

NASA Resources for Educators

NASA's Central Operation of Resources for Educators (CORE) was established for the national and international distribution of NASA-produced educational materials in audiovisual format. Educators can obtain a catalogue and an order form by one of the following methods:

- NASA CORE
Lorain County Joint Vocational School
15181 Route 58 South
Oberlin, OH 44074
- Phone (440) 774-1051, Ext. 249 or 293
- Fax (440) 774-2144
- E-mail nasaco@leeca8.leeca.ohio.gov
- Home Page: <http://spacelink.nasa.gov/CORE>

Educator Resource Center Network

To make additional information available to the education community, the NASA Education Division has created the NASA Educator Resource Center (ERC) network. ERCs contain a wealth of information for educators: publications, reference books, slide sets, audio cassettes, videotapes, telelecture programs, computer programs, lesson plans, and teacher guides with activities. Educators may preview, copy, or receive NASA materials at these sites. Because each NASA Field Center has its own areas of expertise, no two ERCs are exactly alike. Phone calls are welcome if you are unable to visit the ERC that serves your geographic area. A list of the centers and the regions they serve includes:

AK, AZ, CA, HI, ID, MT, NV, OR, UT, WA, WY

NASA Educator Resource Center
Mail Stop 253-2

NASA Ames Research Center
Moffett Field, CA 94035-1000
Phone: (415) 604-3574

CT, DE, DC, ME, MD, MA, NH, NJ, NY, PA, RI, VT

NASA Educator Resource Laboratory
Mail Code 130.3

NASA Goddard Space Flight Center
Greenbelt, MD 20771-0001
Phone: (301) 286-8570

CO, KS, NE, NM, ND, OK, SD, TX

JSC Educator Resource Center
Space Center Houston

NASA Johnson Space Center
1601 NASA Road One
Houston, TX 77058
Phone: (281) 483-8696

FL, GA, PR, VI

NASA Educator Resource Laboratory
Mail Code ERL

NASA Kennedy Space Center
Kennedy Space Center, FL 32899-0001
Phone: (407) 867-4090

KY, NC, SC, VA, WV

Virginia Air and Space Museum
NASA Educator Resource Center for

NASA Langley Research Center
600 Settler's Landing Road
Hampton, VA 23669-4033
Phone: (757) 727-0900 x 757

IL, IN, MI, MN, OH, WI

NASA Educator Resource Center
Mail Stop 8-1

NASA Lewis Research Center
21000 Brookpark Road
Cleveland, OH 44135-3191
Phone: (216) 433-2017

AL, AR, IA, LA, MO, TN

U.S. Space and Rocket Center
NASA Educator Resource Center for
NASA Marshall Space Flight Center
P.O. Box 070015
Huntsville, AL 35807-7015
Phone: (205) 544-5812

MS

NASA Educator Resource Center
Building 1200

NASA John C. Stennis Space Center
Stennis Space Center, MS 39529-6000
Phone: (601) 688-3338

NASA Educator Resource Center
JPL Educational Outreach

Mail Stop CS-530
NASA Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, CA 91109-8099
Phone: (818) 354-6916

CA cities near the center

NASA Educator Resource Center for
NASA Dryden Flight Research Center
45108 N. 3rd Street East
Lancaster, CA 93535
Phone: (805) 948-7347

VA and MD's Eastern Shores

NASA Educator Resource Lab
Education Complex - Visitor Center
Building J-1

NASA Wallops Flight Facility
Wallops Island, VA 23337-5099
Phone: (757) 824-2297/2298

Regional Educator Resource Centers (RERCs) offer more educators access to NASA educational materials. NASA has formed partnerships with universities, museums, and other educational institutions to serve as RERCs in many states. A complete list of RERCs is available through CORE, or electronically via NASA Spacelink at <http://spacelink.nasa.gov>

NASA On-line Resources for Educators provide current educational information and instructional resource materials to teachers, faculty, and students. A wide range of information is available, including science, mathematics, engineering, and technology education lesson plans, historical information related to the aeronautics and space program, current status reports on NASA projects, news releases, information on NASA educational programs, useful software and graphics files. Educators and students can also use NASA resources as learning tools to explore the Internet, accessing information about educational grants, interacting with other schools which are already on-line, and participating in on-line interactive projects, communicating with NASA scientists, engineers, and other team members to experience the excitement of real NASA projects.

Access these resources through the NASA Education Home Page: <http://www.hq.nasa.gov/education>

NASA Television (NTV) is the Agency's distribution system for live and taped programs. It offers the public a front-row seat for launches and missions, as well as informational and educational programming, historical documentaries, and updates on the latest developments in aeronautics and space science. NTV is transmitted on the GE-2 satellite, Transponder 9C at 85 degrees West longitude, vertical polarization, with a frequency of 3880 megahertz, and audio of 6.8 megahertz.

Apart from live mission coverage, regular NASA Television programming includes a Video File from noon to 1:00 pm, a NASA Gallery File from 1:00 to 2:00 pm, and an Education File from 2:00 to 3:00 pm (all times Eastern). This sequence is repeated at 3:00 pm, 6:00 pm, and 9:00 pm, Monday through Friday. The NTV Education File features programming for teachers and students on science, mathematics, and technology. NASA Television programming may be videotaped for later use.

For more information on NASA Television, contact: NASA Headquarters, Code P-2, NASA TV, Washington, DC 20546-0001 Phone: (202) 358-3572
NTV Home Page: <http://www.hq.nasa.gov/ntv.html>

How to Access NASA's Education Materials and Services, EP-1996-11-345-HQ This brochure serves as a guide to accessing a variety of NASA materials and services for educators. Copies are available through the ERC network, or electronically via NASA Spacelink. NASA Spacelink can be accessed at the following address: <http://spacelink.nasa.gov>



NASA Educational Materials

Educational Videotape

Educational Videotapes and slide sets are available through the Educator Resource Center Network and CORE (see listing on page 167).

Microgravity- Length 23:24

This video describes the restrictions that gravity imposes on scientific experimentation and how they can be greatly reduced in the exciting research environment of the Space Shuttle and the International Space Station.

NASA publishes a variety of educational resources suitable for classroom use. The following resources specifically relate to microgravity and living, working, and science research in the microgravity environment. Resources are available from different sources as noted.

Slides

Microgravity Science - Grades: 8-12

This set of 24 slides illustrates the basic concepts of microgravity and describes four areas of microgravity research, including: biotechnology, combustion science, fluid physics, and materials science. 1994

NASA Publications

NASA (1980), Materials Processing In Space: Early Experiments, Scientific and Technical Information Branch, NASA Headquarters, Washington, DC.

NASA (1982), Spacelab, EP-165, NASA Headquarters, Washington, DC.

NASA (1976-Present), Spinoff. NASA Headquarters, Washington, DC (annual publication).

NASA (1994), "Microgravity News," Microgravity Science Outreach, Mail Stop 359, NASA Langley Research Center, Hampton, VA (quarterly newsletter)

NASA (1988), Science in Orbit - The Shuttle and Spacelab Experience: 1981 -1986, NASA Marshall Space Flight Center, Huntsville, AL.

Suggested Reading

Books

Faraday, M., (1988) The Chemical History of a Candle. Chicago Review Press, Chicago, IL.

Halliday, D. & Resnick, R., (1988) Fundamentals of Physics. John Wiley & Sons, Inc., New York, NY.

Holden, A. & Morrison, P., (1982), Crystals and Crystal Growing. The MIT Press, Cambridge, MA.

Lyons, J., (1985), Fire. ScientificAmerican. Inc., New York, NY.

American Institute of Aeronautics and Astronautics (1981), Combustion Experiments in a Zero-gravity Laboratory. New York, NY

Periodicals

Chandler, D., (1991), "Weightlessness and Microgravity," Physics Teacher, v29n5, pp.312-313.

Cornia, R., (1991), "The Science of Flames," The Science Teacher, v58n8, pp. 43-45.

Frazer, L., (1991), "Can People Survive in Space?," Ad Astra, v3n8, pp.14- 18

Howard, B., (1991), "The Light Stuff," Omni, v14n2, pp. 50-54.

Noland, D., (1990), "Zero-G Blues," Discover. v11n5, pp. 7480.

Pool, R., (1989), "Zero Gravity Produces Weighty Improvements," Science, v246n4930, p.580.

Space World, (1988), "Mastering Microgravity," v7n295, p. 4.

Science News. (1989), "Chemistry: Making Bigger, Better Crystals," v136n22, p.349.

Science News. (1989), "Making Plastics in Galileo's Shadow," v136n 18, p.286.

USRA Quarterly. (1992), "Can You Carry Your Coffee Into Orbit?," Winter-Spring.



MICROGRAVITY—A Teacher's Guide with Activities in Science, Mathematics, and Technology TEACHER REPLY CARD

To achieve America's goals in Educational Excellence, it is NASA's mission to develop supplementary instructional materials and curricula in science, mathematics, and technology. NASA seeks to involve the educational community in the development and improvement of these materials. Your evaluation and suggestions are vital to continually improving NASA educational materials.

Please take a moment to respond to the statements and questions below. You can submit your response through the Internet or by mail. Send your reply to the following Internet address:

http://ednet.gsfc.nasa.gov/edcats/teacher_guide

You will then be asked to enter your data at the appropriate prompt.

Otherwise, please return the reply card by mail. Thank you.

1. With what grades did you use the teacher's guide?

Number of Teachers/Faculty:

_____ K-4 _____ Community College

_____ 5-8 _____ College/University - Undergraduate

_____ 9-12 _____ College/University - Graduate

Number of Students:

_____ K-4 _____ Community College

_____ 5-8 _____ College/University - Undergraduate

_____ 9-12 _____ College/University - Graduate

Number of Others:

_____ Administrators/Staff _____ Professional Groups

_____ Parents _____ Civic Groups

_____ General Public _____ Other _____

2. What is your home 5- or 9-digit zip code? _____

3. How was the quality of this teacher's guide?

Excellent Good Average Poor Very Poor

Fold along line and tape closed.

4. How did you use this teacher's guide?

- | | |
|--------------------------------------------------------------|-----------------------------------------------------|
| <input type="checkbox"/> Background Information | <input type="checkbox"/> Critical Thinking Tasks |
| <input type="checkbox"/> Demonstrate NASA Materials | <input type="checkbox"/> Demonstration |
| <input type="checkbox"/> Group Discussions | <input type="checkbox"/> Hands-On Activities |
| <input type="checkbox"/> Integration Into Existing Curricula | <input type="checkbox"/> Interdisciplinary Activity |
| <input type="checkbox"/> Lecture | <input type="checkbox"/> Science and Mathematics |
| <input type="checkbox"/> Team Activities | <input type="checkbox"/> Standards Integration |
| <input type="checkbox"/> Other: Please specify: _____ | |

5. Where did you learn about this teacher's guide?

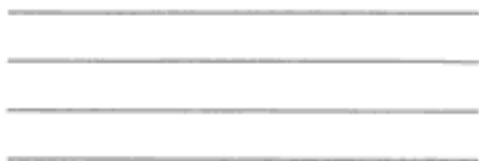
- NASA Educator Resource Center
 NASA Central Operation of Resources for Educators (CORE)
 Institution/School System
 Fellow Educator
 Workshop/Conference
 Other: Please specify: _____

6. What features of this teacher's guide did you find particularly helpful?

7. How can we make this teacher's guide more effective for you?

8. Additional comments:

Today's Date: _____



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