Skills Canada Alberta

Skills Exploration Days

2025 Teacher Guide

WHAT IS SKILLS EXPLORATION DAYS?

Skills Exploration Days is a career exploration experience designed to complement and support Alberta Education's Career and Technology Foundations (CTF) Program of Studies.

The purpose of Skills Exploration Days is to:

Inspire junior high students to identify inherent skills and interests
Connect skills and interests to trade and technology careers through interactive, hands-on experiences that promote creativity, empathy and exploration
Promote trades and technologies as valuable and rewarding career choices

Skills Exploration Days is an opportunity for teachers and junior high students (grades 7-9) to participate in an authentic and meaningful skilled trade and technology career exploration experience. Building on the Maker Day model, the goal of the program is to encourage the use of empathy through design thinking, inquiry, making, and experiential learning. Registered schools will be provided with a toolbox that includes the tools and materials students need to participate in Skills Exploration Days. Seven Learn-A-Skill activities are also included to help students familiarize themselves with the tools and materials available for building their prototype. Using the skills learned with the Learn-A-Skill activities, students will come together for an interactive live-stream to build a prototype that provides a solution to the design challenge and to share their finished projects.

Please note Skills Exploration Days is an in-classroom program which heavily relies on teacher facilitation. Teachers are responsible for guiding their students through the Learn-A-Skill activities and the Design Thinking Process, as well as ensuring students are using the tools and materials provided in a safe and appropriate manner. Our hope is that Skills Exploration Days is as exciting for teachers as it is for students and will inspire educators to implement the Maker Model year-round in their schools! Questions regarding Skills Exploration Days programming can be sent to **clairel@skillsalberta.com.**

REGISTRATION	**September 3, 2025**	8:30am
INTERACTIVE LIVE-STREAM	**December 2, 2025**	9:00am-2:15pm

New registered schools will be provided with a toolbox that includes the tools, materials and PPE that students need to build their prototype. Schools that have previously participated in Skills Exploration Days and received a toolbox have the option to register for a new toolbox or a "top up" toolbox. Toolboxes will remain with the school to support the growth of your CTF programs! **Toolboxes will be shipped to all schools.**

Note: Schools are encouraged to supplement the building with tools, technology and scrap/recycled materials already available at their school. See page 8 for a list of items included in the toolbox and to be supplied by the school.

The registration fee is $250 per new school and a $150 top-up fee per returning school with 30 students per school. **Schools have 7 days to drop their spot following the date of their registration. Any drops past the 7 day period will result in being invoiced 100% of the registration fee.** Teachers can request additional toolboxes by making a waitlist request on the registration portal. Waitlist requests are awarded on a first-come first-serve basis.

HOW DO I REGISTER?

Your school must be registered with Skills Canada Alberta to participate.

- Registering as a Skills School is free of charge. Visit **https://skillsalberta.com/resources/become-a-skills-school/** to create and submit your profile. Once registered, a username and password will be emailed to you.
- Login to the registration portal and select the "Skills Exploration Days" tab.
- Follow the prompts to register for your toolbox. Be sure to correctly select whether you would like a new toolbox or top-up toolbox. If a toolbox is not available or you would like to request an additional toolbox, make a request in the "Waitlist Request" section. Waitlist granting will take place on **September 10, 2025.**
- Questions regarding registration can be sent to **javierad@skillsalberta.com.**

GET STARTED IN THE CLASSROOM!

Follow these steps to ensure all activities are completed prior to Skills Exploration Days on December 3rd.

Step 1: ***Visit the Skills Exploration Days Website*** — **Visit our website** and watch the Skills Exploration Days video to see what a day of exploration looks like, learn the 5 steps of the Design Thinking Process and why design thinking is important to build a meaningful prototype. Under the downloads section, find all of the resources you need to facilitate the in-class program**.**

Step 2: ***Read the 2025 Teacher Guide*** — In this teacher guide, you'll find helpful information such as dates, online registration instructions, schedule of the day, sample floor plan and a list of tools, technology, and materials available to build with.

Step 3: ***Set up the Learn-A-Skill Kits in the Classroom*** — To be used prior to Skills Exploration Days, these skill exploration kits are designed for students to learn the basic skills, knowledge and safety associated with the tools and materials supplied in the toolbox. We recommend setting up the 7 kits around the classroom and groups of students (4-5/group) rotate through. Each kit includes an instructional video with safety information students must access via a QR code. Need additional information about the tools and how to use them safely? Check out more tool safety videos by scanning the QR code stickers included with your toolbox. All Learn-A-Skill videos and additional tool safety videos can also be accessed on the **Skills Exploration Days YouTube playlist.**

Step 4: ***Research the Design Challenge "Future-Friendly Transportation" in the Classroom*** — A **design challenge** is a real life problem that needs to be solved. It is important to research and understand the concepts and vocabulary embedded in the challenge. The more background knowledge the students gain, the more successful they will be during the design thinking worksheet which will result in more creative and meaningful prototypes. We've provided just a few suggested resources to get started but we encourage you and your students to delve deeper into the design challenge topic with further research.

Step 5: ***Complete the Human-Centered Design Thinking Worksheet*** — Now that students are experts on the design challenge topic, teachers will guide them through the design thinking process using the Human-Centered Design Thinking worksheet (included in the toolbox). Students will work in groups of 4 to complete the worksheet. Don't worry, teachers! Our **Design Thinking Presentation** will guide you in facilitating this process. Lastly, students will sketch their million dollar design in the "Final Prototype Sketch" section which will be the blueprint to build their prototype.

Step 6: ***Check out the Skills Exploration Days Padlet & Kahoot*** — Familiarize students with the Skills Exploration Days ***Padlet*** (interact and post photos on the wall) and ***Kahoot*** (a fun feedback game to find out how the day went).

Step 7: ***Set up Work Stations for Building at Skills Exploration Days*** — Students will visit a variety of hands-on stations and use power tools and a variety of materials to build their prototype. Teachers are responsible for supervising the stations to ensure students are safe. If possible, we highly encourage teachers to invite volunteers or industry experts to help at the work stations during Skills Exploration Days. Station signs, a sample floor plan, and a list of tools and materials needed for each station will be provided on page 8. Be part of the show! We recommend using a large screen to project the interactive live-stream of Skills Exploration Days so all the students can see! And don't forget to turn those speakers up!

Step 8: ***Tune into the Skills Exploration Days Interactive Live Stream and Build a Prototype!*** — Let the building begin! With their Final Prototype Sketch in hand, students will come together for an interactive live-stream to build their prototype and showcase their million dollar design! Students will work in their groups of 4 to build a prototype. Students can post pictures on the ***Padlet*** for a chance to win prizes or have their prototype featured on the big screen! Curious about what students built for last year's design challenge? Check out examples of previous prototypes **here.**

BONUS: ***Continue the Maker Movement in Your Classroom!*** — Check out the ***Taking Making into Classrooms Resource*** on our Skills Exploration Day website for all the information you need to keep the excitement alive! See **Section 12** for 31 sample design challenges teachers can use in their classroom today!

A DAY OF VIRTUAL SKILLS EXPLORATION-DECEMBER 2, 2025

Time	Event:
Day Before	**Please ensure the work stations, tools, and materials are safely set up.**
8:50 AM	**Please log onto the live-stream Skills Exploration Days link (received via email)**
9:15 AM	**Welcome Announcements & Safety Video**
9:30 AM-11:30 AM **Check out the Skills Exploration Days Padlet! Use the QR Code for easy access!**	**Build Prototype** Using their final prototype sketch, students will have **3 hours and 15 minutes** to build a prototype by implementing the skills and knowledge acquired during the in-classroom Learn-A-Skill kits. Students will visit 8 work stations: **Electrical Installation, Fashion Technology, Graphic Design, Painting & Decorating, Plumbing, Sheet Metal, Woodworking (Carpentry/Cabinet Making), and Photography.** Everyone must wear **PPE** (gloves, safety glasses, ear protection) provided by SCA in the toolboxes. Students **must** wear close-toed shoes and long pants. Anyone with long hair must have it tied back. Along with using the tools and materials at the work stations, students can also use crafting materials at the **Pantry** and scraps at the **Reuse Centre** where they will be challenged to recycle, reuse, and become aware of environmentally-friendly materials. **Teachers are required to be present and onsite all day.** Be engaged and active with your students but allow them to independently construct their prototype as much as possible. Teachers are responsible for ensuring students are on-task and demonstrating safe behaviors. If possible, have volunteers or industry experts help at the work stations.
11:30 AM-12:00 PM	**Lunch Break** Please have students bring a bagged lunch.
12:00 PM-1:15 PM	**Finish Building Prototype and Create a Title Page** Schools are encouraged to have **Graphic Design** computers available so students can create and print the prototype title page on Photoshop (or a similar software). Students can use markers and paper if computers are not available. Students may also visit the Photography station to take a photo of their prototype.
1:15 PM-1:30 PM	**Clean up & Display Prototype** Students will clean up their workspaces and make their thinking visible by displaying the original prototype sketch, the prototype title page, and their completed prototype on a table for the Gallery Tour.
1:30 PM	**Gallery Tour** Students get the chance to test their prototype, answer questions and visit other displays. Skills Alberta will also highlight some student prototypes from the Padlet on the big screen!
2:00 PM	**Reflection & Evaluation** Finally, all students will appraise their skills and knowledge used to respond to the challenge by participating in a fun reflection and evaluation game via KAHOOT. **Please have computers or devices available to play. Don't miss out on this as we'll be giving away some awesome prizes!** **Use the QR Code to easily access KAHOOT!** The game pin will be provided and displayed by the Skills Alberta Host.
2:15 PM	**Closing Remarks/Depart**

SKILLS EXPLORATION DAYS DESIGN CHALLENGE

Future-Friendly Transportation

Overview

How would your day change if cars, buses, and bikes disappeared tomorrow? You might still be able to reach school or a friend's house if they're nearby, but the number of places you could go and people you could see would shrink significantly.

Transportation is essential to our everyday lives; it connects us to the people, places, and things we rely on. Communities need reliable transportation to access essential services that support health, jobs, education, and recreation. Adequate transportation also allows people to connect with a wider range of community members to support their social network and overall sense of belonging. [1] Ultimately, the farther we're able to go, the more opportunities and services become available to us.

Design Rationale

Personal and public modes of transportation have come a long way since the invention of the wheel, but many ways we travel today come with problems that affect people and the planet. In highly populated cities, increasing numbers of cars lead to traffic jams, long travel times, stressful commutes, and an increase in fuel consumption. In 2021, transportation was responsible for 28 percent of Canada's greenhouse gas emissions, with the largest proportion coming from road transportation.[2] These emissions harm the climate by contributing to global warming and can also pose health risks by polluting the air people breathe.

Beyond environmental and efficiency concerns, transportation systems also raise issues of accessibility and equity. Not all transportation is designed for everyone, leaving many without access to safe, comfortable, and affordable options to get from place to place. As of 2022, access to convenient public transportation was only available to half of our world's urban population [3] and transport issues remain a critical concern for many rural and low to middle-income communities. [4] It can be extremely expensive to implement new transportation options and in busy cities, there is often limited space for new infrastructure without disrupting people's homes, businesses, and the natural environment.

Engineers and inventors are working on more sustainable and inclusive ways to move people. Driverless electric vehicles and solar-powered buses have already hit the roads, while exciting innovations such as flying taxis are being explored.

But there's still room for improvement and that's where you come in. This challenge asks you to imagine the future of transportation. How can we make traveling cleaner, easier, and safer for everyone?

Problem Scenario

Your team has been selected to design or redesign a personal or public mode of transportation that is unique to your community. This challenge will require your team to create a prototype or scale model of your design that addresses the following concerns:

- **Sustainable:** Primarily uses sustainable building materials/techniques/design principles
- **Eco-friendly**: Uses cleaner or renewable energy that reduces harm to the environment
- **Innovative**: Has features or technology that don't exist yet or improve what we already use
- **User-Friendly**: Is easy, safe, and comfortable for the intended user

Success Determinants

Success will be determined by the degree to which your design solution:

- Addresses the design challenge
- Addresses an identifiable need
- **Is original** (not an exact copy of something that already exists) **and as realistic as possible**.
- Utilizes the tools and materials provided in a creative and safe manner
- Aligns to the design motto: *Make it smaller, stronger, do more, be easier to use, be cheaper.*

***Prototype:** a model that illustrates the functionality of an idea or design. It may be life sized or scaled to a model that fits in your hand.

***Sustainable Transportation:** transportation methods that minimize environmental impact while still safely and efficiently moving people and goods [5]

SUGGESTED RESOURCES TO GET YOU STARTED

6 Reasons Why Access to Transport is so Important[1]
Canadians' commutes: Still car-heavy, but some lighter footprints[2]
Sustainable Development Goals: Sustainable Cities and Communities[3]
Introducing Reshaping Transport, a Virtual Design Challenge[4]
Sustainable Transportation: A Comprehensive Overview[5]
When is Public Transport Really Accessible?
Transportation 101 (video)
An Animated History of Transportation (video)
Sustainable Transportation
National Geographic: Transportation Infrastructure
Future transportation: These emerging technology trends will transform our roads and skies
12 Future Transportation Technologies to Watch
Would you travel by flying taxi? Here's everything you need to know

Scan to access links to the design challenge resources →
(or visit https://qrco.de/designresources)

HUMAN-CENTERED DESIGN THINKING ACTIVITY

Look for printed student copies of the worksheet in your toolbox!

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1. EMPATHIZE: Design something meaningful for your partner

Have a conversation with your partner to find out what they know about the topic, make personal connections, and find out what is most important to them by asking them questions.

What does the term *sustainable transportation* mean to you? Tell me about how you travel to all the places you need to go in a week. What's your favourite mode of transportation and why? What issues do you encounter when travelling/commuting? Is there a technology or design feature that would improve your existing transportation? Are your existing transportation options eco-friendly? Are there any unique modes of transportation in your community that stand out? What are some examples of sustainable transportation you've seen in your community or abroad? Ask them to: "tell me stories", "tell me why you feel that way", or follow up on a comment.

2. DEFINE: What is the problem your partner is trying to solve?

_____

Partner's name

needs a way to _____

What: Pick ONE problem that is most important to your partner that you need to solve. What are they most concerned about? What are they most passionate about?

because _____

_____

_____

Why: Explain why this problem is important to your partner. Use facts or stories from #1 to help explain.

3. IDEATE: Brainstorm & sketch solutions to solve your partner's ideas

Sketch 2-4 ideas to help solve the problem

Add lots of detail. Use words and arrows to help describe your sketches.

Share your sketches, gain feedback & redesign ONE idea

Share your sketches with your partner. Use their feedback to modify, redesign or create a new idea.
Share this sketch with your group. Who has the best solution to the design challenge?
Everyone needs to sketch the final idea on the Final Prototype Sketch.

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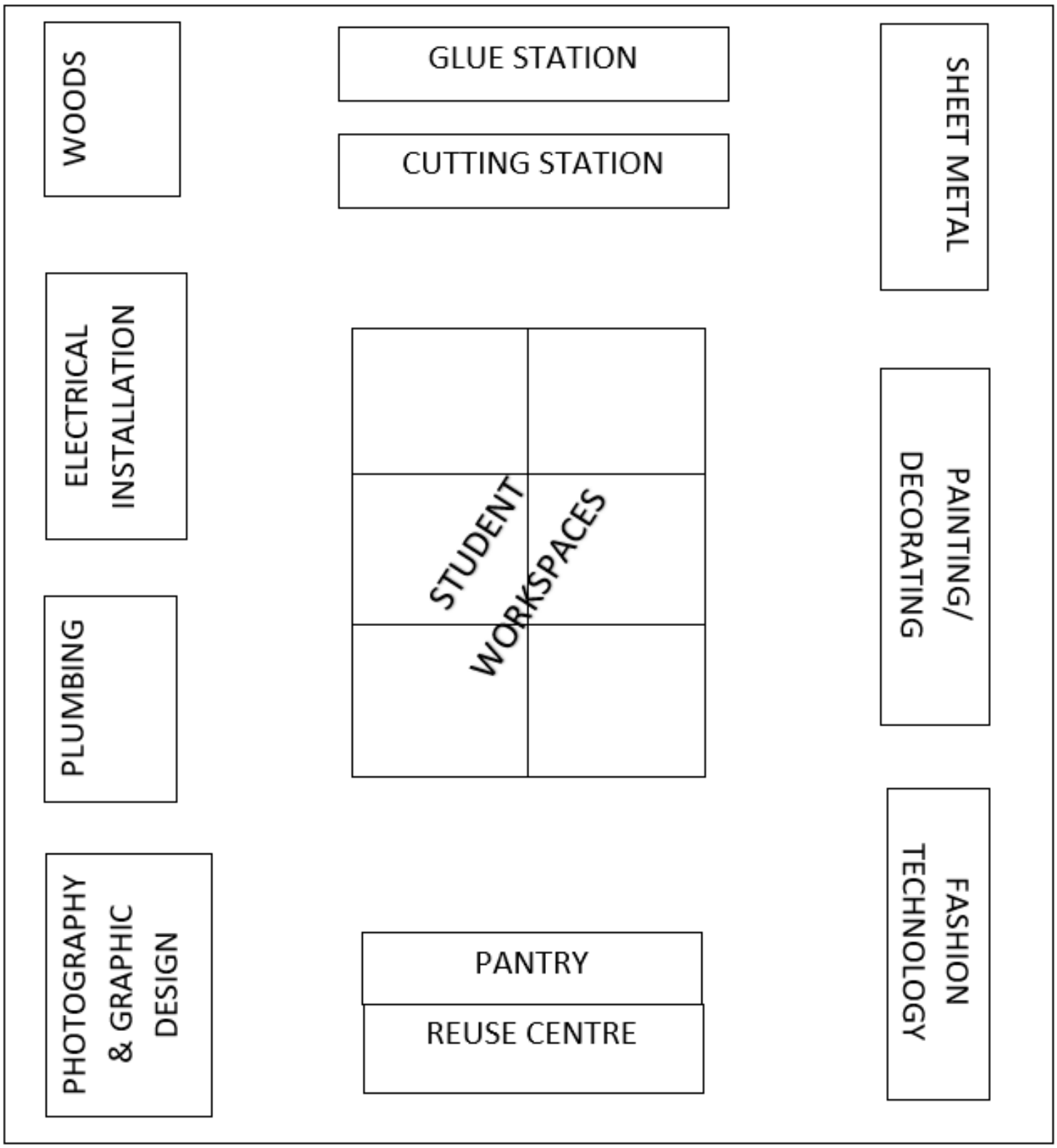
Final Prototype Sketch

Please use this sketch at Skills Exploration Days – it will be the blueprint to help you build your prototype.
Don't forget to add a title for your prototype!

SAMPLE FLOOR PLAN

Here is a sample floor plan to show the work stations needed during Skills Exploration Days to build the prototype. Please modify to meet your needs.



WORK STATIONS

These are some tools and materials that **MIGHT** be included in the toolbox.
Use the chart below to place the tools and materials from the toolbox into the correct work stations.

STATIONS	TOOLS	MATERIALS	SAFETY
WOODWORKING (Carpentry & Cabinet Making)	Cordless Jig Saw Hand Saw Cordless Dremel Tool Cordless Drill Cordless Orbit Sander Hammer Tape Measure Multi Bit Screwdriver Combination Square Saw Horse Brackets	***Teachers must include scrap pieces of wood*** Work Station Sign Jig Saw Blade Dremel Tool Kit Drill Bit Set & Driver Bit Set Spade Bit Set Sanding Disks & Sponge Nails & Screws Clamps Wood Glue	High Adult Supervision Must Wear Safety Glasses, Ear Protection and Gloves Masks provided for dust
ELECTRICAL INSTALLATION	Linesman Plier Wire Stripper	Work Station Sign Solar Power Kit Wire Switches & Plugs Marrettes	Low Must Wear Safety Glasses and Gloves
PLUMBING	Tape Measure Crimper PEX Cutter	Work Station Sign PEX Pipe Fittings, Couplings, Crimp Rings	Medium Must Wear Safety Glasses and Gloves
SHEET METAL	Riveting Tool Tin Snips & Hacksaw Bender & Metal File	Work Station Sign Sheet Metal Rivets Hacksaw Blades	Medium Must Wear Safety Glasses and Gloves
PHOTOGRAPHY	Camera	Work Station Sign Film	Low
GRAPHIC DESIGN	***Teachers may provide computers (optional)***	Please utilize materials you have on hand	Low
PAINTING & DECORATING	Please utilize materials you have on hand	***Teachers should use cardboard or plastic to protect tables*** Work Station Sign	Low
FASHION TECHNOLOGY	Heat Press	Work Station Sign Fabric Thread, Needles & Buttons Transfer Paper	Medium Must Wear Gloves to Prevent Burns When Using Heat Press
CUTTING STATION	Utility Knife & Scissors Metal Ruler	Workstation Sign	Medium Must Wear Gloves to Prevent Cuts
GLUE STATION	Hot Glue Guns	Workstation Sign Hot Glue Sticks	Medium Must Wear Gloves to Prevent Burns
PANTRY	N/A	**Teacher are given a $100 gift card to purchase crafting items (ex: popsicle sticks, zip ties, velcro, magnets, tape, etc)**	N/A
REUSE STATION	N/A	***Teachers must provide pieces of cardboard, foam, fabric, etc***	N/A
SAFETY	First Aid Kit Foam Earplugs Safety Glasses Face Mask Work Gloves	Work Station Sign Duct Tape (secure cords to floor)	

SKILLS EXPLORATION DAYS FAQS

1. How much time should I dedicate to Skills Exploration Days before the virtual facilitation?

While it is up to you how much time you want to spend on the classroom activities before the virtual facilitation, we ask that you review all safety information with students and ensure they feel comfortable using any tools they plan to use to build their prototype. Time spent on the Learn-A-Skill kits is very dependent on your students' starting skill level and confidence with the tools. Some teachers may spend a few class periods while others stretch it over a month or so.

It is also important that students have a thorough understanding of the design challenge and have a prototype sketch ready to go for December 2nd. At a minimum, we suggest a couple class periods to research the design challenge and another one or two to complete the design thinking worksheet. Ultimately, the more background knowledge students gain on the design challenge topic, the more successful they will be during the design thinking worksheet which generally results in more creative and meaningful prototypes.

We encourage you to think big when it comes to building Skills Exploration Days into your classroom and curriculum. With a bit of planning, the design challenge topic could easily be the catalyst for an inquiry project lasting several months in your classroom!

2. How and when will my toolbox arrive at my school?

If you registered for an early bird toolbox, you will receive your toolbox mid-September. If you registered for a toolbox in the fall, you will receive your toolbox by the end of October at the latest. All toolboxes will be shipped directly to your school.

3. Do I have to complete all the Learn-A-Skill activities with students?

We know every classroom looks different, so while it is up to you how you facilitate Skills Exploration Days in your classroom, please ensure you review all safety information on any tools and materials being used with students. In addition to teaching the safety and skills associated with the tools and materials, the Learn-A-Skill kits are great for making students aware of what they have available to them when building their prototypes.

4. I don't feel comfortable using all the tools with my students. What should I do?

We understand there may be a big learning curve for you as a teacher with some of the tools and materials provided.

If you are not comfortable with a certain tool, feel free to exclude it from your facilitation with students. Some teachers choose to use 3-4 Learn-A-Skill stations one year and introduce the others the following year.

We also strongly encourage you to bring in some industry experts, teachers, or additional volunteers to assist with the Learn-A-Skill activities and prototype building. People in your community with some trades expertise are a great resource for both you and your students. Additional volunteers are also important for supervising and ensuring students are working safely.

SKILLS EXPLORATION DAYS FAQS CONTINUED

5. What are some examples of previous prototypes?

Check out some prototypes built by students for last year's **alternative dwellings design challenge!**

6. How do I tune in to the virtual Skills Exploration Days on December 2nd?

We will email all registered teachers a Webex link to tune in to the live Skills Exploration Days.

7. What should be on the prototype title page?

Teachers can decide on the criteria for the title page. Depending on the complexity of the prototype, some students may have lots of time to work on this while others may be quite limited and building their prototype down to the last second.

Possible elements include:

- Name of the prototype (hopefully this makes it on there!)
- A picture/diagram of the prototype (created digitally, hand drawn, taken on a camera)
- A logo for the prototype
- Information about what problem the design solves
- Information about who could use the prototype
- Materials used to build the prototype
- How the prototype works
- Challenges encountered when designing the prototype

8. What should I do with the tools once Skills Exploration Days is over?

All tools and materials received for Skills Explorations Days are to remain at your school to support the growth of your CTF programs! You may want to give students time after Skills Exploration Days is over to further test and refine their prototype design. Many teachers also choose to facilitate the design thinking challenge with a different group of students in the spring.

Other suggestions for using your Skills Exploration Days toolbox:

- Keep Skills Exploration Days going year-round! Check out our **Taking Making into the Classroom** resource for more design challenges
- Set up a maker space in your school
- Disperse tools to option classes that require them
- Donate duplicate tools your school doesn't need to other schools in your district
- Hold a teacher training session at your school to show other teachers how to use the tools and Learn-A-Skill resources in their own classroom

9. Who should I contact if I still have questions?

Questions regarding registration can be sent to Javiera de Rossi at javierad@skillsalberta.com
All other questions regarding Skills Exploration Days can be sent to Claire Lecocq at clairel@skillsalberta.com

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