designed to have a regular and ongoing presence in the participating high schools, the InSTEM program can be adapted to meet the needs and knowledge of local Indigenous communities, and STEM learning objectives of individual schools.

Elders, and knowledge keepers will share their knowledge and worldviews in order to demonstrate the synergies between Indigenous perspectives, engineering, and science.

Through hands-on experiences, students will engage in learning new technologies like 3D printing and laser cutting, and then go on to create products aimed at addressing social and community issues.

ENGINEERING DESIGN

A critical part of the program is the design process. This is a cyclical process where students start with an idea and end up with a finished product. It is also aligned with Indigenous entrepreneurship values and business skills to learn how to market and sell your product to benefit you, the community and the environment. Needs identification and research of the problem will be the foundation of the project and the catalyst for designing the product a certain way. As students progress, prototypes of the product will be made and tested to identify areas of improvement, as well as receiving constructive feedback from peers. This process may lead a redesign and re-evaluation of the need. At the end of the program, students will present their final project to the rest of the group.



Elder Fred McGregor and students from Gloucester and Rideau High Schools explore 3D Printing and Engineering Design.

PROJECT OUTCOMES

Social development and Leadership

1. Provide a safe space for Indigenous youth to interact with peers and adults in positive ways. Support youth to develop their social identity, healthy relationships, and interpersonal skills.
2. Through these new relationships, young people will deepen their understanding of Indigenous knowledge and other worldviews of science.
3. Develop critical and reflective thinking abilities and become more confident about expressing their opinions.
4. Develop communication skills and effective teamwork.
5. Develop a range of leadership skills and abilities such as effectively leading change, resolving conflict, and motivating others.

Learning

1. Deepen knowledge of different 'ways of knowing' and understanding science and engineering as an experiential and research opportunity.
2. Understand the steps involved in the design process, from identifying the problem to creating a solution and improving on it.
3. Build multiple perceptions of entrepreneurial concepts.
4. Learning how new technologies work and can be used, including 3D printing and laser cutting.