Case Details

Case Title:

Thar Be Treasure

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Grade Level(s):

Middle School

Subject(s):

Physical Science

Summary:

A group of friends go on a trip to celebrate their high school graduation. After finding a doubloon on the beach the friends plan a SCUBA trip to look for buried pirate treasure.

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Learning Objectives:

1. Explain how pressure is related to water depth.
2. Explain how temperature affects pressure.
3. Explain how density changes with depth.
4. Explain how light travels through water.
5. Explain how SCUBA diving is performed.
6. Explain the circumstances under which one gets the bends and why this occurs.

National/State Standards:

Georgia Performance Standards

S8CS1. Students will explore the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works. (NSES Content Standard A)
a. Understand the importance of and keep honest, clear, and accurate records in science.
b. Understand that hypotheses can be valuable even if they turn out not to be completely accurate.

S8CS7. Students will question scientific claims and arguments effectively. (NSES

Content Standard A)
a. Question claims based on vague attributions (such as Leading doctors say...) or on statements made by people outside the area of their particular expertise.
b. Identify the flaws of reasoning in arguments that are based on poorly designed research (e.g., facts intermingled with opinion, conclusions based on insufficient evidence).

S8P1. Students will examine the scientific view of the nature of matter. (NSES Content Standard B)
c. Describe the movement of particles in solids, liquids, gases, and plasmas states.
e. Distinguish between changes in matter as physical (i.e., physical change) or chemical (development of a gas, formation of precipitate, and change in color).

S8P4. Students will explore the wave nature of sound and electromagnetic radiation. (NSES Content Standard B)
b. Describe how the behavior of light waves is manipulated causing reflection, refraction diffraction, and absorption.
c. Explain how the human eye sees objects and colors in terms of wavelengths.
d. Describe how the behavior of waves is affected by medium (such as air, water, solids).