



Skills Exploration Days

2022 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 trade and technology careers as a valuable and rewarding career choice

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 will include the tools and materials students will need to participate in Skills Exploration Days. As well, an interactive Skill Kit activity is included to help students explore the design challenge topic as well as familiarize themselves with the tools and materials available for building their prototype. Using the skills learned with the Skill Kit, students will come together for an interactive live-stream to build a prototype that provides a solution to the Design Challenge and 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 Skill Kit activities, the Design Thinking Process, and 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!

New registered schools will be provided with a toolbox that will include the tools, materials and PPE that students will need to build their prototype. Schools that have previously attended Skills Exploration Days and received a toolbox are provided with a "top up" toolbox. These toolboxes will remain with the school to support your programs! Pick up details are TBA.

Note: Schools are encouraged to supplement the building with tools, technology and scrap/recycled materials already available at their school. See page 9 for a list of items included in the toolkit and to be supplied by the school.

**INTERACTIVE LIVE-STREAM
REGISTRATION**

**December 6, 2022 9:00am-2:00pm
September 28, 2022 8:30am**

The registration fee is \$250 per new school and a \$150 top-up fee per returning school. Up to 60 schools can participate (30 new & 30 returning) with 30 students per school. Request additional spots by making a waitlist request on the registration portal. The drop deadline is on **October 19, 2022**, after this date schools will be invoiced 50% of the total amount. Once a school has picked up their toolbox, the school is invoiced for the full amount. Registration and additional student spot requests are rewarded on a first-come first-serve basis.

HOW DO I REGISTER?

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

◆ Registering as a Skills School is free of charge. Visit <https://skillsalberta.com/resources/become-a-skills-school/> then "Click Here to Register as a Skills School". Once registered, a username and password will be emailed to you.

Login to the www.skillsalberta.com registration portal using your username and password by selecting the "**Login**" link that is found in the top navigation bar.

◆ Login to the registration portal and select the "Skills Exploration Days" tab.

◆ Once registration opens, click on the green "Add New" and select the number of spots you would like. These spots will be added under "Registered Participants". If a spot is not available or if you would like to request additional spots, click "Add New" in the Waitlist Request section. Waitlist granting will take place on **October 5, 2022**.

◆ You are required to provide each student's name, their parent/guardian's name and e-mail. An online consent form is sent directly to the parent/guardian's e-mail. All consent forms must be completed by **November 23, 2022**.

GET STARTED IN THE CLASSROOM!

Follow these steps to ensure all in-classroom activities are completed prior to attending Skills Exploration Days

Teachers: Please visit the [Skills Exploration Days Website](#). 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.**

Read the 2022 Teacher Guide, the Skill Kit Presentation, and the Design Thinking Presentation- In our 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. In our Skill Kit Presentation, you'll find detailed steps and helpful tips to run the projects smoothly in your classroom. Our Design Thinking Presentation will help you facilitate your students through the design thinking worksheet. Read these documents **BEFORE** starting Skills Exploration Day with students!

Overview of Steps to Facilitate Skills Exploration Days with Students:

Step 1: [Research the Design Challenge "Sustainable Food Systems Solutions" 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 a very creative and meaningful prototype.

Step 2: [Tool Safety and Exploration](#)— Get students familiar with the tools and materials provided in the toolkit. This is a chance to **emphasize safety** with students and give them a chance to get their hands on the tools that they're most excited about! Need to learn how to use a jig saw? Scan the QR code on the tool to find out!

Step 3: [Set up the Skill Kit in the Classroom](#) - To be used prior to Skills Exploration Days. The skill kit includes two interactive activities to help students explore the design challenge topic as well as familiarize themselves with the tools and materials available for building their prototype. With more information on how to facilitate the Skill Kit in your classroom, refer to the [Skill Kit Presentation](#).

Step 4: [Check out the Skills Exploration Days Padlet & Kahoot](#)- Get students familiar 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 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 toolkit). 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: [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 7: [Tune in to the Skills Exploration Days Interactive Live Stream and Build a Prototype!](#)

Let the building begin! With their Final Prototype Sketch in hand, students will put come together for an interactive live-stream to build their prototype and showcase their million dollar design!

Step 8: [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

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
9:15 AM	Welcome Announcements & Safety Video
9:30 AM-12:30 PM Check out the Skills Exploration Days Padlet! Use the QR Code for easy access! 	<p>Build Prototype</p> <p>Using their final prototype sketch, students will have approximately 3 hours to build a prototype by implementing the skills and knowledge acquired during the in-classroom Skill Kit. Students will visit work stations including Electrical Installation, Fashion Technology, Painting & Decorating, Plumbing, Sheet Metal, and Woodworking (Carpentry/Cabinet Making). Everyone must wear PPE (gloves, safety glasses, ear protection) provided by SCA in the toolkits. Students must wear fully covered shoes, long pants and long hair must be tied back.</p> <p>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.</p> <p>Lunch Break (flexible timing)</p> <p>Please have students bring a bagged lunch and take a lunch break at a time that suits your students.</p> <p>Create a Title Page</p> <p>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.</p> <p>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.</p>
12:30-1:00 PM	<p>Clean up & Display Prototype</p> <p>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.</p> <p>Curious how we put together a live-streamed event across Alberta? Enjoy a behind the scenes look at the cool technology used at Production World to put on Skills Exploration Days while you clean up!</p>
1:00PM	<p>Gallery Tour</p> <p>Students get the chance to test their prototype, answer questions and visit other displays.</p>
1:30 PM	<p>Reflection & Evaluation</p> <p>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.</p> <p>Use the QR Code to easily access KAHOOT! The game pin will be provided and displayed by the Skills Alberta Host.</p> 
1:45 PM	Closing Remarks /Depart

SKILLS EXPLORATION DAYS DESIGN CHALLENGE

Sustainable Food Systems Solutions

Overview

Do you ever look in your fridge and wonder where your food comes from? Every piece of food has a story to tell. Corn that starts its life in Argentina may travel thousands of miles away to the U.K. to be made into breakfast cereal which might even end up in your pantry. Grapes and strawberries grown in Peru are shipped across continents to fill grocery store shelves in Canada year-round. Those carrots on your plate might have come from the United States or maybe from a local farmer down the road.

All of the food we eat has its own journey to make within the food system. “But profound changes in the way food is grown, processed, distributed, consumed, and wasted over the last several decades have led to increasing threats to a future of food that is sustainable, equitable, and secure. Today, food systems are at the center of many of the critical challenges we face.”

Design Rational

Food is essential to our lives. It not only keeps us healthy and fuels us to do the things we love, but it is central to our cultures, families, and communities. With our world population projected to reach 9.8 billion in 2050, we need to be creative about how we’re going to produce enough food for people around the globe and create a future of food that is good for people and the planet.

Unfortunately, from growing to consumption, our current food systems and food practices are unsustainable to meet the needs of our changing world. “Each part of a food item’s journey produces greenhouse gases — whether it’s the carbon emissions from the forests that are mowed down to grow crops, or the methane gas released from livestock such as cows and goats. There’s also the exhaust from the trucks, trains, ships and planes that transport food across borders, and the fluorinated gases that seep from the refrigerators that keep food cool and fresh until it’s purchased.”¹ That’s not all! We as Canadians waste 40% of the food we produce, costing us \$31 billion yearly and further contributing to greenhouse gas emissions. Food systems are not only major contributors to climate change, but they are also severely impacted by it. Extreme weather events caused by global warming such as floods, droughts, and fires all affect how and where we can produce food.

Climate change isn’t the only negative impact our food systems have on our planet. Over the past few decades, the goal of producing more food at a lower cost has resulted in a loss of biodiversity, a greater impact on land and water usage, as well as a heavy reliance on fertilizers and pesticides. As a result, our food and our soil is less nutritious making future growing more challenging.

So here’s the big question: How do we create a better food future for everyone, everywhere?²

Problem Scenario

It’s time for us to lead the charge in a food systems revolution! Implementing the principles of sustainable development, your team has been selected to look at a food systems issue either locally or globally. The issue that you choose can exist in any area of the food system (farming/production, processing, packaging, transportation, consumption, or waste). Using your powers of creativity and innovation, your team must choose an issue that resonates with you and develop a prototype to address the concerns raised by the issue. Your prototype must ensure environmental sustainability and contribute to a food future that is healthy for people and the planet.

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.

***Food system:** all of the steps a food goes through from being grown to being consumed, including packaging, transporting, and selling.⁸

***Sustainability:** the ability of a system to last or endure; meeting current human needs without endangering our descendants⁸

SUGGESTED RESOURCES TO GET YOU STARTED

Food Systems Information:

Farming First: Innovations for Sustainable Food Systems: <https://farmingfirst.org/food-systems#home>

Food Systems Infographic: https://www.foodspan.org/pdf/lesson-plan/JohnHopkins_info_0714.pdf

How Much Are Our Food Systems Responsible for Climate Change?: <https://www.weforum.org/agenda/2021/04/study-food-systems-drive-an-estimated-one-third-of-greenhouse-gas-emissions>

Food Secure Canada: Five Big Ideas for a Better Food System: <https://foodsecurecanada.org/policy-advocacy/five-big-ideas-better-food-system>

Food and Agriculture Graphic Connected to 17 Global Goals: https://www.fao.org/fileadmin/user_upload/codexalimentarius/photo-archive/Infographics/SDG-Wheel.jpg

Our Global Food System is the Primary Driver of Biodiversity Loss⁶: <https://www.unep.org/news-and-stories/press-release/our-global-food-system-primary-driver-biodiversity-loss>

Videos:

What is Sustainable Development? <https://vimeo.com/144354623>

What is the Environmental Impact of Feeding the World?: <https://www.calacademy.org/educators/what-is-the-environmental-impact-of-feeding-the-world>

Food Sustainability Basics: <https://video.link/w/uPHzd>

Food Systems Innovations:

The Futuristic Farms That Will Feed the World: <https://video.link/w/8NHzd>

Top 7 Sustainable Food Innovations from 2020: <https://www.springwise.com/innovation-snapshot/sustainable-food-business-ideas-2020>

Self Sustainable Zero Waste Productive Home in Melbourne Demonstrates Future: <https://video.link/w/uOHzd>

References:

[Global Alliance for the Future of Food²](#)

[Support for Sustainable Food Systems⁴](#)

[United Nations Department of Economic and Social Affairs³](#)

[Climate Change and Food Systems⁵](#)

[Exploring the Impacts of Feeding the World⁸](#)



HUMAN-CENTERED DESIGN THINKING ACTIVITY

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



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 do the terms food system, sustainable, production, consumption and waste mean to you? Where does most of the food you eat come from? How much food do you waste and why? What are some examples of irresponsible production, consumption, and disposal actions of food that you see happening in your school or community? How could you make your local food system more sustainable? Have you heard of any food systems issues happening globally? 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.

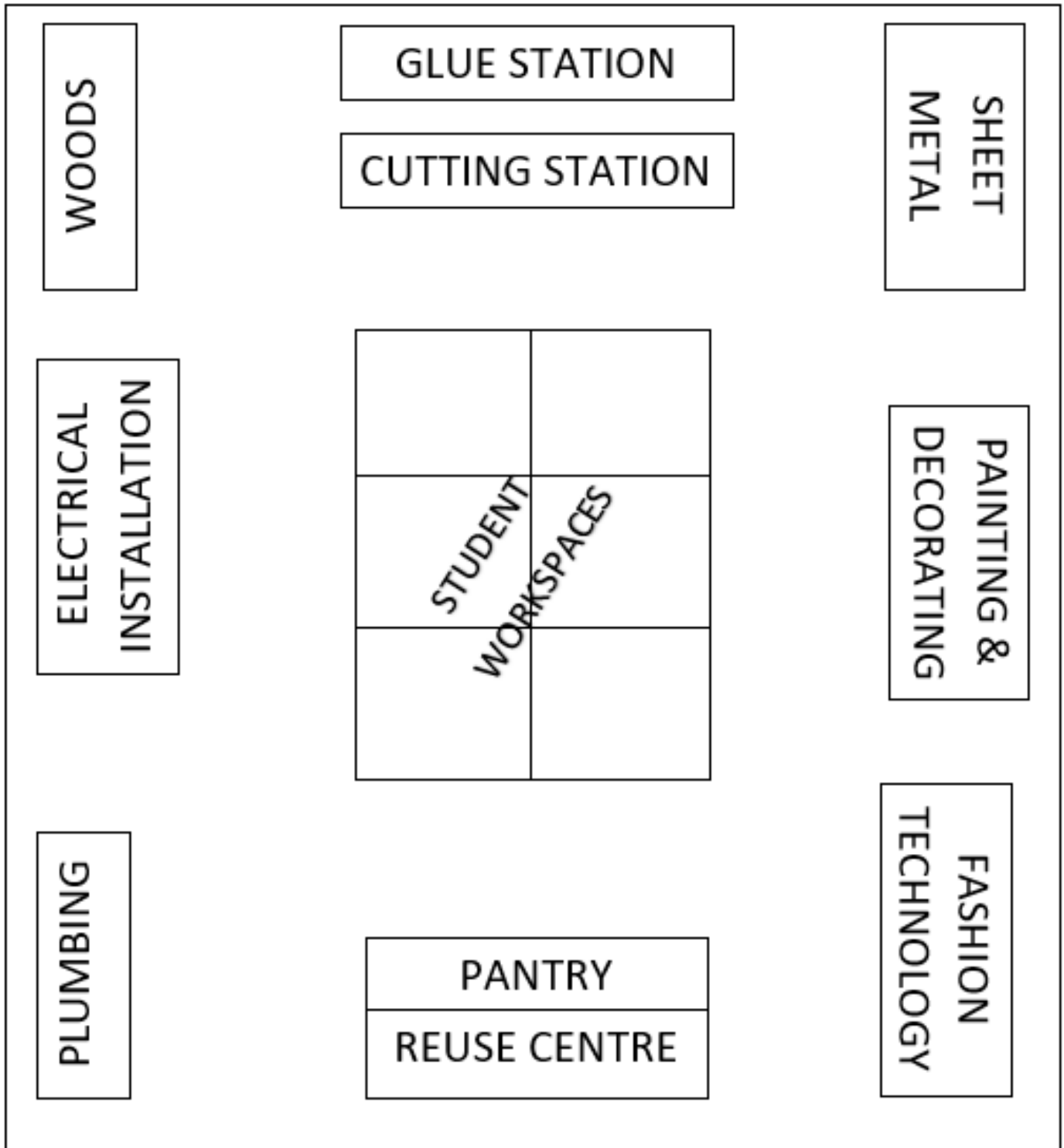


Final Prototype Sketch

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	<i>Teachers must include scrap pieces of wood</i> 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
ELECTRICAL INSTALLATION	Linesman Plier Wire Stripper	Work Station Sign Solar Power Kit Wire Switches & Plugs Marrettes	Low Must Wear Safety Glasses and Gloves
PLUMBING	Manual Mitre Box Tape Measure Hand Saw	Work Station Sign Pipe Fittings C-Clamps	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
PAINTING & DECORATING	Please utilize materials you have on hand	<i>Teachers should use cardboard or plastic to protect tables</i>	Low
FASHION TECHNOLOGY	Sewing Machine Cordless Hand Sewers	Work Station Sign Fabric Landscape Fabric Thread, Needles & Buttons	Low
CUTTING STATION	Utility Knife & Scissors Metal Ruler		Medium Must Wear Gloves to Prevent Cuts
GLUE STATION	Hot Glue Guns	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	<i>Teachers must provide pieces of cardboard, foam, fabric, etc</i>	N/A
SAFETY	First Aid Kit Foam Earplugs Safety Glasses Work Gloves	Work Station Sign Duct Tape (secure cords to floor) Sanitizer (wipe down tools)	