

SKILLS EXPLORATION DAYS DESIGN CHALLENGE

Evolution of Sports Through Innovation



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.¹

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.¹ The first-ever Winter Olympics, originally known as "International Winter Sports Week," was held in 1924.² 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 1960.³

Design Rationale

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.¹ 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,⁴ 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.⁵

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 Olympics²: <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 History³: <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 Mind¹: <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

The Evolution of Sports Gear⁴: <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

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=DoukGhKBm8>

Cutting-Edge Technology Behind Para Sports⁵: <https://www.paralympic.org/feature/cutting-edge-technology-behind-para-sports>

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