

2016 AFRICAN AMERICAN HISTORY CALENDAR LESSON PLAN TEMPLATE

Month/Honoree(s): Dr. Stuart Hamilton (March)

Lesson Title: Applying the Scientific Method in Medicine

Grade Level/Course: Grades 4-8

Subject: Science

SC Academic Standards and Skills Addressed:

SCI.4.S.1A - [*Conceptual Understanding*] - The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.

SCI.8.8-1 - [*Standard*] - The student will demonstrate an understanding of technological design and scientific inquiry, including process skills, mathematical thinking, controlled investigative design and analysis, and problem solving.

Introductory Statement/Lesson Overview:

This lesson provides a humorous opportunity for students to practice scientific inquiry vocabulary and basic mathematical thinking that are needed in scientific thinking. Dr. Hamilton has observed a problem that many people in the village he has visited seem to be struck with a terrible disease. (His patients seem to have a terrible odor.) He thinks he has a cure but he needs to test his hypothesis.

Goals/Lesson Objectives:

1. Students will learn to solve problems in a way similar to how scientists and engineers might solve problems.
2. Students will need to explain their thinking both verbally and mathematically to justify their conclusion.

Instructional Materials: (These should be included in the body of the lesson or as attachments)

1. copy of Dr. Stuart Hamilton's biography from the 2016 calendar
2. copy of Dr. Hamilton's Success in the Scientific Method!

3. Animated Science. Episode 1. The Scientific Method.
<https://www.youtube.com/watch?v=tUP8rFWzVt4>

posted from Youtube on 1/4/16

This is a cartoon clip that shows key ideas of observation, hypothesis, data collection, results, and a conclusion. There are no audible words but the key terms are written and illustrated.

4. <http://www.clean-water-for-laymen.com/bacteria-in-well-water.html>

copied on 1/8/16

This is a link to an article which provides great background information on diseases that affect people.

Lesson Progression and Time Frame:

Activity 1:

Read the calendar information on Dr. Stuart Hamilton and locate South Carolina and South Africa on a world map. **10 – 15 minutes**

Read grade level standards that apply to students on the scientific method.

SCI.4.S.1A - [*Conceptual Understanding*] - The practices of science and engineering support the development of science concepts, develop the habits of mind that are necessary for scientific thinking, and allow students to engage in science in ways that are similar to those used by scientists and engineers.

SCI.8.8-1 - [*Standard*] - The student will demonstrate an understanding of technological design and scientific inquiry, including process skills, mathematical thinking, controlled investigative design and analysis, and problem solving.

Pose question to students, “How might a doctor have to use a controlled investigative design to help patients?” Allow students to answer some of the possibilities.

Activity 2:

Have students review the steps in a controlled investigation by watching the link <https://www.youtube.com/watch?v=tUP8rFWzVt4>. Prior to an initial viewing of the clip, review key vocabulary terms (listed below) and relate these terms to conducting a controlled scientific explanation. These terms should be posted for students to see. **10 -15 minutes**

Terms listed in the clip: Observation, Hypothesis, Experiment, and Results

Terms not covered in the clip but should also be listed: Independent variable, constant, and conclusion

Activity 3:

Give students a copy of “Success in the Scientific Method” and also a copy of the worksheet. The teacher should decide if this is best covered a whole group lesson, cooperative partners, or individual student work. **15 – 25 minutes**

Extensions/Differentiation:

A possible extension is to relate the difference in seasons from the Northern Hemisphere to the Southern Hemisphere. Students could compare the average temperature, length of a day of Columbia , SC to a city in South Africa.

SCI.8.E.4B.3 - *[Performance Indicator] - Develop and use models to explain how seasons, caused by the tilt of Earth’s axis as it orbits the Sun, affects the length of the day and the amount of heating on Earth’s surface.*

Differentiation of instruction would be to expect different math from students on question 7 of the worksheet. Higher level students would be expected to reduce the fraction and change to a decimal or percent. Lower students could be allowed to simply subtract.

Assessment:

The teacher may use the worksheet provided and grade the students based upon the point total provided next to each question.

Developed by:

Jurgen Schnackenberg

Newberry Middle School

Newberry County School District