



MindFuel: FSC Case Study Summary Report

Prepared for: Future Skills Centre

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FSC is a forward-thinking centre for research and collaboration dedicated to preparing Canadians for employment success. We believe Canadians should feel confident about the skills they have to succeed in a changing workforce. As a pan-Canadian community, we are collaborating to rigorously identify, test, measure, and share innovative approaches to assessing and developing the skills Canadians need to thrive in the days and years ahead. The Future Skills Centre was founded by a consortium whose members are Toronto Metropolitan University, Blueprint ADE, and The Conference Board of Canada

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Overview:

Project: MindFuel - Canada Tech Futures Initiative

Duration: May 2021 - September 2023

Population: All underrepresented groups

Industry Sectors: Education, STEM

Region(s): British Columbia, Alberta, Yukon

MindFuel's Tech Futures Challenge engages youth in grades 7-12 & post-secondary in AB, YT and BC to work directly with experienced mentors and STEM industry experts to learn about the exciting world of STEM technologies and develop an innovation mindset through real-world project development, which supports reducing barriers for STEM educational attainment.

Through the program youth are able to work collaboratively or independently on real-world problems using science and design thinking to build tangible solutions. This enables them to develop skills, build key competencies and nurture innovative, entrepreneurial thinking to better prepare them the jobs of the future.

The project aims to . . .

To promote innovation and resilience, through focusing on 3 critical aspects:

1. Locally situated (working with regional experts to form a youth mentor network);
2. Providing virtual access to online programming & workshops;
3. Moving students through a transformative learning framework which results in knowledge & skills development, competency building in collaboration, critical thinking, and communication.

Beginning / Past: Where the Project started

#Spirit: the team began the project with a strong emphasis on spirit and learning, with the goal to address the gaps in skills development and education for Indigenous youth.

#Relationships: the team set out to build relationships with the communities that are built on the Indigenous values and culture. The team also built positive relationships with FSC.

#Process: Planning came from a place of community strengths to support youth.

Current literature indicates that there are significant gaps in access and skills development in technology and literacy for Indigenous youth, particularly those living in rural & remote areas. According to several literature sources this gap is even wider in the geographic areas of the Yukon, Northwest Territories and Alberta. Recognizing that COVID-19 pandemic only furthered this divide through a shift to online learning in the education sector, and if left unaddressed, these critical gaps in online access to education could have long standing impacts on the future

economic outlook of provinces/territories, and the future employment opportunities for Indigenous youth.

Experiences / Present: Program Impacts and Barriers/Gaps

#Spirit: The team has remained flexible and adaptable to meet the needs of youth, building in processes for reflection from a place of spirit, and engaging in reciprocal knowledge transfer. Team members illustrated that the opportunity to work alongside Future Skills Centre and support youth has positively impacted both their professional and personal lives.

#Relationships: The team has built relationships with the communities that are supportive and reflect Indigenous ways of knowing and doing. In addition to maintaining positive working relationships with their colleagues and FSC.

#Process: Planning continues to be done from a place of community strengths, opportunities and sovereignty. Processes remain flexible and adaptable to community needs and changing priorities.

The MindFuel team conducted a Needs Assessment through engaging Indigenous youth to gather feedback, ideas and suggestions on content and delivery modes to meet the needs identified. The user feedback data collected and evaluations of these sessions enabled the team to develop a prototype that is grounded in youth wants/needs.

Key Learnings:

- **The need for inclusive and equitable access to technology:** Access to technology and Wi-Fi is essential to program delivery. It is important to understand and try to mitigate the barriers participants might face with WIFI, hardware and software.
- **Building relationships and trust takes time:** spend time identifying engagement protocols and building trust through initial conversations with communities through:
 - Being flexible, adaptable and understanding to community realities and needs
 - MindFuel was able to use the FSC funding for food in the community, centering gatherings around food allowed for creating a feeling of familial together-ness that strengthened relationship building. Longer-term collaboration has been the goal and desire for MindFuel, and gathering around food has supported this ideology.
 - Avoiding short-term and one-time engagements and commit to longer term relationships
 - Ensure that knowledge mobilization, sharing approaches and dissemination of results is led by, and comes from the community in ways that feel most meaningful to them. In supporting communities' needs and upholding the notion of “nothing about us, without us”, stronger relationships are built.
 - Consecutive sessions/commitments are vital in developing trust and building relationships

- **It is important to remain flexible and adaptable:** it is important to be comfortable in the unknown, with the understanding that things may change, work plans may need to be adjusted etc. While recognizing that even if the work doesn't unfold as it was written in the application, that the project will unfold, and work out.
- **The importance of using in-person events:** as in person sessions in the community are highly beneficial for both the team and the students.
 - Particularly for engaging in reciprocal knowledge transfer
 - Note: while in-person is preferred, an online community is possible to blossom and grow if funded correctly
 - Consider, and prepare for differences in needs between online and in-person learning. Some teachers found that more time was needed in online environments for not only teaching the lesson, but for troubleshooting problems that arose. *"A blinking light might be a 30 minute lesson, but having free time letting the students troubleshoot takes 90% of the time and that's difficult online."*
- **When working with youth,** 1-on-1 connection is important, as respectful, focused attention improves engagement
 - Acknowledge, and provide recognition for achievements and success to improve motivation. *"when they find out they can do things with it, they become more engaged."*
 - Model curiosity, sharing the "why" of using the technology, and how it can be applied to their daily lives
- **The importance of positive team relationships:** build team spirit/morale through sharing, learning, and maintain respect for all involved.
 - Partnering students with opposing interests can be helpful to support learning (i.e., coding vs. circuit building)
 - Model collaboration and mentorship
- **The significance and impact of funding:** FSC, and the grant is instrumental in completing the work and validating the need to continue the work.

Transition: Primary Data Collection

#Spirit: The team built in, and took time to reflect on the process from a place of spirit. Uncovering how the project impacted them, and the communities and the youth served.

#Relationships: relationships were supportive with open two-way lines of communication between the project team, partners and communities.

#Process: Processes were evaluated using Indigenous values and community sovereignty as that looked like for each community served. The processes were validated by the communities and project partners.

When MindFuel started the Canada Tech Futures initiative, the team set out a number of measurable objectives; however, like many other FSC-funded projects they found they had to adapt. As some of the team stated “transition seemed to be a component of this project from the beginning” the MindFuel team remained flexible at every stage; from transitioning from an in-person program during pandemic restrictions, to learning more about the communities they worked with as they moved forward.

The project team transitioned from their original goals and promoting their original challenge, to looking at how best to provide smaller, more tangible milestone projects. The team found this method worked better to suit the needs of each community, taking the time to learn about where they were at, how best to support them, and adapted the model accordingly.

Through taking the time to build relationships with communities, MindFuel learned about the importance of culture, language revitalization, the impacts of generational trauma and the need for strong support systems/networks in communities. Through this relationship building MindFuel learned how to be more creative in communications and activities using traditional methods (i.e. story-telling). In addition to learning about the significance of sharing back to communities and trauma-informed approaches, and how to incorporate these methods into the initiative’s work.

In late May 2023, MindFuel returned to Siksika Nation High School to meet with some of the high school students and teachers. During this time, MindFuel implemented JRI’s Waawiyeyaa evaluation tool, which uses a storyboard model to share experiences in a visual format that honors and incorporates Indigenous ways of knowing and learning approaches.

Through the Waawiyeyaa evaluation tool five (5) students who had participated in a student project during the 2022 Tech Futures Challenge cycle were asked to respond to the following questions.

- What were some successes & challenges of working on your project? (*Past*)
- How have your project learnings & experience helped you in this last year, in school and life? (*Present*)
- The Chem 20 class is currently working on the bioreactor, what advice would you recommend for them in order to continue developing the project? (*Transition/Future*)
- What do you think teachers should know about this type of learning experience /project? (*Future*)

This method was successful in understanding the journey students have undertaken with their teacher and team, and also allowed the teams to reflect on where they started and where they would imagine how the project could continue to develop.

Across the various communities, teachers and students alike started with varying levels of STEM technologies knowledge. However, through the MindFuel programming, both students and teachers were more able to challenge themselves, develop skills and build key competencies.

*“I gained empathy for student learning and their experiences going through something new.”
– Teacher*

“It’s fun when you are doing it with friends - learning and failing together” – Student

““I feel in real life you gotta make everything work” – Student

“Never give up” – Student

Future State: Next Steps

#Spirit: team members are culturally competent and inclusive. These values are reflected into the work they do. They are enthusiastic and have confidence that they can do what they set out to. All of which leads back to spirit.

#Relationships: the team continues to build relationships with the communities while applying principles of Indigenous position, equity and inclusion.

#Process: planning continues to be done from a place of community strengths, opportunities and sovereignty.

With the extension, MindFuel intends to continue knowledge mobilization activities, building community relationships and understanding needs. They intend to continue to compare the Indigenous ways and western way; observing how the ways of doing align and differ and apply this to their work.

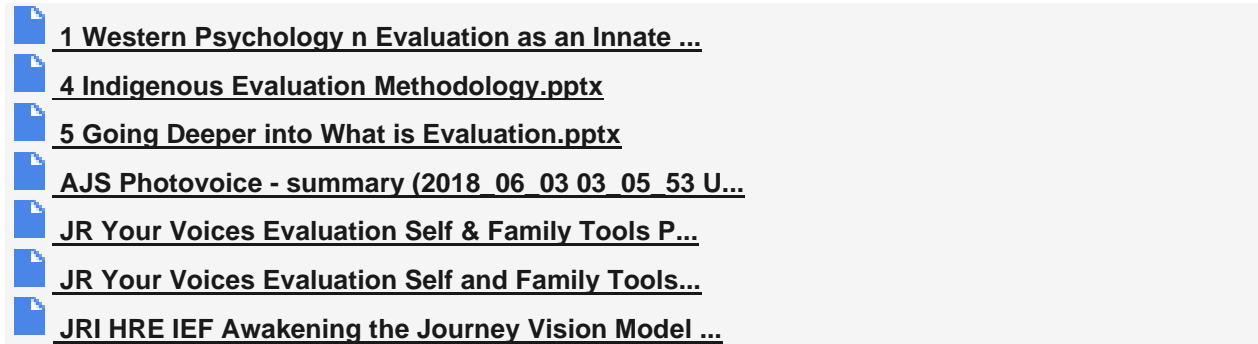
MindFuel also intends to continue to:

- Work with funders to develop parameters that better address the realities, needs, and barriers of Indigenous communities (such as land-based learning).
- Build into the budget a strategy for predicting unexpected costs associated with addressing technological barriers in communities.
- Determine how to, and to maintain long-term collaboration and relationship building with the five (5) unique communities served, including the feasibility of when/how to return to communities both virtually and in-person.
 - With the Northland School Division in AB, MindFuel has scheduled 4 professional learning workshops have been planned for the 2023/2024 school year and a planned a student showcase for next spring

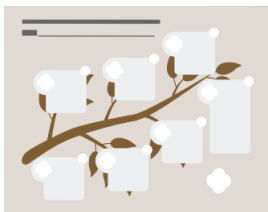
- With Dene Tha Community School in AB, MindFuel has scheduled the next weeklong community visit for the week of September 18, 2023
 - With Tsay Keh Dene School in BC, MindFuel is in the process of scheduling the next weeklong community visit for the week of October 16, 2023
 - With Tantalus Community School in YT, MindFuel will be scheduling the next weeklong community visit for November 2023.
 - With Siksika Nation High School, MindFuel is hoping to continue collaborating on developing and delivering professional learning workshops for their teachers with the potential of delivering these workshops together in other communities. Dates to be confirmed in September for the 2023-24 school year.
- Continue to develop the new organizational collaborations and continued partnerships that have grown and strengthened through the focus of this project, in particular, with:
 - Amino Labs in AB to collaborate on student and teacher programs and resources
 - askenootow STEM Enterprises Inc in SK to collaborate on workshops, in particular for teachers, and continue to receive their consultation on resource development.
 - Knowledge mobilization & community engagement consultant in AB to further develop our program practices and project applications.
 - IndigeSTEAM in AB to co-develop and co-deliver digital & coding skills projects and programs, and support each other's vision and mission.

Appendix A: Documents Provided to Organizations

Data Collection Tools to review:



1. The Waawiyeyaa storytelling tool which participants the opportunity to share their stories on a linear path through the past/present/transition and future states



2. The Medicine Wheel tool with gives participants the opportunity to share their reflections wholistically through the lens of spirit, mind and body

