



Purpose:

To *compare* the steps of a real **scientific investigation** to that of the **scientific method**.

Vocabulary:

- **Observation** – the gathering of information using our 5 senses (see, smell, taste, hear, feel)
- **Inference** – a reasonable conclusion made from observations

Background:

Although scientists use many methods to solve problems, scientists in the same field frequently use similar approaches. Often these involve doing an experiment. For example, if a botanist (someone who studies plants) wanted to develop plants that resist drought, the botanist would use many plants and follow procedures common to many botanical experiments. A materials scientist working to develop a new type of plastic for an artificial limb would use a different procedure. What kinds of experiments are possible when you study human beings? How can you collect evidence in these situations? Begin to consider these issues as you watch the story of the disease called pellagra (puh-LAY-gra), which affected poor rural families of the South.

Notes on video:

What were the problems caused by pellagra?

What did people think caused pellagra?

- 1.
- 2.
- 3.
- 4.

What evidence did Dr. Goldberger observe or collect about pellagra?

What did Dr. Goldberger conclude about the cause of pellagra?

Observations & Inferences:

Identify each of the following statements as either an observation or an inference that was made about pellagra.

Observation

Inference

_____	_____	a. Corn causes pellagra.
_____	_____	b. Only children in the orphanage developed pellagra. The staff did not.
_____	_____	c. Changing the orphans' diets cured those who had pellagra.
_____	_____	d. Only people who lived in the South got pellagra.
_____	_____	e. Pellagra is not an infectious disease.
_____	_____	f. Pellagra causes skin rashes and, eventually, insanity.
_____	_____	g. People get pellagra because they are poor.
_____	_____	h. Pellagra is caused by diet.
_____	_____	i. Orphans and prisoners who ate a balanced diet did not develop pellagra.
_____	_____	j. The Southern way of life caused pellagra.

1. Next, look at the statements that you marked as inferences. Based on the evidence that Dr. Goldberger found, **put a star next to each inference that is faulty.**
2. Choose one of the inferences that you put a star next to, and explain how that inference could have been made based on observations.

Analysis Questions:

Answer the questions below in complete, quality, and correct sentences using facts, reasons, evidence, or data to support your answer.

1. Tell Dr. Goldberger's hypothesis about the cause of pellagra.

2. Describe the two key experiments Dr. Goldberger did to provide evidence of the relationship between pellagra and nutrition. **Be sure to explain if the results provided evidence that supported or disproved his hypothesis.**

3. Tell what Dr Goldberger could have done to provide more convincing evidence of the relationship between pellagra and nutrition.

4. a. Tell which steps of Dr. Goldberger's investigation were the **same** as the scientific method.
b. Next describe the steps that were **different**. *Use evidence from the video.*

a. State the problem. b. Create a hypothesis. c. Do a investigation. d. Record & Analyze data. e. Make a conclusion. f. Repeat & Recheck. g. Communicate Results

a.

b.
