



Take Our Kids to Work™

The Students Commission of Canada

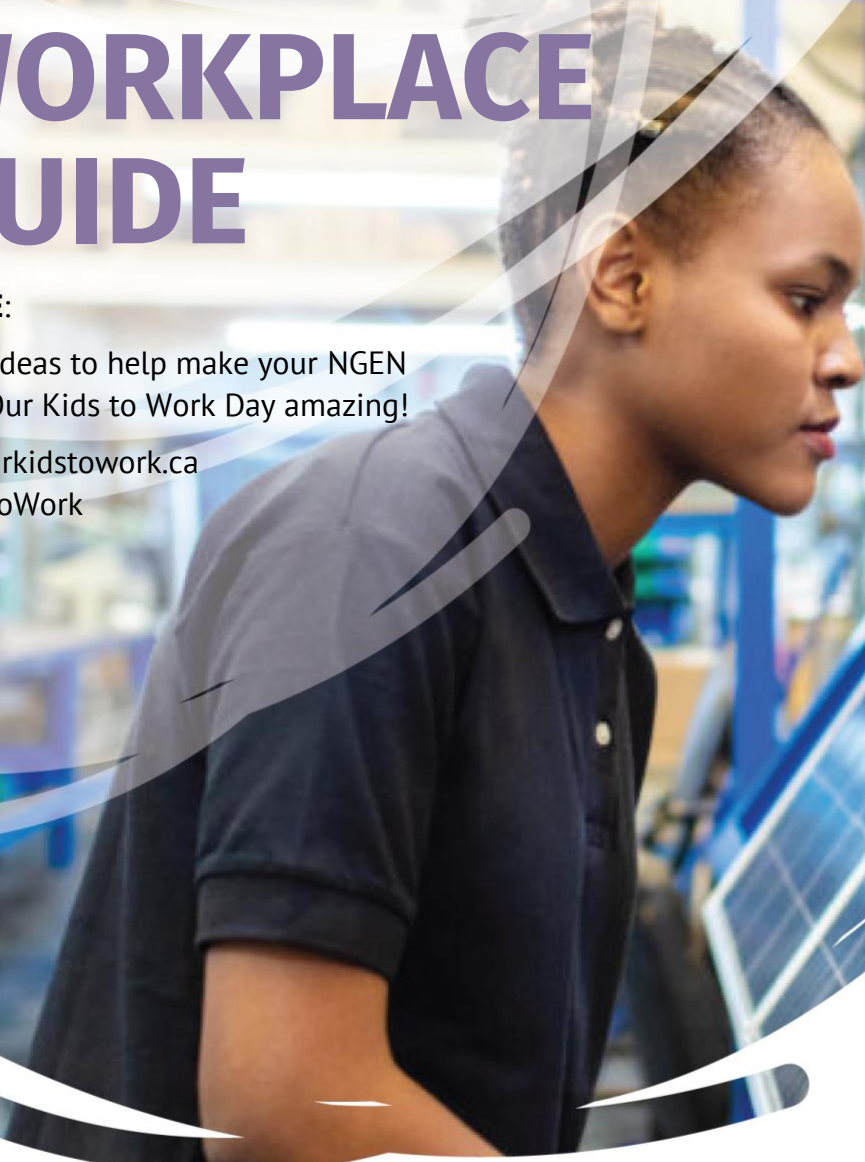
ADVANCED MANUFACTURING WORKPLACE GUIDE

INSIDE:

Great ideas to help make your NGEN
Take Our Kids to Work Day amazing!

takeourkidstowork.ca

#KidstoWork



Presented
by



Future Launch

NGen



WELCOME!

Help prepare the next generation during Take Our Kids to Work Day 2023!

No matter what your Take Our Kids to Work Day looks like this year – whether virtual, in person or a combination of both– we’re here to support you! Advanced manufacturing is at the heart of developing new technologies that impact daily lives, from energy efficiency to healthcare textiles. The message for students is that if you like solving problems, this career sector is for you and the changes happening in manufacturing are contributing to a more sustainable and exciting future.

On Wednesday, November 1, you’ll have access to pre-recorded virtual content giving your employees and the students you host the opportunity to learn more about advanced manufacturing through participating [engaging] through this exciting day:

- Incorporate The Students Commission of Canada’s pre-recorded virtual theme sessions as part of your own day of activities. There is a special panel of Chief Executive Officers and entrepreneurs who are leaders in Advanced Manufacturing, discussing trends and career highlights of working in the sector for your use. Please see pages 21-34 in this Guide.
- Host students in person, if you can do so safely, and incorporate The Students Commission of Canada’s virtual content into a “blended” day.
- Make sure your employees have access to the recorded theme sessions in case they would like to have access to that resource during or following the day and can participate with their children after November 1.

Launched in 1994, Take Our Kids to Work Day is the most recognized career exploration event in Canada. Inside the umbrella promotion and resources created by The Students Commission of Canada, there are many ways to engage. Employers open their doors with planned events for schools in their neighbourhoods or host their employees’ children. Thousands of Grade 9 students across Canada join their parents, caregivers, friends or relatives at work to get a firsthand look at what a workday looks like in the workplace and what skills are important when pursuing various careers.

Before, during and after Take Our Kids to Work Day 2023, workplaces and their employees play an important role in igniting students’ curiosity and opening the door for them to explore their future!

Thank you for your collaboration and support innovating new ways to build future ready students.





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PART B

COMMUNICATION TEMPLATES:

Sample social media posts and internal communications to help promote your day

PART C

HEALTH AND SAFETY GUIDELINES:

Including links to online safety tips for youth

PART D

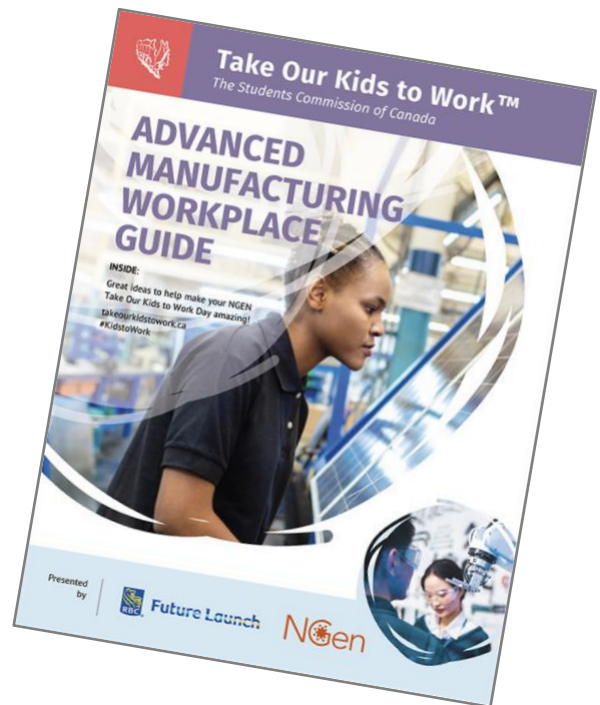
FOCUSED RESOURCES FOR ADVANCED MANUFACTURING:

Key messages for students about Advanced Manufacturing

Expert answers to questions to explore with students

Summary of the Transforming Manufacturing with Advanced Technologies video

Motivational stories





WHAT'S HAPPENING IN 2023?

A dynamic virtual cornerstone **kick-off – *Everyone Belongs Here!*** – with highly visual, engaging content. This video can be viewed stand-alone or can be the launch pad for your organization's continued participation during the theme sessions that follow it. RBC Olympian Larissa Franklin will share her journey in high-performance sport and her career emphasizing resilience and self-discovery. Students from across Canada will ask questions and a panel of experts from diverse industries will provide their insights and tips.

- Employees and their children can review the new pre-recorded 2023 **theme sessions**, which will offer insights into the skills and opportunities available in various career paths. The six sessions are listed below.
- **Take Our Kids to Work Day Live!** All day November 1, 2023, your employees, visiting students and their families can drop-in to a casual coast-to-coast live stream event. Ask questions of **Career Advisors**. Share stories of discoveries from your workplace with others across Canada.
- **Updates, tips, activities and ideas** for making Take Our Kids to Work Day meaningful for your employees and the students you host are in this guide.
- **Advanced Manufacturing, supported by NGEN, has a special focus this year!**

Participation is simple!

You'll be able to access the cornerstone kick-off and the theme sessions to plan your event **by [registering or confirming](#)** your intent to participate. We will provide you with advance previews of the materials, live dates for helpful planning webinars (or recordings of them if you missed one), email reminders, participant certificate templates and social media assets. On November 1, 2023 and afterwards, access for your employees, their families and students visiting your premises access to all resources and guides, plus **Take Our Kids to Work Live!**



PART A: PLANNING A FUN, SUCCESSFUL TAKE OUR KIDS TO WORK DAY



By October 23, 2023

1. Determine what your organization's Take Our Kids to Work Day will look like. Some questions to ask include:
 - How will you mix speakers, virtual resources, live Q&A room and tours of your facilities?
 - Are any hands-on activities for students possible?
 - Is it for students associated with your employees only or do you want to reach out to neighboring schools? Some children are unable to attend at their caregivers/parents workplaces.
 - How long will the day run? Will it be a full day, half-day or a couple of hours?
2. Prepare the agenda. Incorporate the cornerstone kickoff and theme sessions as appropriate, identify guest speakers from your company, tours, etc.

[Resource: Take Our Kids to Work Day sample agenda](#) [Resource: Take Our Kids to Work Day sample activities](#)

TIP

If you are hosting students in person, confirm with your local public health unit and insurer that the coverage you have for visitors to your workplace includes students on Take Our Kids to Work Day.

TIP

Identify a host for your event. It doesn't need to be your CEO or a senior employee. Choose someone enthusiastic to engage students!





3. Organize a way for employees to sign up to assist on Take Our Kids to Work Day. Consider different roles, e.g., hosts, speakers, facilitators, activity leaders, etc.
4. Get the message out! Once you determine what your day will look like, send an all-employee email, or post on your office's intranet, to announce your workplace's participation in Take Our Kids to Work 2023 and invite employees to sign up to join in the fun!

[Resource: Take Our Kids to Work Day internal email](#)

Week of October 23

1. Finalize and confirm all presenters and presentations, panelists, speakers, and activities included in your Take Our Kids to Work Day program.
2. Do a dry run of your Take Our Kids to Work Day. You want your use of the Livestream Career Advisors and showing the TOKW Kickoff and Session videos to be smooth, so book time with your presenters to test the technology and ensure everyone is set up for success. Test your platform if using virtual components (e.g., Microsoft Teams, Webex, Zoom).
3. Identify and enlist a designated tech support employee to set up, test, run and troubleshoot your organization's activities seamlessly. Share contact info for your tech support broadly so all participants have the support they need on November 1.
 - Ensure any presenters/speakers are briefed, have speaking notes, and test their technology and connections in advance.
 - Provide links and logins and include them in calendar invites.
4. Circulate your Take Our Kids to Work Day agenda so all employees are aware of the schedule for the day.

Week of October 30

1. Email employees and their children to inform them of the agenda for the day, provide links, and generate enthusiasm for participating!
2. Join the conversation online! Post on your company's social media channels and invite your employees to do the same. Use **#KidsToWork** and tag @StdntsCmmsn (Twitter) so that we can celebrate (and share!) your posts.

TIP

Ask students to identify one question they hope to have answered during the day. Use this information to guide the employees whose participation might add





November 1, 2023 (the big day!)

1. Throughout the day, join the conversation and at *Take Kids to Work Live!* online:
 - a. Use the hashtag **#KidsToWork**
 - b. Tag @StdntsCmmsn in all posts on Twitter and @studentscommission on Instagram and tag The Students Commission of Canada on Facebook and LinkedIn
 - c. Take screen shots, video and group photos and tag us!
 - d. If you are posting photos that identify participants by name, make sure you have obtained appropriate, informed consent.

After November 1, 2023

1. Send an internal communication thanking employees, students, presenters, and all participants and highlighting the success of the day.
2. Send your photos and videos to info@studentscommission.ca.





Tips for a successful Take Our Kids to Work Day!

- ☑ Get to know your audience and be sure they feel comfortable. Some workplaces send a survey out to students ahead of time to hear what they would like to learn, see, and hear from.
- ☑ Make the day as interactive as possible with quizzes, polls and activities. If you are having people joining virtually, use the chat function liberally to pose questions and solicit feedback.
- ☑ Vary the content and speakers/presenters to keep students engaged. Ideally, keep speaker sections brief with plenty of time for questions. If possible and safe, build in some hands-on and alternative kinesthetic experiences, as well as listening ones.
- ☑ Incentivize participation with prizes and other types of recognition.
- ☑ Build in physical activity breaks. Encourage some movement or, weather permitting, outdoor breaks to retain student focus.





How to Access the Recorded Sessions and Virtual Event

Everyone Belongs Here!

This cornerstone virtual event is an uplifting way to kick off the day, bringing a message of purpose and belonging to students, their parents and educators alike. The 45-minute pre-recorded video sets the stage for a great Take Our Kids to Work Day and is available afterwards to use as part of your regular curriculum. RBC Olympian Larissa Franklin will share her journey in high-performance sport and her career emphasizing resilience and self-discovery. Students from across Canada will ask questions and a panel of experts from diverse industries will provide their insights and tips. Available in English and French.

Theme sessions

These 45-minute videos feature seven different career themes., Hosted by dynamic and interactive industry experts, they offer more options than ever before for students to encounter numerous professionals, sectors and industries. Each session is available for viewing throughout the day, and after the day. Available in English and French.

Take Our Kids to Work Day Live!

All day November 1, 2023, your employees, visiting students and their families can drop-in to a casual coast-to-coast live stream event. Ask questions of **Career Advisors**. Share stories of discoveries from

Register and learn more
www.studentscommission.ca
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workplaces with other students and employers from across Canada. Moderated in English and French.

How to access the virtual recorded 2023 resources

You can register any time or update your registration at <https://www.studentscommission.ca/en/take-our-kids-to-work>

After registration, access videos, guides, planning webinars, related materials, links and the recording of ***Everyone Belongs Here!*** for pre-planning purposes.

Everyone Belongs Here! and themed sessions will go live for public viewing by students, families and employers to view all day on Wednesday, November 1 on our website and The Students Commission [YouTube channel](#), plus post event day.

You can view each session as a class or share the links with your students so that they can watch and participate individually.



Sample agenda for Take Our Kids to Work

Use this full agenda to customize your day with students in-person at one workplace setting.

TIME <i>(suggestions)</i>	ACTIVITY
9:00 – 9:40 a.m. Arrivals, departures may vary, dependent on school start times, bus schedules Activity times can be lengthened or shortened depending on size of your workplace, offered in different order, etc.	<p>Welcome</p> <ul style="list-style-type: none"> • Welcome from your workplace’s representative [CEO] • Overview of the day’s activities • Going over guidelines (what to keep in mind in the workplace as others are working) • Set-up Cornerstone video: Take Our Kids to Work is a national event, thousands of students participating, your career may take you anywhere <p>Play Kick-off video – Everyone Belongs Here! A 20-minute video featuring RBC Olympian Larissa Franklin</p> <p>Brief Context Setting from one or two of your workplace’s representatives (could be a dialogue) regarding your company’s work and how it relates to themes of the Kick-off Video (i.e., diversity, resilience, and critical transferable skills, talents, experience you value that can be discovered early in high school). Share link for Take Our Kids to Work Live! Your visiting students and your employees can interact with others across Canada throughout the day.</p>
9:40 – 9:50 a.m.	<p>Ice Breaker: smaller groups or large Ice-breaker activity – e.g., two truths/one lie or share a special skill/secret talent you have</p>
9:50 – 10:30 a.m. 9:50 – 12:00 p.m.	<p>Tour of workplace highlights: ideally in smaller groups, job shadowing Employees at each “highlight” describe what happens there, why it’s important, answer questions. See, touch, do activities if possible.</p>
10:30 – 12:00 p.m. <i>Shorter tour option</i>	<p>Watch and discuss with students recorded 2023 theme sessions Depending on group size, select sessions to watch in this time period. This can be either all together or let students choose from among the five (40-minute sessions), depending on technology and space for viewing, size of the group, employee facilitators. After watching, employees lead an interactive session in discussion format or complete the theme session activities or completing some of your organization activities (see suggestions in this guide)</p>
12:00 – 12:50	<p>Lunch. May include entertainment or a fitness break.</p>
12:50 – 3:30 p.m.	<p>Extend, mix and match activities of the morning. Add in time to participate in Take Our Kids to Work Live! Your visiting students and your employees can interact with others across Canada throughout the day.</p>
4:30 – 4:00 p.m.	<p>Closing ceremony and wrap up. Ensure your key employees and visiting students have time to complete the Take Our Kids to Work Day survey and receive their participation certificates</p>



Themed Session Descriptions

- Everyone Belongs Here! Cornerstone Kick-off
Showcasing self-discovery, resilience and play in career exploration
- Advancing Diversity and Representation in Healthcare
People Power People
- Transforming Manufacturing with Advanced Technologies
The future of making in the digital era
- Exploring Tech @ RBC's Strategy & Innovation Team!
Boost your artificial intelligence
- Discovering your Talents in the 21st Century
The Art of Work today, tomorrow and forever
- Cultivating Green Careers of the Future
Diversifying sustainable career pathways
- Diversifying the Creative Journey
The Art, Media, and Design Industry



Everyone Belongs Here! Cornerstone Kick-off **Showcasing self-discovery, resilience and play in career exploration**

Presented by RBC Future Launch

Welcome to a day of discovery. So often, we don't know what we don't know. That can limit what and who we aspire to be. Everyone deserves insights into all the possibilities ahead, the opportunity to explore how their talents match jobs of today and tomorrow. Our goal is to introduce you to as many happy people with diverse career stories as you have time for today and in the year ahead. Everyone belongs here! is our theme for introducing a world of endless possibilities and ways of meeting some challenging realities. In this session, RBC Olympian Larissa Franklin kicks us off with her journey in high-performance sport, emphasizing resilience and self-discovery in the career journey. Sharif Mahdy goes from camper to CEO of a national charity for youth. In addition, some young Canadians will share their lived experience such as how they turned a teenage career in anti-racism work into a career in corporate banking and social responsibility or went from attending a youth conference to Deputy Chief. We'll finish up suggesting you check our Career Advisors featured on the website who will be available throughout the day for live interaction in our Take Our Kids to Work Live! Drop-in livestream.

Register and learn more
www.studentscommission.ca
#KidstoWork

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Advancing Diversity and Representation in Healthcare People Power People

Sponsored by McKesson Canada

Some of the best jobs and companies in health care aren't household words. Take a peak! Discover the vast range of careers hidden away in the health care and pharmaceutical industry. This session showcases the importance of diversity within the healthcare sector and how it positively impacts patient care. Engage in a panel conversation with experts from diverse backgrounds, who provide valuable insights and personal experiences from different career journeys. Gain knowledge about essential connections that make health care smarter, expanding access and reducing waste. Explore how partnerships between key players create a world of better health. Take a look at the range of resources, support, and technology offered by the diversity of all these partnerships, improving the industry.

McKesson Canada operates like a central nervous system of health care, partnering with key players in the health care industry for more than 100 years.

Transforming Manufacturing with Advanced Technologies The future of making in the digital era

Sponsored by NGen, Next Generation Manufacturing Canada

Discover the cutting-edge world of Advanced Manufacturing and its impact on industries and careers. Join industry leaders and experts as they showcase breakthrough technologies and innovative solutions. Explore the diverse opportunities within this dynamic sector and learn about the skills needed to thrive in the "future of making." Youth will submit video questions for panelists to provide valuable insights and inspiration for your journey in the world of Advanced Manufacturing. Don't miss this chance to explore how creativity, technology, and entrepreneurship come together in shaping a sustainable future.

NGEN is the industry-led, non-profit organization leading Canada's Global Innovation Cluster for Advanced Manufacturing.

Exploring Tech @ RBC's Strategy & Innovation Team! Boost your artificial intelligence

Sponsored by RBC Future Launch

Hear from employees and co-op student about what it's like to work with RBC's strategy and innovation team 'TechLabs'. They will share what it's like to be part of Tech@RBC, and their tech careers working technologies like Generative AI and Immersive Technology. They'll also share some surprises they've learned along the way!



RBC Future Launch is an important player in helping young Canadians accessing a variety of opportunities to develop the skills they need for a bright future.

Discovering your Talents in the 21st Century ***The Art of Work today, tomorrow and forever***

Plum io, Shad Canada, International Experiences Canada, The Students Commission of Canada

Dive into the world of 21st-century skills and their relevance in today's job market. New jobs, new careers are being created every day. Your talents, your skills can lead you to success in more jobs than perhaps anyone knows. Discover the key skills and competencies that employers seek in today's workforce or kick-start you into your own business. This session offers insights into how to discover and strengthen your talents and skills every year you are in high school, through work, volunteering and travel. Panelists will share their stories of discovering and harnessing their talents, moving from building one business, to another and then another. Discover how to align your unique strengths and talents with jobs and careers that energize you. Discover how you can travel, within and outside of Canada with programs that prepare students for the challenges of the future. The session highlights various success stories and showcases real-life examples of young and older individuals who have honed their 21st-century skills to excel in their careers. Panelists will respond to youth-submitted video questions, providing personalized insights and advice to inspire and empower young participants on their career journeys.

Plum is a Talent Platform, that provides employers data-driven insights to empower individuals to find career opportunities that align with their unique strengths and talents. Shad Canada offers a month-long summer program in 22 universities across Canada focused on STEAM and entrepreneurship for grade 10 and 11 students. International Experience Canada (IEC) offers Canadians the opportunity to work and travel abroad. The Students Commission of Canada offers skill building programs for youth through conferences, volunteering, youth advisories, employment and social justice projects.

Cultivating Green Careers of the Future **Diversifying sustainable career pathways**

Explore the future of green careers, helping to repair, improve and preserve the environment. Get a sense of how industries are innovating and understand the importance of sustainability in today's world. This session will feature a section where key actors of the sector respond to youth video-submitted questions, addressing specific inquiries and inspiring participants to consider careers in the green economy. Hear from Rodney, whose work for social change as a teenager taught him skills that led him from a heavy equipment operator to a successful management career in the oils and how he now balances two worlds, protecting and preserving the environment in his reserve and working for change in industry.



Diversifying the Creative Journey The Art, Media, and Design Industry

This session focusses on art, media, and design careers. Explore the diverse and dynamic world of creative industries and learn about the exciting opportunities they offer. Engage in discussions with experts and professionals from the art, media, and design sectors, gaining valuable insights into their journeys and experiences. Discover the power of creativity, storytelling, and innovation in these industries and how they shape our culture and society. This session will also provide an interactive element where panelists respond to youth video-submitted questions, offering personalized advice and encouragement to aspiring young creatives.

Ideas for fun, career-related, interactive activities

There are many ways to help your employees and students engage, have fun and learn. Some ideas are:

- Incorporate a “speed round” into your presentations of various roles in your organization. Structure five-minute sessions with staff from different departments and at different levels of the organization to respond to rapid questions from students in the virtual meeting room.
- Share a list of roles/job titles in your company. Break students into groups (or have them work independently) to guess what those jobs include, e.g., responsibilities and skills that they use. Alternatively, create a worksheet with role in column A and responsibility in column B. Have students match role to responsibility. Once the activity is complete, invite each employee with that job title to introduce themselves and share what they do and what skills they use daily. Provide time for Q&A.
- In advance of Take Our Kids to Work Day, mail a “Take Our Kids to Work Day” kit to all staff who register. It could include a t-shirt or mug for themselves and their child or other organizational ‘swag’ that they can wear and use on November 1.
- Ask presenters from your company to develop activities and challenges to engage students based on their department’s function or area of expertise. If there are visual aids, worksheets or other materials required, include them in the Take Our Kids to Work Day kit. Students who complete these activities/challenges can score points during the day for completing them (and even compete for prizes)!
- Plan some games as ice-breakers (e.g., set up a trivia game on Kahoot.com).
- Play charades. Have someone in your company develop a list of “secret” words or phrases (e.g., a job function or role). Include a different word/phrase in the Take Our Kids to Work



Day kit. During the day, students can sketch (Pictionary-style) or act out (charades style) their word and compete for points, or just for fun!

- Sales pitch activity. Share your company's values or even pose a current real-life challenge that your company faces. It can be complex or simple! Students can work with their parents to come up with a product or service that would benefit your organization and create a two-minute virtual sales pitch to present the idea to a panel of judges (employees selected to hear the pitches).





PART B TEMPLATES & COMMUNICATIONS MATERIALS



Internal communication / announcement:

Calling all employees with children in Grade 9!

<Organization> is pleased to announce our participation in the national Take Our Kids to Work Day on Wednesday, November 1, 2023!

We hope you'll take part by including your Grade 9 student in the day's events, which this year will include <activities> .

If you're planning to participate, please contact <insert name> at <insert email address> by <insert date>.

To help make this day a success, speak with your child and ask what he or she would like to learn about that day. We'd like to make sure it's an event they will enjoy and learn from. All comments are welcome.

Stay tuned for more details!

Social Media Sample Posts

Join the conversation on social media for Take Our Kids to Work Day using the **#KidstoWork** hashtag. Build some buzz about the exciting activities you are planning and promote the day at your organization.

We're looking forward to amplifying your tweets and posts throughout the day!



Sample social media posts before the day:

Nov 1 is Take Our **#KidstoWork** Day with @StdntsCmmssn! We're proud to take part and support the next generation workforce.

We're excited to host Gr 9 students virtually and give them a glimpse into our work on Nov 1 for @StdntsCmmssn's Take Our **#KidstoWork** Day!

Take Our **#KidstoWork** Day is coming up on Nov 2! We're proud to take part and help Canada's youth explore the world of work.

Take Our **#KidstoWork** Day is back this year! We're excited to take part in "the day that lasts a lifetime" with @StdntsCmmssn on Nov 1!

Sample social media content for the day:

Today's the day that lasts a lifetime! Gr 9 students are participating virtually to explore their futures, now. Join us to celebrate @StdntsCmmssn's Take Our **#KidsToWork** Day!

Today is Take Our **#KidsToWork** Day! We're proud to host Gr 9 students virtually for a fun, interactive day and support their career exploration!

We're excited to have visiting Gr 9 students spend a virtual day with us for Take Our **#KidsToWork** Day!



PART C HEALTH, SAFETY AND LIABILITY

For online safety tips for students, visit:

[Canada Safety Council: Online Safety Rules for Kids](#) [ACTIVE Kids: Online Safety Tips for Remote Learning](#) [Kids Help Phone: Staying Safe Online](#)

[MissingKids.org: Online Safety Resources for \(Virtual\) Back To School](#)

The following recommendations are based on the findings of an Expert Safety Panel, a committee of experts from organizations with acknowledged expertise in workplace safety and education. The Expert Safety Panel conducted a study and provided a series of recommendations that The Students Commission of Canada follows and that we encourage all workplaces that host in-person events on Take Our Kids to Work Day to follow.

Safety Recommendations:

- Communicate the importance of health and safety through a variety of channels to accommodate different learning styles.
- Enlist workplace health and safety experts to review the content and context of all materials produced for the Take Our Kids to Work Day program.
- Develop informed consent forms that contain workplace health and safety messaging, signed by students and parents.
- Encourage all participants in the Take Our Kids to Work program to commit themselves to a safe day. Include on forms a section demonstrating that students have read and discussed materials on health and workplace safety before participating.
- Begin Take Our Kids to Work Day with mandatory workplace orientations that focus on health



and safety issues relevant to that environment. Workplaces should use the expertise of their health and safety personnel to assist with the orientation if possible. Where appropriate, there should also be a student health and safety representative for the day.

- Encourage program participants to adopt a zero tolerance policy for ignoring health and safety guidelines and communicate this in program materials.
- Supervise student participants all day while they are at the workplace site. The student supervisor should be a competent individual and there should be a set ratio of the number of students to each supervisor that is appropriate for each workplace.
- Allow students to undertake only those tasks and experiences for which they have been properly oriented.
- Create an environment where students are encouraged to speak about health and safety concerns, ask questions, and comment on situations they observed during the day. Workplaces should conduct an annual inspection prior to Take Our Kids to Work day with a view to youth workplace safety.

All supervisors should:

- Train workers to safely perform every task they are assigned and check regularly to ensure that safety procedures are being followed.
- Alert employees to every possible safety hazard, no matter how obvious or minor.
- Observe and correct any unsafe practices or conditions.
- Provide appropriate protective clothing and equipment to every employee.
- Discuss with your employees any past accidents and the corrective measures that have been taken to prevent similar accidents from happening again.

Employer liability information

A student must be treated with identical care to that of any visitor to an employer's premises. Employers must take reasonable care to ensure that their premises are safe for the visitor.

Employers may be liable for damages if a student is injured while on their premises. It is recommended that employers have appropriate liability insurance in place and that they consult their insurance providers in this regard.



The Students Commission of Canada and The Students Commission of Canada's liability information

Take Our Kids to Work Day is an educational program provided by employers for Grade 9 students across Canada. The Students Commission of Canada is pleased to provide suggestions to employers for planning and preparation, including health and safety preparation, in anticipation of Take Our Kids to Work Day. However, The Students Commission of Canada does not arrange or monitor activities or programs that are provided by employers as part of Take Our Kids to Work Day, nor do they provide specific health and safety training to employers or students. As such, employer and student participants in Take Our Kids to Work Day acknowledge and agree that participation in Take Our Kids to Work Day is completely voluntary, and employer and student participants acknowledge and accept all risks of participation and assume full responsibility for all such risks to themselves and/or liability to others.

The Students Commission of Canada is not liable for damages arising from any and all actions, claims, demands, obligations, causes of actions, costs, expenses, and compensation of any kind on account of or in any way arising out of, or which in the future may result from, participation in Take Our Kids to Work Day or in conjunction with Take Our Kids to Work Day or the negligence of other people, including other participants.



Register and learn more
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PART D A FOCUS ON ADVANCED MANUFACTURING



Introduction

This section pulls themes, stories and key messages from the video discussion with five leading Chief Executive Officers featured in the video **Transforming Manufacturing with Advanced Technologies**. You can use these key messages in your own discussions and interactive activities with students, and as inspiration for the stories of your company, its work and the opportunities it offers. The video is available for viewing through the SCC website after registration for the event.

"It's all about innovation, innovation. It's about the future... solving some of the world's biggest issues."

- Linda Hasenfratz

Key messages

- Innovative technologies such as 3D printing and advanced robotics create new and existing products
- Applies almost everywhere: energy efficiency, textiles, construction, agriculture, health care, automotive, aerospace
- For those who are curious, interested in solving problems, team players
- Produces using information, automation, computation, software, sensing, and networking
- Offers diverse careers in sales, marketing, communications, business, trades, science, computing, engineering ...
- Plays a significant role in reshaping industries and driving technological advancements.
- Advance manufacturers often have global presence for their manufacturing operations.
- Technological advancements in advanced manufacturing are addressing global challenges, such as the role of clean energy in sustainable manufacturing.



Details of the video

Transforming Manufacturing with Advanced Technologies **The future of making in the digital era**

Sponsored by NGen, Next Generation Manufacturing Canada

Discover the cutting-edge world of Advanced Manufacturing and its impact on industries and careers. Join industry leaders and experts as they showcase breakthrough technologies and innovative solutions. Explore the diverse opportunities within this dynamic sector and learn about the skills needed to thrive in the "future of making." Youth will submit video questions for panelists to provide valuable insights and inspiration for your journey in the world of Advanced Manufacturing. Don't miss this chance to explore how creativity, technology, and entrepreneurship come together in shaping a sustainable future.

NGEN is the industry-led, non-profit organization leading Canada's Global Innovation Cluster for Advanced Manufacturing.

Featured in the video discussion are Mike Andrade, Chief Executive Officer of Morgan Solar, Tony Chahine, founder and Chief Executive Officer of Myant, Charles Deguire, Chief Executive Officer and co-founder of Kinova Robotics, Linda Hasenfratz, Executive Chairman and Chief Executive Officer of Linamar Corporation, and Carol McGlogan, President and Chief Executive Officer of Electro-Federation Canada.

"The incorporation of semiconductors and software into everything...has transformed traditional inert blocks of metal into smart devices."

- Mike Andrade

Other key quotes from the conversation include:

- "It's really liberating the way we do things, and it's educating the next generation...to understand the product." – Tony Chahine, founder and Chief Executive Office of Myant,
- "Advanced manufacturing will develop new technology and new capacity." – Carol McGlogan, President and Chief Executive Officer of Electro-Federation Canada



How has advanced manufacturing revolutionized industries and careers?

- Advanced manufacturing is changing the job landscape, replacing repetitive tasks with more interesting and higher-paying roles, and promoting a culture of interdisciplinary knowledge. For example, fashion designers working with engineers or language experts with computer programmers.
- Advanced manufacturing is driving innovation, making new technologies and capabilities accessible, and enabling the development of products that can improve the quality of life, such as assistive robotics for people with disabilities.
- Advanced manufacturing has revolutionized industries by incorporating semiconductors, software, and firmware into products, making them smart and interconnected. The convergence of the digital and physical worlds in manufacturing, often referred to as Industry 4.0, has led to increased connectivity and automation across the entire supply chain and production process.
- Sustainability is a growing concern in advanced manufacturing, with the integration of energy-efficient practices and data-driven decisions to reduce environmental impact.

"It's really liberating the way we do things, and it's educating the next generation...to understand the product."

– Tony Chahine

Some key quotes from the conversation include:

- "Advanced manufacturing will develop new technology and new capacity." – Carol McGlogan, President and Chief Executive Officer of Electro-Federation Canada



What does the future look like? What are the different, diverse opportunities?

Advanced manufacturing is essentially a technology business and it is advancing rapidly. It offers a dynamic environment for individuals interested in technology and innovation. The sector actively contributes to solving major global challenges related to the environment, air quality, access to water, food security, and more through the development of innovative products and sustainable processes.

- The industry emphasizes full-stack manufacturing, where individuals are involved in the entire product development process, from design to production. Multidisciplinary education is seen as crucial including mechanical and product design, various engineering roles (e.g., manufacturing, operations, supply chain), data analytics, marketing, finance, legal, and communication.
- Regions with clean energy sources are advantageous for manufacturing, as it reduces carbon footprints and aligns with sustainability goals.

"Advanced manufacturing is a team sport... we need all kinds of diversity of skill sets to make it possible."

- Charles Deguire

Some key quotes from the conversation include:

- "If you want to serve the world, you're probably going to have to make something... the manufacturing of those products is more advanced than the end products." - Mike Andrade, Chief Executive Officer of Morgan Solar
- "The knowledge needs to be a full-stack system... multidisciplinary education is involved in advanced manufacturing." - Tony Chahine, founder and Chief Executive Officer of Myant
- "Our energy sources are very clean ... products are made with clean energy, which is fundamentally important to a sustainable world." – Linda Hasenfratz, Executive Chairman and Chief Executive Officer of Linamar Corporation



What are the skills, competencies, strengths, and qualities required?

Curiosity is a fundamental skill in advanced manufacturing, along with an innate drive for innovation.

The industry rewards those who constantly seek to improve and create new solutions. Problem-solving and critical thinking skills are highly valued. Advanced manufacturing often involves overcoming challenges and finding creative solutions.

Adaptability to change is crucial. Professionals must be comfortable with continuous learning and evolving with the industry.

"Do your homework, find out about companies, find out about some of these stories... keep your options open, math, sciences, they're important subjects."

- Carol McGlogan,

- Collaboration and interdisciplinary teamwork are essential in advanced manufacturing. It involves various skill sets and talents coming together to achieve common goals.

- Advanced manufacturing emphasizes the importance of teamwork. Success in this field requires the ability to work collaboratively with diverse teams to achieve common goals. Unlike some tech-focused fields, advanced manufacturing welcomes a broad range of skills and expertise, including design, user experience, social engineering, marketing, and finance.

Advice from experts:

- Linda Hasenfratz highlights the importance of curiosity, innovation, adaptability to change, problem-solving, and critical thinking as essential skills for success in advanced manufacturing. She emphasizes that the industry requires individuals who are comfortable with a high pace of change.
- Charles Deguire underscores the significance of teamwork and describes advanced manufacturing as a team sport. He encourages individuals who thrive in a team environment, possess curiosity, and wish to make a positive impact on the world to consider this field.
- Tony Chahine highlights the inclusive nature of advanced manufacturing, where individuals from various backgrounds and skill sets can actively participate in shaping the future of the industry. It offers opportunities for people with diverse skills, including fashion designers, user experience experts, and social engineers.
- Mike Andrade points out that advanced manufacturing is a total business encompassing a wide range of skills, including marketing, finance, and communications. He emphasizes that the industry is competitive and constantly changing, requiring both aptitudes and attitudes to succeed.



What is the role of creativity, technology, and entrepreneurship?

- Creativity and technology are closely intertwined in advanced manufacturing. Technology enables the realization of creative ideas and innovations, while creativity drives the development of new technologies and applications.
- Creativity is at the heart of innovation in advanced manufacturing. The industry involves problem-solving, designing new products or processes, and finding creative solutions to complex challenges.
- Advanced manufacturing is closely linked to entrepreneurship, as it offers opportunities to create new products, processes, and businesses that address emerging needs and improve existing technologies.

"Creativity is essential in any industry that's based on innovation... the advanced manufacturing field is one filled with entrepreneurs."

- Linda Hasenfratz

Some key quotes from the conversation include:

- "Creativity is the DNA of every job... every aspect of creativity is required ultimately to make a successful product." - Tony Chahine, founder and Chief Executive Officer of Myant
- "Advanced manufacturing can feed creativity... being surrounded by innovation, being aware of what's missing out there, you combine the two together, you're curious, you're going to build new businesses." - Charles Deguire, Chief Executive Officer and co-founder of Kinova Robotics
- "The future is already here, it's just not evenly distributed... if you're working in advanced manufacturing, solving problems that haven't been solved, you get an opportunity to see the future because it's your present." - Mike Andrade, Chief Executive Officer of Morgan Solar



Communicating with youth: how do we answer questions about ethics and careers within advanced manufacturing in relation to the impacts on the environment?

- If you're interested in solving problems that the world is facing, a career in advanced manufacturing brings the digital and physical world together to solve those challenges in the world. Advanced manufacturing is a team sport, and there is place for everyone from marketing, sales, creative, to engineering in the problem-solving team.
- Promoting Sustainability: Sustainability is a top priority for manufacturing companies and encourages young people to be part of the solution by driving sustainability initiatives.
- Advanced manufacturing plays a crucial role in sustainability by developing products and processes that address environmental and societal challenges. Creativity is essential in designing sustainable solutions
- Career Planning: Research is important, keeping options open and ensuring that students have the necessary qualifications and skills to pursue careers in advanced manufacturing. Don't drop subjects too early, math and science are important.

"If you think that manufacturing is not doing a good job sustainably of making products sustainably, then be part of the solution."

- Linda Hasenfratz

Here are some thoughts that reflect these themes:

- Find out about companies, find out about the stories you hear... keep your options open; math, sciences, they're important.
- Prepare early by exploring various industries and keeping your options open.
- Core subjects like math and sciences are essential, but don't neglect other skills like communication and leadership.
- Do your homework and research different companies and career paths to make informed decisions.
- Be passionate and open to learning throughout your educational journey.
- Keep your eyes on the future and strive to contribute positively to the world through your career choices.



CEO Stories

Mike Andrade- CEO Morgan Solar



Mike Andrade is CEO of Morgan Solar, holds an M.B.A. earned at night school, a engineering bachelor science degree and 30 years of technology experience. He believes that the world's energy system is going through a technology disruption and he has seen many of these events before.. He is passionate about ensuring that Canada effectively deals with this transition and avoids the fate of companies such as Nortel and BlackBerry in previous technology disruptions. As such, he is active both as an investor and adviser in the Canadian clean technology ecosystem.

My company Morgan Solar does sensors and analytics for solar fields to improve their efficiency and also works to incorporate solar into buildings to do self-generation and improve efficiency.

For me, advanced manufacturing is all about solving the next problem in the clean tech space. A key problem: What's holding solar back?

The good news is that the sun is everywhere and there's more than enough sun energy hitting the world to power the world total world in in less than an hour. So it's not that energy is scarce, the question he works on is how do we convert infinite amount of energy in the place where the most people live?

People live and work in buildings, so the real frontier is incorporating solar better into buildings? Everyone knows you can put it on your roof, what do you do with windows? Windows pose a dual problem. One is the sun does good things, and the sun does bad things.

In the summer, it might be too much heat and glare, and you have to run more electricity. At night, there's no sun. In the winter, you want the heat to come in from the sun. So, we are developing are products that don't require someone to be a PhD in optics or solar like that.

They'll look like a blind, a louver, a pergola, and what they will generate meaningful amounts of solar over windows, over skylights, over, glass facades, while at the same time, reducing the energy generation required to cool or heat the building.

Instead of having a solar panel out in the field somewhere, running it to the grid to run an air conditioner, people generate power at their building and prevent the need for air conditioning in the first place.



CEO Stories

Carol McGlogan, President and CEO of Electro-Federation Canada (EFC)



Carol McGlogan is the President and CEO of Electro-Federation Canada (EFC), a national, not-for-profit association representing the dynamic electrical and automation industries, contributing to Canada's net-zero future, intelligent buildings, and smart infrastructure. She has a Bachelor of Business Administration degree and spent much of her career in the lighting industry in marketing, sales and channel management

One of the key areas of advanced manufacturing is the whole aspect of 3D printing. One barrier sometimes to innovation is that it costs too much to try something. When you introduce 3D printing, you can, not only bring that whole cost down, it allows all sorts of industries or manufacturers to innovate like they've never done before.

We're now doing 3D printing of lighting fixtures for those designers who wanted to create extremely unique products, when before it was too expensive to ever do that. Now you can do it in an affordable way. So, whether it contributes to innovation or creativity and style, advanced manufacturing has its finger on that.

I was a liaison officer for a university and I traveled talking to high school students about the university and opportunities for courses and careers. I saw many times the look of disappointment on some students who didn't plan soon enough for the career that they later became interested in.

So, my advice to students is do your homework, find out about companies, explore more about people's interesting stories that you hear about during Take Our Kids to Work Day.

Keep your options open, especially with math, sciences and languages. They're important subjects.

As well, leadership skills and communication skills are important in a career; think about those core subjects that keep all the doors open!



CEO Stories

Charles Deguire CEO and co founder of Kinova Robotics



Charles Deguire is the passionate visionary behind Kinova, a leader of the modern robotics revolution. The organization is driving robotic adoption in multiple markets, His mission is clear: empower individuals and organizations with better tools, robotic tools, to serve humanity's most pressing needs. From people with disabilities to surgeons, and machinists to factory workers, Charles and his team help them to accomplish more by using robotic solutions.

When I launched Kinovo Robotics, I was 23 years old and a student in electrical engineering, surrounded by robotics. I was impressed by Canada's space robot; it's a big thing. I grew up with my uncle in a wheelchair; power wheelchair users have limitations, they cannot open doors. So I put the two together. If we can send robot to space, my uncle can for sure have the help of a robot to open doors.

So we started there and became a manufacturer, then we became an advanced manufacturer because we had to build this robot. Once we became an advanced manufacturer, we said 'now that we can build robots for people in wheelchairs, what else could we apply this robot to?'

The next thing we wanted to solve was making healthcare more accessible through medical robotics. For example, with cancer you need to treat faster and you need to diagnose faster. We were able to team up with surgical partners and build a platform that supports early diagnosis and same day surgery of early-stage lung cancers. We've built the needed innovation starting from one piece of technology transferred to another application because we were good at building and evolving that technology.

We knew that robotics can be applied to down-to-earth problems really efficiently, and we built a business out of that. Feed us to be more creative, feed us to be more agile, and when you see a gap, get started.

Combine being surrounded by innovation and being aware of what's missing out there. If you are curious, you're going to build new businesses. That is good for all of us. It's good for you. It's good for Canada and you are going to enjoy doing it.



CEO Stories

Linda Hasenfratz, CEO of Linamar Corporation



Linda Hasenfratz is the Executive Chairman and Chief Executive Officer of Linamar Corporation. Linamar Corporation (TSX:LNR) is an international advanced manufacturing company, arising from a one-man machinery shop started in the basement of the family home, after her father immigrated to Canada. Linamar create solutions that power vehicles, motion, work and lives for the future. The range is vast: scissor, boom and telehandler lifts for the aerial work platform industry, draper headers and

self-propelled windrowers for the agricultural harvesting industry, propulsion systems, structural and chassis systems, energy storage and power generation for both the global electrified and traditionally powered vehicle markets, manufacturing solutions for medical devices and precision medical components

The advanced manufacturing industry is going to contribute massively to a sustainable future through the electrification of mobility, from first hybrid electric vehicles, then battery electric vehicles and finally fuel cell electric vehicles.

This is a game changer. Transition that's going to be happening over the next 20 years and advanced manufacturing will play a really important role in changing the way we get around to be safer and cleaner.

It is being 100% driven by manufacturing companies who are innovating new products to power these vehicles and build them. This is an area that that my business Linamar is very engaged in. There's a lot that we're doing in terms of developing new products for electrified vehicles, whether it be hybrid battery, electric or fuel cell electric.

I think that there are products that people aren't even really thinking about; fuel cell electric vehicles is a great example. Hydrogen, in my opinion, is the future of many different industries. Mobility just being one of them. And so we're developing, for instance, very low profile [00:48:00] conformable tanks that can store 30% more hydrogen than traditional style fuel tanks. This will be a really important part of bringing those vehicles into the market.

I would say most people aren't even thinking about hydrogen vehicles today, because the talk is all about battery electric. This will be a great bridging technology to fuel electric vehicles because, by definition, both are electric vehicles. The propulsion is the same; it's just how you power it.

Advanced manufacturing is not just designing vehicles and products for today. We're also designing vehicles and products that will be launching eight or 10 years from now and continuing the cycle of change and evolution in technology.



CEO Stories

Tony Chahine, founder and Chief Executive Officer, Myant



Tony Chahine, founder and Chief Executive Officer of Myant, a startup company practicing Textile Computing™ that brings together a team of engineers, chemists, physicists and fashion designers to work. Myant knits sensors and actuators into everyday textiles, giving them the ability to sense and react to the human body. Today Myant through its innovations, patents, partnerships and collaborations is reimagining the future of healthcare, how it is administered and ensuring no one is left behind regardless how remote you are or your socioeconomic status, ensuring healthcare is made accessible to make the most informed decisions to live a healthy long life.

I started Myant in 2010. At the time, I wanted to solve a problem. My dad had developed a very early sign of dementia at the age of 63. Someone with dementia cannot participate. They are not able to input, talk to a device, go on a video call, etc.

So I really wanted to stay connected with my dad. The challenge for me was how do I develop a passive interface, that I could stay connected with my dad and my dad could stay connected with his care provider. Then we can eliminate phone calls from a nurse, the nurse having to translate what my father is going through, many of us have had to deal with this in one way or another.

So I wanted to create this passive interface and to feel the presence of my dad as if he's next to me regardless how far I was from him. I don't want him to connect with me only when he needs me, I want it to be continuous.

Again, as if he's next to me, I don't need to dial a phone. If he's next to me, I could see him. So I want it to be continuous. I want it to be bi-directional so I can sense and can also deliver back through the medium, whether it is heating, cooling, [00:42:00] electric stimulation.

As well, I want it to be for the whole person, not the way they manage healthcare, managed by disease with a doctor for cardiovascular disease, a doctor for dementia and a doctor for something else. My dad had all of those, so it was very difficult. So I wanted to have a whole person interface and I wanted it to be bi-directional, I wanted to be continuous, and more importantly, I wanted it to be passive because my dad couldn't learn any new habits.

In 2010, Canada had an almost nonexistent textile manufacturing industry, and I didn't have any



knowledge of manufacturing textile at the time. I knew how to create an electric board. I knew how to solve an electrical engineering problem, but I didn't know how to make textile a medium. So we started on a whiteboard, and everyone said it's not possible, there's no way this will see the light of the day. It will never be approved by FDA or Health [00:43:00] Canada. **We spent a lot of time and money in developing machinery, acquiring machinery, learning every aspect.**

I say it's a full stack engineering or full stack manufacturing job because we needed to learn how to code polymer or carbon or P dot into yarn to make it conductive. We needed to make sure we how to knit it and weave it in a machine that has mechanical friction. If the yarn itself is scratched, your impedance or electrical measurement will be variable, which is not a good thing.

And then from there, we needed to make sure it's washable and dryable because you do not want to give them an interface that you're saying you can't wash it and you can't wear it this way. So all sorts of new disciplines that we needed to learn.

And of course, you have various sizes of people and body shapes. So you're [00:44:00] developing your electric circuit, but all of a sudden you have someone who could be two XL and you have someone who could be zero size or one XL or one or, or small.

With all these challenges, we went through ups and downs. We were doomed for at least the first 5- 6 years, and in 2016-17, we start seeing some breakthroughs, and, but we were completely alone. There was no industry, no support, but the ability to make it happen was there, and we were fortunate that we had the means to stay afloat.

Now we created a completely new industry from scratch. It doesn't exist anywhere else in the world.

So having that desire and figuring out and calling people and mapping it all out, you can create. new categories, unbelievable new type of product that could serve. And, and I will say this, we have Now we have almost 200 people, with our seasonal workers,, maybe 230 staff. We're not perfect, but or the most part, our employees enjoy working here because they feel they're contributing to an outcome far more than just delivering a product on a price for a price.

So, that's my experience. We provide accessibility. We are Health Canada licensed. We have FDA under final review. We have Mayo Clinic, the largest hospital in the world, signed to list our product. We've done all sorts of clinical trials with them. The Cleveland Clinic in Abu Dhabi used our product. Many hospitals right now in Canada use our product. All from a story that was not possible. It was not supposed to be possible in an industry that didn't exist in Canada. So all sorts of possibilities. I'm not the only one. **There's all sorts of possibilities, but that's the benefit of figuring out how to make things and stay in the course to make it happen.**



Activities of interest to students: based on real-life examples of successful projects that solve problems, improve industry or contribute to a sustainable future

You can use examples from your workplace on these themes or the CEO stories of Mike, Tony, Linda, Charles and Carol from either printouts of the stories or the video.

- **Innovation and Problem Solving:** Hold a discussion about highlighting the importance of innovation in advanced manufacturing. Tony's story about developing a passive interface for dementia patients and Linda's example of developing products for electrified vehicles showcase how innovation drives progress in this field.
- **Sustainability:** Discuss what role advanced manufacturing plays in building a sustainable future. Mike discusses the advancements in clean tech, particularly in solar energy, and the potential of technologies like sensors and analytics to make solar energy more financially attractive. Carol talks about the cost-effective potential of 3D printing for innovation, which can contribute to sustainability by reducing waste.
- **Interdisciplinary Approach:** Showcase for students what different pathways and subject areas are related to careers at your workplace. Tony's experience with developing a whole-person interface for healthcare highlights the importance of interdisciplinary collaboration in advanced manufacturing. It involves combining expertise from various fields, such as electronics, textiles, and healthcare, to create innovative solutions. Charles describes advanced manufacturing as "a team sport."
- **Market Disruption:** Do you have examples to show students what role your workplace plays "disrupting" and improving the way work is done. The conversation underscores how advanced manufacturing can disrupt traditional markets and industries. Mike discusses how solar energy has disrupted the energy market, and Carol mentions how 3D printing is changing the landscape of product design and manufacturing.

"We're trusted as a nation... making should be a matter of our own pride, and it's something that we can export anywhere in the world."

- Tony Chahine



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