

Muse®

AFTERLIVES:

The End is Just the Beginning

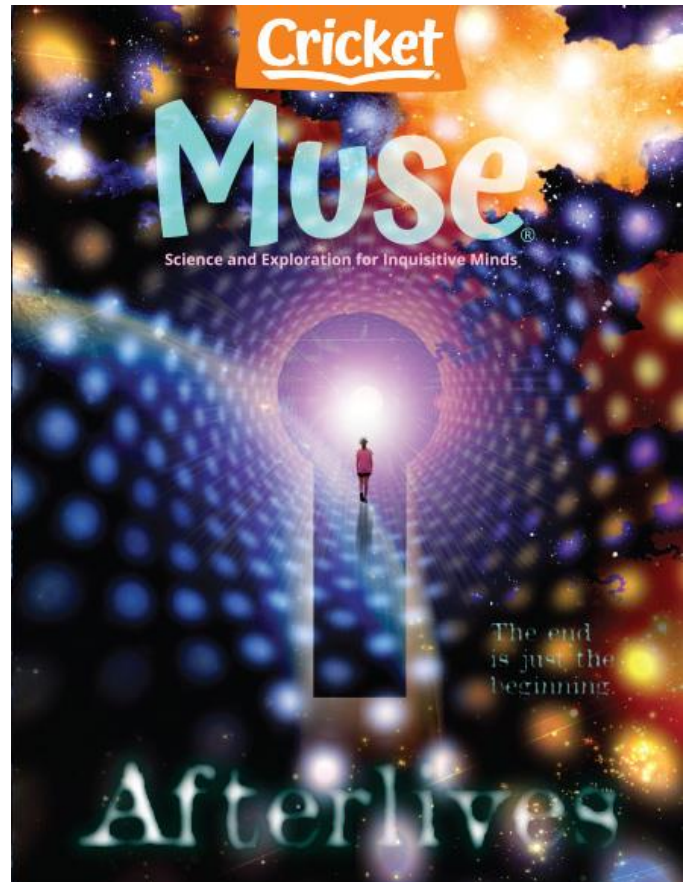
Humanity has a long history of being obsessed with the afterlife. While believers are busy conducting séances, scientists are more concerned with developing de-extinction techniques that can bring animals back from extinction. Explore the possibilities in this issue of MUSE.

CONVERSATION QUESTION

How do scientists explore the possibility of life after death?

TEACHING OBJECTIVES

- Students will learn how scientists are attempting to reintroduce the woolly mammoth into the world.
- Students will learn about the history and methods used to try to contact the spirit world.
- Students will learn how the solar system will transform when the sun dies.
- Students will compare and contrast the features and traits of different animals.
- Students will identify cause-and-effect relationships.
- Students will examine the interconnectedness of relationships.
- Students will create a timeline indicating the extinction of various animals.
- Students will demonstrate their understanding of the literary device, alliteration.
- Students will create mathematical word problems based on the solar system.



In addition to supplemental materials focused on core STEAM skills, this flexible teaching tool offers vocabulary-building activities, questions for discussion, and cross-curricular activities.

SELECTIONS

- **Mammoth Return**
Expository Nonfiction, ~1050L
- **Seriously Spooky Séances**
Expository Nonfiction, ~550L
- **The Afterlife of the Solar System**
Expository Nonfiction, ~1050L

Mammoth Return

pp. 10–15, Expository Nonfiction

Gone from our planet for nearly 3,700 years, the woolly mammoth may be on the path to de-extinction. Learn how scientific advancements are making it possible to raise long-gone creatures from the dead. Travel back in time to the Ice Age and get acquainted with this furry giant.



RESOURCES

Compare and Contrast: Mammoth Musings

OBJECTIVES

- Students will learn how scientists are attempting to reintroduce the woolly mammoth into the world.
- Students will compare and contrast the features and traits of different animals.
- Students will create a timeline indicating the extinction of various animals.

KEY VOCABULARY

- **demise** (p. 12) an ending of existence
- **diversity** (p. 12) being composed of differing elements
- **revitalize** (p. 12) to give new life to
- **vibrancy** (p. 15) the quality of being full of energy and life

ENGAGE

Conversation Question: How do scientists explore the possibility of life after death?

Activate prior learning by having the students form small groups and list as many extinct animals as they can. Have them discuss reasons for extinction and the technology that may now exist to prevent, or possibly reverse, extinction.

INTRODUCE VOCABULARY

Post key words and definitions on the board. Have students underline or highlight the sentences where these words appear. After reading, instruct students to rewrite the sentences substituting a valid synonym for each vocabulary term.

READ & DISCUSS

Have students remain with their groups from the introductory activity and read the article aloud within their cluster. Reconvene as a class and use the following questions to ensure a comprehensive understanding of the article.

1. Describe the features and behaviors of a woolly mammoth.
2. How do scientists think that the woolly mammoth became extinct?
3. How is de-extinction becoming possible?
4. Explain cloning and why scientists cannot bring back extinct animals using this process.

SKILL FOCUS: Compare and Contrast

INSTRUCT: Divide the class into small groups and have students reread the article noting passages that address both elephants and the woolly mammoth. Distribute *Mammoth Musings* and have students work to compare and contrast these two animals. Allow them to share their work with other groups and amend their charts if necessary, but instruct them to write their answers to the final question on the page independently.

ASSESS: Collect the graphic organizer to determine if students were accurately able to compare/contrast information from the text. Evaluate understanding by reviewing independent answers to the final question.

EXTEND

History: Have the students research other animals that have gone extinct. Direct them to create a timeline with dates, names, and pictures that indicate when each animal vanished. Pose the question, “If you could bring back one animal from extinction, which would it be? Why?” Arrange the students in small groups to discuss the question.

Mammoth Musings

Compare and Contrast: Use information from the article to compare and contrast the woolly mammoth and the elephant.

How are they alike?	How are they different?
1. 2. 3.	1. 2. 3.

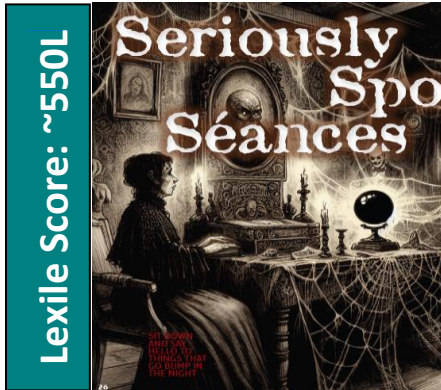
How do scientists expect elephants to play a role in the de-extinction of mammoths?

Muse® Teacher Guide: October 2024

Seriously Spooky Séances

pp. 26–30, Expository Nonfiction

Take a journey into the spirit realm and explore society’s fascination with the afterlife. This article exposes the fraudulent methods used by mediums of the past, as well as acknowledges our desire to believe the unbelievable in order to remain close to those we’ve lost.



RESOURCES

Cause and Effect: A Bump in the Night

OBJECTIVES

- Students will learn about the history and methods used to try to contact the spirit world.
- Students will identify cause-and-effect relationships.
- Students will demonstrate their understanding of the literary device, alliteration.

KEY VOCABULARY

- **séance** (p. 30) a meeting at which people attempt to make contact with the dead, especially through the use of a medium
- **spiritualism** (p. 30) a system of belief based on supposed communication with the spirits of the dead
- **supernatural** (p. 29) attributed to some force beyond laws of nature

ENGAGE

Conversation Question: How do scientists explore the possibility of life after death?

Divide the class into two teams to debate the existence of the afterlife. Conduct an informal debate, reminding students to provide reasons and evidence to support their claims. (Emphasize respect for different belief systems.) The debate will easily launch you into the reading of this article. Ask students if there is anyone who is willing to share a real life experience with a medium or séance. Remind the class to be respectful listeners.

INTRODUCE VOCABULARY

List the key vocabulary terms on the board and have students use resources to define them accurately. Ask them to consider how the words are related and to make a prediction about the content of the article. Revisit the students’ predictions after the reading.

READ & DISCUSS

Pose the following questions to the students to facilitate meaningful discussion.

1. How did the Fox sisters begin a “creepy craze”?
2. How does the power of suggestion contribute to the experience of a séance?
3. Why do you think people are so eager to make contact with the spirit world?
4. Can all of the information relayed by mediums be explained away?

SKILL FOCUS: Cause and Effect

INSTRUCT: While exploring the history of séances, this article also exposes the methods used by fraudulent mediums. Introduce the graphic organizer, *A Bump in the Night* and advise the students that they will be looking for cause-and-effect relationships (a relationship in which one event makes another event happen) throughout the text. Circulate and provide clarification if necessary.

ASSESS: Evaluate the students’ work from the graphic organizer. Arrange peer groups if remediation is necessary.

EXTEND

Language Arts: Guide the students to notice the use of alliteration throughout this article. (Seriously Spooky Séances, Creepy Craze, etc.) Review the definition of alliteration (the repetition of the same sound, usually consonants, at the start of a series of words in succession) and discuss why it is an effective literary tool. Instruct the class to rewrite well-known book titles using this device. Ex: Cat in the Hat could become Feline Fancies Fedoras. Read the student-created alliterative titles aloud to the class and challenge them to decipher the actual titles.

A Bump in the Night

Cause and Effect: Consult the article to record the cause-and-effect relationships. Remember the cause is what occurred while the effect is the result from that behavior.

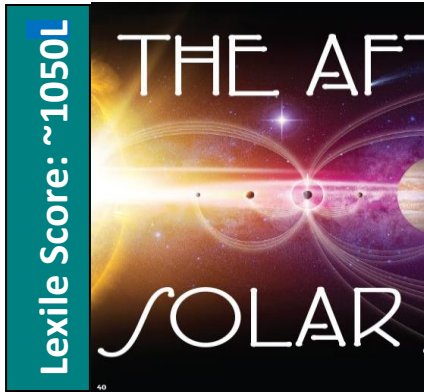
Page #	Cause/Behavior	Effect/Result
p. 30	Photographer of Mary Todd Lincoln used double exposures to craft spirit photograph.	The spirit of Abraham Lincoln appears to be present in photograph taken of Mary Todd Lincoln.

Use the chart to discuss with a partner how mediums' "tricks" fraudulently fostered a belief in the afterlife. Is this still an occurrence today?

The Afterlife of the Solar System

pp. 40–45, Expository Nonfiction

This article takes the reader on a tour of our solar system as it exists today and projects how it will be transformed when the sun ultimately dies. Stargaze 5 billion years into the future and imagine a starkly different universe.



RESOURCES

Examine Relationships: Lights Out

OBJECTIVES

- Students will learn how the solar system will transform when the sun dies.
- Students will examine the interconnectedness of relationships.
- Students will create mathematical word problems based on the solar system.

KEY VOCABULARY

- **contracts** (p. 44) decreases in size
- **fusion** (p. 42) process of causing an object to melt with intense heat so as to join with another
- **transform** (p. 42) make a dramatic change in form, appearance, or character
- **wreak** (p. 43) cause or inflict

ENGAGE

Conversation Question: How do scientists explore the possibility of life after death?

Activate prior knowledge by asking students to predict what will happen when the sun begins to die. Ask them to consider Earth, as well as the other planets in the solar system.

INTRODUCE VOCABULARY

Post and discuss the key vocabulary words and definitions on the board. Then display the following cloze sentences and have students supply the correct word:

1. A fresh coat of paint can _____ a room.
2. The pupil of the eye _____ in the light.
3. Bad habits can _____ havoc on your health.
4. Nuclear _____ is difficult to use for the generation of power.

Have students write their own sentences using the words correctly.

READ & DISCUSS

Reinforce comprehension of the concepts in this article by using the following prompts to direct discussion.

1. Describe a typical star.
2. What do scientists predict will happen when the sun is 10 billion years old?
3. Why do scientists believe that life has a real chance on Titan?
4. How will the habitable zone change over time?

SKILL FOCUS: Examine Relationships

INSTRUCT: Review the information presented in the article. Distribute the *Lights Out* graphic organizer and instruct students to examine the interconnectedness of the concepts and terms listed. Direct students to use the details and graphics from the text to thoroughly explain and record the relationships.

ASSESS: Circulate and discuss the information that the students are recording on their organizers. Collect the finished work and remediate if necessary.

EXTEND

Mathematics: Have students research the distance of planets relative to each other, as well as to the sun. Model a word problem that incorporates such information. (**Example:** *The average distance from Earth to Mars is 140 million miles, while the distance from Earth to the sun is 93 million miles. How much farther is the sun from Mars than Earth?*) Challenge students to create their own word problems for their classmates to solve. Check for accuracy. Advise them to create multi-step word problems and to use a variety of mathematical operations.

Lights Out

Examine Relationships: Explain the relationship between the object and concepts listed.

red giant ↔ white dwarf

hydrogen ↔ helium

liquid water ↔ sustainability of life

planets ↔ moons

sun's death ↔ solar system