GRACE Education Curriculum Satellites	
Teachers	Grades 3-5
Science & Lang Arts	

So Many Satellites

Background Information: A satellite is something that orbits a planet. Satellites can be natural or artificial. Natural satellites are celestial bodies orbiting another of greater size. Artificial satellites are manufactured machines that people send into space to orbit a planet. They usually orbit Earth and collect information or do a job that helps scientists and people on Earth. There are many types of artificial satellites. Scientific satellites take pictures in space to help us learn about space and planets, including Earth. The International Space Station is a scientific satellite. Other satellites are used to gather information, spy, or study weather. These are military satellites, resource satellites and weather satellites. Some satellites are just used for communication. Other satellites help airplanes and boats find their way. These are called navigation satellites. What kind of satellite is GRACE? GRACE is a scientific satellite.

Objectives: At the end of the lesson, the students will be able to:

- Describe the various types of satellites.
- Understand that GRACE is a science satellite.
- Complete graphic organizers.
- Understand the purpose of satellites and their use to human beings.

Standards: Science: earth and space science; science and technology; science in personal and social perspectives.
Language Arts: use of different writing process elements to communicate with different audiences for a variety of purposes.

Vocabulary: Satellites Orbit Navigation

Materials: Graphic organizers
Computer with Internet access
Satellite reference books from the library

Directions to the Teacher:

1. Review the background information and sample graphic organizer. Several examples of graphic organizers may be found at: http://www.graphic.org/concept.html
2. Give students time to use both books and the internet as reference tools to find out more about the different types of satellites.
3. Critical Questions: What is the central word, concept, research question or problem around which to build the map? What are the concepts, items, descriptive words or telling questions that you can associate with the concept, topic, research question or problem?
4. After students gather enough information, they will complete the graphic organizers (see sample attached). Students can do one large organizer with types and information, or several smaller organizers with each type. Do at least two – one with the different types of satellites and one for GRACE.

Extensions:

- Take information from the Graphic Organizer and develop a Venn diagram that compares and contrasts the various types of satellites.
- Students will select one type of satellite, write a report, and conduct an oral presentation to the class about their type of satellite.
- Students identify a satellite that is traveling in space or has traveled in space. What type of satellite is it? What was its mission or purpose? Provide history of the satellite. Complete a poster display of their satellite.

References / Resources:

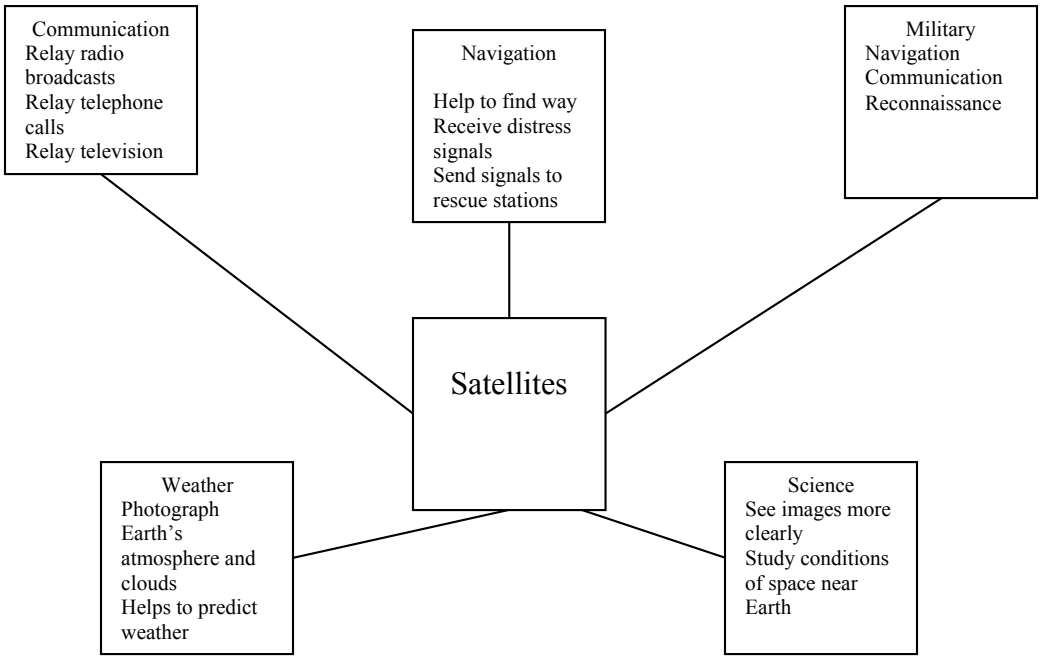
Sterling, Mary E. Write All About It. Teacher Created Materials, Huntington Beach: CA, 1993.

Walker, Niki. Satellites and Space Probes. Crabtree: NY, 1998.

Websites:

http://www.csr.utexas.edu/grace/
http://www.tsgc.utexas.edu/topex/
http://athena.wednet.edu/curric/oceans/indexhtml
http://daac.gsfc.nasa.gov/CAMPAIGN_DOCS/OCDST/
http://www.nasa.gov
http://shuttle-mir.nasa.gov/shuttle-mir/science/
http://www.ksc.nasa.gov/shuttle/missions/missions.html
http://earth.jsc.nasa.gov/
http://imagine.gsfc.nasa.gov/docs/sats_n_data/gamma_missions.html
http://spaceflight.nasa.gov/station/index.html
http://www.boeing.com/defense-space/space/spacestation/team.html

Example:


Communication
Relay radio broadcasts
Relay telephone calls
Relay television
Navigation
Help to find way
Receive distress signals
Send signals to rescue stations
Military
Navigation
Communication
Reconnaissance
Satellites
Weather
Photograph Earth's atmosphere and clouds
Helps to predict weather
Science
See images more clearly
Study conditions of space near Earth

GRAPHIC ORGANIZER