In this activity,

You’ll assemble and build your own lightsaber! Learn how lightsabers were made for the first Star Wars movie, A New Hope, and about two theories for how lightsabers could work in real life.

Ideas to Explore

- How lightsabers were constructed for A New Hope.
- How lightsabers might work in real life if humans had the technology to build them.

Words to Know:

The Force - an energy field that connects all life in the Star Wars galaxy together. Its power can be used by the Jedi, the Sith, and other Force-sensitive beings.

Lightsabers - powerful weapons that channel the Force, lightsabers come in a variety of different colors and are used by Jedi Knights and Sith Lords in combat.

Jedi Knights - part of the larger Jedi Order, they are the guardians of “peace and justice.” They use the Force to protect and defend others and carry lightsabers.

Sith Lords - the evil counterparts of the Jedi Knights, they use the Dark Side of the Force to acquire power. They carry red lightsabers.

Hilt - a weapon’s handle.

Blade - the part of a weapon or tool that cuts.

Reflector - an object or material that can reflect light in a specific direction.

Laser beam - a narrow beam of light produced by a laser.

Plasma - a neutral gas that is heated at a high temperature until it is ionized, creating energy. Once this happens, the gas can conduct electricity and create magnetic fields.
Stuff You’ll Need:

This activity requires specific materials and, for younger kids, an adult’s help.

- A computer/tablet/smartphone to watch videos
- A ruler or tape measure
- Scissors
- (1) 3 ft. long fluorescent tube protector
  - T8 size, found at some hardware stores.
  - The tube needs to be approximately 3 feet long—if the tube is longer, you can trim it to make it shorter (an adult should help with this).
- (1) Small 9-LED size flashlight
  - Many different styles are available on Amazon.com.
  - The battery cap should be on the bottom of the flashlight so it can stick out slightly from the hilt—this will allow you to change the batteries more easily.
- Batteries (for your flashlight)
  - Many LED flashlights come with batteries. Use the batteries required for your flashlight. Most 9-LED flashlights take AAA batteries.
- (1) Cardboard tube
  - Paper towel tubes work best! (If using toilet paper tubes, you will probably need two).
- Duct tape
  - Chrome works best for the reflector.
  - Having multiple colors of tape is great for designing your hilt! You can use different colors like black, chrome, gold, white, and red.
- Permanent markers
  - Don’t use washable markers as they will come off the plastic tube.
  - The Avery Large Desk-Style Size markers work best, but Sharpie markers work too.
  - It’s a good idea to have multiples of the colors you’re using as the markers can wear out.
- Sandpaper; 220 grit (recommended)

Before you start!

In Star Wars, Jedi Knights and Sith Lords wield lightsabers in combat. Lightsabers are deadly and powerful weapons. Could lightsabers exist in real life? People have wanted to build lightsabers since the first Star Wars movie, A New Hope, premiered in 1977. Even today we don’t have the technology to build one.

Watch this video to hear a Museum of Flight educator explain two ideas for how humans could make lightsabers in the future. You’ll also learn how lightsabers were constructed on the set of A New Hope!

Want to learn more about the science behind lightsabers? Watch Lightsabers: Science and Star Wars
Now, Make it!

Step One

Using a paper towel tube or toilet paper tube(s), create a hilt that is approximately 7.5 inches long.

» Line up a ruler evenly with the bottom of one end of the tube. The ruler and tube should be side-by-side (or you can flatten the tube and place the ruler on top of it).

» Find the 7.5 inches mark on the ruler. Draw a line on the tube at this spot. This is how long your hilt will be.

» Trim off the extra tube.

» Note: If using toilet paper tubes, you may need to tape two tubes together (duct tape works well) to achieve the necessary length.

Fit your cardboard tube (hilt) to the diameter of your fluorescent tube protector (blade).

» Use a ruler to help you draw a straight line down the tube lengthwise. Cut the cardboard tube along the line.

» Wrap the cut cardboard tube around one end of the fluorescent tube protector (it may overlap).

» Tape the seam closed (duct tape works well).
Step Two

Install the flashlight into the opposite end of your hilt (cardboard tube) from the fluorescent tube protector (blade).

» To make the flashlight fit snugly, wrap duct tape around the end of the flashlight and slide it into the tube.
» You may need to add more tape depending on the width of the tube.
» Remember to keep the flashlight battery cap exposed so batteries can be replaced when needed.

Step Three

Color and sand the fluorescent tube protector (blade).

» Color the entire fluorescent tube protector (blade) with a permanent marker. You can use any color you want.
» It will take awhile to color the entire tube—be patient!
» After you color the entire fluorescent tube protector, sand the tube with a sheet of 220 grit sandpaper to diffuse the light from the flashlight.

What color will you make your blade?

Get some help coloring!
Step Four

Make the reflector.

» Use one of the black plastic end caps from the tube guard to create a simple reflector. This will help light up the fluorescent tube.
» Stretch a piece of chrome duct tape over the inside facing end of the cap. Trim it cleanly so it can be re-inserted into the end of the fluorescent tube protector (blade). *(This can be a little tricky and you may want to have an adult help you trim the tape.)*
» If you want, add a piece of chrome tape to the outside-facing end of the cap just for looks.
» Install the cap at the opposite end of the fluorescent tube protector (blade) from the cardboard tube (hilt).
» Optional: Finish by wrapping a wide strip of duct tape around the end.

Step Five

Decorate your cardboard tube (hilt).

» Decorate your cardboard tube (hilt) with markers and tape! You can use different colors of duct tape to make designs on your hilt or completely cover the cardboard.
Step Six

Turn on your flashlight and watch your lightsaber glow. Now you are ready to defend the galaxy!

Want More?

During your next visit to The Museum of Flight,

• Explore the Aviation Pavilion and the World War II gallery in the Personal Courage Wing to see more planes that inspired Star Wars!

• Visit the Museum during our annual Star Wars Reads Day held annually in the Fall for more Star Wars fun!

Make it Connect!

What other technology from Star Wars do you think humans could replicate now or in the future? Share some of your ideas with your friends and family.

Explore some of the other videos on the Science and Star Wars website to see how the science and technology featured in Star Wars is being used in real life!

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