Inspiring Tech Futures

2yr Annual Report

2023/24 -2024/25

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With Gratitude

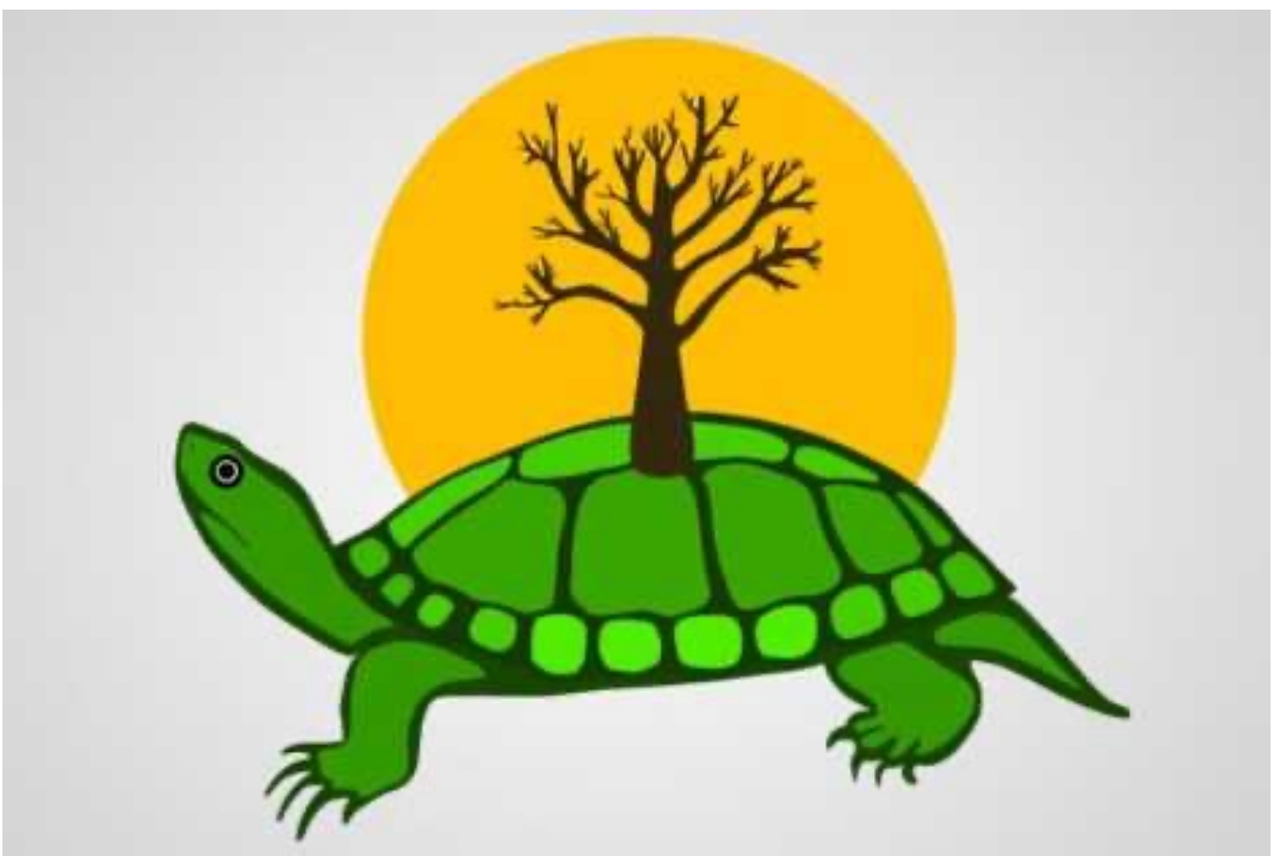
To our Collaboration Partners - the Students, Teachers & Communities:

Thank you for welcoming us into your schools, communities, and universities learning together, and teaching us more about our programs and ourselves than we could have even imagined at the beginning of this journey.

We are grateful, humbled & we look forward to our continued learning together.

Thank you, and with appreciation.

We acknowledge that our collaborations and work take place across the traditional territories of many Indigenous Nations, who have lived on and cared for these lands since time immemorial, and we honour their deep connections to the land, waters, and communities. We are committed to walking the path of truth and reconciliation and, we are grateful to live, learn, and work in these territories, as we continue to seek to understand how to deepen meaningful relationships with Indigenous peoples.



Turtle island image designed by Anishinaabe artist Nancy King, who goes by the name Chief Lady Bird

Energizing Youth Innovation

MindFuel is helping to build a stronger Canada, through programs that combine education, innovation, entrepreneurship, social development and environmental sustainability.

Our Commitments

Fostering Innovation in Learning: MindFuel has a strong commitment to fostering innovation in learning, by leveraging technology and creative teaching methods. MindFuel empowers youth to develop critical thinking, problem-solving and digital literacy skills necessary for the future.

Inspiring Youth Engagement: MindFuel is committed to empowering youth by providing them with engaging programs, resources, skills development and networking. MindFuel sparks curiosity, encourages active participation and helps young minds unlock their full potential.

Promoting STEM Learning: MindFuel emphasizes the importance of science, technology, engineering and mathematics (STEM) as foundational to building a strong and innovative workforce. MindFuel's programs equip youth with STEM skills, preparing them for the demands of a rapidly evolving world.

Cultivating Indigenous Knowledge: MindFuel acknowledges the significance of Indigenous knowledge and strives to integrate Indigenous perspectives and content into its programming. By doing so, MindFuel supports Indigenous reconciliation and promotes a deeper understanding of Canada's rich cultural heritage.

Encouraging Social and Environmental Responsibility: MindFuel is committed to social development and environmental sustainability. Through its programs, MindFuel inspires youth to become responsible global citizens, fostering a sense of stewardship for the planet and encouraging actions contributing to a more innovative and sustainable future.

Message from Chair & CEO

We are thankful for your continued commitment to and support of the MindFuel Foundation over the past two years, and we're pleased to present a 2yr Annual Report summarizing our community impacts. As we conclude our 2023-25 fiscal period, we are grateful to our community, who have worked with us to ensure Canadian youth have access to STEM innovation and educational opportunities - both through our eLearning division, Wonderville Enterprises, and through our youth innovation division, Canada Tech Futures. We are proud of our team, and of the hundreds of community collaborators who work tirelessly to deliver our award-winning programs --helping youth to thrive and making Canada a stronger player in global innovation. But we know the work is far from done. We believe that STEM futures should be available to everybody.

In the pages of this report, you'll read about some significant highlights from the past two years, including: Our deployment and continued iteration of our Connect2Innovate (https://connect2innovate.ca/) platform, a community-led, AI enabled, technology platform that connects youth (ages 15-29) to critical stakeholders in Canada's innovation ecosystem.

Through C2I, youth will be able to build their in-demand skills for the jobs of tomorrow, gain access to work experience, and be empowered as aspiring innovators with the mentorship, funding, and other resources they need to turn ideas into reality in emerging nanotechnology, robotics, AI or synthetic biology, and other fields of employment.

As for the future? Through C2I and other initiatives, we'll continue to invest into youth innovation talent development. We expect to deliver between 2,000,000 and 4,000,000 hours of extracurricular innovation learning in the next five years, and we know based on our recently published 10 year post-longitudinal impact study, that in many of the youth project talent teams we support, a minimum of 10% will commercialize their projects in under five years. Ultimately, this will lead to investment capital attraction, trademark/IP creation, employment, and GDP contributions. These incredible outcomes are critical to Canada's future, and it gives us immense satisfaction to know that we are supporting Canada's technology futures by investing in young innovators.

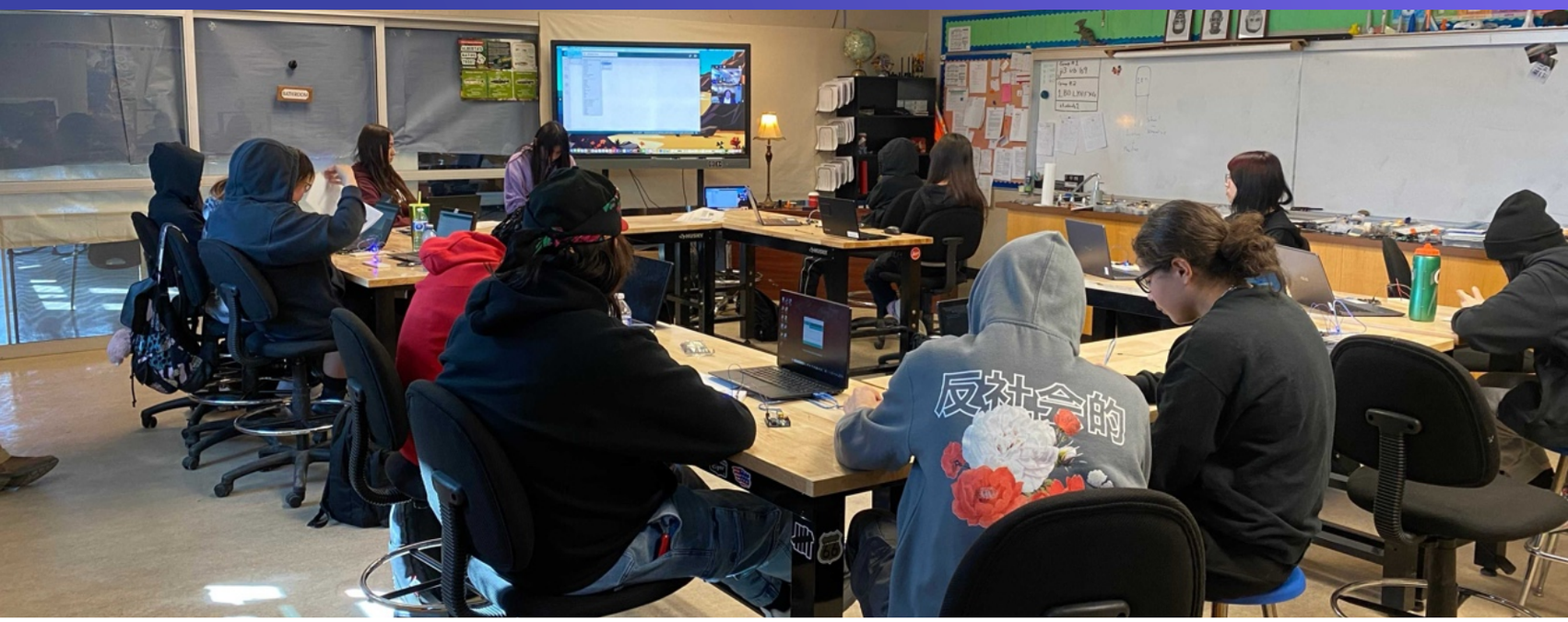
Together, we will empower tomorrow's STEM innovators.

We believe that MindFuelers are driven by curiosity and a passion for innovation, all with the goal of making Canada better. We can think of no more worthy or critical goal as we move further into the 21st century with its challenges and opportunities than to encourage youth to become MindFuelers. We're grateful for your belief in our mission. Together, we're driving meaningful, collaborative change.

Cassy Weber
CEO

Dan Semmens
Board chair

Introduction



Energizing young people to advance their ideas and move our world forward is at the root of all things MindFuel. Through our programs we help youth to prepare and thrive in future careers by igniting their passion to pursue STEM (science, technology, engineering, math). As young people journey through our programs, we spark their imagination, nurture self-confidence, and build growth mindsets. We inspire them to explore boldly. Think critically. View challenges as opportunities. Become fearless problem-solvers and create a brighter future.

During the last two years, MindFuel expanded our immersive innovation programming to many provinces and territories; introduced AI learning to our coding programs; expanded our partnership network to over 200 across Canada; and critically, began the development of our latest technology platform - Connect2Innovate (C2I), based on extensive insights gathered through discovery sessions with key stakeholders. C2I makes the innovation sector more accessible to Canada's youth, which we know is critical to increasing Canada's innovation capacity and outputs.

Finally, we published Part 2 of an insights paper based on a post-10 year study focused on economic outcomes in youth who are MindFuel alumni. Key outcomes of the paper summarized the number of projects we supported that youth went on to commercialize. Additionally, youth provided insights into key outcomes such as venture capital raised, employment creation directly related to their companies; patents and trade secrets filed, GDP contributions, and critically, talent retention in Canada.

Overall, it's been a tremendously successful two years and we hope you enjoy reading highlights of these exciting outcomes in our two year annual report.

Post 10yr Longitudinal Study Part 2

March 2025

13% of TFC supported projects commercialized within 4.5 years

confirm an ongoing interest in innovation and entrepreneurship **87%**

(2013-2022)

1,720,000 hours of extracurricular learning
4,300 aspiring innovators (ages 15 – 25)
35% commercialized a technology after TFC
$32.5M in venture capital (as of Dec 2024)
$13.2M revenue and 138 high skilled jobs (as of Dec 2024)
91% talent retention in Canada
79% talent retention in Alberta

> ***MindFuel is creating a pathway for young innovators to become the next generation of STEM leaders.***
> ***Curtis Stange, President & CEO, ATB Financial***

> ***This program is critical to Alberta's tech-futures – not only in talent development but also reducing brain-drain.***
> ***Derrick Hunter, President & CEO Bluesky Equities Ltd.***

Programs at Glance

Building on over a decade of success in youth innovation, MindFuel's programming begins with a strong foundation in STEM education. Our STEM Foundations—anchored by Wonderville and Codingville—introduce students to the core principles of science, technology, and digital literacy through immersive, interactive learning. These platforms are designed to spark curiosity, build confidence, and develop the essential skills that prepare youth to think critically and creatively in a rapidly evolving world.

From this foundation, students are invited to go further through our Youth Innovation Programming, which includes Design Challenges, Tech Futures Challenge, Founders Fundamentals, and more. These experiences move learners from exploration to application—empowering them to prototype solutions, collaborate with mentors, and bring real-world innovations to life. Together, these programs form a comprehensive pathway that nurtures the next generation of innovators, entrepreneurs, and changemakers across Canada.

Our programs include:

Wonderville (wonderville.org) - Wonderville sparks curiosity and STEM engagement through interactive, game-based learning that builds foundational innovation skills in students.
[Grades 4-9]

Codingville (codingville.ca) - Codingville empowers students to become digital creators through hands-on coding challenges that develop problem-solving and computational thinking.
[Grades 1-9]

Design Challenges - Student-centered design challenges immerse learners in real-world design thinking and innovation, fostering creativity, teamwork, and local impact.
[Grades K-12]

Tech Futures Challenge (TFC) - Tech Futures Challenge enables youth to tackle real-world problems using emerging technologies, supported by mentorship, funding, and collaboration.
[High School, Post-secondary]

Founders Fundamentals - Helps young entrepreneurs turn ideas into ventures by building entrepreneurial mindsets and innovation capacity.
[Post-secondary, young adults]

Professional Learning – Hands-on sessions equip educators with the tools and confidence to lead innovation-based learning in their classrooms.
[Adults, Professionals]

Connect2Innovate (C2I) (connect2innovate.ca) - Connect2Innovate is a national digital innovation platform that connects youth, educators, and partners with resources, mentorship, and collaboration tools to drive inclusive innovation.
[Aspiring Innovators - Age 15 to 29]

STEM Foundations

Wonderville [**Grades 4-9**] ignites curiosity and builds foundational STEM confidence through immersive, game-based learning experiences. By combining real-world videos, interactive experiments, and career showcases, it cultivates a mindset of exploration and discovery. Designed to empower both students and educators, Wonderville fosters early engagement with innovation by making complex scientific concepts accessible, exciting, and relevant to everyday life. It also supports educators with high-quality teaching resources that encourage inquiry-based learning and creativity in the classroom.

Codingville [**Grades 1-9**] equips students with essential digital skills, artificial intelligence and computational thinking through engaging, self-paced coding challenges and hands-on projects. It nurtures problem-solving abilities and digital confidence, helping learners transition from consumers of technology to creators. By integrating coding into real-world contexts, Codingville lays the groundwork for future innovation, encouraging students to think critically, build solutions, and explore pathways in technology and entrepreneurship. Educators are supported with professional learning tools that help embed innovation into classroom practice.

> ***"Codingville helped me engage in coding and made it much easier to learn coding."***
>
> **~ Codingville student**

80%

of Codingville.ca teachers stated: "My students' knowledge and confidence in coding & digital skills have increased."

74%

of Codingville.ca student participants stated: "I now know more about coding & digital skills."

80%

of Codingville.ca teachers stated: "Students who have accessed Codingville show an increased interest in pursuing high school/post-secondary studies in a STEM field."

STEM Foundations

Wonderville STEM Knowledge Development

As a MindFuel supporter, you are part of an energetic team of individuals and organizations committed to the development of leading-edge programming to drive the future of STEM learning and innovation. Our award-winning resources and programs are designed to help students engage in real-world problem-solving and innovation across numerous fields, and, during the year, we reached **143 countries** and more than **7874 communities globally**. In Canada, we reached **519 communities** across all provinces and territories.

STEM Foundations (2023-2025)	Learning Sessions
Climate change, biodiversity, energy and alternative energy, agriculture and environmental and water management science	*126,738*
STEM knowledge foundations (such as biology, physics, chemistry and earth sciences)	*63,452*
Health and related sciences	*10,673*
Innovation, emerging technology, design thinking, synthetic biology and nanotechnology, and entrepreneurialism	*29,818*
STEM Career Showcases and girls and women in STEM	*2,598*
Indigenous ways of knowing	*1,722*
Coding, computational thinking, robotics, information modeling, machine learning and artificial intelligence	*8,428*
Space and astronomy	*3,120*

STEM Foundations

Codingville Skills Development

> *It is getting them to think in terms of a 21st century mindset, adapting and changing based on real world data to solve problems.*
>
> ~ Teacher, Brooks, AB

39,998
K-12 students engaged

240,020
Total hours of student learning

38%
From rural/remote/northern communities

49.4%
Female students

10%
Self-identify as Indigenous

5%
Self-identify as Black or a person of colour

1,374
Teachers

4,808
Total hours of professional learning

Community Pilot

Learning Together

Inspired by MindFuel's first all-Indigenous Tech Futures Challenge (TFC) team in 2019 and their innovative student project, MindFuel's Future Skills Centre pilot's mission focused on increasing STEM innovation learning opportunities for Indigenous youth in AB, BC & YT rural & remote communities.

Pilot vision: To create learning opportunities that will spark creativity, strengthen prior knowledge in STEM, support ideas and build interest in future studies and work in STEM.

Pilot approach: focus on student project-based hands-on learning, knowledge sharing, mentoring, and interweaving Indigenous ways-of-doing & Western science.

Ultimate outcome: To create a framework that supports long-term economic opportunities for Indigenous youth.

With each community Pilot partner, building relationships was prioritized first, which led to skills building workshops with teachers and/or community educators, and then working directly with the students. Foundational with each workshop was working with a STEM technology new to the teachers & students, storytelling, art, and local/cultural connections.and project-based learning.

88%

of teachers stated: "The learnings from this workshop will help me to support youth in building STEM skills relevant to the real-world."

100%

of teachers stated: "Students who have accessed Coding & Automation activities show an increased interest in pursuing a job/work/career in a STEM field."

80%

of students stated: "I kept working with the sensors, breadboard and coding even when parts of it didn't work."

Community Pilot

Empowering STEM Innovation Learning & Doing

- Student attendance improved. One school shared they had students who previously had not yet attended school that school year, and they participated in the full week of activities.
- Student participation in STEM activities increased, as well as sustained interest and focus.
- Student motivation increased to continue learning & doing, as well as exceeding activity outcomes.
- Teacher supports for learning a new tech and incorporating it into their classroom strengthened.
- Teacher knowledge, skills & confidence in new tech & innovation mindset development increased.
- Project-based learning and the design thinking process works and aligns with Indigenous ways of learning and doing.
- Student understandings of STEM fields & careers heightened.

> *"It made me curious on why it wasn't [working] and then figuring out why it wasn't working and fixing the problem."*
> *~ Student*

> *"Something indecipherable became more easy to understand."*
> *~ Student*

> *"This is the first time I've seen them with their cameras on."*
> *~ Online School Teacher*

Community Pilot

> *"There's so much more technology available...that I didn't even know existed before the start of what we've done here...that's just completely changed the direction of how I've used technology. Now it's a tool to help them grow within themselves and show how they know things. It let's them have more of an outlet in different ways."*
>
> ~Teacher *(awareness and insight gained from using the Johnston Research Inc. Waawiyeyaa evaluation tool)*

283
K-12 Indigenous students engaged

17
Rural/remote/northern schools

6
Indigenous Collaboration Partners
(4 AB, 1 BC, 1 YT)

46
Student sessions

31
Teacher Workshops

5
Week-long in-person community visits

35
Resources
(7 videos, 27 activities, 1 showcase event)

512 kits, **13** laptops &
145 tech incentives

Design Challenges

These dynamic, student-centered challenges immerse youth in real-world problem-solving, technical skill development and design thinking. By engaging in collaborative challenges, students develop critical innovation skills such as ideation, prototyping, and iterative thinking. These experiences not only build technical and creative confidence but also connect learners to local innovation ecosystems, encouraging them to see themselves as active contributors to their communities and future industries.

Building Stronger Communities

With a combination of in-person and virtual student workshops and events, MindFuel's in-community work continued to grow and strengthen in rural, remote and northern communities, including collaborating with four Indigenous communities in Northern BC, AB and YK, including Northlands School Division to deliver engaging, hands-on STEM programming to students and teachers. The STEAM-based projects incorporated weaving together storytelling, cultural connections and "tech", and included unplugged computational thinking activities, design challenges, coding, circuit building and text-based coding, with the goal of building youth resiliency in learning and applying new STEM skills.

> ***"I felt super proud making it, step by step, it felt good finishing my project, the first time it worked."***
>
> **~ Grade 8 student – Northland School Division, Coding & Automation participant**

87%

of students stated: "I found using this technology fun."

86%

of students stated: "I want to learn more about coding and building circuits."

79%

of students stated: "I found using tech, storytelling and art interesting."

Design Challenges

Empowering STEM Innovation Thinking & Doing

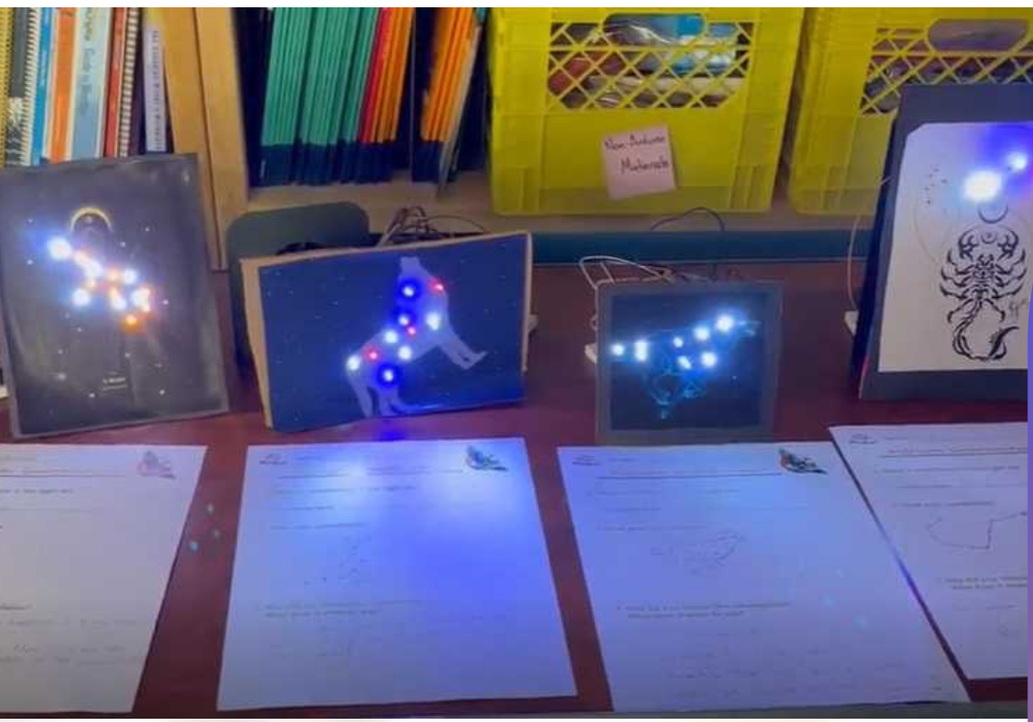
- Building on learnings from previous in-person community visits, collaborated with teachers and K-12 students from four rural, northern Indigenous schools to further develop their smart circuit building and coding & digital skills and application, as well as introduce more of the design thinking process.
- Led in-person and digital student class sessions on smart circuit building and coding for grade 7-12 classes in rural, remote and northern schools in Alberta, British Columbia and Yukon.
- Developed and delivered three design challenges for a Whitehorse school, and collaborated with Yukon University and Whitehorse Boys and Girls Club to deliver a full day robotics building and coding challenge.
- Further developed STEAM-based project guides and resources for teachers and students incorporating smart circuits, storytelling and art for Northlands School Division. Students applied their new skills in smart circuit building and coding through their individual or group projects, and incorporating cultural practices and/or personal interests, and shared their learnings and working prototypes or art project at a virtual district-wide showcase in March.

> *"I felt overjoyed when I finished the coding and after I made the motor move solo.*
>
> ~ Grade 6 student – Northland School Division, Coding & Automation participant

Design Challenges

Working and Learning with Community

> *I had a great experience with tech, coding and circuits. I really had fun, was a wonderful time.*
> ~ Student, Coding & Automation participant



1,103
K-12 students engaged

3,195
Total hours of K-12 student learning

48
Student workshops

95%
From rural/remote/northern communities

54%
Female students

75%
Self-identify as Indigenous

4%
Self-identify as Black or a person of colour

1%
Self-identify as a newcomer to Canada

Tech Futures Challenge
(2023-2025)

Tech Futures Challenge (TFC) [**High School and Post-secondary**] empowered youth from across **Alberta, British Columbia, Ontario and Manitoba,** to become change makers by tackling real-world problems using cutting-edge STEM fields like synthetic biology, bio-engineering, biotechnology, coding, 3D design & printing, robotics and automation. Through mentorship, funding, and collaboration, participants transform bold ideas into impactful solutions. TFC fosters a culture of innovation by encouraging interdisciplinary thinking, resilience, and entrepreneurial action—preparing youth to lead in a rapidly evolving world and contribute meaningfully to society and industry.

> **"It was incredible to meet new people and entrepreneurs in the STEM field, as it has set me up with amazing resources for my future career.**
>
> **~ 2024 High School Participant**

89%

of students stated: "I can now apply my knowledge in new ways to address problems."

94%

of team advisors stated: "The workshops increased my team's communication, collaboration and networking skills."

100%

of judges & mentors stated: "TFC and the Showcase event support youth in building real-world STEM skills and cross-disciplinary competencies."

Tech Futures Challenge

Empowering STEM Innovation & Entrepreneurship

- Engaged youth in understanding and directly applying problem identification, project ideation, and prototyping through a collaboration and STEM-based design thinking process, and skills building and training in areas of emerging technology.
- Supported youth in prototype iteration through mentoring opportunities with subject matter experts and MindFuel team members.
- Supporting youth in competition preparation, and building their entrepreneurial and networking skills .

> *Participating in TFC was amazing for connecting us with mentors and helping us find experts to refine and polish our ideas into solid products with the potential to solve real world issues. TFC was great for helping our teamwork through our designs and iterations and forced us to iron out many essential details to our project we may have missed initially.*
> *~ 2024 Collegiate Participant*

> *The Tech Futures program provided my team with the tools and resources to take a sustainability issue that they were passionate about and develop an impactful engineered solution to solve that problem.*
> *~ 2024 Team Advisors*

> *[TFC's impact on me:] Most definitely in shaping a character, given the diversity in problems (and the different ways you can approach it), as well as leadership, communication & advocacy.*
> *~ 2024 Collegiate Participant*

> *I find it inspiring and it allows me to also explore new science topics. I find it very motivating to work with students.*
> *~ 2024 Judge, Prototype Showcase*

Tech Futures Challenge

501
Students engaged (AB, BC, MB, ON)

15,964
Total hours of student learning

12
Student workshops & events

6%
From rural/remote/northern communities

57%
Female students

1%
Self-identify as Indigenous

52%
Self-identify as Black or a person of colour

10%
Self-identify as a newcomer to Canada

TFC Pitch, Skills Building, Prototyping

TFC Projects

Working with Teams

> *The Tech Futures program had a profound impact on our students, primarily through the acquisition of practical skills learned in the lab, insights gained from expert-led workshops, and the collaborative learning environment that allowed them to observe other teams' project development.*
>
> *~ 2024 Team Advisor*

High School Teams - 5 Projects (2023/24)

Beewise, United Robotics of Lacombe 1 - Lacombe, AB

The BeeWise Monitoring System allows beekeepers to monitor the temperature, humidity and carbon dioxide levels in the hive especially during the cold winter months.

Bo-Find, Lethbridge High School iGEM – Lethbridge, AB

In order to quickly and successfully diagnose BRD pathogens in the field, we propose the use of a recombinase polymerase amplification (RPA)-based tool that can reliably give test results in under an hour and without laborious sample preparation or analysis.

CO2Apture, Renert High School - Calgary, AB

An electrolyzer-fermentor system that accomplishes 3 objectives: (1) optimizes the production of PHB from transformed E. coli through genetic engineering; (2) develops an effective extraction method for PHB from the biohybrid system; and (3) develops PHB into viable bioplastics to be used in the production process of green buildings.

TFC Projects

Collegiate Teams - 7 Projects (2023/24)

Bac2Root, University of Lethbridge iGEM 1 – Lethbridge, AB

It enhances plant growth, improves soil health, and effectively suppresses clubroot through synergistic interactions and natural mechanisms, reducing the need for chemical inputs and promoting a healthier, more resilient agricultural ecosystem.

DNADetect, University of Calgary BIOMOD - Calgary, AB

DNADetect uses a blocked DNA origami nanopore, a tiny hole formed by folding DNA into specific shapes, inserted into a membrane encasing fluorescent dye. The focus of this work is to design a biosensor capable of detecting specific target molecules, offering potential for widespread application in disease diagnosis.

GreenLith Tech – Calgary, AB

GreenLith fits perfectly in this gap and would offer a sustainable, cost-effective alternative with increased Safety, Selectivity, Reusability and Customizability with lesser environmental damage and a vision of facilitating sustainability sustainably.

NanoHeme, University of Calgary iGEM 1 – Calgary, AB

It's a universal blood substitute that meets several UN sustainability goals and can help bridge this gap. NanoHeme will utilize erythrocruorin to safely transport oxygen throughout the body, ultimately saving lives.

ProSpore Detection, University of Lethbridge iGEM 2 – Lethbridge, AB

This innovative kit leverages advanced protein-based technology to provide rapid, accurate detection of Plasmodiophora brassicae spores in soil samples.

REECapture, University of Calgary iGEM 2 – Calgary, AB

REEcapture utilizes a non-infectious M13 bacteriophage modified to express a peptide sequence that recycles rare earth elements, a component needed to build electronics, from E-waste.

TRASH-E, University of British Columbia – Vancouver, BC

TRASH-E—aims to develop a semi-autonomous robot that allows a user to locate and mark where trash is located, autonomously move the robot to the corresponding location, and haul the trash to shore.

TFC Projects

High School Teams - 8 Projects (2024/25)

Beewise, United Robotics of Lacombe 1 - Lacombe, AB
Build a data logging Arduino system that would monitor and discern the probable cause(s) of bee death in the winter among three main factors: carbon dioxide, humidity and temperature.

BetaBalance, Lethbridge High School iGEM 1 – Lethbridge, AB
BetaBalance aims to bioengineer oat plants to increase betaglucane production in order to produce a supplement to aid in hypertension.

BioBot, AquaAlert - Calgary, AB
Solar-powered floating device designed to detect heavy metals—lead, mercury, and arsenic—in water using genetically engineered E. coli and a simple circuit; offering rapid, on-site detection at a fraction of the cost.

Carbon Replay, Our Lady of the Snows - Canmore, AB
Carbon Replay envisions a world where the manufacturing of a high-value carbon sequestering PLA bioplastic composite (and its recycling) can be powered by net zero landfill diverted organic fuels from our ever-growing and wasteful urban populations, accomplished with our SMbR (small modular bioreactor) manufacturing network.

InnoSkate, Renert High School - Calgary AB
A novel solution that engineers E. coli to produce recombinant ice-nucleating proteins (INPs) which can be applied directly to rink surfaces, reducing refrigeration demands while preserving natural ice quality.

Poiste-itive, United Robotics of Lacombe 2 - Lacombe, AB
An arduino-based system that will track posture through sensors and alert users via the app when slouching is detected to remind users to be mindful of their posture throughout the day.

Rhizoretention, Lethbridge High School iGEM 2 – Lethbridge, AB
Rhizoretention aims to engineer rhizome bacteria to help plants conserve water over longer periods of time by controlling stoma opening and closing to address crop death during periods of drought.

Water Inaccessibility, GreenEarth - Toronto, ON
A mobile app that will bring awareness & education to water inaccessibility.

TFC Projects

Collegiate Teams - 13 Projects (2024/25)

Adaptive Kneeling Frame, Project 90 - Calgary, AB
An innovative mobility aid designed for children with cerebral palsy, arthrogryposis, and other conditions to support themselves on their knees and arms which enhances posture, encourages muscle engagement, and provides a safer, more effective therapy experience.

AeroSense, University of Calgary BIOMOD 1 - Calgary, AB
AeroSense is an air monitoring biosensor (using an aptamer-based fluorescence detection system) designed to detect airborne viruses, such as COVID-19, in real time. This technology enables early intervention and helps prevent the spread of infectious diseases.

Algae Tech, Chimera 1 – Calgary, AB
This team is examining fabrics, textiles, and paints made from or embedded with algae, photosynthetic microbes that convert carbon dioxide to oxygen and are easily grown.

AptaMod, University of Calgary BIOMOD 2 - Calgary, AB
This project developed an ion-based nanoscale biosensor to detect key biomarkers related to neurodegenerative diseases (NfL, TDP-43, CHI3L1) faster , more affordably, and with greater accessibility.

ARBO/Repellion, University of Ottawa iGEM – Ottawa, ON
This project created a formulation that enables harmless skin microbes to produce mosquito-repelling compounds, creating a durable, sweat- and water-resistant barrier which can repel mosquitoes for up to 12 days.

Biofuels, Chimera 2 – Calgary, AB
This team is investigating the use of naphthenic acid degrading algae to convert environmental toxins from the Alberta oil sands into a renewable biofuel source, cleaning our local waters!

Hyaluronic Acid, University of Lethbridge iGEM - Lethbridge, AB
This project aims to use E. coli to produce HA for a more efficient and toxin-free process & to produce HAase more efficiently through bacterial fermentation.

LacThera, Prairie iGEM – Winnipeg, MB
The idea behind our project is to use a probiotic bacteria to help maintain balance of healthy bacteria in vaginal area.

MicroRem, Green Vanguard - Calgary, AB
Decontaminate the Hanford nuclear site soil & groundwater by injecting micro organisms that remove these toxic chemicals.

Mycology, Chimera 3 – Calgary, AB
This team is investigating the potential and translatability of mushrooms and fungi as tools for bioremediation, construction materials, textiles, and more sustainable sources of agriculture!

NanoGuide, University of Calgary iGEM – Calgary, AB
This project aims to develop a sensitive RNA sensor as an early and accessible diagnostic tool for Avian Influenza in both farm animals and humans.

Nutrix, Double Healix – Calgary, AB
This project is an AI-powered meal planning app designed to help users address nutrient deficiencies while maintaining their cultural food preferences.

ReneWool, University of Alberta iGEM – Edmonton, AB
This project aims to engineer a synthetic plasmid that expresses keratinases and/or cellulases—enzymes capable of degrading keratin and cellulose, common in textile industries—to biologically degrade fabric wastes.

Founder's Fundamentals

Founders Fundamentals engages youth, ages 18-30, in bringing their innovative ideas to life. With a focus on the early pre-revenue, start-up stage, participants develop skills and practices that support the foundations of their business. Through mentorship, microgrants, and skill-building, participants develop entrepreneurial mindsets and innovation capacity. This program nurtures resilience, strategic thinking, and leadership—equipping youth to launch impactful startups or integrate innovation into their careers. It serves as a launchpad for long-term engagement in the innovation ecosystem.

Collaborating with Industry

Collaborating with partners, including Centre for Newcomers, FREDsense, Innovate Calgary Social Innovation Hub, and InceptionU, founders were introduced to tangible and practical business practices to further develop their entrepreneurial mindset and clarify the why and hows of their start-up. Key highlights of the in-person and/or online workshops were learning directly with local founders, sharing of experiences and supporting one another, and building essential communication and networking strategies

> *"[A highlight of the workshop was] recognizing that it is actually possible to start a start-up.*
>
> **~ InceptionU From Project to Start-up workshop participant**

81%

of participants stated: "This workshop increased my interest in entrepreneurialism in tech."

88%

of participants stated: "I have a better understanding of how to network in Calgary."

91%

of participants stated: "The workshop helped to increase my knowledge and understanding of branding elements, tools, and strategies for my start-up."

Founder's Fundamentals

Empowering STEM Innovation & Entrepreneurship

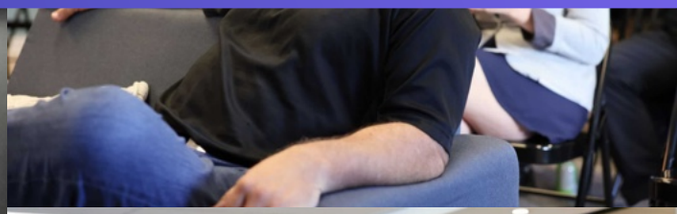
- Engaged youth in developing their start-up idea, deepening their understanding of entrepreneurial methodologies and practices, and creating manageable 'next steps' for their business.
- Supported Founders Fundamentals participants with their start-up ideas through hands-on independent activities, group workshops, mentoring sessions with founders and industry experts, micro-grants, and a culminating showcase.
- Developed and delivered topic specific workshops on how to evolve a project into a start-up, fundraising for a start-up, product branding, and networking tips for a newcomer to the Calgary ecosystem to support the needs of collaboration partners, Centre for Newcomers and InceptionU participants.
- Collaborated with Innovate Calgary Social Innovation Hub & partners on five Pitch and Social for early-stage founders series, supporting underrepresented founders in the Calgary and surrounding area., including a 'Young, Black and Gifted in Tech' workshop for University of Calgary students.

> *[Highlights of the workshop include] meeting with founders and talking with them, asking them questions in a non-intimidating setting.*
> *~ InceptionU From Project to Start-up Workshop Participant, 2023-24*

> *This workshop will help newcomers to start their careers in Canada within a reasonable time rather than struggling years to settle.*
> *~ Centre for Newcomers Networking Workshop Participant, 2023-24*

> *[Highlights of the workshop include] connecting with participants, especially cofounders, tips and how to improve at networking.*
> *~ Centre for Newcomers Networking Workshop Participant, 2023-24*

Founder's Fundamentals



629
Total participants (18-30 + Other)

13,311
Total hours of learning

56
Workshops & events

30%
From rural/remote/northern communities

44%
Female students

7%
Self-identify as Indigenous

18%
Self-identify as Black or a person of colour

30%
Self-identify as a newcomer to Canada

Professional Learning

Supporting Educators

MindFuel's online and in-person professional learning workshops offer Grades 5-12 STEAM educators support in their professional development with new technologies, such as circuits, coding and automation, 3D design and printing, flying and coding drones, and AI tools. Educators are provided engaging hands-on activities and tech materials, paired with direct instruction and one on one support to allow them to learn and develop new STEM skills that they can directly bring back into the classroom.

Collaborating with Schools & School Divisions

With our flexible PL workshop delivery model, we collaborated with individual schools and school divisions to develop workshops that work best within the teachers' schedules and areas of tech need, as well as created co-teaching opportunities with the teachers while visiting rural and remote communities. By learning together and with their students simultaneously, the teachers supported students' learning with experiential learning and tech skills development after we have left the community, and we even created new tech activities based on the teachers and students' areas of interest.

> ***"Even though many were new to this kind of activity, it created huge interest and passion in all the students.***
>
> **~ Middle School Teacher, Gift Lake School, AB**

90%

of teachers stated: "My students found creating their own project using a new technology fun."

80%

of teachers stated: "My students now know more about coding & building circuits."

80%

of teachers stated: "My students found using tech, storytelling and art interesting."

Professional Learning

Empowering STEM Innovation Thinking & Doing

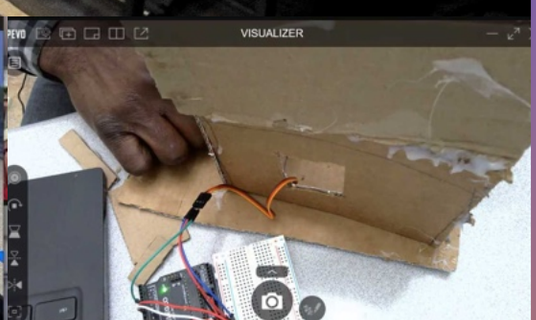
- Collaborated with Northland School Division on a completely online PL workshop series for new and experienced teachers in circuits, coding and automation, so that any of their teachers, who are all in rural or remote communities, could participate. With our long-term collaboration, we were able to explore and integrate more activities, including storytelling as a form of evaluation and incorporating personal and cultural connections. A highlight was meeting some of the teachers in-person for the first time in February 20025 in Edmonton.
- Updated step by step activity handouts were shared with teachers for use during professional learning workshops and in classrooms with students, including those for building and coding circuits with potentiometers, servo motors, ultrasonic (distance) sensors, LED's, pushbuttons and stepper motors.
- Updated teacher resource and student activity booklets were piloted in support of student project ideation and development so that both teachers and students could apply their newly learned tech skills in a project of their own choice.

> *[The workshop] gives ideas of how to incorporate these kinds of skills into the classroom. Starting with the most simple to the more complex.*
> *~ Anonymous Teacher, Northland School Division, AB*

> *Allowing for creative, and sometimes destructive, experimentation was very empowering.*
> *~ Middle School Teacher, Susa Creek School, AB*

> *It opened my eyes to see their potential and also understand the areas they are struggling.*
> *~ Middle School Teacher, Susa Creek School, AB*

Professional Learning



253
Total teachers supported

1,020
Total hours of professional learning

98%
From rural/remote/northern communities

2%
From urban communities

24
Teacher professional learning workshops

Scholarships

2023 CDL-Rockies Opportunities

Paige Thompson

Graduated from: École Olds High School, Olds, AB
Studying at: University of Calgary, School of Architecture, Planning and Landscape

"As a first year student at the School of Architecture, Planning and Landscape at the University of Calgary. I am already learning more about how the collaboration of STEM and design can lead to a more sustainable future. Design has always intrigued me because it is prevalent in every aspect of our built environment. What fascinates me even more is that in order to develop a world that is sustainable, equitable and socially inclusive we must incorporate new, innovative technologies. That is where my interest and love of STEM emerged. I am incredibly grateful to receive the MindFuel and CDL-Rockies Opportunities 2023 Scholarship because together they celebrate how STEM can make a difference in our urban, technological and social landscapes. I look forward to continuing my education and to one day open my own architectural firm that focuses on how STEM and design can construct an improved built world I want to extend my deep appreciation to the MindFuel team, the Board of Directors and the CDL-Rockies for selecting me as a recipient of this scholarship."

Erica Chow

Graduated from: West Island College, Calgary, AB
Studying at: University of Calgary, Computer Science, Minor in Management and Society

"I am truly grateful to have been awarded the CDL-Rockies Opportunities Scholarship. I am currently majoring in Computer Science at the University of Calgary with a minor in Management and Society. I am passionate about finding ways in which technology can assist us in finding solutions to global problems such as the climate crisis. During the next few years, I hope to meet like-minded individuals who are as passionate as I am about using technology to better society. The CDL-Rockies Scholarship will allow me to pursue my education in Computer Science alongside my interests and goals. I am extremely honored to have been awarded this scholarship and am grateful for the support of MindFuel and the CDL-Rockies program."

Scholarships

2024 CDL-Rockies Opportunities

Izyan Ali

Graduated from: Western Canada High School, Calgary, AB
Studying at: University of Calgary, Schulich School of Engineering, Bachelor of Science

"Receiving this STEM scholarship means so much to me because it supports my main engineering education and gives me the freedom to pursue my passion for filmmaking. This funding allows me to develop skills in two different creation disciplines—engineering and storytelling. As an engineer and filmmaker, I can innovate solutions to real-world problems and tell impactful stories that inspire change. I'm excited to use these skills together to make a meaningful difference in my community and beyond."

Prateek Kumar Shreyas

Graduated from: Sir Winston Churchill High School, Calgary, AB
Studying at: University of Calgary, Schulich School of Engineering, Bachelor of Science

"I would like to express my sincere appreciation to the MindFuel and CDL-Rockies team for awarding me with this prestigious scholarship. I am currently enrolled in Engineering at the University of Calgary, with the intention of majoring in Biomedical Engineering, by the end of my degree. I believe everyone deserves an equal opportunity to succeed and thrive in their lives. Unfortunately, health issues are a major barrier to making this a reality, and this is something very few can control. It is up to others in society to help eliminate these barriers and help others lead more fulfilling and healthy lives. I believe with my passion for this, combined with my natural interest in engineering and problem solving, I can do my part to contribute to this reality. I am grateful for the MindFuel and CDL-Rockies Opportunities 2024 Scholarship for providing me with the means to reach this goal, and I look forward to continue making meaningful contributions to the health and lives of others."

Social Media

Summary of MindFuel Engagement

Social Media	**130,351**
Facebook & Instagram Impressions	*44,115*
X Impressions	*11,216*
Linkedin Impressions	*75,020*
User Experiences	**2.75M**
Pageviews	
Wonderville	*1.353M*
MindFuel	*59.9K*
Codingville	*1.344M*
YouTube Channel	
Views	*61,556*
Hours watched	*2,124*

Funding Partners

Canada

NSERC CRSNG

Funded by the Government of Canada's Community Services Recovery Fund | Canada

Transformer

Visionary in STEM Innovation

Hunter Family Foundation

cenovus ENERGY

RBC Foundation

Champion

Leader in STEM Innovation

ATB Financial

Anonymous Donor

Energizer

Partner in STEM Innovation

TC Energy

Drax Foundation

Schulich School of Engineering, University of Calgary

Government of Alberta

Collaborator

Friends of STEM Learning

TELUS Friendly Future Foundation

Honda Canada Foundation

Canada-Alberta Job Grant

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Partners in Science Education and Research

MindFuel Partners

3D Printed Homes Corporation
Aboriginaly Training Services
AC Robotics
Aimsio
Alberta Native Friendship Centres Association (ANFCA)
Amino Labs
Be Well Work Well
Bennett Milner Williams Consulting Ltd.
Berkeley Program
Bio-Treks – Ars Biotechnica
Calgary Egyptian Association
Calgary Innovation Coalition
Careers in Calgary (Calgary Economic Development)
Centre For Newcomers
Creative Destructive Labs – Rockies
Cybera
Cybermentor
Edmonton Unlimited
Exergy Solutions
Fort McMurray Economic Development & Tourism
FSO – Carizon Family Services
FSO – Community Family Service Ontario
FSO – Thrive Counseling
FSO – Family Services Ontario
(other FSOs from prior years)
Firecracker Strategies
FREDsense Technologies Corp.
Future Skills Centre (Toronto Metropolitan University)
Genome Alberta
Google
Immigrant Services Calgary
InceptionU
IndigeSTEAM
Innovate Calgary Life Sciences Innovation Hub
Innovate Calgary Social Innovation Hub
Junior Achievement Southern Alberta
Kerkhoff Technologies Inc.
Logics Academy
Mobility Quotient
Northern Alberta YMCA
Northland School Division
Newcomers Centre
Rainforest Alberta
Robogals
RoboGarden
St. Mary's University
Schulich Ignite
Synbridge
The Ungrin Lab
Tutoring Education Centre
University of British Columbia; Education and Technology
University of Calgary, Haskayne School of Business
University of Calgary, Hunter Hub for Entrepreneurial Thinking
University of Calgary, Schulich School of Engineering
University of Calgary, Werklund School of Education
University of Lethbridge
University of Yukon
yOil Tech
Yukonstruct

Partners in Science Education and Research

Indigenous Collaboration Partners

Communities and Organizations
Dene Tha' Nation
IndigeSTEAM Society
Indigenous Friends Association
Little Salmon Carmacks First Nation
Missabay Community School
Nokee Kwe Employment & Education Centre
Siksika Board of Education
Tsay Key Dene Nation

Alberta Native Friendship Centres Association (ANFCA)
Athabasca Native Friendship Centre
Hinton Friendship Centre Society
Miywasin Friendship Centre
Sagitawa Friendship Centre

Northland School Division
Bill Woodward School
Calling Lake School
Chipewyan Lakes School
Conklin Community School
Elizabeth School
Father R. Perin School
Gift Lake School
Grouard Northland School
J.F. Dion School
Mistassiniy School
Northland Online School
Paddle Prairie School
Susa Creek School

Industry Partners

Amino Labs
Aboriginal Training Services
ASTech Foundation
Careers in Calgary (Calgary Economic Development)
Cybera
FREDsense Technologies
Partners in Research

Gifts in Kind

Bennett Jones LLP
Cybera
DHR International
Google
Hunter Hub for Entrepreneurial Thinking
Kerkhoff Technologies Inc.
Microsoft
RoboGarden
Schulich Ignite
TELUS Spark

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