MindFuel™

BE A MINDFUELER – SHAPING THE FUTURE OF YOUTH INNOVATION

2022-23 ANNUAL REPORT

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SHAPING THE FUTURE OF YOUTH

MindFuel is helping to build a stronger Canada, one that is more inclusive by supporting initiatives focusing on education, innovation, entrepreneurship, social development and environmental sustainability.

OUR COMMITMENTS:

Fostering Innovation in Education: MindFuel has a strong commitment to fostering innovation in education. 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 and resources. Through hands-on learning experiences, MindFuel sparks curiosity, encourages active participation and helps young minds unlock their full potential.

Promoting STEM Education: MindFuel emphasizes the importance of science, technology, engineering and mathematics (STEM) as foundational to building a strong and innovative workforce. As a curriculum and learning expert, MindFuel develops programs that 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 is committed to integrating Indigenous perspectives and content into its programing. 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 sustainable future.

MESSAGE FROM THE CHAIR + CEO

Thank you for your continued commitment and support of MindFuel Foundation Canada over the past year. As we conclude our 2022/23 fiscal year, we are grateful for our community of supporters who have worked with us to ensure Canadian youth have access to STEM innovation and educational opportunities both through our eLearning division, Wonderville Enterprises, as well as our youth innovation division, Canada Tech Futures.

We are proud of our team along with hundreds of community collaborators who have continued to bring their best to deliver our award-winning programs, helping youth to thrive, and to make Canada a stronger player in global innovation.

However, our work is far from done. Through a 10-year longitudinal study, we have identified that a broad segment of our society still feels they don't have access to STEM learning or innovation opportunities, so one of our key priorities has been facilitating access to our programs and services to a broader range of youth.

We firmly believe that STEM futures should be available to all, and our efforts to engage with specific groups such Indigenous students, racialized youth, new Canadians, the LGBTQIA2S+ community and girls and women continues to gain momentum. For example, in our 2022-2023 Tech Futures Challenge program, 50% of students identified as female, 57% self-identified as Indigenous, 8% identified as Black or People of Colour, and 7% identified as Newcomers to Canada. This is a good start, but there is much more work to do in order to make Canada's innovation sector accessible to the 6.4 million youth (aged 30 and under) who fall into the above populations.

In the pages of this report, you'll read about some significant highlights from the past year, including:

- Our celebration of *100 Days of Youth Innovation*, where we showcased more than 100 changemakers tied to our organization.
- We achieved more than 1 million learning sessions this past year in our E-learning division.
- We counted more than 64,000 hours of student learning and training in coding and digital literacy through Codingville.
- We engaged more than 1,200 youth innovators in our immersive Canada Tech Futures Program.

Fueling the next generation of STEM innovators is in our hands. We often ask ourselves what it takes to be a "MindFueler", and the answer is simple: It's having the drive, curiosity and desire to make our country better than it is today, by applying innovation and technology in a welcoming and supportive environment.

Thank you for being a MindFueler with us – we couldn't do it without you!

- Shahauna Siddiqui, Chair

Shahauna Siddiqui

- Cassy Weber, CEO

Cassy Weber

INTRODUCTION

MindFuel ignites a passion for STEM innovation in youth, inspiring them to shape our future by becoming the engaged knowledge workers, leaders and problem-solvers of tomorrow. Through our work, and in support of our mission, we have served youth across Canada for 34 years.

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

To all of our partners, thank you for your support and contributions in helping to build Canada's technology futures. Together, we accomplish the following critical outcomes:

- Empowering and engaging youth through STEM innovation and entrepreneurialism.
- Empowering teachers to ignite a passion for science exploration and discovery in their students.
- Developing and delivering high-quality, innovative, scientifically accurate 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.

100 DAYS OF YOUTH INNOVATION

During the year, MindFuel celebrated *100 Days of Youth Innovation* and specifically, 10 years of programming focused on building Canada's Tech Futures. Through the first 10 years of our youth innovation programming, each team identified a real world problem, and then over the course of one or more program cycles, developed prototypes as solutions to these real world problems, which generally fall into clean-tech, bio-tech, health-tech and agri-tech. And WOW, was there lots to celebrate! Over five thousand youth innovators (aged 16 to 26) have participated in our programming, and through team-based project learning, they have developed amazing innovations! We were thrilled to recognize youth teams who developed projects using synthetic biology, nanotechnology, computational solutioning and robotics and we give thanks for deep insights into their innovation journey.

100 Days of Youth Innovation highlighted the ingenuity, resilience and limitless potential of youth teams. We also gathered critical insights through interviews with alumni who are now entrepreneurs, educators, funding partners and other key community builders who shared their perspectives on what innovation means and why investment into youth innovation is critical to Canada's future.

Finally, throughout *100 Days of Youth Innovation* our larger community was able to celebrate Canada's talent pool. MindFuel is paving the way for a new generation of innovators, equipped with the skills, confidence and immersive learning environments needed to become a driving force of Canada's innovation ecosystem.

CLICK HERE FOR A FULL SUMMARY OF 100 DAYS OF YOUTH INNOVATION

SOCIAL MEDIA IMPACT 2022-23

SUMMARY OF MINDFUEL SOCIAL MEDIA: APRIL 1, 2022 – MARCH 31, 2023

MEDIA	TOTAL APRIL 1, 2022 - MARCH 31, 2023
Total Social Media Impressions	705,159
Facebook & Instagram Impressions	622,674
Twitter Impressions	41,316
LinkedIn Impressions	41,169
Total Website Visits/Reach	1,583,998
Website Visits	Wonderville – 1.147M MindFuel – 30,315 Codingville – 406,683
Google Ad Impressions	10,714,836
Google Grant Impressions	336,965
YouTube User Experiences	38,041 views 1,310 hours watched

FOUNDATIONAL KNOWLEDGE & SKILLS DEVELOPMENT SUMMARY

SUMMARY APRIL 1, 2022 – MARCH 31, 2023

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 161 countries and more than 1,600 cities and towns/communities nationally, reaching youth in every province and territory of Canada.

REAL-WORLD SKILLS DEVELOPMENT AREAS	LEARNING SESSIONS APRIL 1, 2022 - MARCH 31, 2023
Climate change, biodiversity, energy and alternative energy, agriculture and environmental and water management science	**360,936**
STEM knowledge foundations (such as biology, physics, chemistry and earth sciences)	**295,180**
Innovation, emerging technology, design thinking, synthetic biology and nanotechnology, and entrepreneurialism	**2,084**
Health and related sciences	**258,602**
STEM Career Showcase and girls and women in STEM	**28,459**
Indigenous ways of knowing	**12,195**
Coding, computational thinking, robotics, information modeling, machine learning and artificial intelligence	**28,443**
Space and astronomy	**14,170**

Many thanks to our dedicated funding partners and donors, including those who chose to be anonymous.

We would not be the organization we are without your support.

ELEARNING DIVISION – SUPPORTS K-12 LEARNING THROUGH CURRICULAR RESOURCES

Our eLearning division, Wonderville Enterprises (WVE), develops online platforms designed to support K-12 students in their learning journey as either an in-classroom or self-directed resource. As experts in the interactive eLearning space, we understand how to develop resources that immerse students into the fun world of STEM through engaging activities that align with curricular science standards.

Each year through our eLearning division, we reach 1,600+ communities in every province and territory in Canada, and have served tens of millions of teachers, students and parents since launch. During the last fiscal year, we delivered over a million learning sessions to K-12 students, engaging youth in the world of space and astronomy, robotics and coding, health sciences, STEM foundations, and more. Finally, WVE distributed programming to more than 160 countries.

MindFuel's core programs include Wonderville English, Wonderville French, and Codingville.ca (in Canada) and codeGOAT for regions outside of Canada. We are recognized as curriculum experts and have received many awards over the years for excellence in programming.

Teachers, parents and students love the simplicity of access, and the deep interactive engagement!

FOR MORE INFORMATION, PLEASE VISIT:

www.wonderville.org (English or French)

www.codingville.ca

www.codeGOAT.org (outside of Canada)

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, 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.

WONDERVILLE PROGRAM OUTCOMES FOR K-12 STUDENTS:

APRIL 1, 2022 – MARCH 31, 2023

2022-23 LEARNING SESSIONS	# OF SESSIONS
English	977,417
French	22,652
English & French	1,000,069
RURAL / REMOTE / NORTHERN / URBAN (CANADA)	**% OF SESSIONS**
Rural / Remote / Northern	41%
Urban (English)	59%

Wonderville English and French platform is used in all provinces and territories, with the **greatest use in Ontario, Alberta, British Columbia and Quebec.**

Additionally, Wonderville distributes to over **1600 towns and cities** each year and has **users in 161 countries.**

WONDERPLAY

Last year we introduced WonderPlay which provides the ability to rent our most popular Wonderville games. This gives teachers access to a single resource at a low-cost for one week use to supplement their existing lesson plans.

Thousands of students enjoyed access to these STEM games last year.

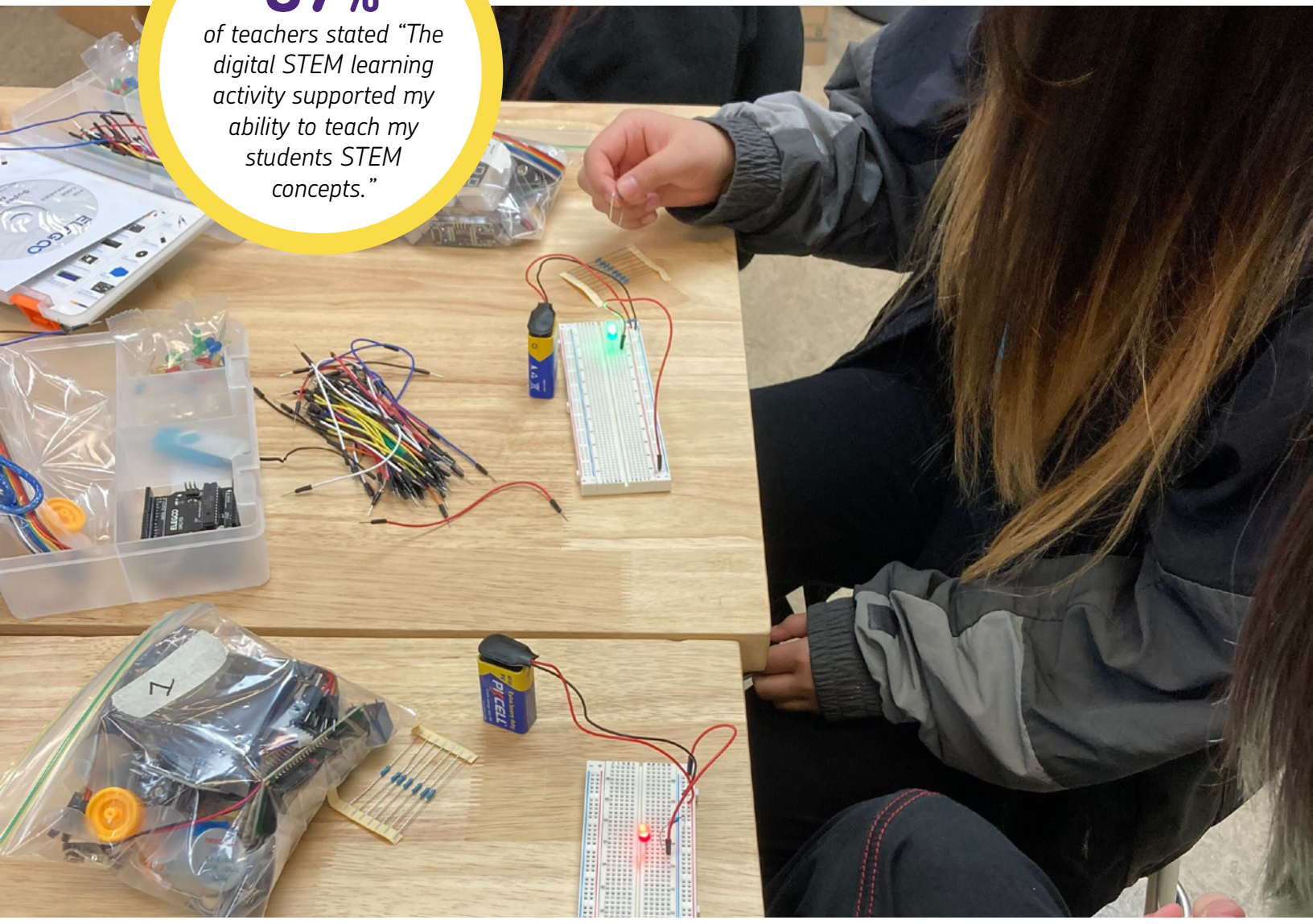
WONDERVILLE TESTIMONIALS:

TEACHER SURVEYS

88%
of teachers stated "This digital STEM learning activity increased my students' engagement in STEM learning."

83%
of teachers stated "I would use Wonderville to support my students' learning again."

87%
of teachers stated "The digital STEM learning activity supported my ability to teach my students STEM concepts."



CODINGVILLE

CODINGVILLE.CA

Codingville is a game-based platform that engages students and teachers in coding and digital skills development, and includes independent, self-paced student learning and projects, and professional learning resources for teachers. These high-quality, digital and hands-on activities and resources increase students' overall coding and digital skills, knowledge, literacy and aptitude; and helped them to be more prepared for high school and post-secondary studies in coding and computer science, and related future careers.

CANADA	2022-23
Total K-12 Students	10,063
Total Hours of Student Learning	64,193
% Rural/Remote/Northern and Urban Learners (English)	39% Rural/Remote/Northern 61% Urban
% Female Students	49%
% Self-Identify as Indigenous	7%
% Self-Identify as Black or People of Colour	27%
Total Teachers	455
Total Hours of Professional Learning	1,593

EMPOWERING DIGITAL LITERACY AND COMPUTATIONAL SOLUTIONING

- In partnership with RoboGarden, MindFuel engaged kindergarten to grade 12 students and 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.

- Delivered teacher professional training on coding and digitals skills, including unplugged activities and Codingville information sessions for teachers and co-teaching student workshops, in collaboration with program delivery partner, Logics Academy.

STUDENT SURVEYS

78%
of Codingville.ca student participants stated, "Now I know more about coding and digital skills."

81%
of Codingville.ca student participants stated, "I want to learn more about coding."

75%
of Codingville.ca student participants stated, "The Codingville Adventures were fun to do and made learning how to code easier."

STUDENT TESTIMONIALS

- *"Codingville helped me start my coding passion!"*
- *"Codingville helped me learn coding blocks and meanings while having fun doing the tasks at hand which were challenging but doable."*
- *"By working on Codingville, I learned to use harder code and be creative."*

TEACHER SURVEYS

87%

of Codingville.ca teacher feedback participants stated "I will be able to incorporate the coding and digital skills information and activities into the youths' learning sessions."

79%

of Codingville.ca teacher feedback participants stated "My students' knowledge and confidence in coding and digital skills have increased."

83%

of teachers/educators stated that "Through the Codingville and computational thinking activities experience, I have increased my knowledge and confidence in teaching coding."

TEACHER TESTIMONIALS

- *"The platform was a fun, easy, and well organized way for students to experience block coding. My students were able to increase their computational thinking skills." - Teacher, Manning, BC*
- *"A simple easy to follow [coding] journey, allowing even young non-readers a way to participate and engage." - Teacher, Peace River, AB*
- *"They love solving problems and helping one another! They now know more than me." - Teacher, Cambridge, ON*

YOUTH INNOVATION DIVISION

SUPPORTS CANADIAN YOUTH, AGED 15 TO 29 WITH IMMERSIVE SKILLS AND TRAINING PROGRAMMING

MindFuel's area of expertise is supporting the development of an innovation mindset in youth in both curricular and extracurricular formats and has invested over $120M into Canada's development of youth innovation talent.

Innovation results from a context where a problem is identified, and the desire for change, coupled with the right mindset, leads to an innovative production. Innovation will be a critical factor in achieving a durable, inclusive, and diversified economy. The problem is real! Our programs are developed with the below considerations in mind:

- Canada is falling behind in the world's innovation index, despite the fact that a recent 2022 OECD report shows Canada as one of the most highly educated populations.
- If left unaddressed through low investments in youth innovation, this Canadian innovation challenge will only grow. Therefore, developing an innovation mindset among Canadian youth is a critical priority for Canada's economic growth and to our broader, long-term goal of an inclusive, diversified, and globally competitive economy.

After 10 years of piloting youth innovation programs (2013-22), we're happy to share our impacts, which demonstrate the connections between the development of an innovation mindset and the creation of intellectual property (IP), commercialization, and ultimately GDP contributions.

CLICK HERE FOR MORE INSIGHTS

CANADA TECH FUTURES

Through our youth innovation division, called Canada Tech Futures, we deliver programming designed to engage youth (aged 30 and under), and especially under-represented youth in the fun and amazing world of innovation.

In 2022, we commissioned a study to engage alumni from over the last 10 years to better understand the impacts of innovation programming. In partnership with GenomeAlberta and with funding provided by ATB Financial, we're pleased to share highlights of the longitudinal study:

KEY HIGHLIGHTS AMONG ALUMNI WHO PARTICIPATED IN OUR YOUTH INNOVATION PROGRAMMING IN THE BIOTECH STREAM, (AGES 16 TO 26), INCLUDE:

- 90%+ talent retention in Canada
- >20% of respondents have started a company
- 36% of respondents have commercialized a technology
- 64% are published authors in a peer reviewed journal
- 67% of respondents have created or been part of a team that has created an innovation in their professional career (and, critically, 75% attribute MF's program as key to their success)
- 40% of participants are racialized (Indian, Asian, Black, Indigenous, other)
- Male/Female/NonBinary ratio was 48:45:7
- 14% LGBTQ+
- 47% of respondents agreed that participating in MindFuel played a role in them accessing 'innovation/STEM' related scholarships of which 94% of participants had received at least one scholarship and over 50% had received between 4-10.

Stay tuned for future releases of white papers which will delve into specific areas of insights sharing.

CLICK HERE FOR MORE INFORMATION

CANADA TECH FUTURES PROGRAM ENCOMPASSES FOUR MAIN PROGRAMS:

- **TECH FUTURES CHALLENGE:**
  High school & post-secondary youth teams focus on solving real-world problems using emerging STEM fields, such as synthetic biology, nanotechnology, robotics and coding. MindFuel provides project funding, subject matter expertise, and mentorship support.

- **IN COMMUNITY – STUDENT CENTRED WORKSHOPS IN SKILLS AND KNOWLEDGE DEVELOPMENT, AND CAREER AND TECHNOLOGY PLANNING:**
  For details please visit mindfuel.ca/programs.

- **PROFESSIONAL LEARNING – TEACHER CENTRED WORKSHOP FOR SKILLS AND TRAINING:**
  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.

- **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, and helps to build a community of founders and innovators.

SUMMARY OF CANADA TECH FUTURES PROGRAM APRIL 1, 2022 – MARCH 31, 2023

ANNUAL HIGHLIGHTS	2022-23
Youth Innovators	1,231
Total Hours of Skills Training	13,432
% Rural/Remote/Northern and Urban Learners (English)	75% Rural/Remote/Northern 25% Urban
Teachers/Team Advisors	308
Total Hours of Support	1,771
% Female Students	50%
% Self-Identify as Indigenous	57%
% Self-Identify as Black or People of Colour	8%
% Self-Identify as a Newcomer to Canada	7%
Team Advisors, Mentors, Subject Matter Experts	166
Student Workshops and Events	75

TECH FUTURES CHALLENGE

The Tech Futures Challenge (TFC), formerly operating at geekStarter, is a two-part STEM focused project-based learning program and competition that engages high-school and collegiate youth in identifying real-world sustainability challenges, and prototyping innovative solutions using emerging technologies including coding, robotics, and synthetic biology. TFC supports youth teams through skills building workshops, access to mentors in industry and academia, and networking opportunities both online and in person. This program is designed to facilitate collaborative problem solving and critical thinking amongst its participants.

TECH FUTURES CHALLENGE SUMMARY	2022-23
Total Middle/High School Teams	**17**
Total Collegiate Teams	**10**
Youth Engaged (AB, BC, ON)	**211**
Total Hours of Student Learning	**5,553**
% Rural/Remote/Northern and Urban *(All Students/Teams)*	**15% Rural/Remote/Northern 85% Urban**
% Female Students	**57%**
% Self-Identify as Indigenous	**3%**
% Self-Identify as Black or People of Colour	**37%**
% Self-Identify as a Newcomer to Canada	**6%**
Student Workshops and Events	**8**

EMPOWERING STEM INNOVATION & ENTREPRENEURIALISM

- Engaged youth in understanding ideation, design thinking, problem identification through a series of 64 workshops focused on skills building and training in areas of emerging technology.
- Supported youth in prototype development through mentor and subject matter experts network building.
- Supporting youth in competition preparation.
- Collaborated with numerous partners to support underrepresented youth – females, Indigenous, Black or racialized, rural/remote and newcomers.

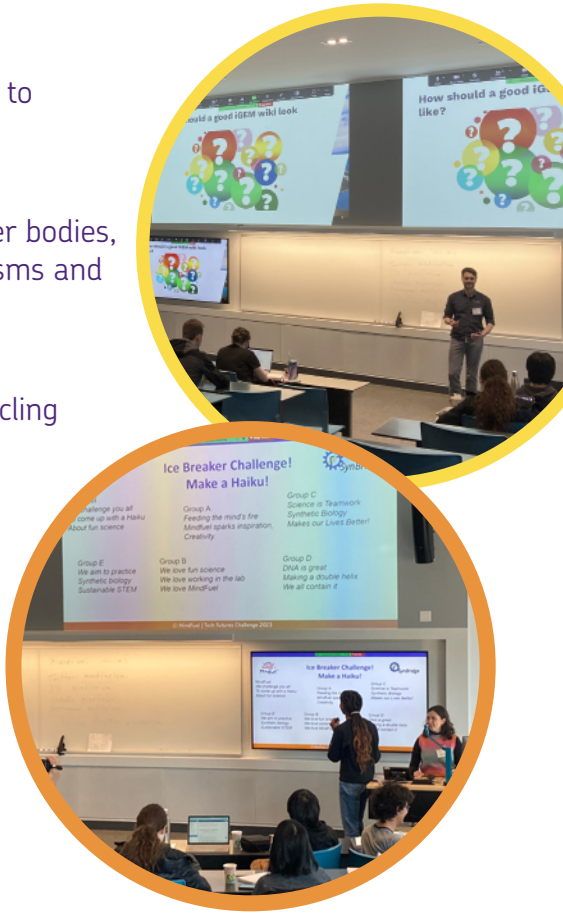
TECH FUTURE CHALLENGE: TEAMS/PROJECTS

2023 TFC TEAM PROJECT – PART 1 – PROJECT PITCH

The 2023 Tech Futures Challenge (TFC) was delivered as a hybrid program with the February Kick-off and Pitch Showcase hosted online and the Skills Building workshop delivered in person at the University of Lethbridge in collaboration with Synbridge in March. The program concluded in May with Part 2, the Prototype Showcase, as an in-person event (the first since 2019).

14 different projects from 2 new teams and 12 returning teams from AB, BC and ON participated in the 2023 TFC Project Pitch, 12 of which were new projects and 2 were continuing projects.

8 JUNIOR/HIGH SCHOOL TEAMS



- **ANAlyze This – Lethbridge High School iGEM, Lethbridge, AB**
  Design a rapid test to detect ANA's, markers for autoimmune diseases, to increase early detection, accessibility and decrease medical waste.
- **Project CRIT – Canmore Collegiate High School, Canmore, AB**
  Design a portable water test kit to determine the toxicity levels of water bodies, specifically Cyanobacteria, a toxic photosynthetic that threatens organisms and ecosystem health.
- **EcoBottle – Rundle College, Calgary, AB**
  Create a vending machine that exchanges empty bottles for cash (recycling vending machine).
- **FabriFuel – Renert High School, Calgary, AB**
  Use a 3-step enzymatic process to fully degrade, metabolize and capture the energy from digesting polyethylene terephthalate (textile polyesters).
- **GreenEarth, Toronto, ON**
  Reduce food waste via an app that connects those in need and those in excess.
- **In The Box – Team Our Lady of the Snows Catholic Academy, Canmore, AB.**
  Convert compost to biochar or fuel.
- **Migraine Mate – Rundle College, Calgary, AB**
  Create an app that actively analyzes user input data & captured data to predict and provide solutions to the onsets and management of migraines.
- **Tech Trade Trio – Rundle College, Calgary, AB**
  Create an app to reduce tech waste by enabling individuals to trade, sell, and/or donate old tech.

6 COLLEGIATE TEAMS

- **Beedie Bright – Simon Fraser University, Burnaby, BC**
  Leverage machine vision and data analysis techniques to seamlessly integrate small watercrafts/marine vessels with GIS software to effectively capture and document change occurring in local environments.
- **Chito-Zing – University of Calgary, Calgary, AB**
  Create a topical wound dressing comprising of a chitosan base and 6-gingerol embedded fibres to provide patients with chronic open wounds a new, antibiotic alternative that is long lasting and requires fewer replacements.
- **CholesterLock – University of Calgary, Calgary, AB**
  Design a novel modified protein capable of lowering LDL cholesterol levels, presenting an ideal alternative cholesterol-lowering treatment, ensuring accessibility and a higher quality of life for the patient.
- **Club^2 – University of Lethbridge, Lethbridge, AB**
  Create a diagnostic kit to detect the early formation of the infecting spores produced by clubroot, a pathogen that is infecting cabbage, cauliflower, kale, turnips, and canola crops around the world.
- **Gluessel – University of Calgary, Calgary AB**
  Develop a novel treatment of diabetes through the use of intestinal proteins.
- **Open RehAIb – NeurAlberta Tech at the University of Lethbridge, Lethbridge, AB**
  Use open-sourced machine learning vision software to extrapolate key insights on brain health of patients (primarily athletes) who have experience traumatic brain injury.

STUDENT SURVEYS

91%

of students stated "Through the Project Pitch Showcase, my curiosity and interest in STEM are growing."

- 2023 Project Pitch Showcase Student Survey

88%

of students stated "I am finding the design thinking process helpful/valuable in developing real-world project ideas and solutions."

- 2023 Project Pitch Showcase Student Survey

82%

of students stated "The knowledge, skills & tools from this workshop will enhance my team's project."

- 2023 STEM Skills Workshop Synbio Student Survey

STUDENT TESTIMONIALS

- ***"Tech Future Challenges offered me with the platform, resources, mentors to learn many skills. From the ideation to the final project showcase, I worked hard with my team mate and along with mentors. I am very thankful to MindFuel Team for their amazing support. I am very proud that our team came up with sustainable solution for the real-world problem (reducing carbon footprint) and shared it with our community." - TFC student, 2022 TFC Post-program survey***

- ***"I would be interested in participating in Tech Futures Challenge in the future, because it supports young people to improve their tech skills and learn from like-minded students and inspire others in the community by solving real-world problems." - TFC student, 2022 TFC Post-program survey***

- ***"This was absolutely phenomenal. I will keep it short, but the hands-on opportunities in the lab and seminars relevant to our project was greatly appreciated and thoroughly supported our work." - TFC student, 2023 STEM Skills Workshop***

MENTOR/ JUDGE SURVEYS

100%
of judges stated "MindFuel is a credible source of STEM education support."

- 2023 TFC Project Pitch Showcase

100%
of judges stated "The Project Pitch program and competition increase youth's engagement and interest in STEM."

- 2023 TFC Project Pitch Showcase

78%
of mentors stated "The seminars increased youths' engagement and interest in synthetic biology."

- 2023 STEM Skills Workshop Synbio Mentor

MENTOR/JUDGE TESTIMONIALS

- ***"It was great to see the ambition of the student teams and how they leveraged digital media to convey their project!"***
  - Judge, 2022 TFC Prototype Showcase
- ***"TFC offers applicable solutions to real world challenges. These programs prepare students and give them an advantage to furthering their STEM careers."***
  - Judge, 2023 TFC Pitch Showcase
- ***"The workshop provides students with an opportunity to consider their work from new angles, ask new questions, and improve their project fit with their intended users."***
  - Mentor, 2023 STEM Skills Workshop

IN COMMUNITY – STUDENT CENTRED WORKSHOPS IN SKILLS AND KNOWLEDGE DEVELOPMENT

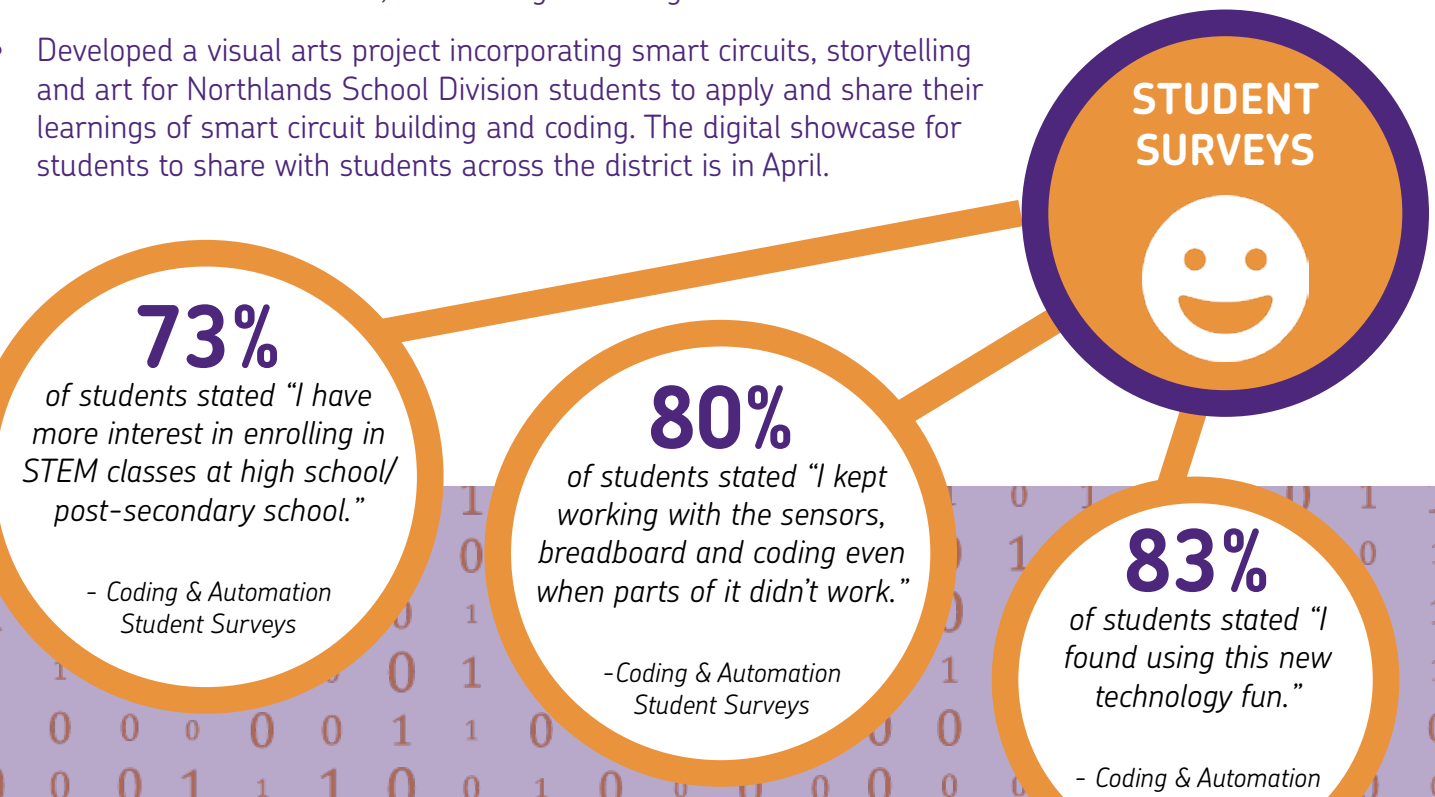
BUILDING STRONGER COMMUNITIES

With a combination of in-person and digital youth workshops and events, MindFuel's in-community work grew in rural, remote and northern communities, including collaborating with four Indigenous communities in BC, AB and YK, Northlands School Division, and Yukonstruct to deliver engaging, hands-on STEM programming to students and teachers. The activities included unplugged computational thinking, design challenges, online coding, circuit building and text-based coding, and STEAM activities with the goal of building youth resiliency in learning and applying new STEM skills.

COMMUNITY AND SCHOOLS	2022-23
K-12 Students Engaged	777
Total Hours of K-12 Student Learning	3,532
% Rural/Remote/Northern and Urban (All Students)	100% Rural/Remote/Northern 0% Urban
% Female Students	50%
% Self-Identify as Indigenous	88%
% Self-Identify as Black or People of Colour	5%
% Self-Identify as a Newcomer to Canada	1%
Student Workshops	33

EMPOWERING STEM INNOVATION THINKING & DOING

- Developed and led inaugural school visits to two rural, northern Indigenous schools working and learning with k to 12 students on smart circuit building and coding and digital skills activities and projects during the week.
- Led in-person and digital student class sessions on smart circuit building and coding for 14 grade 7-12 classes in rural, remote schools in Alberta, and Yukon.
- Collaborated with Yukonstruct to develop and deliver seven STEAM activities with LED e-sewing in Whitehorse and Carmacks, and a design challenge at a Whitehorse school.
- Developed a visual arts project incorporating smart circuits, storytelling and art for Northlands School Division students to apply and share their learnings of smart circuit building and coding. The digital showcase for students to share with students across the district is in April.



STUDENT TESTIMONIALS

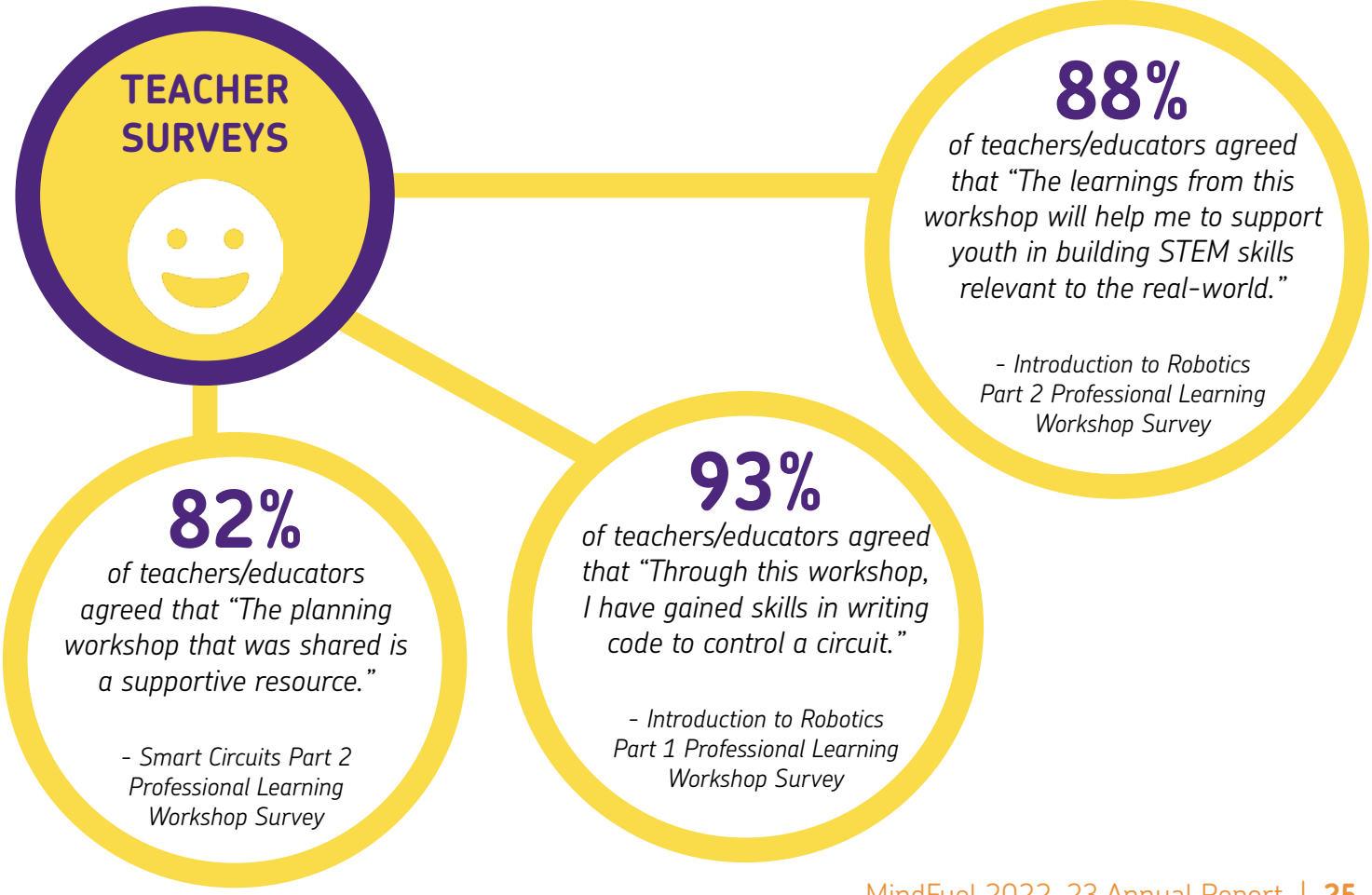
- ***"When turning the light on and off with the technology, and typing is pretty interesting (making it change)....It was challenging and exciting."***
  - Student, Coding & Automation participant
- ***"It made me curious on why it wasn't working and then figuring out why it wasn't working and fixing the problem."***
  - Student, Coding & Automation participant
- ***"It was amazing getting to know all the new stuff I learned."***
  - Student, Coding & Automation participant

PROFESSIONAL LEARNING

TEACHER PROFESSIONAL LEARNING

MindFuel's professional learning workshops offer grades 5 to 12 STEAM educators support in their professional development in STEM skills development through engaging hands-on activities paired with direct instruction and one on one support. This past year, MindFuel focused on developing and delivering an online, six part *Introduction to Robotics* professional learning series covering the basics of building and programming circuits using a breadboard, jumper wires, various inputs and outputs, and a microcontroller.

PROFESSIONAL LEARNING WORKSHOPS	2022-23
Total Teachers Supported	**210**
Total Hours of Professional Learning	**821**
% Rural/Remote/Northern and Urban	**68% Rural/Remote/Northern 31% Urban**
Teacher Professional Learning Workshops	**19**



EMPOWERING STEM INNOVATION THINKING & DOING

- Developed and delivered a digital, six part *Introduction to Robotics* professional learning workshop focusing on building smart circuits and writing code to control outputs based on input signals to Northland School division in northern AB. Teachers were immersed in STEM skills development that they could implement into their own classrooms, learning directly from subject matter experts.
- Delivered an *Introduction to Robotics* professional learning workshop in person to teachers in Indigenous communities in AB and BC.
- Created six editable circuit building and coding activities for educators to use and adapt to suit their classroom needs.
- Co-developed and co-hosted a professional learning workshop with Indigenous educators and consultants on incorporating Indigenous ways of knowing, teaching and learning in mathematics.

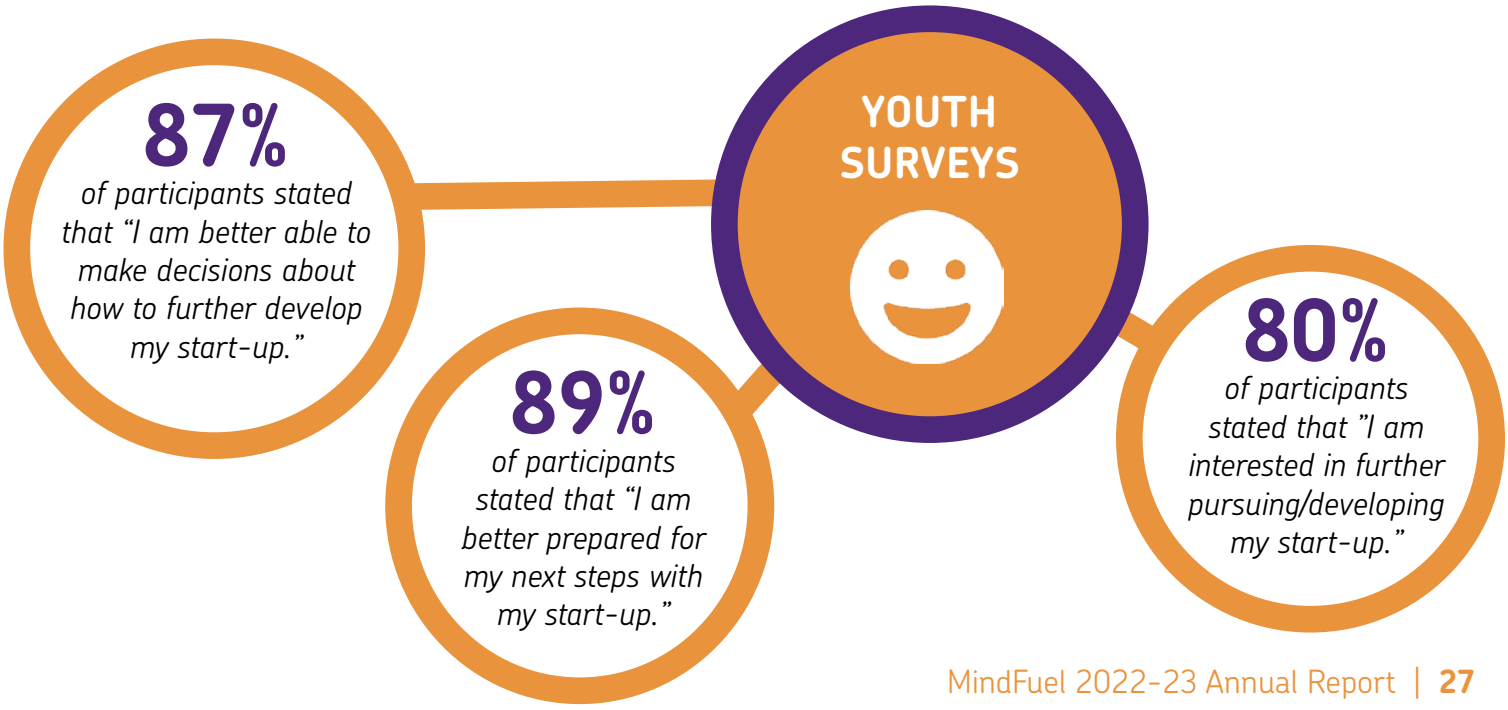
TEACHER/EDUCATOR TESTIMONIALS

- *"I feel much more knowledgeable now, and with a little more practice will be able to bring this to my classroom with my own confidence to guide me through. It is so exciting to teach "real life" lessons to young people!"*
  - Teacher, Professional Learning Workshop, Smart Circuits Part 1, Northland School Division, AB
- *"It has opened my eyes to the technological world we live in, and has helped me to understand some new information about how these technologies exist and are created."*
  - Teacher, Smart Circuits Part 2 Professional Learning Workshop, Northland School Division, AB
- *"It helped me to learn the knowledge and skills to facilitate coding and digital skills. I've gained more confidence in teaching and facilitating students and improving their skills."*
  - Teacher, Professional Learning Workshop, Introduction to Robotics

FOUNDERS FUNDAMENTALS

Founders Fundamentals is workshop series based program that engages youth, ages 18-30, to bring their innovative ideas to life. With a focus on the early pre-revenue start-up stage, participants create the foundations of their business. Through the weekly independent activities, whole group workshops with guest founders, and mentoring sessions over 7 weeks, they develop their entrepreneurial mindset and further clarify the why and hows of their start-up, as well as key communication and networking strategies. They are also introduced to tangible and practical business practices, including supply chain management and customer discovery practices to better understand their customers" needs and to further develop their start-up idea to the next stage.

FOUNDERS FUNDAMENTALS	2022-23
Total Participants (18-30)	**105**
Total Hours of Learning	**897**
% Rural/Remote/Northern and Urban	**1% Rural/Remote/Northern 99% Urban**
% Female Students	**35%**
% Self-Identify as Indigenous	**1%**
% Self-Identify as Black or People of Colour	**27%**
% Self-Identify as a Newcomer to Canada	**64%**
Workshops and Events	**15**



EMPOWERING STEM INNOVATION & ENTREPRENEURIALISM

- 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 from three cohorts 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 two topic specific workshops, in particular on accounting and legal elements of a start-up supporting cohort participants' request for additional content in these areas.
- Developed a collaboration with the Centre For Newcomers, and hosted two full-day workshops to support newcomers learn about how to register a business and integrate into the entrepreneurial ecosystem.
- Collaborated with Innovate Calgary & partners on the inaugural BIPOC Pitch and Social in November, supporting underrepresented founders in Calgary and surrounding area.

YOUTH TESTIMONIALS

- *- "An inspirational experience, the program helped me feel supported and encouraged. Having the opportunity to connect with more experienced mentors helped troubleshoot challenges."*
  - Founders Fundamentals Cohort 4 participant
- *"[Highlights of the workshop include] practical advice, outside of the box ideas, networking opportunities and lots of resources."*
  - Centre for Newcomers Start-up workshop participant
- *"I was able to use the structure provided in Founders Fundamentals to give shape to my business idea."*
  - Founders Fundamentals Cohort 5 participant

SCHOLARSHIP RECIPIENTS

MindFuel, CDL-Rockies and ASTech-Growsafe Systems Founders scholarships are an investment in Canada's future. Supported through donations by Cassy Weber, Camille Huisma and Alison Sunstrum, three scholarships were awarded during the year, which included:

100% FEMALE

100% RURAL

67% IDENTIFY AS BLACK OR PERSON OF COLOUR

2020 ASTECH-GROWSAFE SYSTEMS SCHOLARSHIP RECIPIENT

WINNER: ALLYSSA BONTILAO

- **Graduated from: Sundre High School – Sundre, AB**
- **Studying at: University of Alberta with a Specialization in Cell Biology**
- **Goal: acquiring a Ph.D. in genetics**

"This scholarship will be an investment in my education so that I may start my path of contributing to our further understanding of genetic diseases and other cellular abnormalities. With your support, I hope to prove my worth as a future contributor to the world of medical genetic science and make a difference in the world of STEM today."

2022 CDL–ROCKIES OPPORTUNITIES SCHOLARSHIP RECIPIENT

WINNER: SABRINA PRICOPE

- **Graduated from: Bonnyville Centralized High School. Bonnyville, AB**
- **Studying at University of Alberta, B.Sc (Physics)**
- **Goal: Bachelor of Science with a Major in Physics**

"The 2022 MindFuel CDL-Rockies Opportunities Scholarship is supporting my journey in STEM, while also helping me contribute to the creation of a brighter future with increased resources for students and higher rates of STEM involvement. Thank you again for MindFuel's and CDL-Rockies' generous support, as it has a huge impact on my post-secondary aspirations and my goal of one day becoming a role model for young women in STEM!"

2022 STANELY DANA WEBER – IN MEMORIAM -- SCHOLARSHIP RECIPIENT

WINNER: SETH PEREZ

- **Graduated from: Our Lady of the Snows Catholic Academy, Canmore, AB**
- **Studying at University of British Columbia**
- **Goal: Bachelors of Science in BioChemistry**

"MindFuel has provided me with countless high school opportunities that have expanded my thought processing, my work ethic, and my career opportunities. The Stanley Dana Weber Memorial Scholarship has greatly aided in my pursuit of an education and a profession in STEM and has allowed me to reflect on my growth as a student both in academical and extracurricular areas."

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