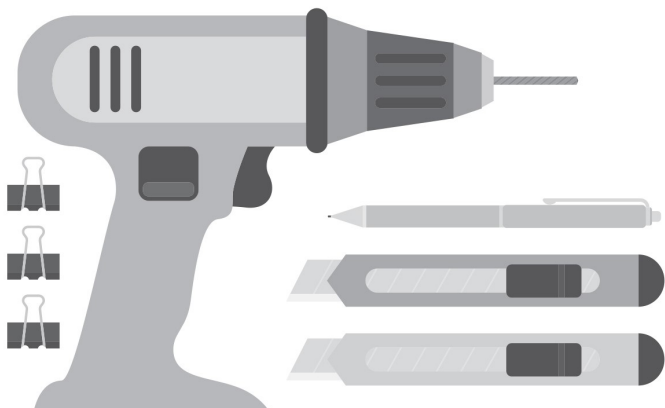


SKILLS

EPL  
RATION

DAYS



2021  
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 day is to encourage the use of empathy through design thinking, inquiry, making, and experiential learning. Registered schools will receive Learn-A-Skill kits to be used in the classroom. The kits allow students to explore their interests and passions about various careers, develop skill and safety knowledge, and get the opportunity to tinker. The in-class exploration with various tools and materials will lead up to one virtual day of Skills Exploration Days. Prior to attending, students must research and be familiar with the **Design Challenge** (pages 5-6). During Skills Exploration Days, students will work in groups of 4 and will be guided through the Design Thinking process by the SCA Education Facilitator. Using the **Human-Centered Design Thinking Worksheet** (page 7), students will solve the Design Challenge and complete a final prototype sketch. Student will implement the skills and knowledge they learned during the Learn-A-Skill kits to design and build a prototype live during Skills Exploration Days.

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 attended the 2020 Skills Exploration Days 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 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.**

**VIRTUAL DATE**

**December 1, 2021** 9:00am - 2:30pm

**REGISTRATION**

**September 29, 2021** 8:30am

The registration fee is \$200 per new school and a \$100 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. Waitlist granting/drop deadline is on **October 20, 2021**, 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](http://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 7, 2020.

◆ 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 3, 2021**.

# GET STARTED IN THE CLASSROOM!

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

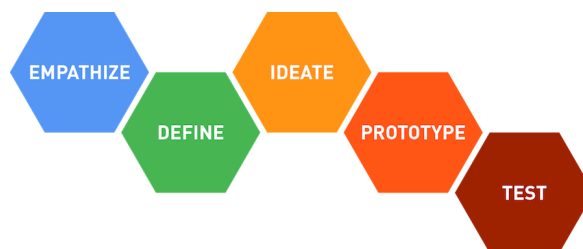
**Step 1:** [Visit the Skills Exploration Days Website](#) - Watch the Skills Exploration Days video to see what a day of exploration looks like, learn the 5 steps of the Design Thinking Process and why design thinking is important to build a meaningful prototype. All the resources are available on this website.

**Step 2:** [Read the 2021 Teacher Guide](#) - 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 career 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 6 kits around the classroom and students (5/group) rotate through. Each kit includes a mandatory career and safety information video student must access via a QR code.

**Step 4:** [Research the Design Challenge “Evolution of Sports Through Innovation” 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 5:** [Introduce the Human-Centered Design Thinking Worksheet in the Classroom](#) - The design challenge is an engaging topic that encourages students to focus on human-centered concerns by using empathy. Inform students that empathy is being able to understand how someone else is feeling, even when you aren't in the same situation. Empathy can make you feel a spectrum of emotions, including joy, pride, excitement, fear, sadness, etc. Students must understand that they will **not** be designing a prototype for themselves. Using the worksheet, they must “put themselves in someone’s shoes” to gain empathy and design a prototype to meet that person’s needs. [Show this video to your students!](#)






**Step 6:** [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 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 9. **Be part of the show! We recommend using a large screen to project the virtual production of Skills Exploration Days so all the students can see! And don't forget to turn those speakers up!**

**Step 7:** [Complete the Human-Centered Design Thinking Worksheet and Build a Prototype at Skills Exploration Days](#) Now that students are experts on the Design Challenge topic, the Skills Alberta host will facilitate the design thinking process as students follow along and complete their Human-Centered Design Thinking worksheet (included in the toolkit). Completing the worksheet will be a breeze with our visual prompts and timers. Students will sketch their million dollar design in the Final Prototype Sketch section which will be the blueprint to build the prototype.

**BONUS:** [Taking Making into Classrooms: A Toolkit Fostering Curiosity and Imagination in Alberta Classrooms](#) Provides background information on the maker movement, design thinking, makerspaces and assessment tools all while making connections and references to the Alberta CTF Program of Studies. 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 virtual Skills Exploration Days link
9:15 AM	Welcome Announcements & Safety Video
9:30 AM-10:30 AM	<p><b>Design Thinking Process &amp; Worksheet</b></p> <p>Students must be ready to work in groups of 4 and each student must have their own copy of the <b>Human-Centered Design Thinking Worksheet</b>. Worksheets are provided in the toolbox. Students will be guided through the design thinking process and worksheet by the Skills Alberta host. Using the research and background knowledge about the Design Challenge gained in the classroom, students will now work in groups to <b>Empathize, Define and Ideate</b> their million dollar design into a final prototype sketch. This sketch will be the blueprint used to build the prototype.</p> 
10:30 AM-12:00 PM	<p><b>Build Prototype</b></p> <p>Using their final prototype sketch, students will have <b>2.5 hours</b> to build a prototype by implementing the skills and knowledge acquired during the in-classroom Learn-A-Skill kits. Students will visit 7 <b>work stations</b> including <b>Electrical Installation, Fashion Technology, Graphic Design, Painting &amp; Decorating, Plumbing, Sheet Metal, and Woodworking (Carpentry/Cabinet Making)</b>. Everyone must wear <b>PPE</b> (gloves, safety glasses, ear protection) provided by SCA in the toolkits. Students <b>must</b> 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 <b>Pantry</b> and scraps at the <b>Reuse Centre</b> where they will be challenged to recycle, reuse, and become aware of environmentally-friendly materials.</p> <p><b>Teachers are required to be present and onsite all day.</b> Be <b>engaged</b> and <b>active</b> with your students but allow them to independently construct their prototype as much as possible. Teachers are responsible for ensuring students are <b>on-task</b> and demonstrating <b>safe</b> behaviors. If possible, have volunteers or industry experts help at the work stations.</p>
Check out the Skills Exploration Days Padlet! Use the QR Code for easy access!	
12:00-12:30 PM	<p><b>Lunch Break</b></p> <p>Please have students bring a bagged lunch.</p>
12:30-1:30 PM	<p><b>Finish Building Prototype &amp; Create a Title Page</b></p> <p>Schools are encouraged to have <b>Graphic Design</b> 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>
1:30 PM	<p><b>Clean up &amp; Display Prototype</b></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>
1:40 PM	<p><b>Gallery Tour</b></p> <p>Students get the chance to Test their prototype, answer questions and visit other displays.</p>
2:15 PM	<p><b>Reflection &amp; Evaluation</b></p> <p>Finally, all students will appraise their skills and knowledge used to respond to the challenge by participating in a fun <b>Reflection and Evaluation</b> game via KAHOOT. <b>Please have computers or devices available to play.</b></p> <p>Use the QR Code to easily access KAHOOT! The game pin will be provided and displayed by the Skills Alberta Host.</p> 
2:30 PM	<b>Closing Remarks /Depart</b>

# SKILLS EXPLORATION DAYS DESIGN CHALLENGE

## Evolution of Sports Through Innovation

*Look for printed student copies in your Toolbox!*

### Overview

Did you watch the Tokyo 2020 Summer Olympic and/or Paralympic Games? Are you excited to watch the Beijing 2022 Winter Olympics? Even if you don't care much about sports, there really is something magical about the Olympic and Paralympic Games. Athletes from around the world train for years to deliver their best performance. We all yell at the TV in hopes our voice will give the athletes that extra little boost, we cry tears of happiness for the winners and we sympathize with the losers. It brings people from all over the world together.

The first Olympic Games took place in 8th century BC in Olympia, but then in 4th century AD, Emperor Theodosius banned the Olympics. Thankfully, the athletic tradition was resurrected about 1500 years later and the first modern Olympics were held in 1896 in Greece. The first-ever Winter Olympics, originally known as "International Winter Sports Week," was held in 1924. It wasn't until 1948 when Paralympic history was made with archery wheelchair at the Stoke Mandeville Games, which later became known as the Paralympic Games in 1960.

### Design Rational

It's very interesting to see how sports have changed throughout Olympic history. Tug of war, hot air ballooning, ski ballet, dueling pistol, swimming obstacle race, and rope climbing are (sadly) not part of the Olympics anymore. But don't worry, new sports are always being introduced! Karate, surfing, skateboarding, climbing and BMX freestyle all made their first debuts at the 2020 Summer Olympics along with badminton and taekwondo making their debuts at the 2020 Paralympic Games. It's also interesting to compare the number of sports at each event - there are 33 Summer Olympic sports (but only 22 Summer Paralympic) and 15 winter Olympic sports (but only 6 winter Paralympic).

Not only have the types of sports changed, but so has the evolution of sports equipment used by athletes. Olympic sports have become more competitive, a lot safer and athletes are breaking world records all thanks to advanced innovations in equipment. Sports equipment has undergone unique transformations over the decades. For example, it was only 150 years ago that baseball players have started wearing gloves, and in the 19th century, hockey players attached blades to the bottom of their boots. Even more mind blowing is all the specialized equipment, also known as assistive devices or assistive technology, used at the Paralympic Games. Racing wheel chairs have evolved dramatically over the years and is now designed to fit so precisely and aerodynamically that athletes can reach speeds of 30 km/h and more.

### Problem Scenario

To get into the Olympic and Paralympic spirit, your team has been selected to design a sports equipment prototype OR an assistive device/technology prototype. This challenge will require you to either: invent a new sport, re-invent an existing sport, or make an existing sport more inclusive. Then you must:

- Design or redesign a new sport equipment to help athletes perform better
- Design or redesign an assistive device/assistive technology to enable athletes with physical disabilities to participate

### Success Determinants & Parameters

For this design challenge, your prototype **must be original** (not an exact copy of something that already exists) and **as real looking as possible**. Other criteria and parameters for a successful prototype are outlined below.

Success in the classroom will be determined by:

- Quality, uniqueness, and usability of the prototype design sketch to ensure it adds value for the users.
- Creative and appropriate use of the potential tools and materials that will be provided.
- Alignment to design motto: Make it smaller, stronger, do more, be easier to use, be cheaper.

Success at Skills Exploration Days will be determined by:

- Ability to integrate (appropriately and safely) tools and materials from at least 3 different Learn-A-Skill stations.
- Quality of your final display - title of prototype, final prototype sketch, project description and team reflection.
- Self-evaluation of the design, prototype and your personal skill set.

**\*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.

**\*Sports Equipment:** the tools, materials, apparel, and gear used to compete in a sport and varies depending on the sport. The equipment ranges from balls, nets, and protective gear like helmets, or a tool used to help the athletes play the sport.

**\*Assistive Device:** a device or tool that is designed, made, or adapted to assist a person perform a particular task. (canes, crutches, walkers, wheelchairs)

**\*Assistive Technology:** an umbrella term for the wide range of systems, devices or equipment intended to help people with disabilities. It can be "low tech" (mobility aids such as wheelchairs and prosthetics) or "high tech" (computer programs such as speech recognition and screen readers.)

# SUGGESTED RESOURCES TO GET YOU STARTED

## **Olympics and Paralympic Game History & Info:**

The Modern Summer Olympic Games- A Timeline: <https://www.history.com/topics/sports/modern-olympic-games-timeline>

1 Minute Videos of Tokyo 2020 Summer Olympic Sports:  
<https://olympics.com/tokyo-2020/en/sports/one-minute-one-sport-olympics>

First Winter Olympics: <https://www.history.com/this-day-in-history/first-winter-olympics>

Beijing 2022 Winter Olympic Games: <https://olympics.com/en/beijing-2022/>

List of Summer and Winter Olympic Sports: <https://olympics.com/en/sports/>

Paralympic History: <https://www.paralympic.org/ipc/history>

Tokyo 2020 Paralympic Games: <https://www.paralympic.org/tokyo-2020>

List of Paralympic Sports: <https://www.paralympic.org/sports>

Videos of Paralympic Sport A-Z: <https://www.youtube.com/watch?v=0bZ51jzmbAQ&list=PL6CBAXPeBajl7Ev8ooo3vG0E5mZlug-8q>

24 Facts About the Olympics That Will Blow Your Mind: <https://www.ef.com/wen/blog/language/24-facts-about-the-olympics/>

## **Sport Evolution:**

Top 10 Weirdest Olympic Sports of All Time: <https://www.casino.org/blog/10-weirdest-olympic-sports-of-all-time/>

Then & Now - How Sports Have Evolved: <https://olympic.ca/2020/11/10/then-and-now-how-sports-have-evolved-over-the-decades/>

How to Invent a Sport: <https://www.youtube.com/watch?v=Ryl37A7RhKw>

How to Reinvent a Sport: <https://www.youtube.com/watch?v=DHY93PxVFnc>

## **Sports Equipment:**

Sports Equipment Definition: [https://en.wikipedia.org/wiki/Sports\\_equipment](https://en.wikipedia.org/wiki/Sports_equipment)

The Evolution of Sports Gear: <https://sportsretriever.com/uncategorized/evolution-sports-gear/>

The Most Dramatic Olympic Sport Equipment Advancements:  
<https://olympic.ca/2015/11/10/the-most-dramatic-sport-equipment-advancements/>

## **Assistive Device & Assistive Technology:**

Assistive Device Definition: [https://www.medicinenet.com/assistive\\_device/definition.htm](https://www.medicinenet.com/assistive_device/definition.htm)

Assistive Technology Definition:  
<http://www.differencebetween.net/technology/difference-between-assistive-technology-and-adaptive-equipment/>

What is Assistive Technology Video: <https://www.youtube.com/watch?v=DoukGhIKBm8>

Cutting-Edge Technology Behind Para Sports: <https://www.paralympic.org/feature/cutting-edge-technology-behind-para-sports>

How Assistive Technologies In Sports: <https://www.understandingdisability.org/AssistiveTechnologies/>



# 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 emotions and thoughts do you feel about athletes competing at the Olympic and Paralympic games? What is your favorite sport and why? What do the terms "sport equipment", "assisted devices" and "assisted technology" mean to you? How could sports equipment or an assisted device/technology be used to improve a sport, make it safer and enable people with disabilities to play? 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.

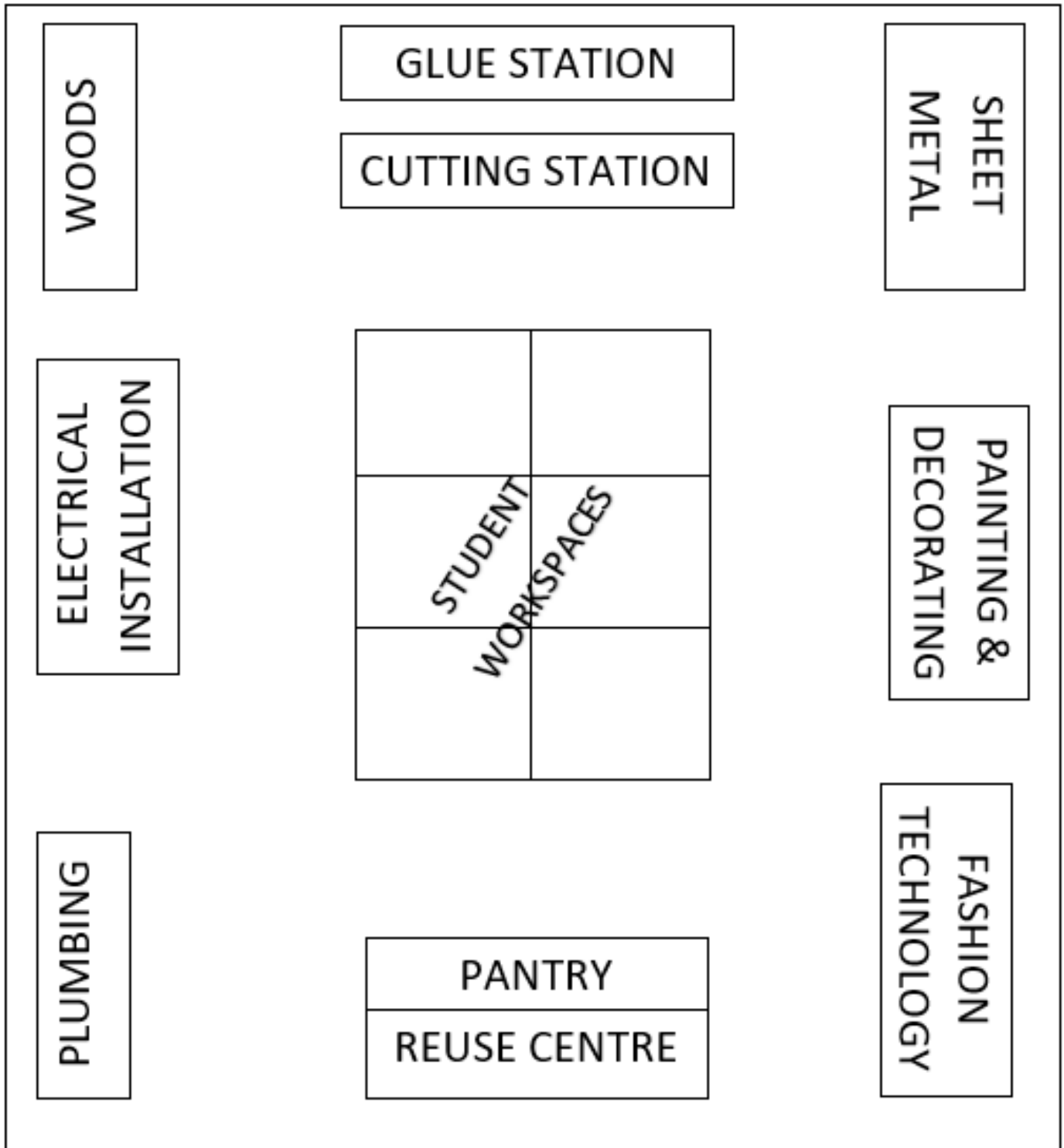


## Final Prototype Sketch

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.





# LEARN-A-SKILL 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)	Corded Jig Saw Hand Saw Cordless Dremel Tool Cordless Drill Corded Orbit Sander Hammer Tape Measure Multi Bit Screwdriver Combination Square	<b>Teachers must include scrap pieces of wood</b> Jig Saw Blade Dremel Tool Kit Drill Bit Set & Driver 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	Wire Switches & Plugs Marrettes	Low Must Wear Safety Glasses and Gloves
PLUMBING	Manual Mitre Box	Pipe Fittings	Medium Must Wear Safety Glasses and Gloves
SHEET METAL	Riveting Tool Tin Snips & Hacksaw Bender & Metal File	Sheet Metal Rivets Hacksaw Blades	Medium Must Wear Safety Glasses and Gloves
PAINTING & DECORATING	Tempura Paint Sticks	<b>Teachers should use cardboard or plastic to protect tables</b>	Low
FASHION TECHNOLOGY	Sewing Machine Cordless Hand Sewers	Fabric Thread, Needles & Buttons	Low
CUTTING STATION	Utility Knife & Scissors Pull Cutter (Klever) 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	<b>Teachers must provide pieces of cardboard, Styrofoam, fabric</b>	N/A
SAFETY	First Aid Kit Foam Earplugs Safety Glasses Work Gloves	Duct Tape (secure cords to floor) Sanitizer (wipe down tools) Face Masks (social distancing) Learn-A-Skill Station Signs	