

#9380

ROCKETSHIPS

AMBROSE VIDEO PUBLISHING

1998

Grade Levels: 11-13+

52 minutes

DESCRIPTION

Looks briefly at the history of rockets, from the space programs of the twentieth century into the cutting-edge technologies and dreams of today.

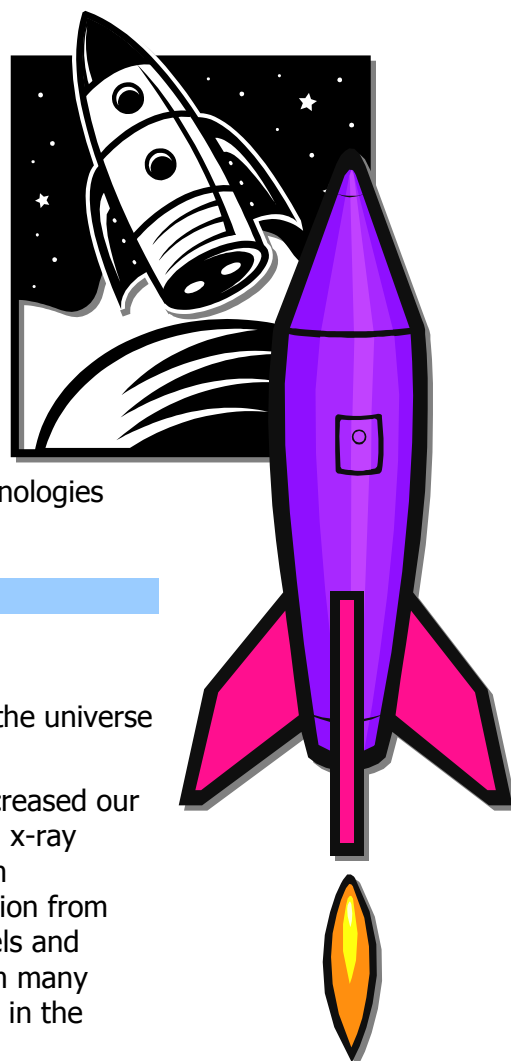
ACADEMIC STANDARDS

Subject Area: Science: Earth and Space

- Standard: Understands the composition and structure of the universe and the Earth's place in it
 - Benchmark: Knows ways in which technology has increased our understanding of the universe (e.g., visual, radio, and x-ray telescopes collect information about the universe from electromagnetic waves; space probes gather information from distant parts of the Solar System; mathematical models and computer simulations are used to study evidence from many sources in order to form a scientific account of events in the universe)

Subject Area: Technology

- Standard: Understands the relationships among science, technology, society, and the individual
 - Benchmark: Knows that technology and science have a reciprocal relationship (e.g., technology drives a science, as it provides the means to access outer space and remote locations, collect and treat samples, collect, measure, store, and compute data, and communicate information; science drives technology, as it provides principles for better instrumentation and techniques, and the means to address questions that demand more sophisticated instruments)
 - Benchmark: Knows that alternatives, risks, costs, and benefits must be considered when deciding on proposals to introduce new technologies or to curtail existing ones (e.g., Are there alternative ways to achieve the same ends? Who benefits and who suffers? What are the financial and social costs and who bears them? How serious are the risks and who is in jeopardy? What resources will be needed and where will they come from?)



INSTRUCTIONAL GOALS

1. To examine practical uses that have resulted from space flight technology.
2. To observe the genealogy of U.S. space vehicles.
3. To present possible future technologies for space travel.
4. To review monetary and safety challenges in space exploration.
5. To analyze the potential benefits of continued space exploration.

BACKGROUND INFORMATION

From the fiery engine and propulsion systems that take rocketships into orbit to the utter serenity of astronauts floating silently in space, *Rocketships* takes an eye-opening look back to the origins of rocket science and forward to the cutting-edge technology of reusable rockets and shuttles. Innovative camera technology takes you inside the space shuttle while remote cameras at the Kennedy Space Center and aboard the craft itself reveal first-hand the technological symphony required to heave 4.5 million pounds of rocketship into the stratosphere. Meet the dedicated people who are creating the next generation of spacecraft, and explore the individual technologies that promise to make space travel simpler, speedier and more affordable. Ride along as state-of-the-art computer animation takes you into the future of space travel when rocketships may some day carry tourists to other galaxies. From the *Discovery Channel*.

VOCABULARY

- | | |
|-------------------|-----------------------|
| 1. Alpha Centauri | 13. Lockheed-Martin |
| 2. Apollo | 14. M1 |
| 3. Ariane | 15. McDonnell-Douglas |
| 4. Atlas | 16. NASA |
| 5. Blackbird | 17. R.L.V. |
| 6. Centaur | 18. Saturn V |
| 7. Clipper Graham | 19. Sputnik |
| 8. French Guiana | 20. Titan IVB |
| 9. H-2 | 21. Vostok |
| 10. Hubble | 22. Yuri Gagarin |
| 11. Kanegashiwa | 23. X-33 |
| 12. Landsat | |

AFTER SHOWING

Discussion Items and Questions

1. Whenever futuristic technology is suggested it is usually called a "Buck Rogers" idea. Who was Buck Rogers?
2. The film does not mention two pioneers who contributed greatly to space travel. Find out who Robert Goddard and Werner von Braun were and what their contributions to early 20th-century rocketry were.



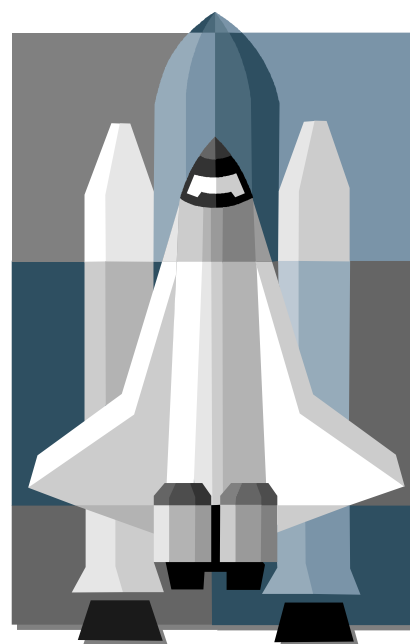
3. The launch of the USSR's "Sputnik" in 1957 caused a wave of national paranoia in the United States. What were those Cold War times like and what American scientific efforts resulted?
4. Research President Kennedy's 1961 speech about reaching the moon. What was his challenge to America? What were the political risks to him and to the nation?
5. Look up the genealogy of United States space vehicles and produce a chart comparing sizes and listing dates and payloads.
6. How much of those first vehicles were lost in the launch? How much more is saved in today's launches?
7. What is meant by a *geostationary* (or geosynchronous) orbit? What is the importance of the equator to it?
8. Find as many practical uses that have resulted from space flight technology as you can. How have they affected your life?
9. The film laments that the shuttle still uses cathode ray tubes. What is newer? What is the difference?
10. What is meant by there being no "capillary action" in space?
11. The *Star Trek* series contains a number of technologies which are based on fact. What is real and what is pure fiction?
12. The film points out that chemical fuels like liquid hydrogen or oxygen will not provide enough power or speed for distant space travel. Can you explain the possible future technology of laser-propelled light craft, solar-powered disks' "free ride," or tethered "sling shot" vehicles?
13. What is meant by "plasma" as the 4th state of matter? How would it be used in propel space vehicles?
14. What is *rapid prototyping*? How would it be used in space?
15. Why is manned flight to Mars unlikely soon?
16. Very distant travel will require at least light speed. What did Einstein say about what happens to time as speed increases? According to him, if man traveled to Alpha Centauri at light speed, what might Earth be like when he returned?
17. It has been suggested that eventual travel would only be possible with molecularly engineered organisms. What is that?
18. Revisit the arguments about the cost of space travel against improving our schools and infrastructure; curing cancer, providing health care, finding alternative energy sources, etc.

RELATED RESOURCES



Captioned Media Program

- Martian Mission #9294
- Riding in the Sky #3289
- Space Exploration: The Rockets #3291





World Wide Web

The following Web sites complement the contents of this guide; they were selected by professionals who have experience in teaching deaf and hard of hearing students. Every effort was made to select accurate, educationally relevant, and "kid safe" sites. However, teachers should preview them before use. The U.S. Department of Education, the National Association of the Deaf, and the Captioned Media Program do not endorse the sites and are not responsible for their content.

- **NASA HUMAN SPACEFLIGHT**

<http://spaceflight.nasa.gov/index.html>

Learn about life in space, how long a space shuttle mission typically lasts, and check out the postflight gallery. Keep current on space news. Check SkyWatch for space station sighting opportunities in your city! Provides much more information.

- **NASAKIDS**

<http://kids.msfc.nasa.gov/>

A NASA product, provides "News by Kids" where kid reporters interview astronauts. Click on various icons on the homepage to be led to topics. "Pioneers" is one of these such sections, and explains "Building the Space Station," "Today's Scientists," "Space Suits," "Living in Space," and much more.

- **HISTORY OF SPACE EXPLORATION**

<http://www.solarviews.com/eng/history.htm>

Extensive information on space history, rocket history, automated spacecraft, hypothetical planets. Provides a space exploration chronology, spacecraft mission summaries including those from the United States, Russia, Europe, and Japan. Contains numerous other topics!

- **NASA EXPLORES**

http://www.nasaexplores.com/lessons/02-007/5-8_index.html

Article explains "Designing Tomorrow's Space Ships Today." Contains national standards and printable activities for teachers and students. An example includes how to design a simple aircraft, to measure the distance it travels, and to calculate the median, mean, and mode of the distances measured.