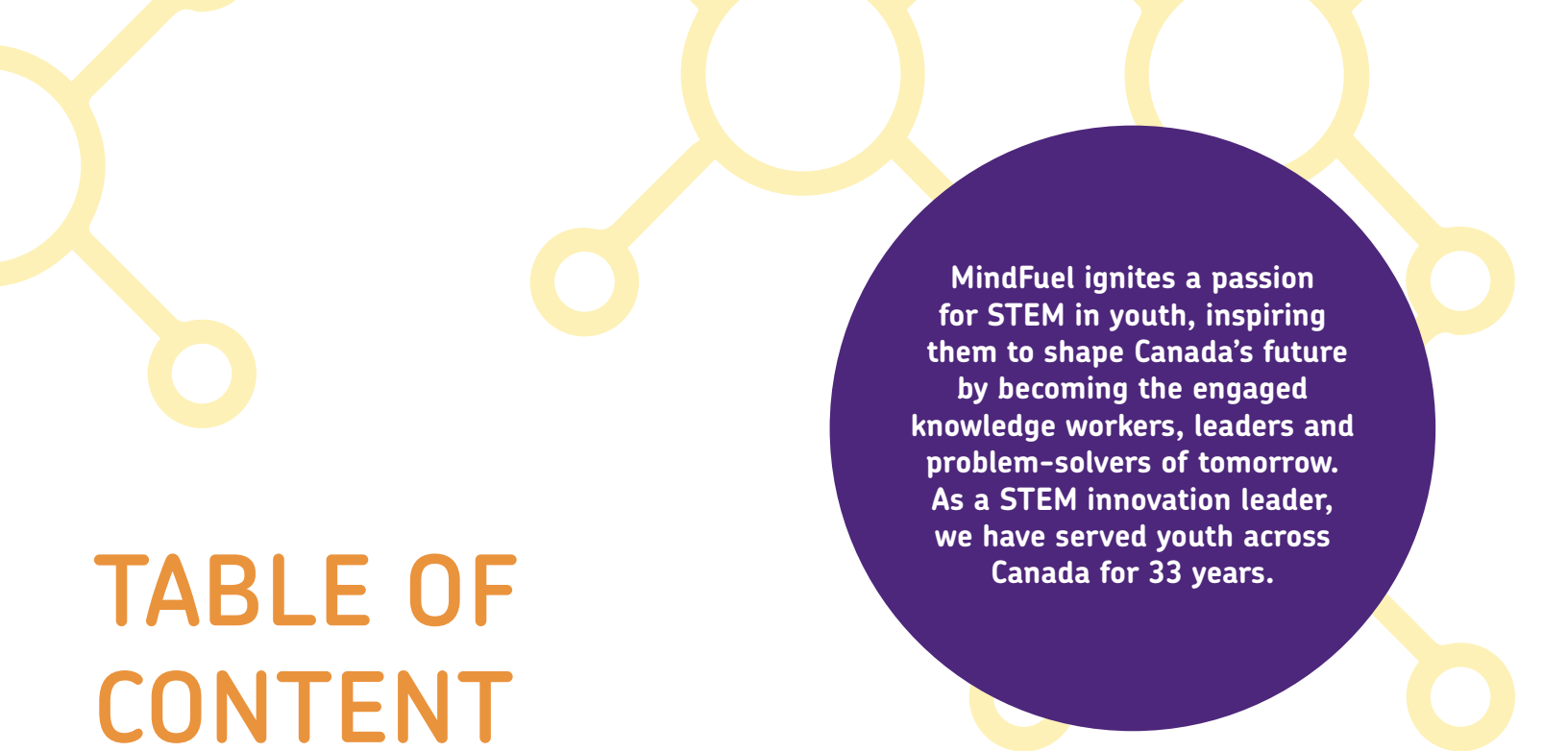# MindFuel™

SHAPING THE FUTURE OF STEM INNOVATION IN CANADA

2020/21 – 2021/22

MindFuel ignites a passion for STEM in youth, inspiring them to shape Canada's future by becoming the engaged knowledge workers, leaders and problem-solvers of tomorrow. As a STEM innovation leader, we have served youth across Canada for 33 years.

TABLE OF CONTENT

MESSAGE FROM THE CHAIR + CEO

As we reflect on the last two years, we're astounded by the teamwork, resilience, creative thinking and adaptability of our team as we navigated the COVID-19 pandemic. For more than 33 years, The MindFuel Foundation has been committed to curating curiosity, inspiring innovation and invigorating the minds of tomorrow, and despite the uncertainties and limitations of the pandemic, we successfully evolved many of our award-winning programs to continue serving students virtually.

In response to COVID-19 school closures, MindFuel rapidly mobilized two critical plans:

In our eLearning division, Wonderville Enterprises (WVE), we removed all paywalls to learning platforms to ensure our high in demand online programs were fully accessible to parents and teachers in support of STEM learning at home.

In our youth innovation division, Canada Tech Futures (CTF), we created an online collaboration hub to support our continued delivery of geekStarter/Tech Futures Challenge and Founders Fundamentals programs. Despite these challenges, MindFuel emerged from the pandemic stronger than ever.

Collectively, we are proud to call our youth and community champions MindFuelers. MindFuelers share the desire to move the needle forward to meaningfully address the challenges Canada faces to compete and flourish. They also believe in the practicality of hands-on experience, and the importance of empowering and engaging students through STEM education and entrepreneurialism.

While we may not have anticipated how the last two years would unfold, we're incredibly proud of the preparation and agility our team displayed to keep our programs running safely. The past two years were punctuated by several highlights, including:

- Through WVE, we reached over 2,000 communities in every province and territory in Canada, and have served tens of millions of teachers, students and parents since launch.

- We delivered 1 million learning sessions to K-12 students in Canada during this reporting period, including space and astronomy, robotics and coding, health sciences, STEM foundations, and more.

- Distributed WVE programming to more than 190 countries.

- Equipped rural, Indigenous, economically disadvantaged, and newcomer communities with resources, skills and knowledge training to spark a love of learning and inspire innovation in youth.

- We are looking forward to showcasing hundreds of projects and prototypes that have been produced by students in the coming months.

At MindFuel, we will continue to move the needle forward to meaningfully address Canada's challenges, allowing for innovation, diversification and STEM learning within all of our communities. Through the power of learning, we will build on the successes of the last two years to continue to develop nurturing learning environments across the country and inspire the next generation of STEM innovators.

Shahauna Siddiqui

– Shahauna Siddiqui, Chair

Cassy Weber

– Cassy Weber, CEO
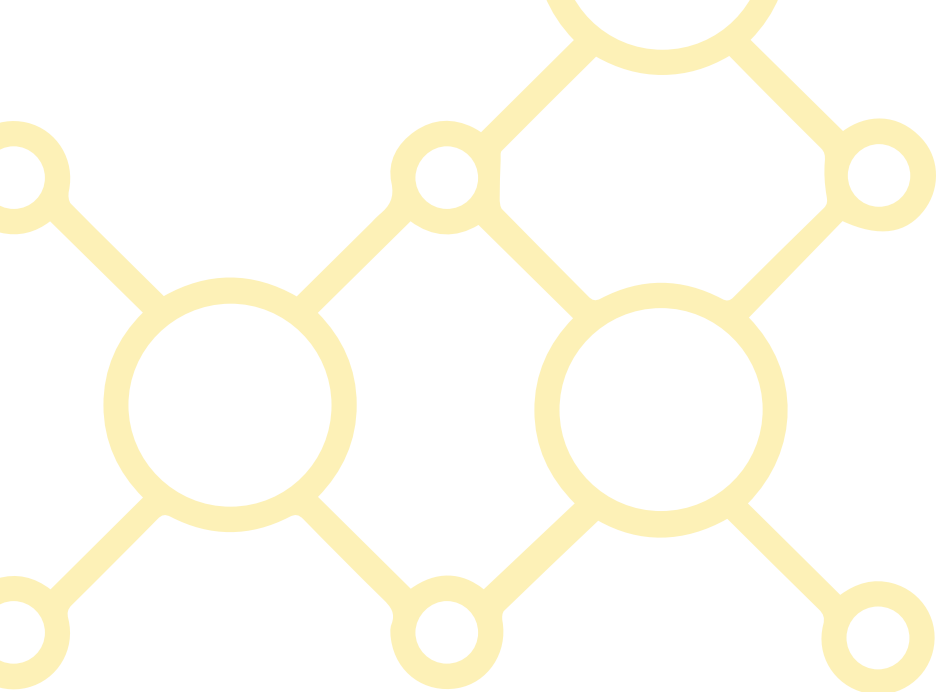
INTRODUCTION

Sparking imagination in the innovators of tomorrow and preparing them to thrive in future careers is our most important work. We inspire them to take risks, adopt a growth mindset, build real-world connections, become creative problem-solvers and think critically about the world around them.

Everyone who works with MindFuel – in schools and throughout our communities – plays a vital role in inspiring and engaging students and teachers in STEM education, through:

- ✅ Empowering and engaging students through STEM topics and entrepreneurialism

- ✅ Empowering teachers to ignite a passion for science exploration and discovery in their students

- ✅ Developing and delivering high-quality, innovative, scientifically-unbiased STEM-learning resources that connect to real-world scenarios and help students build problem-solving and critical thinking skills

- ✅ Increasing science literacy and curiosity, and sparking student interest in STEM topics

- ✅ Inspiring students to pursue STEM-related post-secondary programs and careers

HIGHLIGHTS FROM 2020-2022

SUMMARY OF MINDFUEL SOCIAL MEDIA: APRIL 1, 2020 – MARCH 31, 2022

MEDIA	TOTAL: APRIL 1, 2020 – MARCH 31, 2022
Total Social Media	1,230,593
Facebook Impressions	991,715
Twitter Impressions	217,472
LinkedIn Impressions	21,406
Total Websites Visits/Reach	29,472,489
Websites Pageviews	3,872,291
Google Ad Impressions	24,725,148
Google Grant Impressions	781,350
YouTube User Experiences (Views)	93,700
Total Traditional Media Reach (Print, Online News)	9,106,893

RADIO SPOTS

- **Feb 22, 2021:** MindFuel CEO, Cassy Weber on Hurley in the Morning

- **Oct 28, 2020:** Cassy Weber Interview – The Morning Show With Andrew Schultz and Sue Deyell

- **Aug 25, 2020:** MindFuel CEO Cassy Weber on CHQR 770 with Sue Deyell

- **Apr 3, 2020:** Cassy Weber, MindFuel CEO Interview on Kelly & Company

INTRODUCTION: SKILLS DEVELOPMENT AREA

SUMMARY OF SKILLS DEVELOPMENT METRICS:
APRIL 1, 2020 – MARCH 31, 2022

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 discovery. Our award-winning resources and programs are designed to help students engage in real-world problem-solving and innovation across numerous crucial fields, and reached 192 countries and more than 12,735 communities globally.

REAL-WORLD SKILLS DEVELOPMENT AREAS	STUDENTS REACHED APRIL 1, 2020 – MARCH 31, 2022
Climate change, biodiversity, energy and alternative energy, agriculture and environmental and water management science	504,497
STEM knowledge foundations (such as biology, physics, chemistry and earth sciences)	135,629
Innovation, emerging technology, design thinking, synthetic biology and nanotechnology, and entrepreneurialism	86,588
Health and related sciences	15,212
STEM Career Showcase and girls and women in STEM	6,065
Indigenous ways of knowing	2,200
Coding, computational thinking, robotics, information modeling, machine learning and artificial intelligence	40,651
Space and astronomy	5,881

Many thanks to our dedicated funding partners and donors.
We would not be the organization we are without their support.

With gratitude to all our supporters:
Government of Canada | Government of Alberta
Corporations and Foundations | Philanthropists | Donors

WONDERVILLE: OVERVIEW

wonderville™

Wonderville is an award-winning student engagement platform, which supports blended and interactive learning in the STEM classroom. Students explore the wonder of STEM by engaging in game-based learning, Augmented Reality (AR), hands-on activities, real-world videos and animations, hands-on experiments and STEM career showcases. These reliable, high-quality student activities are supplemented by lesson plans, assessment and professional learning resources for teachers.

STUDENT SURVEYS

- **74% of students** stated, *"I think learning science in this way is fun."*

- **73% of students** stated, *"I have an increased interest in science after using this Wonderville activity."*

STUDENT TESTIMONIALS

- *"Getting to play the games and watching the video helped me remember it better."*

- *"I liked it because I love to do things hands on."*

- *"Getting to play the games and watching the video helped me remember it better."*

TEACHER SURVEYS

- **83% of teachers** stated, "Wonderville is an engaging blended-learning platform."

- **89% of teachers** stated, "This Wonderville activity helped me enrich and enhance my ability to teach the science topic."

- **82% of teachers** stated, "I consider Wonderville to be an innovative teaching tool that I incorporated in my science classes."

TEACHER TESTIMONIALS

- *"Wonderville is an excellent tool to introduce or reinforce concepts. It can also make it fun for students during home study review."*

- *"The videos have added more about careers and real-life applications to my Science class. The games are also very interactive, information packed, and exciting."*

- *"Wonderville is an engaging, scientifically sound, accessible resource that I would recommend to other teachers."*
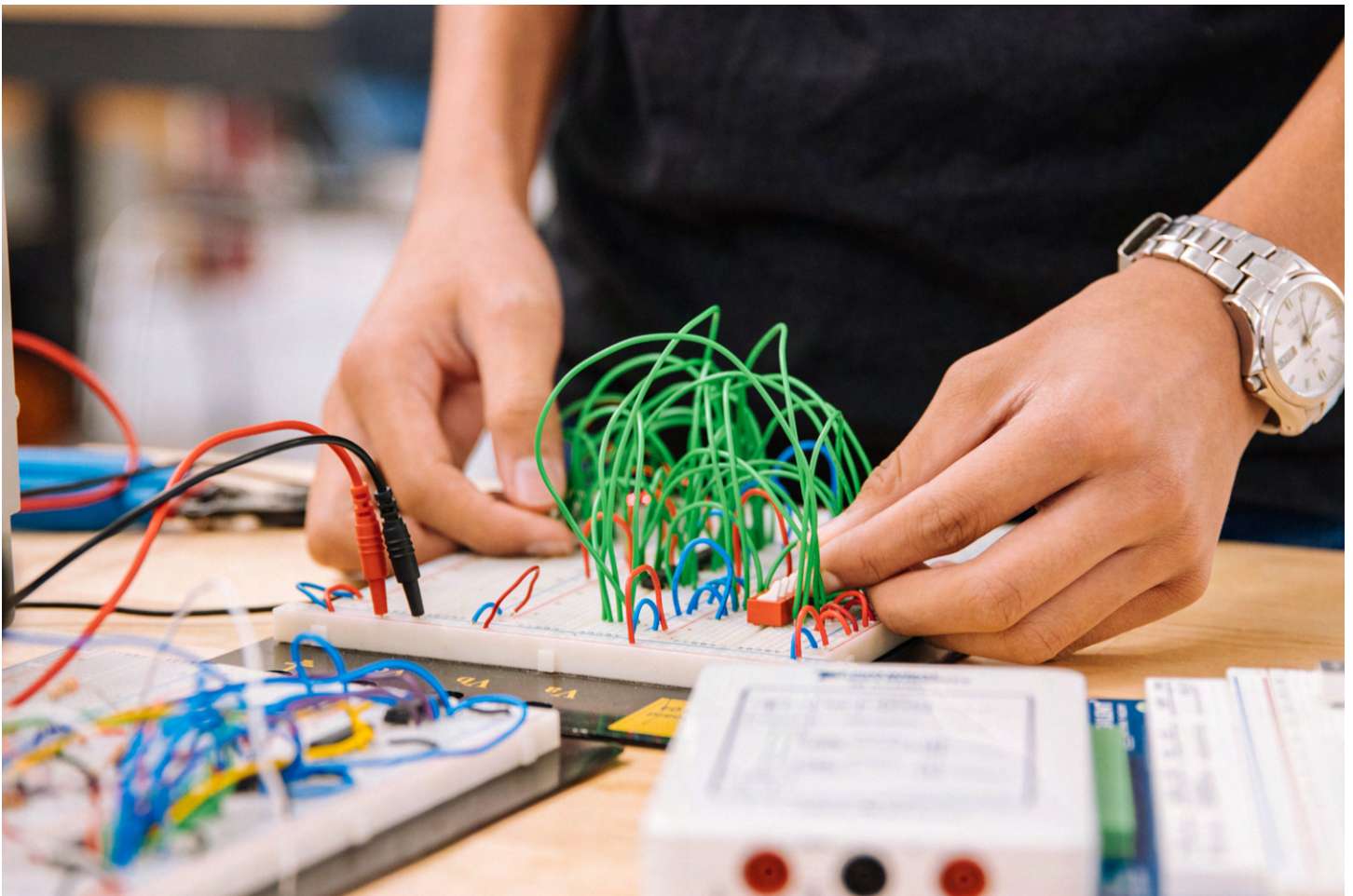
SUMMARY OF WONDERVILLE PROGRAM OUTCOMES (GLOBAL) K-12 STUDENTS:

APRIL 1, 2020 – MARCH 31, 2022

DISTRIBUTED TO 192 COUNTRIES WORLDWIDE

TOTAL STUDENT LEARNING SESSIONS

ENGLISH
4,980,689

ENGLISH & FRENCH
5,006,475
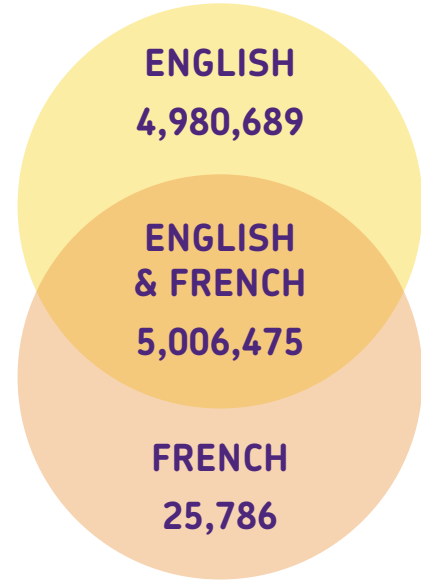
FRENCH
25,786

TOP TEN COUNTRIES

COUNTRY	2020-22 ENGLISH & FRENCH GLOBAL LEARNING SESSIONS
United States	2,110,445
Canada	980,858
India	725,427
Australia	90,042
United Kingdom	88,833
United Arab Emirates	87,353
Philippines	38,035
Indonesia	37,267
Turkey	35,792
Singapore	20,144

SUMMARY OF WONDERVILLE PROGRAM OUTCOMES (CANADA & US) K-12 STUDENTS:
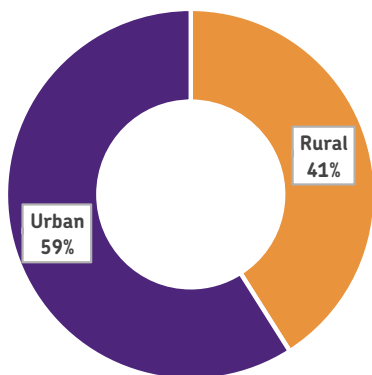
APRIL 1, 2020 – MARCH 31, 2022

10,779

Student Hours of Learning

980,858

Total Canada Learning Sessions (English & French)

English Learning Sessions

Rural 41%
Urban 59%
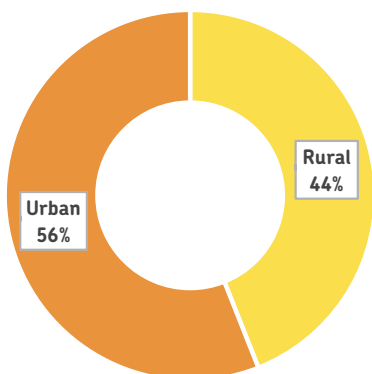
French Learning Sessions

Rural 44%
Urban 56%

WONDERVILLE REACH IN CANADA STUDENT LEARNING SESSIONS

CANADIAN PROVINCES & TERRITORIES	ENGLISH	FRENCH
Alberta	497,467	6,433
Ontario	378,990	1,760
British Columbia	48,450	5,228
Manitoba	10,702	375
Quebec	12,189	299
Saskatchewan	6,210	231
Nova Scotia	5,107	38
New Brunswick	3,497	67
Newfoundland and Labrador	1,639	45
Prince Edward Island	414	6
Yukon Territory	483	0
Northwest Territories	677	0
Nunavut	0	0
Region not set	548	3

WONDERVILLE REACH IN U.S. STUDENT LEARNING SESSIONS

TOP TEN STATES	ENGLISH
US Total	2,109,274
Texas	206,717
California	139,817
North Carolina	129,013
Pennsylvania	92,445
Illinois	103,851
Virginia	81,087
New York	113,561
New Jersey	83,173
Georgia	87,686
Maryland	54,096

CODINGVILLE: OVERVIEW

CODINGVILLE.CA

In January 2020 MindFuel launched Codingville, including student activities and professional learning resources to support students' learning of coding & digital skills. These high-quality, digital and hands-on activities & resources increased students' overall coding and digital skills, knowledge, literacy & aptitude; and helped them to be more prepared for high school & post-secondary studies in coding and computer science, and related future careers.

CANADA	2020-22
Total K-12 students	28,934
Total Hours of Student Learning	8,497
% Rural/Remote and Urban Learners (English)	32% Rural/Remote 68% Urban
% Female Students	53%
% Indigenous Students	2%
Total Teachers	1,535
Total Hours of Professional Learning	991

EMPOWERING DIGITAL LITERACY AND COMPUTATIONAL SOLUTIONING

- Codingville.ca, for teachers and students, developed in partnership with RoboGarden, a game-based coding and digital skills platform.

- Engaged Kindergarten – Grade 12 students & teachers in learning block-based and text-based coding, including Javascript, HTML, and CSS, through self-directed adventures and missions. With three distinctive journeys - beginners (blocked-based coding only), intermediate (block to text-based coding), and advanced (text-based coding only), students are supported to learn coding at their own pace.

- Developed and delivered teacher professional training on coding and digitals skills, including unplugged activities and lesson plans connected to real-world scenarios and experiences.

- The *Crack the Code Challenge* was developed and delivered to support coding and digital skills learning during COVID 19. It was open to all students across Canada, and consisted of three different rounds to three groupings each: ages 6-9, 10-13 & 14-18, and culminated with the development of an app or game.

78% of Codingville.ca student participants stated, "I am now more interested in pursuing high school/post-secondary studies in a STEM field".

79% of Codingville.ca student participants stated, "I now understand what coding is and I'm interested in continuing to learn about coding."

STUDENT TESTIMONIALS

- *"How CanCode impacted me is I learned how interesting coding can be. I never had experience in coding. When I first saw it I signed up and It was fun and interesting. After that I joined the second one too which was actually typing the code out. The second time I joined I learned which functions to use in order to do something. I also joined CanCode for the third time. Even though it was the same as the second session it expanded my knowledge and understanding of coding."*

- *"I found participating in CanCode to be fun, it provided a great foundation. I had a great time learning the basics of Coding to help Robo on his journey. Overall, coding was a fun experience and has encouraged me to learn more about coding"*

- *"By working on Codingville, I learned how to understand the basics of coding to apply in a post-secondary/high school field."*

Codingville Camp

87% of teachers stated, *"Through the Codingville digital training, I have increased my knowledge and confidence in teaching coding & digital skills."*

85% of teachers stated, *"The Codingville digital training enhanced my ability to teach/facilitate coding & digital skills through Codingville."*

TEACHER TESTIMONIALS

- *"It [Codingville] has given me lots of ideas and resources – and most importantly the motivation and confidence – for teaching coding and digital skills at our school." – Anonymous Teacher, Tsay Keh Dene Nation, BC*

- *"I had many students who struggled in the beginner level. They collaborated to achieve their goals and collectively built knowledge in how to code. I had one student in particular who was very stuck. After a few collaborative sessions, she went on to do the rest of the levels by herself." – Anonymous Teacher, Linden, AB*

- *"We've been using Codingville in class for the past few days and I'm happy to say that the students love it. They're fairly competitive so we put a leaderboard up before we start each session. Also, I'm proud to say that my only female student is loving the program." – Anonymous Teacher, Missabay Community School, ON*

CANADA TECH FUTURES: OVERVIEW

CANADA TECH FUTURES PROGRAM ENCOMPASSES FOUR PROGRAMS:

- **geekStarter/ Tech Futures Challenge:** Middle school, high school & post-secondary student teams focus on solving real-world problems using emerging STEM fields, such as synthetic biology, nanotechnology, robotics and coding. MindFuel provides project funding, skills building workshops, and mentorship support.

- **Intro to Robotics Professional Learning /Mini-challenges:** Hands-on skills development for educators to build and program circuits to monitor inputs and control outputs with code using the Arduino Integrated Development Environment software.

- **Career and Technology Studies (CTS) Innovation Bank:** For-credit course materials to teach ENT1010, ENT2010 and ENT3020 to high school students

- **Founders Fundamentals:** Youth, ages 18-30 create the foundations for their start-up idea, and develop their entrepreneurial mindset and skills. MindFuel provides micro-grants and mentorship support

Grades 5-12 and post-secondary students who participate in one of our programs build critical thinking skills as they develop solutions to real-world challenges through hands-on workshops and entrepreneurial-inspired events. These innovation focused and entrepreneurial, real-world programs break down barriers that prevent students from embracing emerging STEM fields in post-secondary education and careers, and foster a belief that we are all innovators and problem-solvers who can contribute to the creation of a better future.

SUMMARY OF CANADA TECH FUTURES PROGRAM OVERALL OUTCOMES
APRIL 1, 2020 – MARCH 31, 2022

CTF – ALL PROGRAMS COLLATED	2020-21	2021-22	2020-22 TOTAL
Students Engaged	219	352	571
Total Hours of Student Learning	4,729	7,275	12,004
% Rural/Remote and % Urban Learners (English)	40% Rural/Remote 60% Urban	49% Rural/Remote 51% Urban	46% Rural/Remote 54% Urban
% Female Students	51%	26%	34%
% Indigenous Students	0%	23%	23%
Total Teachers/Team Advisors	120	173	293
Total Hours of Professional Learning	414	886	1,300
Total Mentors	34	64	98
Total Hours Of Mentor Time	334	814	1,148
Total Subject Matter Experts/Judges	35	44	79
Total Hours Of Subject Matter Experts/Judges	200	250	450

GEEKSTARTER/TECH FUTURES CHALLENGE: OVERVIEW

The Tech Futures Challenge (TFC) evolved in 2020 from the learnings and successes of MindFuel's geekStarter program, and offered a creative and viable response to the COVID-19 pandemic. TFC is an enrichment program that engages middle & high-school and collegiate students in identifying impactful real-world sustainability challenges, and developing and prototyping innovative solutions through emerging STEM fields based in coding, automation & robotics, bioengineering and synthetic biology. Further developed and enhanced by several online components including the newly launched MindFuel Collaboration Platform, this project-based learning program encourages design thinking, collaborative problem solving and critical thinking , and includes skills building events and workshops, mentorship with industry experts, and networking with peers online.

GS/TFC METRICS	2020-21	2021-22	2020-22 TOTAL
Total Middle/High School Teams	10	9	19
Ms/Hs Students Engaged	135	63	198
Total Hours Of Ms/Hs Student Learning	3,046	3,660	6,706
Total Collegiate Teams	3	4	7
Collegiate Students Engaged	18	38	56
Total Hours of Collegiate Student Learning	406	1,336	1,742
% Rural/Remote and Urban Learners (All Students/Teams)	20% Rural/Remote 80% Urban	20% Rural/Remote 80% Urban	20% Rural/Remote 80% Urban
% Female Students	52%	58%	55%
% Indigenous Students	N/A	5%	5%

EMPOWERING STEM THINKING

- Engaged student-teams in finding and solving real-world challenges and building solutions based in emerging STEM fields that could be commercialized.

- Supported teams and their real-world research-based projects through hands-on skill-building workshops & events, project resources and mentorship.

- Continued to build and nurture connections between geekStarter/TFC teams and industry and academia subject matter experts to expand students' knowledge, direct experience and understanding of STEM industries and possible careers.

GEEKSTARTER/TECH FUTURES CHALLENGE: PROJECTS

2020 GEEKSTARTER TEAM PROJECTS
Five of the nine middle/high school geekStarter teams (that were included in the 2019-20 annual report) impressively continued with their projects - 3 synbio and 2 robotics - while adapting to the unknown realities of COVID-19. There were no collegiate geekStarter teams in 2020 . Three collegiate teams had initially expressed interest in participating. However, due to COVID-19, a new program cycle for collegiate teams was not started.

2021 TECH FUTURES CHALLENGE (TFC) TEAM PROJECTS

Despite the uncertainties and limitations of the COVID-19 pandemic, MindFuel successfully evolved its geekStarter program into the Tech Futures Challenge, as part of Canada Tech Futures.

2021 Tech Futures Challenge was delivered exclusively online and supported a total of 93 youth and 14 different projects and teams, 7 of which were new.

- **The Adventioneers, Canmore, AB:** Optimizing the manufacturing process for metal fasteners to reduce waste (tech focus: AI generative design)

- **Bill Nye, Calgary, AB:** Building a water purification system using household materials (tech focus: renewables)

- **Cool Cubers, Calgary, AB:** Designing a naturally powered machine for turning leftover food into healthy items (tech focus: green tech & robotics)

- **Double A Geniuses, Calgary, AB:** Building self-charging battery for electric cars (tech focus: Engineering)

- **Lethbridge High-School iGEM, Lethbridge, AB:** Building a solar-powered robot that targets knapweed with an RNA herbicide (tech focus: robotics & synthetic biology)

- **Net zerO HEROES, Canmore, AB:** Building an event planning app that supports sustainability (tech focus: coding & data science)

STUDENT SURVEYS

- **84% of students** stated, *"By participating in this program & competition, I am improving my knowledge, skills and self-confidence in STEM."* (Project Prototype Competition & Showcase Survey, May 2021)

- **86% of students** stated, *"I plan to (continue to) study STEM at a post-secondary institution."* (Post-TFC Student Survey, May 2021)

- **87% of students** stated, *"I am interested in pursuing a career in STEM."* (Post-TFC Student Survey, May 2021)

- **84% of students** stated, *"I believe this team project work will support my future career in STEM and/or entrepreneurship."* (Post-TFC Student Survey, May 2021)

- **96% of students** stated, *"I am finding the design thinking process helpful/valuable in developing real-world project ideas and solutions."* (Project Pitch Competition & Showcase Survey, Feb. 2022)

- **93% of students** stated, *"My knowledge, skills and confidence in STEM are increasing."* (Project Pitch Competition & Showcase Survey, Feb. 2022)

- **Oviita iGEM UCalgary, Calgary, AB:** Designing a sustainable approach to combat vitamin A deficiency with an engineered yeast nutrient (tech focus: synthetic biology)

- **Renert School iGEM. Calgary, AB:** Developing a biosensor for early detection and monitoring of cat diabetes (tech focus: synthetic biology)

- **SGS St. Albert, St. Albert, AB:** Developing teflon shipping bags for more environmentally friendly packaging (tech focus: chemical engineering)

- **Solaraya UCalgary, Calgary, AB:** Building a solar-powered water purification device to clean up water in developing countries near the equator (tech focus: renewable energy & mechanical engineering)

- **TKSmart, Vancouver, BC:** Developing an app IntelliPark to help drivers find open parking spots (tech focus: IoT & AI)

- **ULethbridge iGEM, Lethbridge, AB:** Developing a targeted approach to tackle pollution caused by blue-green algae (tech focus: synthetic biology)

- **United Robotics of Lacombe, Lacombe, AB:** Building a mini-satellite app to detect and prevent forest fires (tech focus: robotics)

- **Siksika Nation Robotics, Siksika Nation, AB:** Building a prosthetic arm that can be controlled by the user's brain. (tech focus: robotics)

2022 TFC TEAM PROJECTS – PART 1 – PROJECT PITCH

- **Canmore Collegiate High School Synthetic Biology – Canmore, AB:** Developing a portable easy-to-operate bioindicator test kit for cyanotoxins in water

- **The Deciphering Wolves – Chateh, AB:** Building an automated flood alert system

- **E-Former – Rundle – Calgary, AB:** Building a phone app for consumers to make informed decisions based on the environmental & social impact of consumer products

- **GreenEarth – Toronto, ON:** Building a smart transportation phone app

STUDENT TESTIMONIALS

"

MindFuel's Tech Futures Challenge was the perfect mix of mentorship, motivation, and engagement, with an emphasis on solving sustainability problems to help make the world better. Thanks so much for sparking my enthusiasm and helping me focus on creativity and high-tech entrepreneurship!"

(Anonymous student participant, TFC 2021)

"

This was a great opportunity for my teammates and I to be able to meet and talk with mentors who can support us and provide us with great resources throughout our project."

(Anonymous student, TFC Post-program survey, 2021)

"

It's giving us an opportunity to be immersed in a world of people and groups that are trying to solve real-world problems with their expertise, (and) it's encouraging and also lighting a bit of a fire in all of us to be competitive and bring the best version of ourselves and our projects that we can."

(Anonymous student participant, TFC Project Pitch Showcase, Feb 2022)

- **Renert High School – Calgary, AB:** Genetically engineer a more efficient way to harness solar energy

- **Lethbridge High School iGEM – Lethbridge, AB:** Developing an eco-friendly plant-based air freshener

- **University of Lethbridge iGEM – Lethbridge, AB:** Using genetically engineered phage-like particles to combat blue-green algae bloom

- **Beetector – University of Calgary iGEM – Calgary, AB:** Building biosensors for detecting American Foulbrood bacterial infections in honey bees

- **Trojan Horse – University of Calgary iGEM – Calgary, AB:** Improving the method of diagnosis of bacterial infections in prosthetic joints

- **CelluCoat – University of Calgary iGEM – Calgary, AB:** Developing an edible preservative coating for fruit & vegetables to reduce food waste

- **Siksika High School Robotics – Siksika Nation, AB:** Automating algae growth for carbon sequestration to offset carbon emissions

- **MMSN – Rundle – Calgary, AB:** Building an eco-friendly transparent solar panel that can be used as a window

- **Food Flip – Rundle – Calgary, AB:** Building a fresh produce exchange app to reduce food waste

MENTOR/JUDGE SURVEYS
(TFC Project Prototype Showcase, May 2021)

- **97% of judges** stated, *"The Project Prototype program and competition increase youth's engagement and interest in STEM."*

- **94% of judges** stated, *"Participating in Tech Futures Challenge can inspire students to pursue a post-secondary STEM program."*

- **97% of judges** stated, *"The resources and support offered through this program and competition provide youth with deep/impactful learning opportunities."*

MENTOR/JUDGE TESTIMONIALS

"I really value supporting experiential, project-based learning at various stages of students' development because it allows them to develop skills that are not necessarily included in the primary curriculum, while developing resilience and perseverance."

- Anonymous judge, TFC Prototype Showcase, 2021

"My experience was spectacular. Seeing how students are leveraging digital media and online conferencing platforms to deliver pitches is a testament to how MindFuel is supporting 21st century learning and digital literacy in addition to supporting project-based learning."

- Anonymous judge, TFC Pitch Showcase, Feb. 2022

"It's so exciting to see such innovation from the participants of the Tech Futures Challenge. The Challenge has given these kids the opportunity to explore STEM topics far beyond the scope of classroom learning and apply them to the real-world problems they are most passionate about. However, it's more than just a self-directed science project. The Tech Futures Challenge helps participants to develop their ideas into workable, scalable prototypes that could change the world. They get access to mentors and industry experts to help them bring their ideas to the leading edge of innovation. The Challenge is an amazing opportunity for students to get started with STEM."

- Anonymous Judge & Mentor, TFC Prototype Showcase, 2021

TEACHER PROFESSIONAL LEARNING

Launched in 2018, MindFuel's professional learning workshops offer Grades 5-12 STEAM educators support in their professional development through impactful teaching practices, informative presentations and engaging roundtable discussions; as well as STEM skills development through hands-on activities.

PROFESSIONAL LEARNING WORKSHOP METRICS	2020-21	2021-22	2020-22 TOTAL
Total Teacher Professional Learning Workshops	4	16	20
Total Teachers Supported	97	143	240
Total Hours of Professional Learning	194	541	735
% Rural/Remote and Urban	100% Urban	55% Rural/Remote and Northern 45% Urban	67% Rural/Remote and Northern 33% Urban

TEACHER / EDUCATOR SURVEYS

- **100% of teachers/educators agreed**, *"The learnings from this workshop will help me to support youth in building STEM skills relevant to the real-world."* (Introduction to Robotics Part 1 Professional Learning Workshop Survey, Jan 2022)

- **95% of teachers/educators agreed**, *"The Introduction to Robotics Part 2 workshop increased my interest in this STEM topic."* (Introduction to Robotics Part 2 Professional Learning Workshop Survey, Jan 2022)

- **83% of teachers/educators agreed**, *"Through this workshop, I have increased my understanding of Indigenous perspectives in the STEM classroom."* (Indigenous Perspectives in the STEM Classroom PL Workshop Survey, May 2021)

- **80% of teachers/educators agreed**, *"I will be able to incorporate indigenous perspectives & activities into more of my STEM lessons."* Indigenous Perspectives in the STEM Classroom PL Workshop Survey, May 2021

EMPOWERING STEM THINKING

- Developed and delivered a two part "Introduction to Robotics" professional learning workshop focusing on building smart circuits and writing code to control outputs based on input signals to five Indigenous communities in AB, BC and YT. Teachers immersed in STEM skills development that they could implement into their own classrooms, learning directly from subject matter experts.

- Created seven content videos and nine editable resources incorporating concepts from the professional learning workshops for educators to use and adapt to suit their classroom needs.

- Co-developed and co-hosted two professional learning workshops with educators and community members from the Siksika Board of Education on incorporating Indigenous ways of knowing, teaching and learning into the STEM classroom. Teachers practiced storytelling using science and math curriculum outcomes, and learned about using the medicine wheel as a problem solving tool for climate change.

> "
> *There really aren't words to convey the impact this session had on me as a person and as an educator. It was amazing and I feel like I've learned things that I can instantly apply and use."*
>
> *– Anonymous Teacher, Professional Learning Workshop, Indigenous Perspectives in the STEM Classroom: Storytelling & STEM, 2021*

> "
> *I had very limited knowledge in this area and it really helped to introduce me to the possibilities of how it might be used in the classroom. It took me from knowing very little to feeling like I could acquire the skills to successfully teach this in the future."*
>
> *– Anonymous Pedagogical Supervisor, Professional Learning Workshop, Introduction to Robotics Part 2, 2022*

Virtual "Intro to Robotics" Class

FOUNDER FUNDAMENTALS

Launched in 2021, Founders Fundamentals is an online workshop series that engages youth, ages 18-30 in bringing their innovative ideas to life. With a focus on the early pre-revenue start-up stage, youth create the foundations of their business. Through the weekly independent activities and group sessions over 7 weeks, youth develop their entrepreneurial mindset and skills from communication, marketing, and organizational skills to critical thinking, problem solving and creative thinking skills. They are also introduced to tangible and practical business practices, including supply chain management and customer discovery practices.

FOUNDERS FUNDAMENTALS METRICS	2020-21	2021-22	2020-22 TOTAL
Total Youth Engaged (18-30)	N/A	15	15
Total Participants	N/A	27	27
Total Hours of Learning	N/A	421	421
% Rural/Remote and Urban	N/A	100% Urban	100% Urban
% Female Youth	N/A	19%	19%
% Indigenous Youth	N/A	0%	0%
% Visible Minority/Newcomers Youth	N/A	30%	30%

90%

of participants stated, *"The delivery of the content and topics was engaging."*

80%

of participants stated, *"The weekly videos and independent activities were clear, easy to follow, and manageable to complete."*

93%

of participants stated, *"The Guest Founder segments in the group sessions were interesting and inspiring."*

EMPOWERING STEM THINKING

- Designed and developed an online workshop series with information videos and step-by-step start-up resources and activities based on practical entrepreneurial practices and innovative STEM design thinking process.

- 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 youth and their start-up ideas through hands-on independent activities, group workshops, mentoring sessions with founders and industry experts, micro-grants, and a culminating showcase.

FOUNDERS FUNDAMENTALS PARTICIPANT TESTIMONIALS – COHORT 1 AND COHORT 2 (STARTED)

- *"Prior to Founders Fundamentals, I never thought of a process for starting a business, I was just going to 'do', so this was definitely a steep learning curve that allowed me to identify a step by step process that embraced safe risk and a sense of "I can do It'."*

- *"The program is well designed and helps people, who are starting a business, to line things up correctly so they are ready to hit the ground running once the program is complete."*

- *"By participating in Founders Fundamentals I gained a clear understanding of what my startup is about and how to go about it, in addition to some funds to help go through it. Also the connection and people that can help and guide me in the future to make it better and more impactful."*

IGNITION PACK

Ignition Pack is a popular program and was developed as a permanent resource that transforms science classes by combining the best of 21st century learning, hands-on resources and digital components. Aligned with the Alberta program of studies, students learn fundamental science concepts through exploration, experimentation and critical thinking. Note, as of 2021/22, the Ignition Pack program was discontinued.

SUMMARY OF IGNITION PACK OVERALL OUTCOMES (SINCE LAUNCH):

239 KITS DISTRIBUTED

68 DIGITAL RESOURCES DISTRIBUTED (COVID-19)

DISTRIBUTED TO ALBERTA SCHOOLS WITHIN 47 COMMUNITIES

IGNITION PACK METRICS	2020-21	2021-22	2020-22 TOTAL
Total Students Engaged	6,969	3,531	10,500
Total Hours of Student Learning	174,225	88,263	262,488
% Rural/Remote and Urban	66% Rural 34% Urban	66% Rural 34% Urban	66% Rural 34% Urban
% Female Students	50%	50%	50%
% Indigenous Students	3%	3%	3%

EMPOWERING STEM THINKING

- Increase students' engagement and experience with complex science concepts through inspiring Alberta-based real-world examples and fun, hands-on activities.

- Provide teachers with high-quality, blended learning resources and detailed lesson plans that enable them to teach a complete unit of science.

STUDENT SURVEYS

81% of students stated, *"I learned something more about this science topic."*

75% of students stated, *"The Ignition Pack makes me more knowledgeable about science."*

STUDENT TESTIMONIALS (GRADE 5 STUDENTS, WETLAND IGNITION PACK USERS)

- *"I really liked how we got to build our own wetland. It was easy to understand and a new way to learn science. "*

- *"I had no idea that wetland science is so interesting! I love the Ignition Pack. It lets teachers more effectively and students can be more engaged, learn, and have fun at the same time! I will probably go to university and study the wetlands because of the Ignition Pack!."*

TEACHER SURVEYS

89% of teachers stated, *"Ignition Pack helped make my science classes more interesting and engaging for my students."*

93% of teachers stated, *"Ignition Pack helped me enrich and enhance my ability to teach the science topic."*

TEACHER TESTIMONIALS

"The hands-on Boreal Forest Monitoring activity was a lot of fun for the students and a great way to apply their skills."

–Grade 7 Science Teacher, Interactions & Ecosystems

"The videos are so humorous, the students are hooked from the start. Then when it comes time to build the wetlands, they cannot wait to put together everything they have learned. As a teacher, I also generally appreciate how much time was put into making some of the activities cross-curricular so that I can use them to meet Language Arts and Social Studies outcomes as well."

– Grade 5 Science Teacher, Wetlands Ignition Pack user

"The wetland unit covered each curriculum objective clearly and completely. It is the most comprehensive, useful, convenient and complete science unit I have ever accessed. It is fantastic. The pictures and materials supplied are very excellent and had my students' interest for the entire unit as we used them for various activities. I have recommended this excellent resource to any teacher I talk to who is asking for science resources that are teacher friendly."

– Grade 5 teacher, Wetland Ecosystems Ignition Pack user

SCHOLARSHIP RECIPIENTS

MindFuel and ASTech-Growsafe Systems Founders scholarships are an investment in Alberta's future. Supported through donations by Alison Sunstrum and Camille Huisma, MindFuel offers two scholarships awarded to students graduating from Alberta high schools and entering their first year of STEM-related studies at an accredited Alberta post-secondary institution (university, college, or polytechnic).

2020 ASTECH-GROWSAFE SYSTEMS SCHOLARSHIP RECIPIENT

WINNER: JOANNE CAI

- **Graduated from Archbishop MacDonald Catholic High School (Edmonton)**
- **Studying at University of Alberta**
- **Goal: to become a biomedical engineer to create prosthetics**

"As I enter my first year of engineering at the University of Alberta, I am beyond grateful to have received a scholarship through Mindfuel and the ASTech Foundation. This scholarship has given me not only financial support, but also encouragement and confidence in a field where myself and other women are underrepresented. Mindfuel and ASTech have intersected science and social needs within our community to provide this opportunity to me, and I cannot wait to work towards a better future alongside both of these organizations."

2021 ASTECH-GROWSAFE SYSTEMS SCHOLARSHIP RECIPIENT

WINNER: ELIJAH AGENA

- **Graduated from Archbishop MacDonald Catholic High School (Edmonton)**
- **Studying at University of Alberta**
- **Goal: to become an engineer with focus on environmental stewardship**

"I am truly honoured to be presented with the MindFuel and ASTech Scholarship Award as I embark on my engineering studies at the University of Alberta! MindFuel and ASTech's support empowers me to pursue, through my studies and extracurricular work, my interests in sustainable development and environmental stewardship. I hope to someday contribute to engineering a solution to eliminate microplastics pollution so our wildlife and our food chain can be maintained and my vision for the future achieved. I am so grateful to the ASTech-GrowSafe Systems Founders and MindFuel for this wonderful opportunity and I am excited for the journey of becoming a future engineer!"

BOARD MEMBERS & STAFF

BOARD OF DIRECTORS

James (Jim) K. Gray
Founding and Honourary Chair

Shahauna Siddiqui
Chair
Partner, DHR International

Cassy Weber
CEO, MindFuel

Sherida German
Senior Vice President, Corporate Communications,
Edelman Canada

Wafa Kadri
Manager, Social Investment
Community & Indigenous Affairs
Sustainability & Stakeholder Engagement, Cenovus

Peter Kinash
CFO & COO, India, Replicon

Raja Panwar
Alberta Education (Retired)

Bill Peters
President, Bill Peters Consulting

James Pettigrew
Corporate Director

Daniel Semmens
Vice President and Head of AI, ATB Financial

Georgine Ulmer
President, Churchill Strategies

Stephen Burns
Legal Counsel, Bennett Jones LLP

MINDFUEL TEAM

Cassy Weber
Chief Executive Officer

Alma Abugov
Director, Partners

Sabina Bauer Lewis
Director, Programs

Brad Bill
Executive Assistant/Office
Administrator

Gwen Cowan
Finance & Administration Support

Bogdan Georgescu
Developer

Danielle Ings
Education Specialist

Bruce Johnston
Interim CTO

Micah Louison
Program Development & Outreach
Coordinator

Ian Martin
QA Assurance

Freeda Mulenga
Director, Finance & Administration

Magdalena Pop
Project Manager

Callista Rothwell
Community Outreach Coordinator

Ric Resch
Director, Sales & Marketing

Kiran Sandhu
Education Specialist

Sue Stevenson Brown
Senior Advisor, Resource
Development

Afif Tabish
Digital Media

Ben Thorne
MarCom Coordinator

SUPPORTERS & PARTNERS

SUPPORTERS

Government

Government of Alberta

Government of Canada, ISED

NSERC PromoScience

Western Economic Diversification (PrairiesCan)

Transformer

Future Skills Centre

Syncrude (operated by Suncor)

Champion

Anonymous Donor

Hunter Family Foundation

Energizer

RBC Foundation

Schulich School of Engineering

Collaborator

ATB Financial

AltaML

Canada – Alberta Job Grant

Edmonton Community Foundation

Lou MacEachern

Mobility Quotient

TELUS Friendly Future Foundation

TD Friends of the Environment Foundation

PARTNERS

Learning Partners

3D Printed Homes (SBL)

AC Robotics (SBL)

Agents of Discovery

Aimsio (SBL)

Amino Labs

Berkeley Program

Bio-Treks – Ars Biotechnica

Cybermentor

EvolveU

Exergy Solutions

InceptionU

Innovate Canmore

First Robotics Western Canada

Junior Achievement Southern Alberta

Logics Academy

Mobility Quotient

Northlands School Division

Platform Calgary

Rainforest Alberta

RoboGarden

Schulich Ignite

Synbridge

Tacit Edge

TELUS Spark

TELUS World of Science

Tutoring Education Centre

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

Community Partners

Alberta Native Friendship Centres Association (ANFCA)

Algoma Family Services

ASTech Foundation

Calgary Egyptian Association

Calgary Immigrant Services

Carizon Family and Social Services

Centre for Newcomers

Community Family Services of Ontario

Cybera

Family Service Ontario

Firecracker Strategies

FREDsense Technologies

Immigrant Services Calgary

Indigenous community, Northern Alberta

Indigenous community, Northern BC

Indigenous community, Southern Alberta

Indigenous community, Yukon Territory

Missabay First Nation

Thrive Counselling

Yukonstruct

YMCA Northern Alberta

Gifts In-Kind

Bennett Jones LLP

Cybera

DHR International

Google

University of Calgary, Hunter Hub for Entrepreneurial Thinking

Kerkhoff Technologies Inc.

Microsoft

PwC

RoboGarden

Tutoring Education Centre

Donors

Alison Sunstrum (GrowSafe Systems Founders Scholarship)

Alma Abugov via CanadaHelps

Amal Saifeddine

Amanda Matchett

Brent Bawel

CanadaHelps

CanadaHelps matched by Gore Mutual

Cassy Weber via CanadaHelps

Colleen Burns

Creative Cycle via CanadaHelps

Doug & Charlotte Annable via CanadaHelps

Freeda Mulenga via CanadaHelps

Irene Rose

James Gray

Justin Watson via CanadaHelps

Matched donation from Gore Mutual

NAME

Neil Camarta via CanadaHelps

Paidamoyo Kangai

Paul Johnston via CanadaHelps

Paypal Giving Fund

Peter Kinash via CanadaHelps

Pradeep Soundararajan

Ric Resch via CanadaHelps

Sabina Bauer Lewis via CanadaHelps

Sharon Chesrown via CanadaHelps

Wafa Kadri

Wazoo Enterprises via CanadaHelps

Willian Lytle

Suite 260, 3512 33 Street NW
Calgary Alberta T2L 2A6

P: 403.220.0077
Toll-free: 1-833-EDU-STEM (338-7836)
E: info@mindfuel.ca

Charity registered as
The MindFuel Foundation,
formerly the Science Alberta Foundation

Registration Number: 132657065 RR0001
www.mindfuel.ca