



## Inventions 2: The Impact

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### Purpose

To help students see what inventors have to think about when making an invention, particularly the kinds of effects they can have on people.

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### 3C Issues in Technology #2

When a group of people wants to build something or try something new, they should try to figure out ahead of time how it might affect other people....

### Resources

- [CBC 4 Kids: The Lab](#)
  - [The Smithsonian Institution](#)
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### Context

This lesson is the second of a two-part series on technology and inventions. Students are introduced to the world of inventions and how their ongoing development continues to affect all aspects of living—in both good and potentially bad ways.

In [Inventions 1: Edison and the Light Bulb](#), students learn how inventions are created to solve problems or improve the way things are done. The revolutionary invention of the light bulb by Thomas Edison is used as an example.

In [Inventions 2: The Impact](#), students focus on the process of inventing, particularly on what short- and long-term issues inventors have to consider before developing an invention. They examine a number of other revolutionary American inventions and are encouraged to evaluate the effects of their own invention ideas in terms of their usefulness and public impact.

At this early level, it is important to introduce students to the idea of technology, and help them to identify its various forms and ongoing effects on society. It is also worthwhile to help them see that technology, including the invention of processes and tools since the beginning of time, shows that people have some control over their destiny and can handle problems by searching for better ways to do things, inventing solutions, and taking risks. (*Benchmarks for Science Literacy*, p. 53.)

Having students take part in simple design projects gives them interesting opportunities to solve problems, use tools well, measure things carefully, make reasonable estimations, calculate accurately, and communicate clearly. They are also given the opportunity to ponder the effects that their inventions or projects might have, particularly on their surroundings. (*Benchmarks for Science Literacy*, p. 54.)

Ideas in this lesson are also related to concepts found in the following benchmarks:

- 1C The Nature of Science: The Scientific Enterprise (K-2) #1 -2
  - 8B The Designed World: Materials and Manufacturing (K-2) #1-2
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### Planning Ahead

Materials:

- Paper
- Crayons
- Markers

- [Making an Invention](#) student sheet

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## Motivation

Ask students review questions covering material from the first lesson about inventions, how they help to solve problems, and how they continue to affect and improve the quality of people's lives. Questions may include:

- What are inventions? What do they do?
- How do inventors help to solve problems and make life easier for people?
- In what ways did the invention of the light bulb change the way people lived?
- Can anyone be an inventor? What kinds of qualities does an inventor need?

As a lead in to this lesson, ask students questions like:

- Before Edison invented something, do you think he thought about how it would affect people's lives? Why or why not?
- What kinds of things do inventors need to think about before they try to build something? Why?

(Accept all answers, but ask students to support their views.)

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## Development

### The History of Invention

Direct students' attention to [The History of Invention](#), a resource in a timeline format providing a brief history on significant inventions from ancient times to the present.

To help orient students, begin by showing them the light bulb, reminding them of what they previously studied. Then show and have them learn about very important and highly influential inventions like the pencil, bicycle, telephone, automobile, and television.

During the discussion and while clicking on photos of these recommended inventions, ask students questions like these:

- What do you think this invention, the \_\_\_\_\_, was created to do?
- In what ways do you think the \_\_\_\_\_ has helped people?
- What kinds of things did the inventor of the \_\_\_\_\_ have to think about before creating it? (He/she had to think about how much it would cost to develop, time and energy needed to develop it, chance of success, how to get it to people, safety issues, etc.)
- What kinds of future problems could the \_\_\_\_\_ create for people? Why? (Problems might include high cost, unfair distribution, damage to the environment through waste, becoming outdated or replaced by newer inventions, etc.)

### Two Young Inventors

As a way to recognize their own capacities to become great inventors or problem solvers, direct students to the story of [Successful Kid Inventors](#), on the By Kids for Kids site. This page presents a list of kid inventors and the inventions they came up with. Students can click on some of the names on the list to get more information about the inventor and invention.

Ask students to read about a few of the inventors. After doing this reading, ask

questions like:

- What can you tell me about these inventors?
- What makes them special? How do you think they were able to do this? (They were young, good hearted, creative, identified a need, worked hard for a cause, didn't give up, etc.)
- What did they have to think about before inventing their product? (They had to think about the problem they were trying to solve, design and features, reasonable cost, realistic goal, ease of use, etc.)

### **You as the Inventor**

Emphasize again the point that anyone can be an inventor, as long as he or she is willing to work hard and to fail at first or even many times. Then ask students these questions, which they may remember from the beginning of Inventions 1: Edison and the Light Bulb:

- What is something that you find is hard to do?
- Can you think of a tool or device that can help you do \_\_\_\_\_ easier?

Having already taken notes of their replies, help to remind students of these initial invention ideas. Then ask questions like these:

- If you were a young inventor, do you think inventing a \_\_\_\_\_ is a good idea? Why or why not?
- Do you think it could be built?
- What kinds of inventions or technology would you use to build it?
- How might this help people?
- Do you think people would want to buy or use a \_\_\_\_\_? Why or why not?

For the students who initially mentioned unrealistic ideas like, for example, an "invisible ray gun" or a "jet-powered skateboard," the questions above should help them come to the conclusion that, as young inventors, they do not have the realistic resources or the capacity to invent such an item. It may also be found that the idea does not meet the needs of potential users and might, therefore, be a waste of time and effort.

Now divide the class into small groups and encourage them to come up with smarter and more realistic needs-based inventions which, for example, they might be able to invent at their homes on a small budget.

Distribute the [Making an Invention](#) student sheet and explain to the class what each group will need to keep in mind as they develop their inventions. They will do this by talking about the invention and drawing an illustration of it showing the size, features, parts, etc. When finished, each group will have to address each point on the student sheet as they talk before the class about their invention ideas.

Optional Practice Tool: Depending on student levels and computer availability, a fun and creative way for students to brainstorm is to have them first draw out their ideas on the easy-to-use online [Inventors' Sketchbook](#) at Invention at Play. Close supervision may be required for some. Point out the "reset" button to erase sketches. Note that all groups will need to draw their final ideas on paper before presenting them to the class.

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### **Assessment**

Review the key discussion questions and lesson material. Have students answer questions like these:

- Why is it important to think about how inventions might affect people or the environment?
- What did you like or dislike about trying to invent something?
- Would you ever become an inventor? Why or why not?
- Do you ever invent new, better, and easier ways of doing something? If so, what?

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### Extensions

This lesson may be supplemented by [Build a Better Pencil](#), which helps students make and evaluate simple designs, while developing an awareness of the constraints involved in designing and ultimately building something.

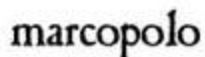
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Students can learn more about inventors and inventions by exploring the [Inventor of the Week Archives](#) from The Invention Dimension. This extensive database offers an alphabetical listing of numerous inventors of the past and present and detailed information on their important accomplishments.

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[Invention at Play](#) is part of the Smithsonian National Museum of American History that challenges students to explore, question, invent, and collaborate to make their own discoveries.

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