16428 Avenida Florencia, Poway, CA 92064; (858) 487-8149 (phone); (858) 312-1566 (fax); miriam@nu-edu.com

Exploring Space: The Universe[1](DVD)
Teacher Notes

Notes:

1) This is a very important video that introduces the students to the universe "at large". To maximize attention distribute worksheet prior to viewing and say something to the effect that they will be tested on the material. After the students have filled out the worksheet from watching the video, if there is time left (or as homework), you can direct them to the book to get a different perspective on the same subject matter.
2) The video run time is 30 minutes.
3) On the unitedstreaming website http://www.unitedstreaming.com there is a teacher's guide that provides the entire script for the video as well as additional information.

Answers to questions:

1) What is a Universe? The whole of everything, everything there is. All matter.

2) What is a Galaxy? A cluster of stars, dust, and gas held together by gravity. Galaxies can contain billions of stars.

3) How many galaxies in the universe? Scientists estimate about 100 billion

4) What are the three types of Galaxies?

1. Spiral
2. Elliptical
3. Irregular

5) What is a Nebula? A low density cloud of gas and dust in which a star is born.

6) How are stars born? Stars are born in nebula from gas and dust. With increasing gravity and pressure, the temperature increases. When the temperature exceeds 20 million degrees, nuclear fusion begins. This marks the birth of a star.

[1] Exploring Space: The Universe. ©1995 United Learning. Discovery Enterprises, LLC. <http://www.unitedstreaming.com>

Supported by NASA's Goddard Space Flight Center, under contract NNG05CA67C

7) What is nuclear fusion? In the stars 4 hydrogen atoms combine to form a helium atom. This results in the release of a tremendous amount of heat. This is just one example of fusion. Heavier elements also combine in a similar manner.

8) How do stars die? A star stars to die when it has used up most of its hydrogen. When this happens, the star begins to collapse, increasing its heat, and starting to convent helium into carbon, also via fusion. This generates additional heat. The heat buildup causes the outer layers to expand. The star will then evolve into a red giant, white dwarf, or explode in a supernova. These stars can then proceed to turn into black holes or neutron stars.

9) What is a supernova? An explosion of a star. A tremendous amount of energy and various elements are released.

10) What is a neutron star? A star in which all the particles have become neutrons; collapsed remains of a supernova.

11) What is a black hole? The leftover core of a super massive star after a supernova. Black holes exert a tremendous gravitational pull.

12) What is the Big Bang Theory? The theory that states that the universe began with a tremendous explosion

13) What do the different colors seen in stars tell us about them? Their temperature. Red is the coolest, blue is the hottest, like the colors in a campfire.

Supported by NASA's Goddard Space Flight Center, under contract NNG05CA67C