

Unit 3/Week 1

Title: Medicine: Past and Present

Suggested Time: 5 days (45 minutes per day)

Common Core ELA Standards: RI.4.1, RI.4.2, RI.4.3, RI.4.5; RF.4.3, RF.4.4; W.4.1, W.4.2, W.4.4, W.4.9; Sl.4.1; L.4.1, L.4.2, L.4.3

Teacher Instructions

Refer to the Introduction for further details.

Before Teaching

1. Read the Big Ideas and Key Understandings and the Synopsis. Please do **not** read this to the students. This is a description for teachers, about the big ideas and key understanding that students should take away **after** completing this task.

Key Understandings:

Observation, experimentation and innovation lead to scientific discovery and real-world solutions.

Synopsis

Major medical discoveries are detailed over time. Diverse individuals, using scientific methods and innovation, determined causes for disease and some developed treatments to address medical mysteries.

2. Read entire main selection text, keeping in mind the Big Ideas and Key Understandings.
3. Re-read the main selection text while noting the stopping points for the Text Dependent Questions and teaching Vocabulary.

During Teaching

1. Students read the entire main selection text independently.

2. Teacher reads the main selection text aloud with students following along. (Depending on how complex the text is and the amount of support needed by students, the teacher may choose to reverse the order of steps 1 and 2.)
3. Students and teacher re-read the text while stopping to respond to and discuss the questions and returning to the text. A variety of methods can be used to structure the reading and discussion (i.e.: whole class discussion, think-pair-share, independent written response, group work, etc.)

Text Dependent Questions

Text Dependent Questions	Answers
<p>How did the author structure the text to help you better understand information in Medicine: Past and Present?</p>	<p>Sub-headings guide the reader to the information within each section—main ideas and details.</p> <p>The author adds a time-line to emphasize the sequence of scientific & medical discoveries.</p>
<p>Reread pages 208-209. How did disease impact people’s lives during the 1300’s? How did most people view illness or disease during that time period?</p>	<p>Black Plague killed 75 million people in Europe in the mid-1300’s/14th century. 208</p> <p>“Getting sick was always scary, not just during the Black Plague...People could fall ill and die and no one would know why. People did not live long. The life expectancy was only 30-40 years. People thought magic caused disease...believed in magic.” P. 209</p>
<p>Hippocrates lived before the time of the Black Plague. What were his views on disease and the human body? Why is he called the Father of Medicine?</p>	<p>Hippocrates was an early Greek best known for his ideas that “the human body is predictable and that diseases have natural causes and reasonable explanations....He was able to find reasons for illness by closely studying the human body and observing diseases. He also thought that people could understand the way the body worked.” 210</p> <p>He is known as the Father of Medicine for his use of observation and examination of patients to determine the cause for disease. He creates the Hippocratic oath and the medical ethics that is still in use today 210--timeline</p>

<p>How did Anton van Leeuwenhoek make his discovery? What was Jenner’s discovery? Why would Jenner’s work be considered controversial or unethical today? (Pgs. 212-214)</p> <p>Using the text for support, compare the work of both scientists. How were their processes for discovery similar? How were they different?</p>	<p>Leeuwenhoek is able to achieve 160 x magnification with his microscope and uses it as a tool to examine microorganisms (timeline). He used it to look at water from a pond and found tiny animals swimming...He became famous for discovering that there were many different types of microorganisms.</p> <p>Jenner agreed with Hippocrates that “diseases have natural causes.” Jenner guessed that the body develops antibodies to fight disease. He tried to think of ways to make antibodies to fight disease. He heard that if you had smallpox you couldn’t get smallpox. He infected people with cowpox until they were well and then infected them with smallpox. People did not get ill and determined they had become immune.</p> <p>Similar: both used observation and examining evidence to make discoveries Differences: Jenner conducted experiments to test his idea/hypothesis.</p>
<p>What was the purpose of Pasteur’s experiments? Describe his contributions. What were the effects of Pasteur’s discovery on Joseph Lister and the field of medicine? (Pgs. 215-218)</p>	<p>Purpose 1: Pasteur wanted to dispel the belief that life could grow from nonliving things—the idea of spontaneous generation. He conducted several experiments to prove his idea wrong. <u>Proved bacteria were carried by air but didn’t grow from nonliving objects.</u></p> <p>Purpose 2: Conducted experiments on animals to see if bacteria caused disease in people. Examined blood and conducted experiments and found they had bacteria in their blood. So he injected healthy animals with bacteria and they became ill. <u>He proved bacteria caused disease and able to develop vaccine.</u></p> <p>Lister and other doctors began sterilizing equipment to prevent spread of disease and disinfected wounds to prevent infection.</p>
<p>What were the results of Fleming’s contaminated lab experiment? (Pg. 219)</p>	<p>Lab experiments were contaminated with mold that he should study them. He learned that mold killed bacteria. Years of testing confirmed Fleming’s discovery. Fleming named the substance/mold penicillin. Penicillin saved many lives. Infections that used to kill were now treatable.</p>

<p>How was the work of all the scientists we have read about so far, similar? What words can be used to describe these researchers? Cite evidence to support your responses.</p>	<p>All: Identified a question or problem and used scientific examination to draw conclusions.</p> <p>Some: Tested their ideas in experiments and developed medicines or inventions to address real-world problems. Scientists were curious, observant, focused, organized, determined, inventive, problem-solvers...</p>
<p>Hippocrates said that the human body is <u>predictable</u> and that diseases have <u>natural causes</u> and <u>reasonable explanations</u>. How does information from the text support each part of his idea?</p>	<p><u>Predictability:</u></p> <ul style="list-style-type: none"> ● Harvey’s discovery of blood circulation ● Vitamin C deficiency will cause scurvy—vitamin C causes problems ● The body will develop anti-bodies and immune system to fight disease ● Bacteria causes disease ● Medicines can be developed to treat diseases ● Disinfecting wounds will increase chances of healing <p><u>Diseases have natural causes and reasonable explanations:</u></p> <ul style="list-style-type: none"> ● Diseases are caused by bacteria/germs/microbes ● Vitamin deficiency causes disease ● “All medical research now assumes that the human body is a part of nature, and that diseases have explanations like everything else in nature. As the natural causes of diseases are discovered, scientists are able to find ways to prevent and cure diseases.”

Vocabulary

	<p>KEY WORDS ESSENTIAL TO UNDERSTANDING</p>	<p>WORDS WORTH KNOWING General teaching suggestions are provided in the margin.</p>
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<p>TEACHER PROVIDES DEFINITION not enough contextual clues provided in the text</p>	<p>Page 208 - Plague Page 219 - Contaminated</p>	<p>Page 208 - Epidemic Page 209 - Remedy Page 210 - Oath, code, ethics Page 214 - Chemist, conducted Page 219 - Confirm Page 221 - Mystified</p>
<p>STUDENTS FIGURE OUT THE MEANING sufficient context clues are provided in the text</p>	<p>Page 214 - Immune Page 215 - Dispel Page 217 - Vaccine Page 218 - Sterilized, disinfected</p>	<p>Page 209 - Expectancy, wound, infected Page 210 - Predictable, reasonable, ancient Page 211 - Circulates, breakthrough Page 213 - Deficiency Page 219 - Antibiotic</p>

Culminating Task

- Zora Neale Hurston once said, “Research is formalized curiosity. It is poking and prying with a purpose.” How does the quote by Hurston relate to the importance of observation, experimentation, and innovation explored in “Medicine: Past and Present”? Use evidence from the text to provide support for your ideas.
- “Wherever the art of medicine is loved, there is also a love of humanity” - Hippocrates How does this quote by Hippocrates relate to “Medicine: Past and Present”? Use evidence from the text to provide support for your ideas.

Additional Tasks

- In “Medicine: Past and Present” you learn about the Greek philosopher Hippocrates. The Hippocratic oath is named after him. What is the Hippocratic oath? Determine how and why it is still used today. Be prepared to explain if you feel the oath is still necessary.

Name _____ Date _____

“Medicine: Past and Present”

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3. Hippocrates lived before the time of the Black Plague. What were his views on disease and the human body? Why is he called the Father of Medicine?
4. How did Anton van Leeuwenhoek make his discovery? What was Jenner’s discovery? Why would Jenner’s work be considered controversial or unethical today? (Pgs. 212-214)

5. Using the text for support, compare the work of both scientists. How were their processes for discovery similar? How were they different?

6. What was the purpose of Pasteur's experiments? Describe his contributions. What were the effects of Pasteur's discovery on Joseph Lister and the field of medicine? (Pgs. 215-218)

7. What were the results of Fleming's contaminated lab experiment? (Pg. 219)

8. How was the work of all the scientists we have read about so far, similar? What words can be used to describe these researchers? Cite evidence to support your responses.

9. Hippocrates said that the human body is predictable and that diseases have natural causes and reasonable explanations. How does information from the text support each part of his idea?