

INVENTION AND INNOVATION OF EVERYDAY THINGS

A UNIT in Two Lessons for Fourth and Fifth Grade Classes

Unit Overview:

The everyday things that we rely on in our homes were all created by someone, somewhere. Most of the items that we use to keep things clean, to communicate and to entertain ourselves today are all innovative advancements on much simpler designs and early inventions. This unit will examine an early innovation from our history.

Unit Summary:

Students will learn that everyday items that we rely on today have their roots in earlier inventions. They will have the opportunity to discover the history of the Fresno Scraper and through the story of the development of this foundational farming tool they will learn about the phases of invention. The unit will conclude with students applying their new knowledge about the phases of invention to create with own innovation.

Time Allotment:

Two 30-40 minute lesson plans.

Grade Level: 4-5

Standards

History-Social Science Content Standards

Chronological and Spatial Thinking

1. Students explain how major events are related to one another in time.

Research, Evidence, and Point of View

1. Students frame questions that can be answered by historical study and research.
2. Students detect the different historical points of view on historical events and determine the context in which the historical statements were made (the questions asked, sources used, author's perspectives).

Historical Interpretation

1. Students explain the central issues and problems from the past, placing people and events in a matrix of time and place.
2. Students understand and distinguish cause, effect, sequence, and correlation in historical events, including the long-and short-term causal relations.
3. Students explain the sources of historical continuity and how the combination of ideas and events explains the emergence of new patterns.
4. Students recognize the role of chance, oversight, and error in history.
5. Students recognize that interpretations of history are subject to change as new information is uncovered.

Reading: Informational Text 4th Grade

1. Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
3. Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
7. Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

Writing Standards 4th Grade

2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
 - a. Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.
 - b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.
 - c. Link ideas within categories of information using words and phrases (e.g., *another*, *for example*, *also*, *because*).
 - d. Use precise language and domain-specific vocabulary to inform about or explain the topic.
- e. Provide a concluding statement or section related to the information or explanation presented.

Reading: Informational Text 5th Grade

1. Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
3. Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
7. Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.

Writing Standards 5th Grade

2. Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.
5. With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing.
6. With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.
2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

Learning Objectives

Students will be able to:

Define Invention

Understand the process of developing innovative solutions to everyday problems by inventing new tools

Describe the Fresno Scraper, its purpose and the present-day invention that replaced it today

Plan their own invention using the phases of invention.

Materials

Video:

AJ Fox, *On the Road* segment for KSEE Channel 24

<https://www.facebook.com/ajfoxwx/videos/2462636003861560>

Web (Reading):

History of the Fresno Scrapper

<https://www.valleyhistory.org/fresno-scraper>

Handout:

History of the Fresno Scrapper Questions Sheet

Introduction and Learning Activity #1: History of inventions - The Fresno Scrapper

Set-up:

Begin a discussion with the class about invention and innovation. Ask students to name a few inventors that they are familiar with.

Read the following quote from thriveglobal.com introduce the topic of inventions

“The invention has been given to man to advance in his own life and to teach future generations. So, maybe, to invent something is to open the eyes more and detect what is needed, what would make the world better and more beautiful. Inventing is being a visionary.”

– Published on May 8, 2019, <https://thriveglobal.com/stories/why-are-inventions-so-important/>

Tell students that in the Central Valley, we have several local people who have created and improved upon inventions that have impacted all of society in certain aspects. Students will be learning about one of these inventions and how it improved agricultural the Central Valley and beyond.

Then, have students read (in-depth) the history of the Fresno Scrapper on the Fresno County Historical Society website. Next, for further information have students watch the brief video about the Fresno Scrapper (links available in materials).

In small groups, have students complete the answers to the questions from the *History of the Fresno Scrapper* worksheet (listed in materials).

Learning Activity #2: Create an Invention

Tell students they will now have the opportunity to create a plan for an invention. Have students work together in small groups for this activity. Ask them to complete the following phases of creating an invention:

Concept Phase:

- Think about a current, everyday problem that you would like to solve. Explain why it is a problem, what the concern is, and how the problem impacts your daily life?
- Next, conduct research on the internet or with library resources and brainstorm possible solutions to the problem.
- Then write a proposal for how to solve this problem.

Design Phase:

- Draft a plan for how to develop your invention, include items such as costs for materials, type of materials, identify resources needed.

Build Phase:

- Sketch a model or build a prototype of your invention using materials that you have readily available to you.

Allow for students to share their invention with the class or groups to receive feedback.

Assessment

Use the following questions to guide a recap discussion, as a quiz, or a guideline for a quick drawing assignment.

Learning Activity #1:

Recap discussion: Discuss the significance of inventions. Ask students for a take-away about the learning about the history of the Fresno Scraper. What was most significant thing they learned from about from the process of inventions, such as the Fresno Scraper?

Learning Activity #2:

Review & Redesign: After completing their invention plan, tell students to review their work (invention), and identify areas that they may want to do differently to improve their design.

Extension Activity

Learning Activity #2:

Reflection Paper: Have students write a reflection paper on their experience of creating an invention to solve an everyday problem. What did they learn about the issue? What did they learn about themselves through this process? Would this invention be something that they would like to pursue developing further?

Distance Learning Options

- Assign the readings and require two group discussions before presenting.
- Hold discussions via video conferencing software like Zoom or Teams.
- Use breakout sessions via Zoom or Teams to assist in group work activity.
- Alternatively, require students to contribute to an online discussion board 1-2 times per week.
- Hold live stream or video presentations in which each student is required to fill 1 minute of time.
- Each group share out to class to ensure all students comprehend the content.