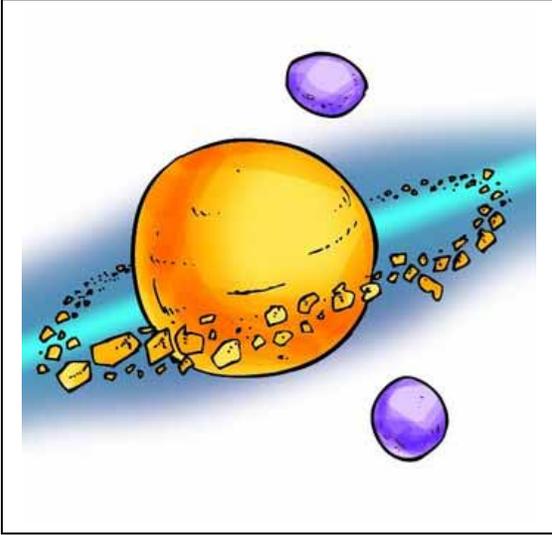


Science by Storytelling: The Aster's Hoity-Toity Belt

Activity Extension: K-W-L Grades K-4 & 5-8



NSES Standards that support this story:

Grades K-4: Content Standard D—As a result of their activities in grades K-4, all students should develop an understanding of

- Objects in the sky
- Changes in earth and sky

Grades 5-8: Content Standard D—As a result of their activities in grades 5-8, all students should develop an understanding of

- Earth in the solar system

Suggested Activities to Accompany the Story

A. Find out what they Know

Grades K - 4

Make a class list asking the students to guess which words in the story:

1. Represent real objects or places in the solar system.
2. Represent fictitious objects or places in the solar system.

Discuss with your class why they think some of the objects or places are fiction, and why they aren't real.

Grades 5 – 8

Make a class list asking the students to guess which words in the story:

1. Represent real objects in our solar system.
2. Represent fictitious objects or places in our solar system.
3. Represent science concepts or processes that scientists theorize are true.

In an open class discussion, ask students to share out real and fictitious objects, noting any science concepts or processes that they theorize may be true.

B. Teach them something they Want to learn

After you determine what your students know, choose from the list of solar system facts and theories and share new information with them. You may want to refer to the leader version of the story, which has some specific factual information identified as callout boxes in the margins.

Review the Dawn Mission section of the Dawn Web site, where mission information will help your students understand why NASA chose this mission to travel to our solar system's asteroid belt, and what it hopes to learn there. <http://dawn.jpl.nasa.gov/mission/index.asp>

C. What did they Learn?*

Grades K - 8

1. Conduct a class discussion on what observations and/or questions your class now has about the asteroid belt and our solar system. Note all observations and questions on the board.
2. Working in small groups, ask students to choose an observation or question and develop their own theory about why they believe the selected item is true or false.

*You can visit the Dawn mission Web site to learn more about the sample return mission and about asteroids in general. <http://dawn.jpl.nasa.gov>

D. Let your imagination roam!

1. After hearing the story, ask students to create their own:
 - a. Story that leads up to *The Aster's Hoity-Toity Belt*—a preface of sorts.
 - b. That follows behind *The Aster's Hoity-Toity Belt*—an ending/sequel of sorts.
 - c. Song that follows the story line.
 - d. Poem around one character in the story.
 - e. Wall mural depicting the storyline.
 - f. Model of the solar system out of clay, or another type of medium of their choice.
 - g. Illustrations to accompany the story.
2. Encourage your class to act out the story.

Asteroid Notes:¹

An asteroid is a small solar system object in orbit around the sun composed mostly of rock. Many of these objects orbit the sun between Mars and Jupiter. Their size can range anywhere from 10 meters in diameter to almost 1000 kilometers. Scientists theorize that asteroids are material left over from the formation of the solar system. One theory suggests that they are the remains of a planet that was destroyed in a massive collision long ago. More likely, asteroids are material that never formed into a planet.

The Dawn mission will investigate two asteroids, Ceres and Vesta, which reside in the extensive zone between Mars and Jupiter together with many other smaller bodies, called the asteroid belt. These two asteroids have followed very different evolutionary paths. Although they are theorized to be approximately the same age, they are remarkably different. Ceres is very primitive and wet while Vesta is evolved and dry.

The three principal scientific drivers for the Dawn mission are first that it captures the earliest moments in the origin of the solar system enabling us to understand the conditions under which these objects formed. Second, Dawn determines the nature of the building blocks from which the terrestrial planets formed, improving our understanding of this formation. Finally, it contrasts the formation and evolution of two small planets that followed very different evolutionary paths so that we understand what controls that evolution.

¹ Source: Dawn mission Web site: <http://dawn.jpl.nasa.gov/>