

CRANK FLASHLIGHT

Environment & Outdoors



THE ADVENTURE:

Build a flashlight that will never run out of batteries! Powered by turning the crank, your flashlight will provide reliable light for short periods whenever you need it.

PLAN:

- What do you know about the parts of a flashlight?
- What do you know about the parts of a circuit?
- What do you know about motors and generators?
- Where will you find all of the materials to build your flashlight?

DO:

- Gather all of the necessary materials and tools.
- Use a generator, LEDs, capacitors and a crank to build your flashlight.
- What circuit elements do you need to use?
- How can you make your flashlight brighter? How can you get the light to last longer?
- Build a case for your flashlight, making sure all of the parts fit inside.
- Turn the crank, and watch your flashlight glow.

SAFETY NOTE:

Soldering irons get very hot! Use caution when soldering circuit elements together. Keep a first aid kit close at hand.

REVIEW:

- What do you know now that you did not know before?
- Other than a crank, how else could you generate electricity?
- What else could you power using similar technology? How could you scale up this technology?
- How sustainable is this technology? Why?
- Could you build a similar device without a pre-made generator? How?
- What elements of STEM were in this adventure? Science? Technology? Engineering? Mathematics?
- What did you like about this adventure? What did you not like? What would you do differently?

MATERIALS:

- LEDs
- Capacitors
- Diodes
- Wires
- Cardboard or plastic tubing for a case
- Generator
- Crank
- Electrical tape
- Solder and soldering iron

ONLINE RESOURCES:

- **How to Build a Crank Flashlight** - www.brighthubengineering.com/diy-electronics-devices/109647-how-to-build-a-magneto-crank-flashlight/
- **How to make a hand crank flashlight** - youtube.com/watch?v=cTmLKf6CL4A
- **How hand-powered generators work electronics** - howstuffworks.com/gadgets/travel/hand-powered-generators.htm
- **Modify a Hand-Crank Flashlight** - usbhandcrankflashlight.blogspot.ca/