



MAINE MUSEUM OF
INNOVATION
LEARNING +
LABOR

Energy

Innovation Kit

Teacher's Guide:
Lesson 6

Made possible in part by:

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Introduction

Maine MILL's Innovation Kit program provides lessons and materials to schools throughout Maine designed to inspire them with stories, experiences, and paths for the future. The Energy Innovation Kit focuses on energy innovation, renewables, and solar energy. Students learn about the history of how power was generated in Maine's mills and factories, and how new forms of energy are captured and deployed. They explore electricity, make circuits, and build solar cars. They learn about jobs in the field, including electrician, solar installer, and electrical engineer, and hear from people in these jobs today. Our Energy Information Kit offers teachers 2 weeks (6-8 class periods) of lessons and activities and all the necessary materials to successfully complete each. Each lesson and activity is linked to Maine State Learning Standards and Next Gen Science Standards, where applicable, to help teachers achieve their curricular goals for the year.

How to Use the Energy Innovation Kit Teacher's Guide

The lessons and activities in this kit are designed for students in upper elementary through middle school. Each lesson contains learning objectives, complete instructions for the lesson from set up to closing, assessment tools, and standards. Teachers have the flexibility to deliver the lessons in sequential order, scaffolding students' knowledge, or they may select individual lessons based on students' past knowledge, experience or ability level. Where appropriate cross-curricular activities, alternate ideas for assessment and lesson alternatives are noted. Materials provided in the kit are only for the lessons provided in this teacher's manual and not for alternate suggested lessons.

Care of the materials in the Energy Innovation Kit

Enough materials have been provided in this kit for 75 students (3 classes of 25 students each). Many activities require students to work in pairs or small groups. All materials in the Energy Innovation Kit are contained in sturdy plastic boxes. Handle the trunk the materials are delivered in with care, it will be heavy. It is recommended that teacher's store materials in a room that can be secured. Each box is labeled with the activity the material is for and a checklist for teachers to use when returning materials to the box. Please note any materials that may have been damaged on the checklist sheet.

Note about Consumable Materials

Lesson 3 contains a selection of consumable materials for students to use in the construction of their model water wheels. Please return any unused materials with the kits to reduce the amount of waste.



How Can You Save the World? Careers in Renewable Energy



Innovation Kit Day 8

Time: 1 - 50-60 minute class period

Lesson Note: As an alternative to this lesson, or in addition to it, teachers may choose to invite a professional working in the solar energy industry to visit the class to describe the work they do, why they chose the career, the educational pathways available to qualify to do the work they do, and why the work they do is important.

Learning Objectives:

- Students will reflect on their unique strengths, skills and career aspirations.
- Students will explore examples of career paths by reading or viewing profiles of various professionals.
- Students will be able to describe possible careers available within the energy industry.
- Students will understand the multiple paths to careers in the energy industry.

Materials Needed:

- Computers with access to the internet
- [“HELP WANTED”](#) activity sheet
- Optional: art supplies/poster board (materials not provided in the Innovation Kit)

Set Up:

1. Have a computer with a projector set up before students arrive with [“Electricians Will Save the World”](#) and [“ReVision Energy Electrical Apprenticeship Program”](#) videos ready to show the class and the [Solar Energy Career Map](#) ready to show students during teacher modeling.
2. Have enough copies of [“Help Wanted”](#) activity sheet for each student.
3. There are 2 options* for how students can present their work for this activity:
 - a. Create a job listing using the editable Google Doc template "Help Wanted" shared with students. Have students make a copy to edit on their own. These can then be shared with the teacher digitally or printed and turned in. Based on the skills and ability levels of your students you may choose to have them change the fonts and add additional elements or even use a free poster creating software (i.e. Canva) to create their listing but all elements from the template must be included.
 - b. Create a poster using large paper/poster board and art supplies. Make sure to have enough supplies for all students if selecting this option. Students can follow the same template model but will create the document by hand and will draw rather than download a picture.

*It is recommended that the teacher choose ONE option for the entire class to follow for ease of instruction, but teachers may give students a choice in how they would like to present their information if they choose. Age and ability levels should be taken into consideration.

(Set Up Cont.)

4. Set the stage with music - have music cued up. (See introduction below)

Introduction

1. Set the mood with music. As students are entering the room before the bell rings/class period begins, play a song that mentions working. There are lots of options out there, but here are a few suggestions: 9 to 5 - Dolly Parton, Morning Train (9 to 5) -Sheena Easton, Hard Days Night - The Beatles, Takin' Care of Business - Bachman Turner Overdrive, Workin' for a Living - Huey Lewis & the News.
2. Ask the students to reflect on ways in which renewable energy resources will help curb the climate change crisis. Answers should include reduction in carbon admissions, reduction in environmental impact, etc. Then ask them to brainstorm as a group ways that they could contribute to finding solutions to climate change. Answers will likely include personal efforts like using less water and electricity, driving electric vehicles or riding bikes more, etc. Encourage students to also consider careers they might choose that could help combat climate change.
3. Together as a class watch the video from ReVision Energy "[Electricians Will Save the World.](#)" Following the video ask students to brainstorm other jobs that might be needed in renewable energy. Encourage students to consider all the different steps involved in the production of renewable energy and to think outside of the box.
4. Next watch the video from ReVision Energy "[ReVision Energy Electrical Apprenticeship Program](#)" Following the video, ask students to consider what the different paths to careers might be. Answers will likely include college, vocational technical school, military, etc. Encourage students to think about what types of jobs might be appealing to them.

Instructions, Teacher Modeling, Guided Practice

1. Explain to students that they are going to create a "Help Wanted" listing for a profession in the solar energy industry that is interesting to them.
2. Distribute the "Help Wanted" student activity sheet, or share the editable sheet digitally. Review the "Would You Rather" section together as a class, and give students 5 minutes to complete this section independently.
3. Display the [Solar Energy Career Map](#) for the class to see. Highlight the information on the X and Y axis, and demonstrate how to use the chart to view a short summary of each job. Explain that students should review the summary for each of the jobs listed there and then select 3 they would like to learn more about. Students should then read the detailed descriptions for each job, and select the ONE that they think could be the most interesting for them.

Independent Work Time

1. Students should use this time to complete “Help Wanted” activity. Make sure to answer any questions or to address technical issues as they arise.

Closing and Homework

1. Have students clean up all supplies.
2. Unfinished work should be sent home to complete for the next class.

Standards

Maine Learning Results - Life and Career Ready Standards

(K-12) Standard A.1 Self-Knowledge Students demonstrate an understanding of their own capabilities, characteristics, attitudes, and how these attributes impact their future choices, including local, state, national, and global opportunities.

(K-12) Standard A.3 Problem Solving Students are engaged community members who identify problems and apply skills to resolve problems within local and global communities.

(K-12) Standard B.1 Exploring Opportunities Students understand their options and can navigate choices and experiences concerning interests and future opportunities.

(K-12) Standard C.2 Career Awareness and Adaptability Students integrate personal aptitudes and interests, changing employment trends, community and societal needs, and current economic conditions into ongoing career plans, adapting as necessary.

Rubric for Poster Assessment

Category	4	3	2	1
Coverage of Topic	The poster includes all required information plus additional information.	The poster includes all of the required information.	The poster includes most of the required information.	The poster includes little of the required information.
Images	The image helps the reader to better understand the nature of the work required for the selected job.	The image mostly helps the reader to understand the nature of the work required for the selected job.	The image does not generally help the reader understand the nature of the work required for the selected job.	The image is missing or unrelated to the topic.
Use of class time	Used time well during the class period. Focused on getting the project done. Never distracted others.	Used time well during each class period. Usually focused on getting the project done and never distracted others.	Used some of the time well during each class period. There was some focus on getting the project done but occasionally distracted others.	Did not use class time to focus on the project AND/OR often distracted others.
Grammar/ Legibility	There are no grammatical errors, and the poster is legible	There are no grammatical errors, and the poster is mostly legible.	There is 1 grammatical error, and the poster is mostly legible.	There are 2 or more grammatical errors, and it is difficult to read.