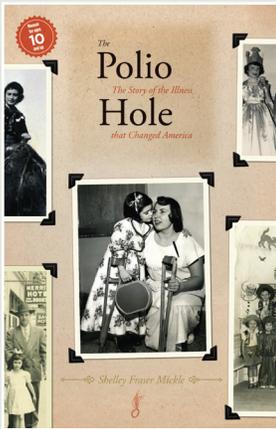


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LESSON PLANS

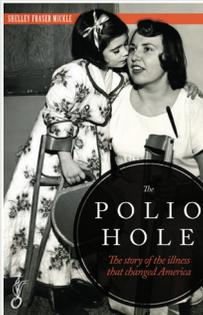


The Polio Hole The Story of the Illness that Changed America

Teaches basic virology and will be exciting reading for all students who might consider medicine as a career choice.

Reading level 6.8 Ages 10 and up

THIS NONFICTION BOOK COMES IN TWO VERSIONS TO MEET YOUR NEEDS IN TEACHING SCIENCE AND LITERARY TECHNIQUES



The Polio Hole The Story of the Illness that Changed America

Suitable for high school science classes, medical school enrichment reading, and the general public's understanding of a cultural history in 1950s America.

Plan Overview

*These Lesson Plans were written by Rebekah Bliss, Dept. Head and Reading Coach in Jacksonville, Fl., who used *The Polio Hole* as an FCAT Prep while also raising her students' compassion and awareness of global issues.*

Teachers will demonstrate to students how to analyze informational text using graphic organizers. The teacher may focus on one particular type of analysis, or may cover several types if students are divided into groups. Should the teacher wish to cover all of the various strands, more than one class period will be required.

Materials needed:

Either PDF files of the NMAH website or web access to the NMAH for students. <http://americanhistory.si.edu/polio/> is the website for the National Museum of American History located in Washington D.C. Their online exhibition “What Ever Happened to the Polio” is the source for the informational text of this lesson.

PDF files of the various graphic organizers for informational text are included in the downloaded poliohole_lessonplan.zip file.

Specific Sunshine State Standards are noted among the activities. Florida's Sunshine State Standards are comparable to most other state standards.

Text Structure Patterns in Informational Text: Purple Pinkie Lesson

1. Explain that authors organize their writing in certain ways (as listed on the chart) to support their main ideas.
2. Provide the chart below in a larger format (chart board, white board, etc.) As the students read selections from the information packet on polio—i.e. the printouts from the NMAH website— have the students identify examples of the structures in the text. You may wish to lead the students in an example and then let them work in groups.
3. Once you have completed the sample chart as a class, use the individual charts for your students groups to identify the text structure patterns in the remaining paragraphs. (Note: these graphic organizers may also be used in guided reading and centers with independent leveled texts to help students identify how the author is organizing the information to make the meaning clear to the reader).
4. The chart can also be used as a tool in writing to help students decide how they want to organize their thoughts to make their meaning clear.
5. Please remember that this lesson is only a baseline, you may add to the lesson anyway you like. Other graphic organizers enclosed for informational text: compare/contrast, main idea, cause-and-effect, history/story frames (main idea & comprehension & sequencing); and a research frame as well—in this one the students list a fact or a concept, why it is important and where it may be found in the text. Please feel free to be as creative as you like.

FCAT Related Benchmarks

LA.7.2.2.5 *The student will use interest and recommendation of others to select a variety of age and ability appropriate nonfiction materials (e.g., biographies and topical areas, such as science, music, art, history, sports, current events) to expand the core knowledge necessary to connect topics and function as a fully literate member of a shared culture.*

Subject Area: Reading/Language Arts Grade Level: 7

Body of Knowledge: Literary Analysis

Standard: Nonfiction

Date Adopted or Revised: 01/07

Status: State Board Approved

LA.8.2.2.5 *The student will use interest and recommendation of others to select a variety of age and ability appropriate nonfiction materials (e.g., biographies and topical areas, such as science, music, art, history, sports, current events) to expand the core knowledge necessary to connect topics and function as a fully literate member of a shared culture.*

Subject Area: Reading/Language Arts Grade Level: 8

Body of Knowledge: Literary Analysis

Standard: Nonfiction

Date Adopted or Revised: 01/07

Status: State Board Approved

See Additional Benchmarks in included file: *Standards Benchmarks Purple Pinkie.doc*

Text Structure Patterns in Informational text

Text Pattern	Description	Key Words	Example	Graphic Organizers
Description	Uses language that helps the reader see, hear, taste, touch, smell (images)	Sensory words, adjectives		Describing Wheel Spokes Observation Chart
Sequence	Helps the reader understand the order in which things happen	Dates, <i>today, yesterday, once, first, later, next, before</i>		Time Line History Frame Sequence Chart Flow Map
Compare / contrast	Shows how two or more ideas, events, etc are alike and/or different	<i>While, yet, but rather, like, unlike same, as opposed to, on the other hand, similarly</i>		Venn Diagram Compare Contrast Grids
Cause and Effect	Gives explanations or reasons for something	<i>Because, since, so that, if...then, therefore, as a result, for this reason, on account of, consequently</i>		Flow Chart Multi-Flow map
Problem / Solution	Identify problems and possible solutions	<i>Conclude, a solution, the evidence shows, a reason for, a way to solve, try, attempt, resolve</i>		Problem-Solution Chart Story Map Flow Map
Examples	Gives specific examples of something	<i>For example, for instance, on one occasion, to illustrate</i>		Brace Map

Extension Activity for Language Arts: *Intensive Reading Lesson Plan*

Novel Unit: The Polio Hole by Shelly Mickle

Note: This book will take considerably longer than one 50 minute class period. This novel should be at least a 2 week unit. You may use a literature circle structure for studying the novel. I would recommend reviewing <http://www.litcircles.org/index.html> for formats if you have never previously conducted a literature circle. A particularly helpful website for both fiction and non-fiction literature circles is <http://www.lauracandler.com/strategies/litcirclemodels.php#BasicLitCircle> the PDF files from this website are open source and are located on the disk included within this packet. Blackline masters are also included for photocopying.

Please keep in mind that technology can also be integrated into the lesson via discussion boards. The following information comes the website:

http://drscavanaugh.org/lit_cir/technology_integrated_activities.htm

Technology Integrated Activities

Activity Assignment	Technology Integration/ Enhancement	Tech Foundation Standard (ISTE)
Discussion Coordinator	Chat/Discussion board	1, 2, 4
Vocabulary Elaborator	Interactive dictionary	1, 2, 4 6
	Online dictionaries	1, 2, 4 6
Literary Expository	File attachments	1, 2, 4
	Audio recording	1, 2, 4
Graphic Illustrator	White board	1, 2, 3, 4
	Paint	1, 2, 3, 4
Graphic Organizer	Mind/concept mapping software	1, 2, 3, 4
	Concept map web sites	1, 2, 3, 5
Background Researcher	Internet research	1, 2, 5
	Search engines	1, 2, 5
Web Researcher	Ask an expert	1, 2, 5, 6
	Author study/ask an author	1, 2, 5, 6
Media Hunter	Multi-media search engines	1, 2, 5
Connector	Chat	1, 2, 4
	Search engine	1, 2, 4, 5

Table: The technology enhanced literature circle assignments

In terms of the literacy instruction and classroom design, literature circles are a way for students to share reading experiences, and integrating the technology with the literature circle can provide a worldwide audience for sharing, with resources and tools to assist students in accessing, organizing, analyzing, and communicating (Lamb & Smith 1999).

In the technology enhanced literature circle, readers experience standard literature circle concepts with technology integrations that require the students to use technology tools such as search engines, paint programs, concept mapping software, and chat rooms.

The literature circle assignments that have been developed include: Discussion Coordinator; Vocabulary Elaborator; Literary Expository; Graphic Illustrator; Graphic Organizer; Background Researcher; Web Researcher; Media Hunter; and Connector. Each assignment has integrated technology applications. Using this technology enhanced literature circle approach students working in groups have experiences in all six Technology Foundation Standards for Students from the ISTE NETS:

Basic operations and concepts

Social, ethical, and human issues

Technology productivity tools

Technology communications tools

Technology research tools

Technology problem-solving and decision-making tools (ISTE 2000)

PDF files of the appropriate role sheets are contained on the enclosed disk; blackline masters are provided for your duplicating convenience.

It is important to activate the students' prior knowledge before beginning the novel. This may be done using a K-W-L/S type of activity; or it may be done through a multi-media presentation, such as the previous lesson for Language Arts, using the website and the peripheral media. Another schema that it is important to activate is the difference between life in the 1950's and life today; race and gender roles and expectations have changed greatly.

By previewing the book and completing an anticipation guide, students will be able to compare and contrast how life in the United States has changed over time. Also, a book preview will help students to isolate and examine their feelings and attitudes concerning people they perceive as "disabled" in some way.

Some possible topics/questions for discussion could be:

When you see people with a visible disability (there are many invisible disabilities) what do wonder or think about first?

When you see someone in a wheelchair, what do you notice first—the chair, the person in the chair, or the person pushing the chair (if applicable)?

How do you feel about approaching someone in a wheelchair? Why do you think you feel this way?

Do people with visible and invisible disabilities have the same basic needs as other people? Can you name the basic needs of people? (Here focus on Maslow's Hierarchy of Needs to lead the discussion).

Do people have visible and invisible abilities? Give examples if possible.

Student responses to the book may be in the form of whole or small group instruction, individual roles via the literature circle, through the reading journals using a response to the journal writing prompts. However you choose to have your students create artifacts of their learning as they progress through the book, it is important that they understand that they are building to a culminating activity in which they will use the information gathered from their reading via their journals, literature circle response sheets, portfolios, etc.

Vocabulary

Because of the high level vocabulary within the text of the book, it is important to preview each chapter and to teach the vocabulary words students are not likely to know. These are the “Tier 2 and Tier 3” type of words. Tier 2 words are higher order words that express a concept that could be stated by a lower order word. An example would be: “happy”—happy is a Tier 1 word. “Elated” is a Tier 2 word. A Tier 3 word is a content specific word such as “epidemic.”

For vocabulary instruction to be authentic, it must be more than copying the words, looking up the definitions in the glossary or dictionary, copying and memorizing for a test. Having the students define the vocabulary verbally, conceptually through the use of examples and non-examples and in a graphic form allow the student to retain a better concept of the word and its meaning and use. An appropriate way to do this would be through the use of the Frayer Model, or some other similar graphic organizer for vocabulary instruction. Without regular use of the words by the students to incorporate the words into their daily usage, even the literacy methods and strategies are not as effective. A word wall displaying the students’ representations and graphic organizers is only of value if it is constantly referred to by the students as well as the teacher.

The Polio Hole Vocabulary:

Bacteria	Killed-virus vaccine	Placebo
Bacteriologist	Laboratory	Polio, Infantile Paralysis
Cells	Live-Virus Vaccine	Preservative
Cynomolgus monkey	Microbiologist	Jonas Salk
Culture	Microorganisms	Reproduce
Deformity	Nerve Tissue	Albert Sabin
Electron Microscope	Oral Vaccine	Specialists
Epidemic	Pancreas	Tissue
Epidemiologist	Patent	Tissue Sample
Fly Larvae	Patent Medicines	Trivalent Vaccine
Germ	Pathologist	Trypsinization
Immunity	Pathology	Viremic phase
Infection	Paralyzed	Virologist
Inoculation	Pharmacy	Virus
Iron Lung	Pharmaceutical	Zoologist
Jim Crow		

Chapter Discussion Questions

These questions may be used for general discussion, in conjunction with the literature circle model or, as appropriate, a journal prompt or bell ringer assignment.

Chapter 1:

1. Have you ever been seriously hurt or sick? If yes, how did you feel emotionally and physically? If no, how do you think you might feel?

Chapter 2:

1. The author shows us a picture of herself as a scared but brave little girl who is coping with an illness that neither she nor her doctors understand. She also talks about Dr. Salk, many miles away in Pennsylvania, Dr. Sabin in Ohio and Dr. Isabel Morgan in Maryland. Think for a moment how this little girl's life and the lives of these doctors were connected—name some ways that you can use the knowledge you acquire in school to help others you may never know or meet.
2. List some ways your lives connect to others.
3. What is Polio?
4. Why was there not a vaccine to prevent polio?
5. In the early days of medical practice what did doctors know about germs? What didn't they know about spreading infection?
6. How did polio change the way America paid for medical research?

Chapter 3:

1. What are bacteria and viruses? How do they differ?
2. What is a vaccine?
3. What is an antibody?
4. How does a vaccine work to prevent illness?
5. Why was the use of animal research necessary?
6. What is a microscope?
7. What effect does having to deal with scary situations have on a young person?
8. How important do you think Shelly's parents were to her before her illness? During her illness? After her illness?
9. What kind of a microscope is necessary to see the poliovirus? Why do doctors and scientists have to use this type of microscope with this virus?

Chapter 4:

1. Shelly talks about “Zip,” her favorite stuffed animal, and how happy she is to have with her in the hospital. Did you have a favorite stuffed animal or doll when you were little? Tell about the doll or animal—who gave it to you?
2. What are the reasons why animal research is controversial?
3. Take a position on animal research: Is it justified (right) or is it an unnecessary cruelty (wrong)? Use examples to support your argument.

Chapter 5:

1. Why did Jonas Salk believe that a dead vaccine could be produced? What would be the advantages of a dead vaccine?
2. Why did Dr. Albert Sabin think a live vaccine would work better? What are the dangers of a live vaccine?
3. Shelly remembers when black people weren’t allowed to be in the same areas as white people. How does she feel as she observes this? How does she feel about Verna Mae? What is her attitude toward her night visitor?
4. On page 45, the author writes, “I was not different from the earth. I was who I was long before I was changed. I was still who I was, no matter how I would be from here on out.” What do you think the author means by this statement? How can you be changed and remain the same? Explain your answer using the text and your own personal experiences.

Chapter 6:

1. The poliovirus is not detectable in the bloodstream within the patient’s circulatory system. Why is this so?
2. Dr. Salk looked at the flu virus and realized there are many different kinds of flu. What did this lead him to believe about the polio virus? What kind of thinking did Dr. Salk demonstrate?

Chapter 8:

1. Why did the typing process take so long? If the same kind of scientific challenge occurred today, would the process have taken so long? Why or why not?
2. What kinds of tissue samples did Dr. Salk want to use? Where did he obtain these?
3. Scientific researchers encounter two major problems within this chapter. Identify the problems and explain why they were so difficult.

Chapter 9:

1. Dr. Salk identified how many types of the poliovirus? Name each type and describe its effects on the human body.

Chapter 10:

1. Explain the viremic phase of a virus. Draw a map of this phase of the virus' life.
2. What is an epidemic? Explain how understanding or not understanding the viremic phase of a virus affects an epidemic.

Chapter 13:

1. Identify the issues that Dr. Salk and Dr. Sabine disagreed on about the polio virus.
2. Compare and contrast the live vaccine and the dead vaccine.
3. Why do think Dr. Salk and Dr. Sabine felt like they were competing against each other rather than working together?

Chapter 14:

1. What is a scientific culture—a bacterial or viral culture?
2. Where did Dr. Salk decide to culture the virus?
3. What is the importance of the trypsinization process to understanding how polio affects the body?
4. Why was important that the monkeys used to study the virus be kept alive to do so?

Chapter 15

1. What is medium 199? Describe its importance.
2. How does Dr. Salk decide which types or strains of the bacteria to use in making the vaccine? Why was this such an important decision?
3. What does Dr. Salk use to kill the vaccine? What would the dangers be if Dr. Salk did not check his work carefully?

Chapter 20

1. Define a placebo. Use a dictionary to find out the origin of the word—what language does it come from and what is the root meaning of the word?
2. Why would a placebo be useful in research?
3. Give an outline of the scientific process for an experiment.
4. What is meant by a “control” in terms of scientific experiments?
5. Why are “controls” important?
6. What was unique or different about how Dr. Salk did his research trials?

Chapter 24

1. Why do you think that most students your age are unfamiliar with polio?
2. How are children in America protected from polio?
3. Why do you think that public systems such as schools require immunization records before allowing students to attend?
4. What is Rotary?
5. Who founded Rotary? (Note this question may take a little external research).
6. What are the four principals of Rotary? Explain what is meant by these principals and how these principals fit with Rotary’s mission to end Polio.
7. Who has partnered with Rotary to end Polio? How have they done this and encouraged others to join in the campaign?
8. What kind of personality do you think medical researchers must have to study illnesses that need new treatments and cures?
9. What kind of personality do you think medical care givers must have to give good medical treatment to patients who are sick?
10. What kind of personality do you think people who work to help others (philanthropists) have that motives them to help others?
11. What kinds of knowledge are important to help end problems caused by disease, sickness and suffering?
12. Think of the subjects you study in school. How do each of these play an important part in finding your career?

Final Projects:

In addition to student participation, vocabulary assessment, journal writing, etc., you may wish to have students create a unique artifact or presentation for assessment of their understanding.

Some ideas are:

1. Have students create an infomercial using a digital camera about equal access in public areas.
2. Have students design their own building or room with equal access points using a CAD open source program.
3. Have students conduct a digitally recorded interview with someone who has overcome a great obstacle in their life.
4. Have students design and create a logo and/or advertisement for Rotary—this logo and/or advertisement should chronicle Rotary’s involvement in ending Polio throughout the world. Digital and non-digital media are acceptable.
5. Create an “Ability Awareness” campaign that emphasizes various abilities that different people have rather than their disabilities.