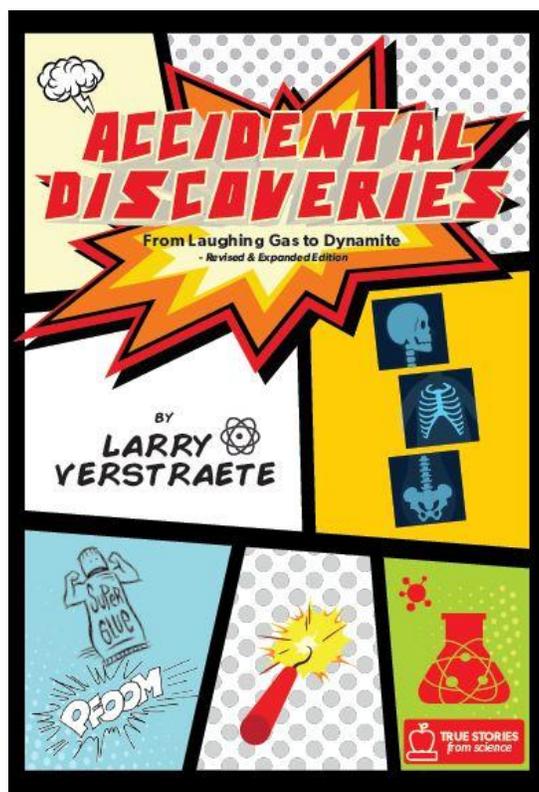


TEACHER'S GUIDE

ACCIDENTAL DISCOVERIES
From Laughing Gas to Dynamite

REVISED & EXPANDED 3RD EDITION

by Larry Verstraete



This revised and expanded edition of *Accidental Discoveries: From Laughing Gas to Dynamite* contains over 80 stories about the errors, accidents, coincidences, and odd circumstances that have started or changed the discovery process, providing scientists and inventors with new and valuable information, insights or solutions to problems.

This guide offers a range of classroom activities that are designed to promote discussion and expand understanding as readers explore the stories in this book.

TEACHER-LED ACTIVITIES

Bag of Props

Collect various objects that are connected to a story of an invention or breakthrough. Place these in a bag or box, and then have students draw one out at a time. With each article, have them try to piece the story together. Close by telling them the story and using the props for extra pizzazz. As a variation, have students research a story of invention or discovery and assemble the props themselves to use as a display or to assist their telling of the story to the rest of the class.

Who Am I?

Have students assume the identity of an inventor or scientist. Have them dress the part and becoming the person for a day or a period. For added suspense, keep the identity of each character secret and have students use probing questions on each other to try to determine who the person is and what contribution he/she made.

News Flash

Assume the role of a scientist or inventor from the past. Have students assume the roles of reporters or broadcasters. Have them ask questions of you that will help to unravel your identity, the ground-breaking details behind the story, and the implications of the breakthrough. As a closing activity, students could write up the story as a newspaper article or as a broadcast item for television or radio.

For an additional challenge, have students include an opposing view in their report. This could be an invented character from the historical period that has a criticism or contrary opinion about the invention or discovery.

Simple Twists

The Slinky (p. 23) is an example of a simple invention created from a single coil of wire. After reading the Slinky story, hand each person a piece of wire 40-60 cm long. Have them twist, bend and shape it into an invention of their own - fanciful or practical. Hold an "Invention Fair" and put them on display. For added fun, have the students write or tell the story behind their invention.

Contraption Creations

Read or tell the story of an invention that was developed from odds and ends such as *Unexpected Splash* (p. 135), the story Lonnie Johnson and the Super Soaker. Emphasize how the inventor used odds and ends to build the device. Challenge

children to create a contraption out of odds and ends found at home. Have a "Contraption Day" when children bring their creations to demonstrate.

Proof Positive

Tell or read the beginning to a story involving a famous experiment. Lead students to understand the problem, but stop short of sharing the results of the experiment. Demonstrate the phenomenon or have students do the same experiment to verify the results.

Some examples of experimental stories:

- Archimedes & specific gravity, p.6 - after setting the stage by telling about Archimedes' dilemma and his trip to the public baths, have students conduct an activity involving water displacement before finishing the story
- Galileo and the pendulum, p.9 - students conduct the pendulum experiment & then check Galileo's own findings
- Alexander Fleming & penicillin, p.90 - set up culture dishes to grow mould before telling how Fleming finally isolated penicillin

Breaking News

Promote the idea that science and invention are ever-changing fields. Collect newspaper or magazine clippings that announce scientific or technological advancements. Use the clippings to fuel interest, prompt discussion, and provide students with a realistic view of science and its impact on society. Some possibilities:

- Daily Report:
Assign each student a day in which to review a ground-breaking news item. Post the articles on an ever-changing bulletin board. Consider classifying the articles by scientific/ technical discipline, scientist-inventor, country of origin, or other feature.
- Timeline Stretch
Create a classroom time line that stretches from the past into the future. As students read stories of breakthroughs have them place the discovery or invention on the 'past' section of the timeline. Have them predict how life will change in the future and what scientific or technical advancements will become eventual realities. Place these on the 'future' section of the timeline. Provide opportunities for students to explore the future world through art, writing etc.

One from Two Combinations

Read or tell stories about inventions that resulted from combining two other inventions. The ice cream bar (p. 70) and the Walkman (p. 101) are two examples. After, brainstorm lists of inventions and put their names on slips of paper (examples: Q-Tip, safety pin, cornflakes, Liquid Paper, Silly Putty, Slinky, pencil, refrigerator magnet etc.). Have each youngster draw two names. What new invention could be created from the two? What would it look like? Who would use it and why?