



Task: The Universe Rated R!

Alignment of Performance Task with National Standards

Grade Level: 9-12

Specific skills and knowledge demonstrated by the task:	Alignment with Project 2061 Benchmarks for Science Literacy	Alignment with National Science Education Standards
Students' ability to describe violent and catastrophic changing nature of the universe.	4A- Universe (9-12)#2: The current theory is that its entire contents expanded explosively from a hot, dense, chaotic mass. Stars condensed by gravity out of clouds and molecules of the lightest elements until nuclear fusion of the light elements into heavier ones began to occur. Fusion released great amounts of energy over millions of years. Eventually, some stars exploded, producing clouds of heavy elements from which other stars and planets could later condense. The process of star formation and destruction continues.	Standard D- Earth and Space (9-12)- The Origin of the Universe- Stars produce energy from nuclear reactions, primarily the fusion of hydrogen to form helium. These and other processes in stars have led to the formation of all the other elements.
Students' ability to describe the technology for gathering data scientists use to learn about the universe.	4A- Universe (9-12)#3: Increasingly sophisticated technology is used to learn about the universe. Visual, radio and x-ray telescopes collect information from across the entire spectrum of electromagnetic waves; computers handle an avalanche of data and increasingly complicated computations to interpret them....	Standard A- Inquiry (9-12)- Understandings About Scientific Inquiry- Scientists rely on technology to enhance the gathering and manipulation of data. New techniques and tools provide new evidence to guide inquiry and new methods to gather data, thereby contributing to the advance of science.
Students' ability to describe a particular cosmic object or event.	4A Universe (9-12)#2 ... Eventually, some stars exploded producing clouds containing heavy elements from which other stars (and presumably planets orbiting them) could later condense. The process of star formation and destruction continues.	Standard D: Earth and Space- The Origin and Evolution of the Universe- ...Billions of galaxies, each of which is a gravitationally bound cluster of billions of stars, now form most of the visible mass in the universe...Stars produce energy from nuclear reactions, primarily the fusion of hydrogen to form helium, These and other processes in stars have led to the formation of all the other elements.

<p>Students ability to describe the impact of science and technology on scientists and society</p>	<p>3A Technology and Science (9-12)#1,3 ...new technologies make it possible for scientists to extend their research in new ways or to undertake entirely new lines of research. The very availability of new technology itself often sparks scientific advances.</p> <p>In contrast, science affects society mainly by stimulating and satisfying people's curiosity and occasionally by enlarging or challenging their views of what the world is like.</p>	<p>Understandings about Science and Technology- Science often advances with the introduction of new technologies. Solving technological problems often results in new scientific knowledge. New technologies often extend the current levels of scientific understanding and introduce new areas of research.</p>
<p>Students' ability to visually represent objects or processes.</p>	<p>11B Models (See Essay p267) "Students need to acquire images and understandings that come from drawing, painting..."</p>	<p>Unifying Concepts and Processes- Evidence, Models, and Explanation- Models are tentative schemes or structures that correspond to real objects, events, or classes of events, and that have explanatory power...Models take many forms...</p>
<p>Students' ability to communicate scientific information accurately and effectively.</p>	<p>12D Communication Skills (see Essay p 295) Translating scientific ideas to the general public.</p>	<p>Standard A: Inquiry-Communication: ...accurate and effective communication including expressing concepts, reviewing information, summarizing data, using language appropriately, developing diagrams and charts...</p>