

## *Inventors and Inventions I: Teacher's Guide*

**Grade Level:** 3-5

**Curriculum Focus:** Technology

**Lesson Duration:** Two class periods

### **Program Description**

**Animal Tracking Satellites** – Discover how scientists follow elephants, whales, and manatees.

**Baby Stretcher** – When an infant is injured, this child-size stretcher provides more protection.

**Biodegradable Golf Tee** – Take your swing, then leave the tee where it stands. Nature will do the rest.

**Boomerang** – From aboriginal weapon to child's toy, learn about the forces that bring boomerangs back.

**Velcro** – The idea for this handy fastener came from a walk in a field thick with burrs. (Video 1 of *Inventors and Inventions 2-pack*.)

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### **Video Comprehension Questions**

#### Segment 1, Animal Tracking

- Why were radio tracking devices made for animals? (*People were concerned about the condition of animals living in the wild, so radio tracking devices were created to help people learn more about how these animals lived and traveled and whether they were being harmed as their environments were developed for human purposes.*)

#### Segment 2, Baby Stretcher

- How did Wendy Murphy get the idea for the baby stretcher Weevac 7? (*Wendy Murphy first got the idea for the baby stretcher Weevac 7 when she was watching television coverage of an earthquake that showed babies being transported on adult-sized stretchers. She thought that there should be a better way to carry babies and small children.*)
- How does the baby stretcher Weevac 7 work? (*The baby stretcher Weevac 7 can carry up to six babies or small children in specially designed pockets. These pockets are made of vinyl, which keeps the babies warm and helps to protect them from outside temperatures.*)

#### Segment 3, Biodegradable Golf Tee

- How were Casey Golden's biodegradable golf tees originally made? (*Casey Golden's biodegradable golf tees were originally made of fertilizer, peat moss, grass seed, flour, and applesauce, which would become soft and blend into the earth after they were used. They were microwaved and then sanded to resemble the traditional golf tee shape.*)

#### Segment 4, Boomerang

- What are the two types of boomerangs, and how are they used? (*The two types of boomerangs are the nonreturn boomerang, which flows in one direction only and is used for hunting animals and as a*

*weapon; and the return boomerang, which is designed to return to the person who throws it and is used for sport.)*

### Segment 5, Velcro

- How did the inventor George de Mestral first get the idea for Velcro? (*The inventor George de Mestral first got the idea for Velcro while he was on a hunting trip. He became curious about tiny plants whose burrs stuck to his pants and socks.*)
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## Lesson Plan

### Student Objectives

Students will understand:

- Some inventions come about accidentally.
- The story of an invention can be told in an interesting fashion.

### Materials

- *Inventors and Inventions I* video and VCR, or DVD and DVD player
- Computer with Internet access

### Procedures

1. In this activity, you will help students do research to find out how many common everyday objects were invented. Start a list on the board with two inventions – sticky notes and Velcro. Invite students to add other everyday objects they may be curious about, such as:
  - Swiss army knives
  - Book lights
  - Hand warmers for winter sports enthusiasts
2. Tell students that they will be writing a report about one invention. Specify for students the questions you want them to answer about the everyday object they choose:
  - Why did the object first come about? Did someone set out to make it, or did an accident of sorts inspire the inventor?
  - Through what stages did the object develop? What caused changes in the object over time?
  - How did the everyday object in question affect the way people behave?
  - What is the economic impact of the object? That is, how many are made each year, and how many people are involved in making it?
3. Motivate students to show their inventiveness in figuring out where to look to get information about the discovery of sticky notes, Velcro, or another everyday product. Rather than relying on



printed encyclopedias as students so often do for research, show them how to use alternative sources for this inquiry. Demonstrate for students how to look for information on the Web, such as Web sites about inventions and corporate Web sites—for example, the 3M Web site for Post-it Brand sticky notes.

4. Tell students they should write their reports in the narrative mode, explaining the story of the invention in chronological order. They should explain where the inventor began, what happened when, and how events transpired once the inventor or someone else recognized the usefulness of the new product.
5. Ask students to think about narrative techniques used in the video that created suspense or human interest. In particular, encourage them to use quotations, such as statements by the inventor or by the marketer about the development of the product.
6. Conclude by asking students if they thought this project was more about science or more about writing. Help students see that it's just as important to write well on a science topic as it is when writing a book report about a novel.

### *Discussion Questions*

1. There's a saying that genius is 10 percent inspiration and 90 percent perspiration. What does that saying mean, and do you agree with it now that you've studied some inventions and inventors? Why or why not?
2. Identify a new invention that you or someone you know has used in the last six months. Is it a brand-new invention, or did it grow out of something else? If you can't think of anything, focus on computer software.
3. Inventors often patent their inventions. What does it mean to patent an invention? In what way does patenting protect an inventor?
4. What can an inventor do to make it easier for him or her to come up with ideas?

### *Assessment*

Use the following three-point rubric to evaluate students' work during this lesson.

- 3 points: Student narratives include substantial content; highly coherent and unified paragraphs with particular attention to transitions appropriate to narratives; no errors in grammar, usage, and mechanics.
- 2 points: Student narratives include enough content; coherent and unified paragraphs with some attention to transitions appropriate to narratives; some errors in grammar, usage, and mechanics.
- 1 point: Student narratives do not include sufficient content; incoherent paragraphs lacking in unity and transitions; many errors in grammar, usage, and mechanics.

### *Vocabulary*

**inspiration**



*Definition:* something that moves a mind to create

*Context:* Many times a dream acts as inspiration for an inventor, a novelist, or a painter.

### **newfangled**

*Definition:* New and maybe needlessly novel

*Context:* One elderly person complained that the remote control device was newfangled; the other elderly person appreciated the convenience of the device.

### **patent**

*Definition:* A document that gives an inventor the exclusive rights to manufacture or sell the item.

*Context:* The expression patent pending on an object means that the inventor has applied for the right to be the only person who can make and sell the object.

### **serendipity**

*Definition:* A fortunate accident in which a person finds something valuable or pleasing when he or she was not looking for it

*Context:* The inventor did not want to admit the invention came about by serendipity; he wanted the world to think he had carefully designed the invention.

## *Academic Standards*

### **National Academy of Sciences**

The National Science Education Standards provide guidelines for teaching science as well as a coherent vision of what it means to be scientifically literate for students in grades K-12. To view the standards, visit <http://books.nap.edu>.

This lesson plan addresses the following science standards:

- Science in Personal and Social Perspectives: Science and technology in society

### **Mid-continent Research for Education and Learning (McREL)**

McREL's Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education addresses 14 content areas. To view the standards and benchmarks, visit <http://www.mcrel.org/compendium/browse.asp>.

This lesson plan addresses the following national standards:

- Technology: Understands the nature of technological design.
  - Technology: Understands the interactions of science, technology and society.
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## **Support Materials**

Develop custom worksheets, educational puzzles, online quizzes, and more with the free teaching tools offered on the Discoveryschool.com Web site. Create and print support materials, or save them to a Custom Classroom account for future use. To learn more, visit

- <http://school.discovery.com/teachingtools/teachingtools.html>
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