

# in the know embracing STEM in indigenous communities

Using a culturally responsive curriculum in science, technology, engineering and math (STEM) programs leads to better engagement and performance among Indigenous students, a recent report from the Conference Board of Canada and the Future Skills Centre shows.

The *Learning Together: STEM Outreach Programs for Indigenous Students* study explored the shortfalls programs faced reaching Indigenous communities and progress they've made in exposing students to role models and career options in STEM fields. These programs are a response to the national conversation about reconciliation. The report examined the efforts of governments, the formal education system and nonprofit organizations to address the educational gaps and improve the representation of Indigenous peoples in STEM by providing extra attention and resources.

Offering STEM programs to students at an early age presents an opportunity to nurture their enthusiasm and increase awareness of STEM career options, which offer higher pay and career growth and improve the talent pipeline.

These efforts may be critical to the success of apprenticeship programs, which are facing numerous hurdles such as labour shortages that have made replacing retiring tradespeople complicated. According to the International Foundation's 2022 *Top Trends in Apprenticeship Programs* survey, 79% of Canadian apprenticeship programs surveyed targeted Indigenous populations with their recruitment efforts.

## Challenges

After years of imposed educational systems, Indigenous communities are working to revitalize their children's education with their own cultures and languages, which means STEM programming may be one of many competing priorities, the Future Skills Centre report states. Educators are already working to ensure that children feel secure and healthy enough to learn and to improve basic literacy and math skills to help Indigenous children move forward in all future educational and employment possibilities. Other challenges are that many teachers in Indigenous communities are non-Indigenous, and elementary school teachers rarely have a STEM background.

The Future Skills Centre survey noted that rural communities are especially selective about what larger STEM curriculum they allow. Students need to see the relevance to their experiences to engage with programs. Without exposure to STEM professionals, the idea of becoming an engineer or scientist may feel out of reach because they have no path to follow, the report suggests.

## Strategies for Success

Organizations are finding ways to customize their programs to bridge Indigenous and western knowledge as well as meet the children's learning styles and interests. Community leaders want their children to be successful—but not at the cost of their cultural identity.

Outreach organizations are fostering relationships with Indigenous leaders and residents to both reach their mandate of STEM engagement and address needs within the community. For example, Indigenous students in one program participated in constructing a greenhouse, which introduced them to practical engineering and ecology concepts in addition to providing them with an active role in addressing food insecurity.

Building additional relationships outside of schools with other community partners can help connect Indigenous youth to STEM mentors and role models. Mentorship at various stages in an Indigenous child's or young adult's life can help students grow personally and professionally as well as present Indigenous knowledge as equal with, and complementary to, western science.

Outreach programs aren't a fix-all for systemic inequalities and socioeconomic challenges, the report points out. Apprenticeship programs seeking to recruit from Indigenous communities may find some of these strategies helpful while implementing their training programs and outreach efforts. The report suggests that as outreach programs advance through partnership, Indigenous voices should be prioritized. "Strong, respectful partnerships require time, funding, an understanding of history and an acknowledgement of different ways of knowing."

