



INDUSTRIAL TECHNOLOGY

Industrial Technology will teach 4-Her's about the design, building, and use of engines, machines, equipment, and structures to prepare them and provide them with the skills needed for 21st-century jobs.

SPARK IDEA

Chocolate Welding

For this activity, you will need four unwrapped chocolate bars and a glass measuring cup of boiling water (your heat source for the weld). Place two glasses on a solid surface at the same span distance you did for the plank bridge. Unwrap the chocolate bars. Hold the edges of two chocolate bars against the outside of the glass measuring cup. The heat from the hot water will cause them to melt slightly. Press the melted edges together in a right angle and leave to cool. Use the same process to weld the other two chocolate bars together. When both of the half sections have cooled, melt the remaining long edges and press them together to form the box. Let them cool at least 20 minutes (speed up the process in the refrigerator)

OPPORTUNITIES TO EXPLORE

- Seek out welding competitions for youth.
- Sign up for vocational classes offered by your school or community education programs
- Tour a local welding business
- Visit a business that does small gas engine repairs and see how they troubleshoot problems
- Work a summer job with a local HVAC installer, electrician, carpenter, or welder

PROJECT LEVEL GOALS

Beginner	Intermediate	Advanced
<ul style="list-style-type: none">● Identify parts of a small engine● Identify tools used with small engines● Wire a simple circuit● Learn how to connect wood using glue and nails● Learn the role of electrodes in welding	<ul style="list-style-type: none">● Classify small engine types● Identify internal small engine parts● Make simple electrical repairs● Enhance knowledge on sanding and getting a good finish● Join two pieces of metal	<ul style="list-style-type: none">● Identify small engines by sound● Identify and use diagnostic tools● Choose the correct part for a circuit● Discover joining, clamping, and connecting techniques● Use a cutting torch

CAREERS

There are many careers that are in high demand that can be explored in Industrial Technology. These include: HVAC Technician, diesel mechanic, pipefitter, welder, small gas engine mechanic, carpenter, electrician, farm equipment technician, machinist, welding inspector

SKILL DEVELOPMENT IN THE PROJECT

Building **Leadership & Service Skills**: Check homes of family/friends for electricity hazards, repair metal items for a local nonprofit, repair furniture for people in need, do a small engine tune-up day with proceeds going to a local charity

Polishing **Communication Skills**: Check homes of family/friends for electricity hazards, repair metal items for a local nonprofit, repair furniture for people in need, do a small engine tune-up day with proceeds going to a local charity

Learn about **Entrepreneurship**: Start a lawn mowing business, repair items and charge a fee, create simple activity kits to teach kids about electricity - market the kits to summer camps, afterschool programs, or parents, find a project that you enjoy enough to replicate and start a business making them

Discover new **Technology Interests**: Try a project on a CNC machine (router), smart Home technology, incorporation of robotics, engineering, and computer programming in welding, lithium-ion battery electric starting technology replacing pull start

Engage in other **County, Regional, & State Events**: State Fair, Local Fairs/Achievement Days, Tech/STEM/Careers Camp

Connect with a **Mentor**: High School Ag/Tech teacher, local shops (mechanics, repairs, production, installations), 4-H Volunteers

EXHIBIT IDEAS

Make a display of fillet welds vs electrode - Make a display of careers related to welding - Display of basic electrical tools and parts - Display of light bulbs - Comparisons and purpose - Build a birdhouse or feeder, dog house, or a toy train set - Display showing routine repair and maintenance of small gas engines - Display comparing 2-stroke and 4-stroke engines - Display showing the components of a heat pump system