

Space Odyssey Online Teacher's Guide

Cosmic Time Scales

Postvisit Activity for Deep Space



courtesy NASA/ESA & Mohammad Heydari-Malayeri (Observatoire de Paris, France)

Grades 9- 12
CDE Standards
Science: 4.4
Math: 1,2,6

Preparation and Materials

Estimated Preparation Time: 10 minutes

Estimated Activity Time: One to two class periods of 45 minutes each

Materials

Computer with Internet access

Universe in One Year handout

Poster board

Markers

Pencils

Calculators

PowerPoint (optional)

Learning Goals/Objectives

Students will

- Determine the scale of cosmic events compared to a 100-year life span
- Create a time line to show the scale of cosmic events

Connection to *Space Odyssey*

Students who visit *Space Odyssey* will find a wealth of opportunity to learn about objects on a cosmic scale. Beautiful images, taken from Hubble and other space telescopes, are frequently projected on the Space Screen. Museum Galaxy Guides are available to answer questions about virtually any cosmic topic.

Advanced Preparation

Make copies of the Universe in One Year Web site or the quick version handout included at the bottom of this activity.

Classroom Activity

1. Provide students with a printout of <http://school.discovery.com/schooladventures/universe/itsawesome/cosmiccalendar/page2.html>.
2. Students will see that this calendar displays important cosmic events scaled to one year.
3. In this activity, students will make a similar calendar comparing cosmic events to their lifetime, assuming that the student lives to be 100 years old. Students will use real and hypothetical milestones in their own lives including birth, graduation, marriage, etc. to compare cosmic events to their own lives.

4. Students will use the lifetime of 100 years to determine the scale of the important cosmic events on the calendar. For instance, the day they were born would be considered the day of the big bang, and the day they die would be the death of the Sun and, therefore, life as we know it.
5. Ask students to calculate the scale of cosmic events. You may ask them to hand in their calculations along with their final project.
6. Because this calendar covers a different span than the one at discovery.com (from 12.7 billion years in the past to some 5 billion years into the future) the students cannot simply scale the online calendar out to 100 years. The students will have to research things like the age of the universe and how much longer the sun has to burn.
7. Provide students with the necessary materials to display their project, whether on poster board or in PowerPoint.

Variations/Extensions

1. Have students create similar projects based on alternative scales. Let them be creative!
2. Have students add additional milestones on their time lines.

Resources

Web sites

<http://school.discovery.com/schooladventures/universe/itsawesome/cosmiccalendar/page2.html>

Universe in One Year

Month	Milestones
January	New Year's Day: The Big Bang
February	
March	Milky Way forms
April	
May	
June	
July	
August	Sun and planets form
September	Oldest known life-forms (single-celled)
October	
November	First multicellular organisms
December	<p>15th: Cambrian Explosion (burst of new life-forms)</p> <p>17th: Emergence of first vertebrates</p> <p>18th: Early land plants</p> <p>20th: First four-limbed animals</p> <p>21st: Insects begin to flourish</p> <p>24th: First dinosaurs appear</p> <p>25th: First mammalian ancestors appear</p> <p>27th: First known birds appear</p> <p>29th: Dinosaurs wiped out by asteroid or comet</p> <p>31st: 10:15 A.M. Apes appear</p> <p style="padding-left: 40px;">9:24 P.M. First human ancestors walk upright</p> <p style="padding-left: 40px;">10:48 P.M. <i>Homo erectus</i> appears</p> <p style="padding-left: 40px;">11:54 P.M. Anatomically modern humans appear</p> <p style="padding-left: 40px;">11:59:45 P.M. Invention of writing</p> <p style="padding-left: 40px;">11:59:50 P.M. Pyramids built in Egypt</p> <p>1 second before midnight: Voyage of Christopher Columbus</p>