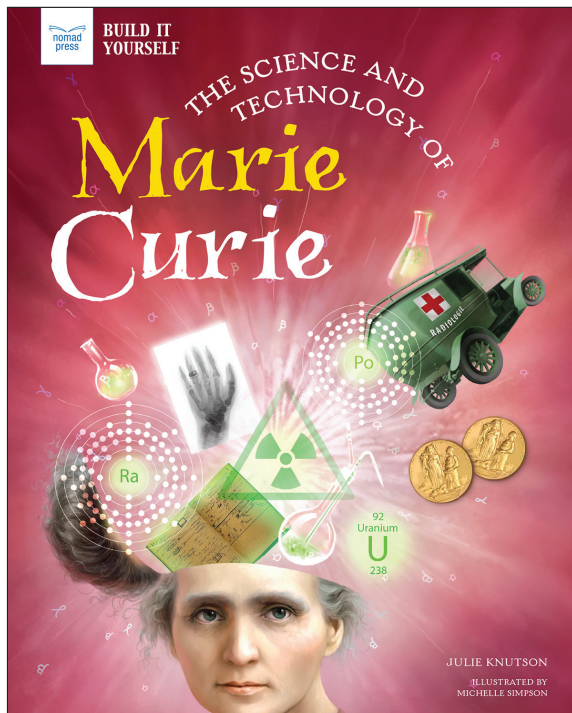




## The Science and Technology of Marie Curie

Nomad Press offers concise classroom guides to help educators explore content-related topics with students and encourage them to develop ideas in meaningful ways. Includes Essential Questions and Common Core Connections.

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**Age:** 9–12  
**Grade:** 4–6  
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**Specs:** 8 x 10, 128 pages, color interior  
**Focus:** Engineering & Technology  
**GRL:** X

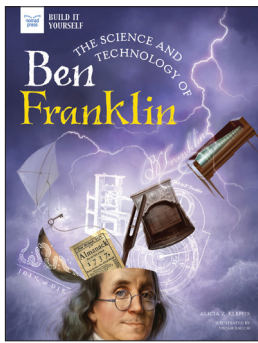
Who gets to do science? During a time when most people would answer, “Men,” Marie Curie followed her passion for science and earned two Nobel Prizes!

In *The Science and Technology of Marie Curie*, readers ages 9 through 12 explore Curie’s groundbreaking scientific research in physics and chemistry and discover how this research forced people to rethink the very structure of their surrounding world . . . and the role of women within it. Her commitment to understanding that which the human eye could not see led to the discovery of two new elements—polonium and radium—and to the birth of a new field of research in radioactivity. In the process, she became the first woman to earn a Nobel Prize and the only person ever to win two Nobel Prizes in two different scientific fields, all as she reset ideas around women’s roles in society.

Through hands-on STEM activities, essential questions, text-to-world connections, and links to online resources, kids zoom in for a closer look into Curie’s world.

Learn more about *The Science and Technology of Marie Curie* at [nomadpress.net/nomadpress-books/the-science-and-technology-of-marie-curie](http://nomadpress.net/nomadpress-books/the-science-and-technology-of-marie-curie)

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## ESSENTIAL QUESTIONS TO ASK

### KEY VOCABULARY

advocate, atom, conductivity,  
double standard, feminist,  
humanitarian, ore, proton,  
replicate, subatomic

### BEFORE READING

#### 1 Establish Background Knowledge

- What do you already know about Marie Curie? What is she famous for?
- How did Curie's professional partnership with her husband help or hurt her ambition?
- Do you know any chemists who work with dangerous materials?

#### 2 Skill Introduction

- What do you do when you come to a word or phrase you do not know?
- How do photographs, videos, and maps help someone learn about a topic?

**CCC: CCSS.ELA-Literacy.L.6.4a** Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.

**CCC: CCSS.ELA-Literacy.L.6.5b** Use the relationship between particular words (e.g., cause/effect, part/whole, item/category) to better understand each of the words.

### DURING READING

#### 1 Check for Understanding

- What characteristics did Curie have that made her special?
- Why might Curie have continued to do work that made her sick?
- How might the present be different if Curie hadn't made her discoveries?
- If you could ask Curie one question, what would you ask?

**CCC: CCSS.ELA-Literacy.RST.6-8.3** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

**CCC: CCSS.ELA-Literacy.RST.6-8.7** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).



You can read articles by Ben Franklin writing as Silence Dogood at this website. Does it sound like something a teen would write?

[https://www.masshist.org/online/silence\\_dogood/essay.php?entry\\_id=203](https://www.masshist.org/online/silence_dogood/essay.php?entry_id=203)



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## ESSENTIAL QUESTIONS TO ASK

### AFTER READING

#### 1 Summary and Expansion

- a Why was Curie's profession considered unconventional at the time? How did Curie overcome any resistance she encountered to doing her work?
- b How did crowdfunding contribute to Curie's success? What might have her career been like if she didn't have to travel and speak to earn the money she needed?
- c How are the subjects of chemistry and physics similar? How do they overlap? What other sciences overlap with them?
- d Do you think Curie would have done well at your school in your time? Why or why not?
- e How did Curie's family help her career?
- f Why do you think Curie chose to be active on the front lines during World War I?
- g Do you think Curie is as celebrated as other scientists? Why or why not?

**CCC: CCSS.ELA-Literacy.SL.6.1c** Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.

**CCC: CCSS.ELA-Literacy.SL.6.4** Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.

**CCC: CCSS.ELA-Literacy.WHST.6-8.7** Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

**CCC: CCSS.ELA-Literacy.WHST.6-8.8** Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

### COMMON CORE CONNECTIONS

**Grade: 6 Language CCSS.ELA-Literacy.L.6.3,4,4a,4b,4c,4d,5,5a,5b,6**

**Grade: 6-8 Science & Technical Subjects CCSS.ELA-Literacy.RST.6-8.1,2,3,4,5,6,7,8,9,10**

**Grade: 6 Speaking & Listening CCSS.ELA-Literacy.SL.6.1,1a,1c,1d,2,3,4,5,6**

**Grade: 6-8 Writing HST CCSS.ELA-Literacy.WHST.6-8.1,2,4,6,7,8,9,10**



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## COMMON CORE CONNECTIONS

### Grade: 6 Language

#### CCSS.ELA-Literacy.L.6.3,4,4a,4b,4c,4d,5,5a,5b,6

3 Use knowledge of language and its conventions when writing, speaking, reading, or listening.

4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies.

4a Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.

4b Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., audience, auditory, audible).

4c Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech.

4d Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).

5 Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.

5a Interpret figures of speech (e.g., personification) in context

5b Use the relationship between particular words (e.g., cause/effect, part/whole, item/category) to better understand each of the words.

6 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

### Grade: 6-8 Science & Technical Subjects

#### CCSS.ELA-Literacy.RST.6-8.1,2,3,4,5,6,7,8,9,10

1 Cite specific textual evidence to support analysis of science and technical texts.

2 Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades

6–8 texts and topics.

5 Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

6 Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.

7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

8 Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

10 By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.



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## COMMON CORE CONNECTIONS

### Grade: 6 Speaking & Listening

#### CCSS.ELA-Literacy.SL.6.1,1a,1c,1d,2,3,4,5,6

1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

1a Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.

1c Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.

1d Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.

2 Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.

3 Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.

4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.

5 Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.

6 Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 6 Language standards 1 and 3 here for specific expectations.)

### Grade: 6-8 Writing HST

#### CCSS.ELA-Literacy.WHST.6-8.1,2,4,6,7,8,9,10

1 Write arguments focused on discipline-specific content.

2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

6 Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

8 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

9 Draw evidence from informational texts to support analysis, reflection, and research.

10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.



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**ACTIVITY!**

# CHEMISTRY SCAVENGER HUNT

**CHEMISTRY KIT**

- science journal
- pencil

From toothpaste to skin creams to bottled water, radium was found in many personal care and household products in the early 1900s. While radium has long been retired from commercial use, many of its neighbors on the periodic table can still be found on your shelves. After all, elements are the building blocks of everything around us!

► **Scour your cabinets for everything from fluorine to sodium to zinc!** In your science journal, write the element's name, chemical symbol, and atomic number as your answer to each clue.

- \* Element in table salt
- \* Element added to some toothpastes
- \* Element found in laundry detergent
- \* Key (recyclable!) element in many cans and pans
- \* Element that powers batteries
- \* Bananas are high in this element that regulates blood pressure
- \* Element behind a coin of the same name
- \* Liquid metal used in thermometers
- \* Dairy products such as milk, cheese, and yogurt are rich in this element

## Think Like Marie!

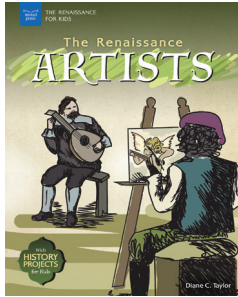
Scientists who work in the field of applied chemistry examine the real world and the everyday applications and effects of chemicals. An applied chemist might create a flame-resistant material. They might research the safety of cosmetics, conduct forensic tests in crime labs, or track the impact of pesticides on humans. Chemists who work in pure chemistry focus on understanding basic properties and processes of elements and their bonds. The line between these two related fields can be difficult to draw. Which of the two do you think the Curies focused on? What makes you think that?

**TEXT TO WORLD**

Can you think of other scientific discoveries that had both major drawbacks and benefits?



# More Biographies from Nomad Press!



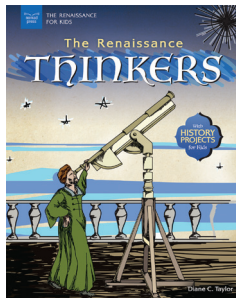
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