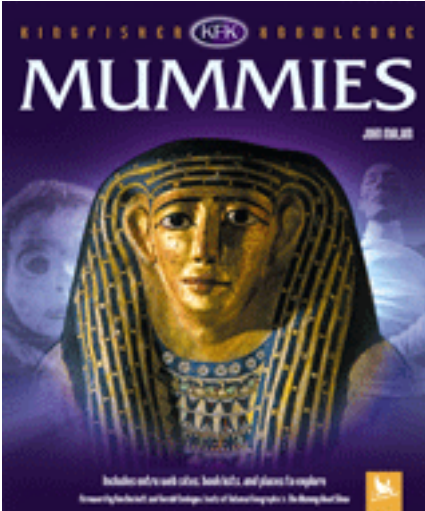


A Teacher's Guide



Mummies

by John Marlam

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About the Book

Ancient civilizations are part of the social studies curriculum in middle school. *Kingfisher Knowledge Mummies* explores ancient and not so ancient cultures and civilizations; examines the traditions and beliefs of these cultures; and helps students appreciate how these peoples cared for their dead. It goes beyond social studies to show how present-day scientists use scientific methods to reveal the secrets of the past and allow the dead to "speak" from the grave. *Mummies* also gives your class a chance to practice and increase nonfiction reading skills.

Reading Comprehension

Give your students time to read the book on their own or in small groups. To get a sense of their understanding and how much they are learning and retaining, use the chapter summaries to open discussions. It is easy to turn the straightforward review sentences in these summaries into questions to pose to your students. For example:

- Chapter 1, page 30, "Two Ways to Make a Mummy": Ask students to define just what a mummy is. Are the only mummies of people? How are natural mummies made?
- Chapter 2, page 46, "Egypt, the Land of Mummies": Ask students to articulate the reasons that the Egyptians mummified their dead.
- Chapter 3, page 46, "Mummy World": Have your students debate the question "Who are the rightful owners of mummies?"
- Chapter 4, page 59, "Mummies Today": Ask students to talk about what scientists hope to learn from studying mummies and how they use scientific instrumentation.

Standards:

Language Arts:

- Uses reading skill and strategies to understand a variety of informational texts.
- Summarizes and paraphrases information in texts.
- Draws conclusions and makes inferences based on explicit and implicit texts.
- Uses new information to adjust and extend personal knowledge base.

Language Arts

Report Writing

Give each student two copies of the Mummy Report Form shown below. They should use the forms to describe two different mummies they have read about in the book. The completed forms will serve as outlines for reports. (Students may not be able to fill in every field for each mummy.)

Students should meet in groups to evaluate each other's writing and aid in the revision process.

Mummy Report Form

I. Mummy's civilization:

II. Name of mummy:

III. Date of mummy:

IV. Method of mummification:

V. Mummy's appearance (describe wrappings, clothing, hair, face, items buried with it, etc.):

VI. Condition of the mummy (intact or partial condition, damages, pre-mummification injuries):

VII. How the mummified body died:

VIII. Location of mummy now:

IX. Scientific tests performed:

X. Conclusions:

(Adapted from *How to Make a Mummy Talk* © James M. Deem. Boston: Houghton Mifflin, 1995.)

Standards:

Language Arts:

- Uses an outline as a prewriting activity.
- Uses a variety of strategies to revise written work.
- Evaluates others' writing.

History:

- Analyzes the influence that specific ideas and beliefs had on a period of time.

Creative Writing

Almost all of the pictures and illustrations in *Mummies* can be used as the basis for a creative writing exercise. For example, examine the pictures of Tollund Man on pages 31, 32, and 33. Here lies the mummified body of a man who was hung 2,100 years ago. What is his story? What was his life like? What might he have done that caused his community to take his life? Was he a criminal or a victim of criminals? Your students can write stories, articles, and/or plays about this man and his life and death.

Your students can do the same for the illustrations on pages 18 and 19, 26 and 27, 34 and 35, 40 and 41, and 42 and 43. The class's work can be bound together and presented as a new book entitled *The Stories Behind the Stories in Mummies*.

Standards:

Language Arts:

- Uses content, style, and structure appropriate for specific audiences.
- Writes narrative accounts, such as short stories.
- Writes in response to literature.
- Uses a range of strategies to interpret visual media.

Art

Look at the picture on page 18. It shows an embalmer wearing the mask of the jackal-headed god Anubis as he works to mummify a dead body. Notice the pictograms on the side of the picture. These are hieroglyphics. We could imagine that these hieroglyphics tell the story of this Egyptian's life and death.

Brainstorm with your class and create your own hieroglyphs. They can represent objects or ideas or depict events. Display your students' hieroglyphs on a chart and constantly add new ones. Have them create scrolls that tell family histories, using only the hieroglyphs from the chart.

Standards:

Visual Arts:

- Knows how visual, spatial, and temporal concepts integrate with content to communicate intended meaning in one's artwork.
- Knows different subjects, themes, and symbols that convey intended meanings in artwork.

Language Arts:

- Prewriting: brainstorming.
- Writes narrative accounts.

Ethics and Values

Studying the remains of past civilizations presents an ethical and moral dilemma. Is our quest for knowledge more important than the respect owed to the dead of previous civilizations?

Read to your class the selections "Mummies are time travelers" on page 9 and "Mummies of Australia and respect for ancestors" on page 43. Have a discussion with your class about this dilemma. Include the following questions:

- Does the goal of gaining scientific knowledge justify the means scientists employ to study mummified remains?
- Did the Australian museums do the right thing in removing the mummies of indigenous peoples from display, thus depriving their scientists the opportunity to learn more about the original inhabitants of their country?
- Would the Australians have acted differently if there weren't any descendants of the original inhabitants alive today?

Standards:

History:

- Analyzes the influence that specific ideas and beliefs have on a period of history.
- Analyzes the effect that specific decisions have on a period of history.

Science:

- Understands the ethics associated with scientific study.

Language Arts:

- Uses reading skills and strategies to understand and interpret a variety of informational texts.

Science

The early Egyptians recognized that the mummification process required removing all the water from the body. Besides draining the blood from the body, they used a chemical salt found in the desert as a desiccant to remove the remaining moisture from the body's tissues. (A desiccant is a substance that helps remove water from things.) They probably had to experiment with various desiccating salts until they came up with the mixture that

worked the best. Several desiccants can be found around the house, and your students can experiment with them to "mummify" an apple and then decide which works best. Depending on your resources, you can do this as a whole class activity or the students can work in research teams.

Materials

Each team will need:

- Two apples
- Knife
- Eight 12-oz. disposable plastic cups
- Tray to hold the cups
- Measuring cup
- Plastic tablespoon
- 12 oz. kosher salt
- 12 oz. baking soda
- 12 oz. washing soda or Epsom salts
- Mixing bowl
- Labels and a marking pen
- Tongs
- Small brush
- Accurate scale
- Graph paper

Procedure

1. Create eight labels like the one below and affix one to each cup.

Sample label:

Cup #
Salt Mixture
Starting Weight (gr.):
Ending Weight: (gr.):

2. Cut the two apples into quarters so that there are eight slices about the same size.
3. Weigh a slice and record its starting weight on a label and place the slice in one of the cups.
4. Repeat this procedure for each slice so that each cup is labeled and has an apple slice in it.
5. Add $\frac{1}{2}$ cup kosher salt to cup #1. Make sure that the apple slice is completely covered. Write the words "kosher salt" on the label. In cup #2 cover the apple slice with $\frac{1}{2}$ cup baking soda and write "baking soda" on the label. For cup #3, cover the apple slice with $\frac{1}{2}$ cup Epsom salts and label the cup "Epsom salts."
6. Into cup #4, place a mixture of 50% kosher salt and 50% baking soda; cup #5, 50% baking soda and 50% Epsom salts; cup #6, 50% Epsom salts and 50% kosher salt. Make sure each slice is covered completely and each cup is labeled correctly.

7. Make a mixture of 1/3 kosher salt, 1/3 Epsom salts, and 1/3 baking soda, and fill cup #7 with ½ cup of the mixture. Label cup #8, with no desiccant as the control.
8. Place the cups on the tray and place on a shelf out of direct sunlight.
9. After seven days, remove each apple slice from its cup with the tongs. Use the brush carefully remove as much of the salt as you can. Weigh the slice and record the ending weight.
10. Compare the starting weight and the ending weight. Calculate the percentage of water lost by each slice. Compare the percentages of weight lost to determine which desiccant removed the most water.

(Calculate the percentage of water lost using the following formula:

% water loss = change in mass/starting mass x 100.)

All of the data can be recorded on the following chart:

Slice	Desiccant	Starting mass (gr.)	Ending mass (gr.)	Change in mass (gr.)	% water loss
1	kosher salt				
2	baking soda				
3	Epsom salts				
4	50% kosher salt 50% baking soda				
5	50% baking soda 50% Epsom salts				
6	50% Epsom salts 50% kosher salt				
7	1/3 kosher salt 1/3 baking soda 1/3 Epsom salts				
8	Control				

Discussion Questions:

- Which desiccant worked best?
- Why was it necessary to have a control?
- Why were the apple slices handled with tongs?
- Where did the lost water go? How could you prove it?
- How did the apple slices look at the start of the experiment and at the end?
- Would the results be any different if the apple was completely peeled, or if it was whole? How could you find out?
- Would the results be different if a different fruit was used? How could you find out?

Standards:

Science:

- Understands the nature of scientific explanations.
- Knows that investigations involve systematic observation; carefully collected, relevant evidence; logical reasoning; and some imagination in developing hypotheses and explanations.
- Designs and constructs a scientific investigation.
- Understands that there may be more than one way to interpret a set of findings.

Discussion

- The modern-day equivalent of mummification is cryogenics. Discuss with your class what cryogenics is and how its purpose is different from mummification. Ask students to talk about whether they would want their bodies to be mummified, frozen cryogenically, or left alone to let nature take its course?
- A mummy was often buried with important items from his life or things she might need for her afterlife. If modern people were to be buried with important, valuable, or treasured items, what would they be?
- Refer to chapter 4, pages 50 and 51, "Mummy Mania": Why have mummies so captured our imaginations?

Standards:

Language Arts/Listening and Speaking:

- Participates in group discussion.
- Asks question to seek clarification of ideas.
- Uses level-appropriate vocabulary in speech.
- Makes oral presentations.
- Plays a variety of roles in group discussion.

History:

- Understands the historical perspective.

Cooperative learning:

- Contributes to the overall effort of the group.