Teaching Science Discovery Timelines

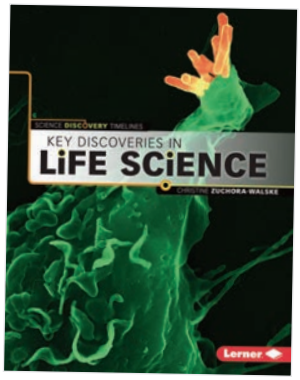
SCIENCE DISCOVERY TIMELINES

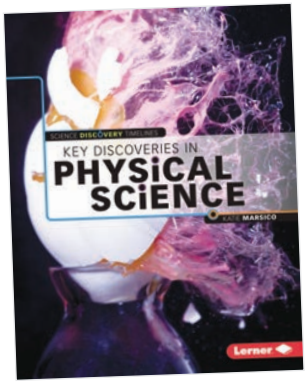
Interest Level: Grades 6–8
Reading Level: Grade 6

LERNER SOURCE™

Titles in this series:

Key Discoveries in Earth and Space Science
Key Discoveries in Engineering and Design
Key Discoveries in Life Science
Key Discoveries in Physical Science





Standards

Next Generation Science Standards (Disciplinary Core Ideas)

- Earth and Space Science
- Engineering, Technology, and Applications of Science
- Life Science
- Physical Science

National Curriculum Standards for Social Studies

- Time, Continuity, and Change

Common Core Reading (Informational Text)

- CCSS.ELA-LITERACY.RI.6-7.2
- CCSS.ELA-LITERACY.RI.6-8.3
- CCSS.ELA-LITERACY.RI.6.5

Common Core History/Social Studies

- CCSS.ELA-LITERACY.RH.6-8.2
- CCSS.ELA-LITERACY.RH.6-8.7

Common Core Science & Technical Subjects

- CCSS.ELA-LITERACY.RST.6-8.2
- CCSS.ELA-LITERACY.RST.6-8.5

Common Core Writing

- CCSS.ELA-LITERACY.W.6-8.7

Multiple Intelligences Utilized

- Intrapersonal, linguistic, visual-spatial

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Lesson 1 Missing Pieces

Purpose
Students will analyze how a sentence fits into the overall structure of a text.

Materials
- a projector
- Science Discovery Timelines series
- writing paper
- pencils

Introduction
- Begin telling the class the middle of a story or the punch line of a joke. Do not provide any introduction or context.
- When met with confused or uninterested stares, ask the following questions:
  - Why are you confused (or uninterested)?
  - What was missing from my story?
  - What happened because I didn't tell the beginning of my story?
  - Why is it important to tell every part of a story?

Read
- Display a page from the first chapter of a book in the Science Discovery Timelines series. Conceal the first sentence of the paragraph.
- Call on a student to read the visible portion of the first paragraph.
- Does anything seem to be missing from this paragraph? Why or why not?
- Reveal the missing sentence and ask another student to read the paragraph in its entirety.
- How does this one sentence affect the paragraph? What information is in the sentence? What later sentences refer to the once-missing sentence?

Model
- Display another page from a Science Discovery Timeline book.
- Read a paragraph or a section from the book aloud to the class. Then choose a sentence, a section, or a whole paragraph to conceal. Reread the page, omitting the concealed portion.
- Aloud, consider the possible effects of omitting this portion.
  - Are there any words or phrases that reference the hidden portion?
  - Is the page missing important links or transitions that connect otherwise separate pieces of information?
  - Are there any major facts or discoveries that are no longer part of the page?
- On the board, make a list of all the ways the page is affected by the omission of the sentences or the paragraph.

Guided Practice
- Turn to and display another page in the book. Ask a student to read it aloud.
- Then call on a student volunteer to choose a section of the text to hide or omit. Reread the page aloud, without the omitted portion.
- Next, lead students in considering the effects of removing the text. You may prompt them with the same questions you considered in the "Model" portion of this lesson.
- Record students' answers on the board.

Independent Practice
- Pass out writing paper and books from the Science Discovery Timelines series.
- Ask each student to choose a page and then a section to omit from that page. Tell students to write down their book and chosen page at the top of the writing paper. They should also record the text they have chosen to omit.
- Finally, ask students to make a list of ways that removing this text impacts the page in the book.

Discuss
- Why is it important to use things like topic sentences, transitions, and concluding sentences? What happened when you cut these out of paragraphs?
- How do you use introductions, transitions, and closings in your everyday speech or writing?

Evaluate
- Review students' lists from the "Independent Practice" section.

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Lesson 2 Connecting Ideas

Purpose
Students will identify and analyze two people, events, or ideas that are connected.

Materials
- Science Discovery Timelines
- writing paper
- pencils

Prepare
- Read one chapter from a book in the Science Discovery Timelines series. Choose two people, events, or ideas related to each other. The chapter timeline may prove helpful in identifying related ideas. Next, make a list of ways that these two people, events, or ideas are related to each other. How did one influence the other?

Pretest
- What did you do this morning that allowed you to come to school today?
- What are things that happened one hundred years ago (or more) that allowed you to be sitting in this exact classroom at this moment?
- Why is it important for us to recognize how events are connected to one another?

Read
- Explain that in this lesson, students will be exploring the ways that two people, events, or ideas are connected. Encourage students to keep this in mind as they read.
- Pass out books from the Science Discovery Timelines series. Ask students to choose and read one chapter.

Model
- Share or display the chapter you prepared. Explain to students that you have already read this chapter.
- Tell students that you are revisiting this chapter now to find two people, events, or ideas that are related to each other.
- Explain that, just as the sentences from lesson 1 influenced the rest of the text, events and ideas from the past influenced one another.
- Model searching the chapter for two related people, events, or ideas. Show the class that the chapter timeline is a possible source of related events.
- Once you have identified two related things, model your thought process aloud for students as you consider ways in which one of these things may have influenced the other. Record your ideas on the board.
- Finally, construct a paragraph or two about the relationship between your chosen people, events, or ideas. Use your recorded ideas as well as suggestions from students to compose the paragraph.

Practice
- Ask students to revisit the chapters that they read, searching for two related people, events, or ideas. Ask students to record their two choices at the top of a piece of paper.
- Have students analyze the relationship between their two choices, recording their ideas on the paper, then writing a paragraph or two explaining this relationship.

Discuss
- What two people, events, or ideas did you choose?
- How were they related?
- What was challenging about this assignment?
- What was easy?

Evaluate
- Read students' lists and paragraphs for evidence of clear writing and understanding.

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Lesson 3
Central Ideas

Purpose
Students will identify and trace central ideas throughout a book.

Materials
- Science Discovery Timelines series

Prepare
- Read one book from the Science Discovery Timelines series. Make a list of topics mentioned repeatedly in the book, such as atoms, energy, communication, or the structure of organisms.

Pretest
- What is a central, or main, idea?
- How can you find a central idea in a book?

Read
- Give students time, in or out of class, to read a book from the Science Discovery Timelines series in its entirety.
- Encourage students to write down topics that they notice are frequently repeated in the book. Explain that when topics are discussed throughout a book, they are called central ideas. A book can have several central ideas.

Model
- Tell students that you read one of the Science Discovery Timelines books yourself and made a list of topics mentioned repeatedly within the book. Display or share this list with the class.
- Choose a topic from this list that you feel is a central idea. Explain the reasoning behind your choice. Perhaps it was mentioned the most in the text or seemed connected to many things within the book.
- Then revisit the book, looking for mentions or evidence of this central idea. Record the page number and make notes on how the central idea is discussed in each passage. Provide two or three examples of how to make these notes.

Practice
- Give students time to choose a topic from their own list and revisit their books, looking for evidence of the central idea throughout. Ask students to record page numbers and make notes on how the central idea is discussed in each passage.

Write
- Once students finish making notes, ask them to write on the following prompt:
  - What was a central idea of your book? How is the idea represented in the book? Does the idea change throughout the book? If so, how does it change?

Discuss
- What central ideas did you find? How could you tell it was a central idea?
- How did the central idea you found change within the book?

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Lesson 4 Research Project

Purpose
Students will research an influential scientist.

Materials
- Science Discovery Timelines series
- Research Project, Part 1 p. 6
- markers
- pencils
- Timeline Practice p. 7
- Research Project, Part 2 p. 8

Pretest
- What famous scientists have you learned about in these books?
- What did these famous scientists do?
- What else happened in these scientists' lives? Did they do anything that isn't talked about in the book?

Read
- Pass out books from the Science Discovery Timelines series. Ask students to turn to one of the timelines found at the beginning of each chapter. Students do not need to look at the same timeline.
- Ask students to find one or more scientists shown on the timeline. Make a list of these scientists on the board.
- Ask students to choose the scientist that interests them the most.

Research
- Pass out Research Project, Part 1 p. 6 to students. Have students write down their chosen scientist on this page.
- Explain that students will be researching these scientists and creating timelines to show the major events and discoveries during the scientists' lives.

Model
- Tell students that before they begin their research, you would like to practice making a timeline of a person's life.
- Pass out copies of Timeline Practice p. 7.
- Draw a line on the board with clear dots at the beginning and the end.
- To the side, brainstorm a few major events in your own life, such as beginning kindergarten, getting married, buying a house, or graduating from college. Then explain that this timeline is meant to show the major events in your life as a teacher (you may choose a different topic if you desire). Ask students to help you identify events on your list that don't relate to your accomplishments as a teacher, such as buying a house. Cross these events off your list. Next, move relevant events onto your timeline, labeling each event with the year and a sentence of description.

Practice
- Give students time to brainstorm major events in their lives. Then ask them to choose a major topic to show on the timeline. Topic examples include accomplishments as a student, a performer, or an athlete.
- Allow students time to move these events onto their timelines. Remind students to use a date and a descriptive sentence for each event.
- Circulate the room to answer students' questions.

Research
- Pass out copies of Research Project, Part 2 p. 8. Explain that these timelines should document the scientific discoveries and accomplishments of their chosen scientists.
- Give students time in or out of class to research their scientists.

Evaluate
- Review students' research and timelines for accuracy and evidence of research.

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Name _____ Date _____

Research Project, Part 1

The scientist I will be researching is _____.

Things I already know about this scientist:

Questions I have about this scientist:

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Name _____ Date _____

Timeline Practice

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Name _____ Date _____

Research Project, Part 2

Below, create a timeline that shows major events and accomplishments in your scientist's life.

On the back of this page, write down the books, videos, or websites you used to learn about your scientist.

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