Assignment Discovery Lesson Plan
Forensics: Who Killed the Iceman?

Grade level
8-12

Duration
One or two class periods

Objectives
Students will

- review information about mummies,
- research a well-known ice mummy, and
- make a class presentation.

Materials:

- Computer with Internet access
- Poster paper
- Markers or similar materials

Procedures

1. Ask students the following questions about mummies (answers in italics).
   - What is a mummy? *(a preserved body)*
   - How are mummies different from skeletons? (They have some organs, muscles, or other soft tissue.) Explain why some bodies become a skeleton, while others become mummies. *(Usually, bacteria or fungi break down soft tissue, leaving a skeleton. When bacteria or fungi cannot grow, the body is preserved and may become mummified.)*
   - How are ice mummies different from Egyptian mummies? *(Ice mummies were preserved accidentally, frozen by their natural environment. Egyptian mummies were preserved on purpose, through a method called embalming.)*

2. Next, ask students to identify what archeologists can learn about a mummy. *(A person's gender, age, diet, cause of death, culture, religion, social standing)*
   - What clues do archeologists look for in a mummy? *(Cultural artifacts, details about bones and wounds, stomach contents, where the mummy was found)*

3. Divide the class into two groups and explain that each group will study one of two well-known ice mummies: the Iceman (discovered in the Alps, believed to have died about 5,300 years ago) or the Ice Maiden (a young Inca girl died discovered in the Peruvian Andes, believed to have died about 500 years ago).
   - Students will research how archaeologists deciphered clues to learn about the mummy and its culture.
   - They will create a drawing or three-dimensional model of the mummy and its artifacts.
   - They will give a class presentation, using their model to explain what the clues revealed about the mummy and its culture. Students may want to role-play the experts (examples: the team leader who oversees the study, the radiologist who reads X-rays, the pathologist who investigates physical wounds).

4. Provide the list of questions below to guide research. Explain that each group's presentation should address the questions.

   - Where was this mummy found? How old is it?
   - What do we know about this mummy's age, gender, religion, cause of death? Explain how scientists know this information.
   - Describe the artifacts found with the mummy. What did they reveal?
   - Describe physical characteristics or marks on the mummy. What do they reveal?
   - What other facts have archeologists concluded about this person's life or death?
   - What has the mummy revealed about its society?
   - What technology was used to study this mummy?
   - Describe the roles of the experts who study this mummy. (archaeologists, radiologists, pathologists, botanists, anthropologists)
   - What questions remain unanswered?

5. Tell students about the following Web sites:

   ICEMAN

   Ultimate Guide: Iceman
   http://dsc.discovery.com/convergence/iceman/iceman.html

   South Tyrol Museum of Archaeology in Bolzano, Italy
   http://www.archaeologiemuseum.it/f06_ice_uk.html

   Otzi
   http://www.mummytombs.com/mummylocator/featured/otzi.htm

   The Iceman's Last Meal
   http://www.pbs.org/wgbh/nova/icemummies/iceman.html

   Plants and the Iceman
   http://www.gla.ac.uk/Acad/IBLS/DEEB/jd/otzi.htm

   ICE MAIDEN

   Juanita: The Frozen Mummy
   http://dsc.discovery.com/stories/history/desertmummies/juanita.html

   The High Mummies
   http://www.pbs.org/wgbh/nova/peru/mummies/high2.html

   Juanita: Incan Ice Maiden
   http://www.mummytombs.com/mummylocator/featured/juanita.htm

   Andes Expedition: Searching for Inca Secrets (see "Virtual Autopsy")
   http://www.nationalgeographic.com/features/97/andes/

   The Ice Maiden of Mt. Ampato
   http://www.mountain.org/zicemaiden.html

6. After both presentations, compare the two mummies in terms of their lives and deaths and what they revealed about their cultures? What questions would students like to have answered about these mummies? Would students like to work as archaeologists on ice mummies or other mummies? Have them explain their answers.

Evaluation
Use the following three-point rubric to evaluate students' work during this lesson.

3 points: Students were highly engaged in class discussions; demonstrated a clear understanding of mummies, how they are preserved, and why and how archaeologists study mummies; gave a clear and thorough class presentation that answered all the questions in the assignment.

2 points: Students participated in class discussions; demonstrated an adequate understanding of mummies, how they are preserved, and why and how archaeologists study mummies; gave a complete class presentation that answered most of the questions in the assignment.

1 point: Students participated minimally in class discussions; demonstrated an incomplete understanding of mummies, how they are preserved, and why and how archaeologists study mummies; gave an incomplete class presentation that answered few or none of the questions in the assignment.

Vocabulary
archaeology
Definition: The scientific study of material remains such as fossils, bones, or relics that reveal information about the human activity of cultures that flourished long ago
Context: By studying physical characteristics of a mummy, such as bones and teeth, archaeologists can determine the person's age and gender.

artifact
Definition: An object produced or shaped by human craft, especially a tool, weapon, or ornament of archaeological or historical interest
Context: Artifacts found with mummies often reveal important cultural clues.

mummify
Definition: To make into a mummy by embalming and drying; to cause to shrivel and dry up
Context: Bodies may become naturally mummified in frozen, dry climates.

mummy
Definition: A body that has been preserved by natural or artificial means
Context: The Iceman is a well-known mummy discovered frozen in the Alps.

Academic Standards
This lesson plan addresses the following standards from the National Science Education Standards:

- Science as Inquiry: Understandings about scientific inquiry

- Science and Technology: Abilities of technological design; Understandings about science and technology

Credit
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