



# Coca-Cola Space Science Center

Columbus State University

SHOWS, EXHIBITS & ACTIVITIES FOCUSED ON GEORGIA PERFORMANCE STANDARDS

## Wonders of the Universe Omnisphere Theater Presentation Sixth Grade Earth Science

### Presentation Summary

(4<sup>th</sup> – 12<sup>th</sup> grade) Travel back to the beginning of the Universe and explore the wonders that abound in the cosmos. Trace your steps back to our solar system and learn "What the Universe is all about." Three dimensional effects you will not believe.

**Duration of Presentation:** 30 minutes

### Associated Web Sites

[www.ccssc.org](http://www.ccssc.org) - Coca-Cola Space Science Center

<http://www.universetoday.com/> - Latest news about astronomy, great pictures.

<http://www.nineplanets.org/> - Good source for research on our Solar System.

<http://hubble.stsci.edu/gallery/> - Look no further for the best that Hubble has to offer!

<http://sse.jpl.nasa.gov/index.cfm> - This site has lesson plans/activities related to latest missions.

<http://www.jpl.nasa.gov/missions/mer/> - Latest news and pictures from the Mars rovers.

<http://www.badastronomy.com/bad/index.html> - Cool site that debunks common misconceptions and other pseudoscientific ideas.

<http://www.solarviews.com/ss.html> - Source for Solar System research and icosahedrons.

<http://www.kidsastronomy.com> - Great site for young astronomers.

<http://www.nasa.gov> - This site has it all.

<http://spacelink.msfc.nasa.gov/> - NASA site for educational resources.

<http://spacescience.nasa.gov/education/educators/links/> - Space Science Education/Public Outreach Sites

<http://www.pbs.org/wgbh/nova/mars/> - Nova website on Mars rovers.

[http://www.exploratorium.edu/ronh/solar\\_system/](http://www.exploratorium.edu/ronh/solar_system/) - use to make a scale model of solar system

## GPS Objectives

### Co-Requisite – Characteristics of Science

#### Habits of Mind

**S6CS1. 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.**

- a. Understand the importance of—and keep—honest, clear, and accurate records in science.
- b. Understand that hypotheses are valuable if they lead to fruitful investigations, even if the hypotheses turn out not to be completely accurate descriptions.

**S6CS5. Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters.**

- a. Observe and explain how parts are related to other parts in systems such as weather systems, solar systems, and ocean systems including how the output from one part of a system (in the form of material, energy, or information) can become the input to other parts. (For example: El Nino's effect on weather)
- b. Identify several different models (such as physical replicas, pictures, and analogies) that could be used to represent the same thing, and evaluate their usefulness, taking into account such things as the model's purpose and complexity.

#### The Nature of Science

**S6CS8. Students will investigate the characteristics of scientific knowledge and how it is achieved.**

Students will apply the following to scientific concepts:

- a. When similar investigations give different results, the scientific challenge is to judge whether the differences are trivial or significant, which often requires further study. Even with similar results, scientists may wait until an investigation has been repeated many times before accepting the results as meaningful.
- b. When new experimental results are inconsistent with an existing, well-established theory, scientists may require further experimentation to decide whether the results are flawed or the theory requires modification.
- c. As prevailing theories are challenged by new information, scientific knowledge may change and grow.

**S6CS9. Students will investigate the features of the process of scientific inquiry.**

Students will apply the following to inquiry learning practices:

- a. Scientific investigations are conducted for different reasons. They usually involve collecting evidence, reasoning, devising hypotheses, and formulating explanations.

- b. Scientists often collaborate to design research. To prevent bias, scientists conduct independent studies of the same questions.
- c. Accurate record keeping, data sharing, and replication of results are essential for maintaining an investigator's credibility with other scientists and society.
- d. Scientists use technology and mathematics to enhance the process of scientific inquiry.

### **Co-Requisite-Content**

**S6E1. Students will explore current scientific views of the universe and how those views evolved.**

- a. Relate the Nature of Science to the progression of basic historical scientific models (geocentric, heliocentric) as they describe our solar system, and the Big Bang as it describes the formation of the universe.
- b. Describe the position of the solar system in the Milky Way galaxy and the universe.
- c. Compare and contrast the planets in terms of
  - Size relative to the earth
  - Surface and atmospheric features
  - Relative distance from the sun
  - Ability to support life
- d. Explain the motion of objects in the day/night sky in terms of relative position.
- e. Explain that gravity is the force that governs the motion in the solar system.
- f. Describe the characteristics of comets, asteroids, and meteors.

## English Language Arts

**ELA6RC3 The student acquires new vocabulary in each content area and uses it correctly. The student**

- a. Demonstrates an understanding of contextual vocabulary in various subjects.
- c. Explores understanding of new words found in subject area texts.

## Social Studies

### *Social Studies Skills*

**SS6RC1 Students will enhance reading in all curriculum areas by:**

- c. Building vocabulary knowledge
  - Demonstrate an understanding of contextual vocabulary in various subjects.
  - Use content vocabulary in writing and speaking.
- d. Establishing context
  - Determine strategies for finding content and contextual meaning for unknown words.

### *Matrices*

#### **Map and Globe Skills**

2. use intermediate directions

11. compare maps of the same place at different points in time and from different perspectives to determine changes, identify trends, and generalize about human activities

12. compare maps with data sets (charts, tables, graphs) and /or readings to draw conclusions and make generalizations

## **INFORMATION PROCESSING SKILLS**

### **Information Processing Skills**

1. compare similarities and differences

11. draw conclusions and make generalizations

13. translate dates into centuries, eras, or ages

15. determine adequacy and/or relevancy of information

16. check for consistency of information