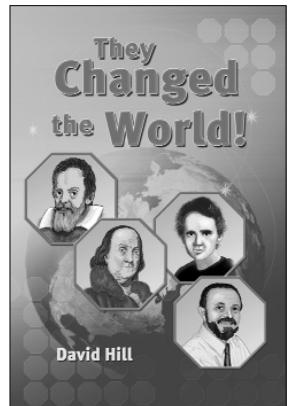


They Changed the World!

by David Hill



Book Summary

This book contains biographies of Galileo Galilei, Benjamin Franklin, Marie Curie, and Mario Molina and explains how their discoveries changed the world.

Features of the Book

- Biographies
- Historical information and photographs
- Time indicators – *Soon after; Over several weeks; After a while*
- Information about scientific practice
- Theme of overcoming obstacles
- Specialized vocabulary – *telescope, conductor, lightning rod, uranium, radium*

Purpose

They Changed the World! can be used to introduce and reinforce the following skills and understandings:

- recognizing the features of a biography;
- making inferences and supporting them with evidence from the text;
- identifying common prefixes;
- summarizing information;
- identifying the ways in which scientists' work affects our lives.

Investigation Tools

- Looking Closer – The Telescope, page 6
- What's the Background? – Ideas about the Universe, page 8
- Making Connections – Lightning, page 13
- Digging Deeper – Conductors, page 16
- Weighing Both Sides – Radioactivity, page 23
- Digging Deeper – CFCs, page 27

The Guided Reading Lesson

- Recognizing the features of a biography
- Identifying the ways in which scientists' work can affect our lives

You may need to spend extra time familiarizing your students with the concepts and specialized vocabulary in this book. This lesson could be taken over two or more days.

Introducing the text

Discuss biographies with the students.

- *What is a biography?*
- *What are the features of a biography?* (tells the story of a person's life; includes important dates, events, and accomplishments; written in the third person)
- *What kinds of people usually have biographies written about them?*

Tell the students that they are about to read the biographies of four famous scientists.

- *What do scientists do?*
- *How might a scientist's work change the world?*
- *What famous scientists do you know about?*

Together, look at the cover of the book, the contents page, and the introduction. The students can then choose one of the scientists to read about. (They don't have to read about the same scientist at the same time.)

Reading and discussing the text

Write the following questions on the board to focus the students as they read their chosen chapter:

- *What did the scientist discover?*
- *How did they make their discovery?*
- *What problems or challenges did they overcome?*
- *Why is their discovery important?*
- *How did it change the world?*

Encourage the students to note the answers to these questions as they read. When they have finished reading, discuss their answers and clarify any questions they have about the text.

Ask the students to choose another scientist to read about. Once again, draw their attention to the questions on the board and have them write down the answers as they read. If a student is reading a chapter that has already been discussed, encourage them to look for new information in the text. This may involve providing more detail or answering the question from a different point of view.

When the students have finished their chapter, discuss their answers to the questions. Focus on information that hasn't been discussed.

The students can now read the remaining chapters.

- *How do you think people felt when Galileo said that Earth moves around the sun?*
- *How is Marie Curie's work used in hospitals today? (x-ray machines, cancer treatment)*
- *How has Franklin's work made a difference to our lives? (He helped us to understand what electricity is and how we can use it.)*
- *How has Mario Molina's work helped to protect the environment? (People no longer use CFCs.)*

Revisiting the Text

The activities below can be used immediately after the guided reading lesson, during later reading sessions as mini-lessons, or as independent activities.

S Making inferences and supporting them with evidence from the text

Refer to the questions that were listed on the board earlier in the lesson. Explain to the students that the answers to the first three questions can be found in the book but they should use inferencing to answer the last two questions. Tell the students that when they make an inference, they need to use the information in the text as well as what they already know.

- *Why was Molina's discovery that CFCs destroy the ozone layer so important?*
- *What information in the text helps you to infer the answer to this question?*
- *What other information did you use?*

The students should discuss answers to the following questions with a partner:

- *Why is each scientist's discovery important?*
- *How did it change the world?*

S Identifying common prefixes

Together, look at “telescope” on page 6. Discuss the definition for this word in the glossary.

- *What other words begin with the prefix “tele”?*

Write the students' answers on the board (telephone, television, telegram, telecommunication).

Discuss what these words mean and what “tele” might mean. Look up “tele” in the dictionary. Ensure that the students understand how the concept of distance applies to each of these words, for example, telephone (tele – at a distance; phone – an instrument connected with sound) television, (tele – at a distance; vision – to see).

S Summarizing information

Ask the students to review what they have learned about each of the scientists.

☞ The students can use the blackline master on page 82 to summarize what they have learned about one of the scientists.