

Background

One of the hallmarks of the Industrial Revolution is the flurry of new inventions and innovations that changed all aspects of daily life. These inventions had both positive and negative impacts. The inventions and innovations of the Industrial Revolution helped create the world we live in today.

Inventors work to find solutions to everyday issues. When we think of inventors, men are often the first to come to mind, but many women invented items that transformed American society.

Task

Students will consider how inventions changed everyday life throughout the Industrial Revolution. They will learn the design process and design their own invention that would improve the life of women during the Industrial Revolution.

Materials

Drawing Paper

Pen & Pencil

Building Materials: recycled boxes, paper clips, construction paper

Tape

Scissors

Vocabulary

Design Process: a tool that helps you break down large projects into smaller, easier-to handle stages.

Prototype: a first, typical or preliminary model of something, especially a machine, from which other forms are developed or copied.

Steps

Invite students to consider inventions that changed the world during the Industrial Revolution.

Create a list of inventions that may include:

Cotton Mill

Light Bulb

Sewing Machine

Explain that inventions improve our lives in many ways. They make our tasks easier, entertain us, improve our knowledge of the world, and even save lives!

Ask students how they think these new ideas are created and collect their thoughts.

Have students look at the patent for the Ice Cream Maker and lead an inquiry.

-What do you notice?

-How do you think this invention is used?

-Why might it be needed or what problem does it solve?

-Who is the user of the invention?

-Is this something we still use today?

Invite students to read the resource on the [Ice Cream Maker Patent](#)

-How did Nancy. M Johnson's patent change the way ice cream is made?

Students can research more about women inventors [here](#) and learn about an additional female inventor, [Sybilla Masters](#), whose innovative work predates that of Johnson.

Once students have a clear understanding of how inventions may improve our lives, introduce them to the design process.

Inform students that inventors follow a process similar to how a scientist will follow the scientific method.

The steps of the design process include the following:

Define: the problem. What issue or task are you trying to solve or improve?

Empathize: Consider who will be using the invention or design. What is their age? What specific modifications might they need to make life easier?

Brainstorm: This is where designers are the most creative. Working in groups, designers will pass around ideas that may be unattainable but will help get ideas flowing. There is no actual building in this step which allows designers to think outside the box.

Prototype: After designers have ideas on how to solve their problem, they will create drawings and then progress to a three-dimensional model made from found materials.

Test: Once a model is created, designers will then test their prototypes to see if they work, if they are safe, and if they need any changes. This is done by allowing others to use the prototype.

Launch: The final step is to launch the design or invention to the general public.

- Note the design process is never finished. There is always room for improvement and new iterations. Use the iPhone as an example of a product that is constantly moving through the design process.

For a case study on the design process direct students to [Eone Bradley Timepiece](#)

Inform students that they will be designing their own invention that would improve the life of someone during the Industrial Revolution. But first, they need to identify some problems.

Divide students into design teams or groups of 3-4 students.

Have design groups explore [The Five Points](#) painting and brainstorm ways life could be improved for the various people in the painting.

For additional ideas students can research a photo from the Lewis Hines Collection in the [National Archives Catalog](#) showing children and women working during the industrial revolution.

Explain that the design teams will design an invention that would make life easier for the people in this painting. Students can choose any person in the painting to consider, empathize with, and design for.

The groups will work through part of the design process.

They will begin by empathizing with the people in the image and brainstorm as a group through drawings and notes.

Once they have a solution to making life easier for the people in their photos, they can begin to prototype.

Prototypes can begin as drawings, similar to the ice cream patent. When the team decides which invention would be best, they will test it with the class.

Students can 'test' their prototypes by sharing their ideas with the class and taking suggestions for improvements. After gathering feedback from fellow designers they can make a second iteration of their invention.

This time, they can begin to make a 3-D model of their invention or, if supplies are limited, the project can remain a drawing.