MOREHEAD
PLANETARIUM AND SCIENCE CENTER

MAGIC TREE HOUSE® SPACE MISSION

CLASSROOM ACTIVITIES

CONTENTS

INTRODUCTION

Morehead Planetarium and Science Center's *Magic Tree House® Space Mission* show is an immersive learning experience that involves students in looking, listening, contemplating and inquiring.

Students travel with the brother-sister duo Jack and Annie in their Magic Tree House as they proceed to answer the questions left for them in a mysterious note signed "–M."

The show begins with narration by Mary Pope Osborne, author of the Magic Tree House® book series (and a graduate of the University of North Carolina at Chapel Hill). Students find themselves perched high in the trees as Jack and Annie discover the note that asks them to answer a series of six questions about space.

When Jack and Annie wish themselves to an observatory where they meet an astronomer, the students go with them. With the help of the astronomer, the Internet, an astronaut, books, and the writer of the mysterious note, Jack and Annie find answers to the questions on the note.

Along with Jack and Annie, students travel to other planets and far out into the Universe on a journey of adventure and learning. You can build on this journey's excitement by continuing with related activities in your classroom. In the following pages are examples of approaches you can take to involve your students in their own research and writing projects.

We hope you will find that *Magic Tree House Space Mission* activities introduce and reinforce a range of science and non-science content you need to cover, while also addressing the varied interests and learning styles of the children in your classroom. ☼

CONNECTIONS TO STANDARDS

The content in *Magic Tree House Space Mission* is appropriate for students in grades pre-kindergarten though three. Specific North Carolina Standard Course of Study objectives discussed in the show include the following Information Skills Objectives:

Kindergarten

1.08—Select resources from both within and outside the school for personal and information purposes.

1.09—Demostrate awareness that resources convey meaning and exist in a variety of formats (Print, graphical, audio, visual, mutimedia).

2.04—Recognize the diversity of ideas and thoughts by exploring a variety of resources (print, non-print, electronic) and formats (print, graphical, audio, visual, multimedia).

3.02—Collect information about diverse cultures, environments, and peoples.

4.01—Identify information needs and formulate questions about those needs.

4.02—Describe several research models.

4.03—Develop a strategy which includes the continous evaluation of the research process and the information gathered.

4.05—Gather information.

4.07—Organize and use information.

4.08—Credit sources of information.

5.03—Collaborate with others, both in person and through technologies, to identify information problems and to design, develop, and evaluate information products and solutions.

Grade 1

1.08—Select resources from both within and outside the school for personal and information purposes.

1.09—Demonstrate awareness that resources convey meaning and exist in a variety of formats (Print, graphical, audio, visual, multimedia, web-based)

2.03—Recognize the diversity of ideas and thoughts by exploring a variety of resources (print, non-print, electronic) and formats (print, graphical, audio, visual, multimedia, web-based).

3.02—Collect information about diverse culture, environments, and people.

4.01—Identify information needs and formulate questions about those needs.

4.02—Describe several research models.

4.03—Develop a strategy which includes the continous evaluation of the research process and the information gathered.

4.05—Gather information.

4.07—Organize and use information.

4.08—Credit sources of information.

5.03—Collaborate with others, both in person and through technologies, to identify information problems and to design, develop, and evaluate information products and solutions.

Grade 2

1.08—Select resourcse from both within and outside the school for personal and information purposes.

1.09—Demonstrate awareness that resources convey meaning and exist in a variety of formats (print, graphical, audio, visual, multimedia, web-based).

1.10—Identify characteristics and advantages of various media formats (print, graphical, audeio, video, multimedia, web-based) for a specific task.

1.11—Explore primary and secondary sources.

2.03—Recognize the diversity of ideas and thoughts by exploring a variety of resources (print, graphical, audio, video, multimedia, web-based)

2.05—Determine usefulness of information resources.

3.02—Collect information about diverse cultures, environments, and people.

4.01—Identify information about diverse cultures, environments, and people.

4.02—Describe several research models.

4.03—Develop a strategy which includes the continuous evaluation of the research process and the information gathered.

4.05—Gather information.

4.07—Organize and use information.

4.08—Credit sources of information.

5.03—Collaborate with others, both in person and through technologies, to identify information problems and to design, develop and evaluate information products and solutions.

Grade 3

1.08—Select resourcse from both within and outside the school for personal and information purposes.

1.09—Demonstrate awareness that resources convey meaning and exist in a variety of formats (print, graphical, audio, visual, multimedia, web-based).

1.10—Identify chracteristics and advantages of various media formates (print, graphical, audeio, video, multimedia, web-based) for a specific task.

1.11—Explore primary and secondary sources.

2.03—Recognize the diversity of ideas and thoughts by exploring a variety of resources (print, graphical, audio, video, multimedia, web-based)

2.05—Determine usefulness of information resources.

3.02—Collect information about diverse cultures, environments, and people.

4.01—Identify information about diverse cultures, environments, and people.

4.02—Describe several research models.

4.03—Develop a strategy which includes the continuous evaluation of the research process and the information gathered.

4.05—Gather information.

4.07—Organize and use information.

4.08—Credit sources of information.

5.03—Collaborate with others, both in person and through technologies, to identify information problems and to design, develop and evaluate information products and solutions.

In addition to these Standard Course of Study objectives, this show covers the following major concepts: black holes, Earth, meteors, the Moon, space probes and the Sun. .

THE COMMON CORE STATE STANDARDS

In addition to the familiar North Carolina Standard Course of Study, our state has recently adopted the new Common Core State Standards. This guide contains materials to help teachers begin to build lesson plans that connect with the themes of these standards. "Writing about *Magic Tree House Space Mission*" and "Looking Up: Words in *Magic Tree House Space Mission*" have been developed with the English Language Arts Common Core Standards in mind. ☼

WRITING ABOUT *MAGIC TREE HOUSE® SPACE MISSION*

The *Magic Tree House Space Mission* show provides your students with a rich experience you can draw upon for writing assignments. Such assignments will help them develop writing skills and knowledge of domain-specific words they will be able to call upon throughout their school years.

In the new Common Core, the English Language Arts Writing Standards for Grades 2-5 ask students to recall information from experiences (Standard 8) and to write narratives to develop real or imagined experiences or events (Standard 2).

When giving any of the writing prompts described below, assign the length depending upon the time available and your students' level of writing skill. All of the assignments can be accompanied by pictures you ask the students to draw. The pre-writing steps can be used with the suggested writing prompts or with prompts that you create.

PRE-WRITING

At the end of the *Magic Tree House Space Mission* guide we have included a glossary of key scientific vocabulary. These are all useful words that you may wish to review with your students and include in class discussions and in writing assignments.

However, in writing about aspects of the show, your students may choose to convey memories and ideas that require other vocabulary. They may already know some of the words they need, but not know how to spell them. Or they may need to learn new words in order to discuss and describe the new experience this show represents for them.

1. Remembering. Ask your students to close their eyes for a little while and remember all the things they saw when they were in the planetarium.

2. Discussing. Ask them to open their eyes and say out loud some of the things they remember. You can give every child the chance to mention one thing she or he remembers. You can make a rule that they must mention things that aren't already on the board.

3. Recording. Write the words down on the board as they are mentioned so that the students can see how they are spelled. Students can draw from this vocabulary as they respond to the writing prompt you assign.

You can repeat steps 1-3 to focus students' attention on particular aspects of Magic Tree House Space Mission*, possibly providing some questions that guide them toward content you wish to cover.*

4. Telling. Keeping an audience in mind can be a complicated task, but you may wish to discuss this topic with students old enough to consider it as they write. Discuss with your students that writing is an opportunity to tell someone else about an experience or an idea you want them to know about. Ask your students to think about the person or people to

whom they are going to "talk" as they write. As they write, they may want think about telling or "talking" to a parent or guardian at home, or perhaps someone at school, like the principal or their fellow students.

5. Organizing. If your students are old enough to write a long paragraph or to write an essay of multiple paragraphs, remind them that organization is important because it helps the person they're telling to follow along and not get confused.

You can mention to students that a good way to organize writing about an experience is to write about it in the order that things happened. Another good way for them to organize is by choosing some things to focus on (which they can do in a pre-writing or brainstorming phase), and not try to write about everything or too much all at once!

WRITE FROM YOUR EXPERIENCE

Prompt. Describe *Magic Tree House Space Mission* to someone who did not get to see the show.

Prompt. Tell someone who did not get to see *Magic Tree House Space Mission* the three most important things you learned from the show.

Prompt. In *Magic Tree House Space Mission*, Jack and Annie answered a question about why Earth is so special a place. How would you answer that question? Write about why you think Earth is a special place.

WRITE FROM YOUR IMAGINATION

Prompt. Write your own story about Jack, Annie, and the Magic Tree House.

Prompt. Imagine you visited the Tree House with a friend. What would you do? Where would you go? How would you get back home? Write a story about your make-believe adventures. The story can be funny or serious.

Prompt. If you went on a *Magic Tree House Space Mission* with Jack and Annie, where would you like to go? What would you like to do? Write down your thoughts. Design a *Magic Tree House Space Mission* patch that you would like to wear on your make-believe adventure.

Prompt. "M" wrote her questions in the form of a poem. Write a two-part poem based on something you learned or wondered about in *Magic Tree House Space Mission*. In the first part of the poem, ask an important question. In the second part of the poem, answer your question. Like the poem in the planetarium show, your own poem should rhyme. Your teacher will tell you how long your poem should be.

Prompt. With your teacher, visit the Magic Tree House Readers and Writers Club: http://www.randomhouse.com/kids/magictreehouse/club.html. Mary Pope Osborne has provided interesting instructions and writing assignments that help young readers and writers think about characters, settings, details, and plots.

WRITE FROM YOUR RESEARCH

Prompt. Was there something in the *Magic Tree House Space Mission* show that you would like to know more about? Tell your teacher so that she can help you learn more (by talking about it in class and looking up information in the media center). Write about what you learn. You can even make a research poster to present in a classroom poster session.

Prompt. Find another *Magic Tree House Space* book in the media center and write a report about it. Include your opinion about which story you liked best and give your reasons. ☼

LOOKING UP: WORDS IN *MAGIC TREE HOUSE® SPACE MISSION*

In this activity, students use the Internet to collect information that they incorporate into a story. After viewing *Magic Tree House Space Mission*, they find out more about the new words they learned by navigating the "Picture Dictionary" on the NASA website.

The "Picture Dictionary" is designed for K-4 students. Therefore, you may prefer to ask older students to investigate topics in *Magic Tree House Space Mission* by using the "World Book @ NASA for Students," which is designed for students in Grades 4-8 (http://www.nasa.gov/worldbook/wbkids/index.html). A worksheet for this alternative assignment is included on a following page.

"Looking Up: Words in *Magic Tree House Space Mission*" and "Looking Up: Topics in *Magic Tree House Space Mission*" can help teachers address several Common Core Standards. For instance, the English Language Arts Language Standards for Grades 2-5 ask students to acquire and use accurately grade-appropriate general academic and domain-specific words and phrases (Standard 6).

TEACHER'S GUIDE

1. Lead a brief discussion about NASA. Ask students:

- What does the acronym NASA stand for?
- Who works at NASA?
- What kinds of things do people at NASA do?

NASA is the National Aeronautics and Space Administration. From the History Division of the NASA website:

> Since its inception in 1958, NASA has accomplished many great scientific and technological feats in air and space. NASA technology also has been adapted for many non-aerospace uses by the private sector. NASA remains a leading force in scientific research and in stimulating public interest in aerospace exploration, as well as science and technology in general. Perhaps more importantly, our exploration of space has taught us to view Earth, ourselves, and the universe in a new way. While the tremendous technical and scientific accomplishments of NASA demonstrate vividly that humans can achieve previously inconceivable feats, we also are humbled by the realization that Earth is just a tiny "blue marble" in the cosmos. (http://history.nasa.gov/; accessed 7/2009)

2. Write out "NASA—National Aeronautics and Space Administration" on the board.

3. Explain that the NASA website is a great place to find information about space and aeronautics (the science of flight). Write the NASA web address (http://www.nasa.gov) on the board. Tell students they will use a certain part of the NASA website called the "Picture Dictionary" to gather information.

4. Pass out the "Looking Up" worksheets. Mention to the students that they heard all of the words they see on the worksheet in the *Magic*

Tree House Space Mission planetarium show.

5. Read the list of words aloud to your students, so that they associate the correct pronunciation with the spelling of each word.

6. Ask the students to circle three words on the worksheet about which they would like to learn more. Students should write the three words they select in the appropriate spaces on their worksheets.

7. Once students have selected their words, direct them toward the computers. If completing this activity with younger students, a teacher or teacher's aide should sit with the students as they conduct their research. Explain the structure of the "Picture Dictionary" website. (Words are listed alphabetically. Students can either scroll down the page or use the hyperlinked letters at the top of the page to jump to the appropriate section.)

8. When students find their words on the main page of the dictionary, instruct them to click on the pictures associated with their words. They should write the definitions (either directly from the web page or in their own words) on their worksheet and read the example sentences for comprehension. Make sure students know how to use the "back" button on the web browser to return to the main page of the "Picture Dictionary." Students should repeat this sequence to obtain their three definitions.

9. When they finish finding and recording their definitions, ask the students to write a short story using all three of their words. (You may choose to give this instruction before students begin choosing their words. However, older students may also have fun with the surprise of having to connect the words in a narrative after they are chosen.) Each story can be as short as 2-3 sentences, or it can be longer, depending upon the age and writing level of your students. With younger students, you may ask them to select just one or two of their words to include in the sentences, or you may skip this step of the activity.

10. Students can write their stories on the back of the worksheets. Alternatively, this may be an occasion when you want them to develop their word-processing skills by composing their stories on the computers they used for their vocabulary investigations.

POST-LESSON EXTENSIONS

Explore the vocabulary. As a class, read aloud the words included on the "Looking Up" worksheet. Ask students who chose one or more of the same words to read their work aloud, so that everyone can hear how the words were used by different writers. Find out who used words that no one else in the class used, and ask those students to read their work aloud. Be certain that every student has the opportunity to read aloud and receive praise for her or his writing.

Look up other words. Have your students complete the "Looking Up" activity more than once, but select different words from the Word Bank each time. You can ask your students to select words that they are interested in that appear in the Word Bank but do not appear on the worksheet. ☼

Name _____

LOOKING UP: WORDS IN *MAGIC TREE HOUSE® SPACE MISSION*

WORD BANK All these things are found in the *Magic Tree House Space Mission* show. They are also in the NASA "Picture Dictionary" (http://www.nasa.gov/audience/forstudents/k-4/dictionary/index.html). **Circle three words that you want to learn more about.**

Astronaut	Gravity	Planets	Space Shuttle
Astronomer	Microgravity	Probe	Space Walk
Exploration	Outpost	Space	Telescope

Word 1: _____

Definition: _____

_____

_____

Word 2: _____

Definition: _____

_____

_____

Word 3: _____

Definition: _____

_____

_____

Use your three words in a story. Remember to use complete sentences when you are writing. Your teacher will tell you how long your story should be and if you should write your story on the back of this worksheet or on another piece of paper. **Use your imagination and have fun writing your story!**

Name _____

LOOKING UP: TOPICS IN *MAGIC TREE HOUSE® SPACE MISSION*

All these topics are connected to the *Magic Tree House Space Mission* show. They are also in the "World Book @ NASA for Students" (http://www.nasa.gov/worldbook/wbkids/index.html).

Astronaut	Climate	Meteor	Star
Astronomy	Earth	Planet	Sun
Black Hole	Gravity	Science	Telescope

Circle three topics that you would like to write a story about. As you read about these topics in the "World Book @ NASA for Students," note any facts that you would like to include in your story.

Topic 1: _____

Notes: _____

_____

_____

_____

Topic 2: _____

Notes: _____

_____

_____

_____

Topic 3: _____

Notes: _____

_____

_____

_____

Use your three topics in a story. Remember to use complete sentences when you are writing. Your teacher will tell you how long your story should be and if you should write it on the back of this worksheet or on another piece of paper. **Use your imagination and have fun writing your story!**

KEY SCIENTIFIC VOCABULARY

Your students will be exposed to these scientific words and concepts during the *Magic Tree House Space Mission* show. Afterward, you may wish to explore several further in your classroom by incorporating them into discussions of the show and into follow-up lesson plans, including a writing assignment.

astronaut. Astronauts are people who are trained and sent into space. Alan Shepard was the first American astronaut to travel into space. The word astronaut means "traveler to the stars."

astronomy. The study of the sky is called Astronomy. Astronomy is considered the first science since people have been studying the sky and stars almost as long as we have record. Astronomy comes from a Greek word meaning "naming the stars."

black hole. A black hole is created when a gigantic star explodes in an explosion called a supernova. When this happens, a small, dense object is left in the star's place. This object has an enormous gravitational pull. The gravitational force is the black hole that sucks everything around it up, including light.

gravity. The attractive force that one body of mass acts upon another. Earth's gravity keeps us from floating off the Earth. The Sun's gravity keeps the planets in orbit.

lunar colony. In the future it is possible that scientists could build a colony on the moon. Such a colony would be self-sufficient and would accommodate residents for occupation for months, or even years, at a time.

meteoroid. A meteoroid is a space rock that floats in outer space. If a meteoroid enters Earth's atmosphere, it is called a meteor and makes a flash across the sky that we usually call a shooting star. If the meteor hits the Earth, the piece that is left is called a meteorite.

moons. Chunks or balls of rocks that travel around planets. They are held in place by the gravity of the planet. All the planets in our solar system, except Mercury and Venus, have moons. The Earth has one moon. Jupiter has the most moons of all the planets - with more than 60.

observatory. A place (usually a building) used to study or "observe" the stars. Early observatories had no telescopes; they were places dedicated for people to study the sky. Modern observatories usually have large telescopes and are built in high, dark places so that people can better see the stars.

planets. Large balls of mass that rotate around stars. Planets are the largest objects in the solar system, besides the Sun. Planets can be made of gas (like Jupiter and Neptune) or of rock (like Earth and Mercury).

space probe. A spacecraft that is controlled by computer and people on the Earth. Space probes are one of the most impor**tant tools** that scientists utilize to study space. Scientists have

used probes to take pictures of the moon and other planets. Some probes have even gone farther out than Pluto!

spaghettification. If a person were ever to get too close to a black hole (cross the event horizon), he or she would be stretched to the thinness of a strand of spaghetti as they were sucked down the black hole.

star. A ball of hot gas that gives off heat and energy. Stars are powered by nuclear fusion in their cores. The color of a star depends on the amount of heat it gives off. Blue stars are the hottest. Red stars are the coolest (even though they are still millions of degrees!).

sun. The closest star to the Earth. The Sun is a yellow dwarf star. Its heat and light are what make day and night, as well as weather, on the Earth.

telescope. An instrument that uses glass lenses or mirrors to help see far things close up. Hans Lippershay invented the telescope in 1608. The world's largest telescope, called the Very Large Telescope, is currently under construction in Chile.

weightlessness. The feeling that astronauts describe they feel when they are in orbit around the Earth. Actually, objects in space are not weightless; they are experiencing microgravity. The shuttle, and everything in it, are in freefall towards the Earth. (Because of the curvature of the Earth and fast velocity of the space shuttle, the objects do not actually fall to the Earth.) The effect of the equal "falling" velocity of the shuttle and its contents makes the astronauts and other objects float, thus appearing weightless.

SOURCE: *Space Research Guide*
by Will Osborne