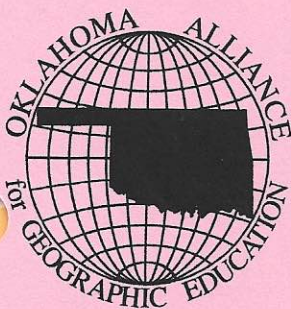


Geography Teacher Training Institute 2005

Presented by the Oklahoma Alliance for Geographic Education
Co-sponsored by Sandy Garrett, State Superintendent of Public Instruction

People + Places = Geography

Lesson Plans and Materials by
Pat Smith



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People + Places = Geography



Oklahoma Astronaut Biographies

Map Skills

Historic Timeline Model

Presented by: OKAGE
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People + Places = Geography

Oklahoma Astronauts

Pat Smith
Broken Arrow, OK

Students will review and strengthen geographic skills: use of maps, direction, key, legend, map symbols, and scale.

National Geographic Standard: The World in Spatial Terms K-4:

1. Fourth grade students know and understand the characteristics and purposes of geographic representations-such as maps, globes, graphs, diagrams, aerial and other photographs, and satellite-produced images.
4. How to use appropriate geographic tools and technologies.

Standard: The World in Spatial Terms 5-8:

1. Fifth grade students will understand the characteristics of maps, globes, aerial and other photographs, satellite-produced images, and models.

Oklahoma PASS 4th grade: Social Studies Skills, Standard 2

2. Identify, use, and interpret basic political, physical, and thematic maps and globes.

Oklahoma PASS 5th grade: Geographic Skills, Standard 7:

1. Identify, evaluate and draw conclusions from different kinds of maps, graphs, charts, diagrams, and other sources and representations, such as aerial and shuttle photographs, satellite-produced images, the geographic information system (GIS), encyclopedias, almanacs, dictionaries, atlases, and computer-based technologies; and an understanding of mental mapping, relative location, direction, latitude, longitude, key, legend, map symbols, scale, size, shape, and landforms.

Resources: <http://edspace.nasa.gov>
<http://science.nasa.gov/>
<http://spaceflight.nasa.gov/>
www.ou.edu/okage
www.okhighered.org/oasis

Oklahoma Astronauts 1966-Present

Lt. General Thomas A. Stafford

Thomas A. Stafford, Lt. General USAF and NASA astronaut, was born in Weatherford, OK. He graduated with honors in 1952 from the U.S. Naval Academy, Annapolis, MD and was commissioned as a second lieutenant in the USAF. In 1953, he received his pilot wings at Connally AFB, Waco, TX. He finished advanced interceptor training and was assigned to the 54th Fighter Interceptor Squadron, Ellsworth AFB, Rapid City, SD. In 1955 his new assignment was to the 496th Fighter Interceptor Squadron, Hahn, AFB, Germany. His duties included flying F-86's as pilot, flight leader, and flight test maintenance.

General Stafford was in the 2nd group of astronauts chosen by NASA to participate in the Gemini and Apollo Projects. In Dec. 1965, he piloted Gemini VI, the 1st craft to rendezvous in space. In June 1966, he commanded Gemini IX and performed a demonstration of the optical rendezvous and a lunar orbit abort rendezvous. From Aug. 1966-Oct. 1968, he headed mission planning analysis for Project Apollo. General Stafford was commander of Apollo 10 in May 1969. It was the 1st flight of the lunar module to the moon, the 1st rendezvous around the moon, and the entire lunar landing procedures except for the actual landing. General Stafford was in the Guinness Book of World Records for the highest speed ever reached by man, attained during his Apollo 10 reentry at 24,791-statute mph.

In 1970, General Stafford became Deputy Director of Flight Crew Operations. However, in July of 1975, he took to the skies again as Commander of the Apollo-Soyuz Test Project mission. It was a historic, joint space flight venture, the 1st mission between American astronauts and Soviet cosmonauts.

General Stafford was promoted to Lieutenant General, Mar. 15, 1978; he retired in 1979. In June of 1990, Vice President Quayle asked Gen. Stafford to Chair a team to advise NASA on President Bush's vision to return man to the moon and start the exploration of Mars.

Throughout his distinguished career, Gen. Stafford earned many special honors. Just a few of many are: 2 NASA Distinguished Service Medals, 2 NASA Exceptional Service Medals, the Air Force Distinguished Service Medal with 3 Oak Leaf Clusters, and the Congressional Space Medal of Honor. He was inducted into the Oklahoma Commerce and Industry Hall of Fame, the National Hall of Fame, and the Aerospace Walk of Honor in 1997.

Oklahoma Astronaut

Colonel Stuart Allen Roosa

Stuart Allen Roosa, Colonel U.S.A.F. and NASA astronaut, was born Aug. 16, 1933 in Durango, Colorado. He moved early in life to Claremore, Oklahoma and studied at Oklahoma State University. Later, he attended the University of Arizona and graduated with honors from the University of Colorado.

Stuart Roosa's active duty in the Air Force was from 1953 to 1976. He was an experimental test pilot at Edwards Air Force Base, CA. He was a maintenance flight test pilot at Olmstead Air Force Base, PA flying F-101 aircraft. Also during his Air Force career was assigned as a fighter pilot at Langley Air Force Base, VA flying F-84F and F-100 aircraft. He logged 5,500 hours flying time.

Col. Roosa was 1 of 19 astronauts selected in April 1955. He was on the support crew for Apollo 9; his 1st space flight was aboard Apollo 14, Jan. 31 - Feb. 9, 1971. Roosa remained in the lunar orbit aboard the command module, "Kittyhawk". While in orbit Roosa performed visual and photographic assignments.

On the moon, Shepard and Mitchell deployed and activated scientific equipment and experiments. The eventually collected about 100 pounds of lunar samples to bring on the return to Earth. Apollo 14 achieved the 1st use of the MET, Mobile Equipment Transporter. It delivered the largest payload placed on the lunar surface, performed the longest lunar EVA, 9 hours 17 minutes, accomplished the 1st use of a shortened lunar orbit rendezvous technique, 1st use of color TV on the surface, and the 1st extensive orbital science period conducted during CSM solo operations.

Col. Roosa was backup command pilot for Apollo 16 and 17 and was later assigned to the STS program. He retired from NASA in 1976. He served as Corporate Vice President International Operations, U.S. Industries, Inc. and President U>S>I> Middle East Development Co. Ltd., Athens, Greece. Until his death on Dec. 12, 1994, Stuart Roosa was President and owner of Gulf Coast Coors, Inc., Gulfport, MS.

Among many special honors Stuart Roosa received are the: NASA Distinguished Service Medal, the Air Force Commendation Medal, the Air Force Distinguished Service Medal, the Command Pilot Astronaut Wings, the Robert Goddard Trophy, and was inducted in the Oklahoma Aviation and Space Hall of Fame.

Oklahoma Astronaut

Owen Garriot Ph.D.

Owen Garriot was born Nov. 22, 1930 in Enid, Oklahoma. He graduated from Enid High School, received a BS from the University of Oklahoma and his MS and Ph.D. from Stanford University. He completed 1 year in the US. Air Force Pilot Training Program.

Owen Garriot served as electronics officer for the U.S. Navy 1953-1956. In 1965, he was 1 of the 1st 6 scientists/astronauts selected by NASA. His 1st space flight was aboard Skylab in 1973. While aboard he set a new record of about 60 days in space. The focus of the flight was studies of the sun, earth resources, and human adaptation to weightlessness in space.

Between his flights, Garriot served as Deputy, Acting Director, and Director of Science Applications at JSC. From 1984 to 1986, he held the position of Project Scientist in the Space Station Project Office. He advised the project as to the scientific suitability of the Space Station design.

Owen Garriot's 2nd flight was aboard Spacelab-1 in 1983, which lasted 10 days. Over 70 experiments in 6 science disciplines were conducted. He operated the 1st Amateur Radio Station from space, W5LFL that is now common aboard STS flights and the ISS.

Later, Garriot served on NASA and National Research Council Committees. He was Vice President of Space Programs Teledyne Brown Engineering. This division provided payload integration for all Spacelab projects and was involved with the U.S. Laboratory for the ISS.

Much of Owen Garriot's time has also been spent assisting in various charity activities in Enid, Oklahoma, including the Enid Arts and Sciences Foundation. He was a co-Founder in 1992. As Adjunct Professor in the Laboratory for Structural Biology at the University of Alabama, he has participated in research activities involving new microbes. His research has taken him to exotic places such as the Azores and 3 trips to Antarctica from which they retrieved meteorites for study.

Owen Garriot has received many special honors, a few of them are: the National Science Foundation Fellowship, NASA's Distinguished Service Medal, NASA's Space flight Medal, and the Goddard Memorial Trophy. He was inducted into the Oklahoma Air and Space Hall of Fame, the U.S. Astronaut Hall of Fame, and Oklahoma's Military Hall of Fame.

Oklahoma Astronaut

Colonel William Pogue

William Reid Pogue, Col. U.S. Air Force and NASA astronaut was born Jan. 23, 1930 in Okemah, Oklahoma. He resides now in Sand Springs, OK and is an Honorary Board Member for the Tulsa Air and Space Museum. He received a BS degree from Oklahoma Baptist University and a Master of Science degree in Mathematics from Oklahoma State University.

Col. Pogue enlisted in the Air Force in 1951 and was commissioned in 1952. From 1953 to 1954, he completed a combat tour in the Korean conflict, and then was a member of the USAF Thunderbirds for 2 years. He flew over 50 types of American and British aircraft and is qualified as a civilian flight instructor.

Col. Pogue is 1 of 19 astronauts selected by NASA in April 1966. He was a member of the astronaut support crews for Apollo 7, 11, and 14. On Nov. 16, 1973, he was the pilot of Skylab 4, the final manned visit to the Skylab orbital workshop. His mission concluded Feb. 8, 1974 and set a new record for the longest manned flight: 84 days, 1 hour, and 15 minutes covering a record number of miles: 34.5 million miles. They successfully completed 56 experiments, 26 science demonstrations, 15 subsystem detailed objectives, and 13 student investigations. They acquired extensive earth resource observations data, information on long-term physiological effects of weightlessness on crewmembers, logged 338 hours of operations of the Apollo Telescope Mount, and performed 2 EVA's lasting 13 hours, 31 minutes.

William Pogue retired from the USAF on September 1, 1975 and is now retired from NASA. William Pogue is self-employed as a consultant and producer for aerospace, general viewer videos on space flight.

Col. Pogue received many honors during his distinguished career, a few of them are: the NASA Distinguished Service Award, Johnson Space Center Superior Achievement Award, the Air Medal, the Air Force Commendation Medal, the Dr. Robert Goddard Memorial Trophy, the Air Force Distinguished Service Medal, the General Thomas White USAF Space Trophy, and was inducted into the Oklahoma Aviation and Space Hall of Fame.

Oklahoma Astronaut

Shannon W. Lucid Ph.D.

Shannon W. Lucid, Chief Scientist, NASA Headquarters, was born January 14, 1943 in Shanghai, China; but Shannon considers Bethany, Oklahoma her hometown. She graduated from Bethany High School in 1960 and received a BS in chemistry from the University of Oklahoma in 1963. She continued her education earning a master of science and doctor of philosophy degrees in biochemistry from the University of Oklahoma in 1970 and 1973.

Dr. Lucid's career includes a wide variety of endeavors. She was a teaching assistant at the University of Oklahoma, senior laboratory technician at Oklahoma Medical Research Foundation, chemist at Kerr-McGee, graduate assistant at University of Oklahoma Health and Science Center

S Department of Biochemistry and Molecular Biology, research associate with the Oklahoma Medical Research Foundation, and astronaut candidate-training program.

Dr. Lucid was selected by NASA in January 1978 and became an astronaut in 1979. She's qualified as a mission specialist on Space Shuttle flight crews. A few of her technical assignments have been Shuttle Avionics Integration Lab, the Flight Software Laboratory, Astronaut Office interface at KSC, spacecraft communicator at JSC, Chief of Mission Support, and Chief of Astronaut Appearances.

A veteran of 5 flights, Dr. Lucid has logged 5,354 hours (223 days) in space. She served as Mission Specialist on:

STS-51G, June 17-24, 1985
STS-34, Oct. 18-23, 1989
STS-43, Aug. 2-11, 1991
STS-58, Oct. 18-Nov. 1, 1993.

Her most recent flight: Board Engineer 2 on Russia's Space Station Mir, launched Mar. 22, 1996 aboard STS-76, returning Sept. 26, 1996 aboard STS-79.

Dr. Lucid held an international record for the most flight hours in orbit by any non-Russian and the most flight hours in orbit by any woman in the world until the ISS was commissioned. In completing her mission onboard Mir, Dr. Lucid logged 75.2 million miles in 188 days, 4 hours, 0 minutes and 14 seconds in space.

In Feb. 2002, Dr. Lucid was selected as NASA's Chief Scientist. She's stationed at NASA Headquarters in Washington, D.C. Her responsibilities are developing and communicating the agency's science and research objectives to the outside world.

Dr. Lucid is the recipient of numerous awards; the most recent is the Congressional Space Medal of Honor by the President of the United States. She is the first woman to receive this prestigious award. Dr. Lucid was also awarded the Order of Friendship Medal by the Russian President Boris Yeltsin. This is one of the highest Russian civilian awards and the highest that can be presented to a non-citizen.

Oklahoma Astronaut

Commander John Bennett Herrington

John Bennett Herrington, Commander U.S. Navy and NASA astronaut, was born September 14, 1958 in Wetumka, Oklahoma. He grew up in CO, WY, and TX; currently, he resides in Spicewood, TX. He received his BS degree from the University of Colorado in 1983 and a Master of Science in aeronautical engineering from the U.S. Naval Postgraduate School in 1995.

John Herrington received his commission from Aviation Officer Candidate School and was designated a Naval Aviator in 1985. His 1st operational assignment was with Patrol Squadron Forty-Eight, VP-48, where he made 3 operational deployments. While assigned to VP-48, he was designated a Patrol Plane Commander, Mission Commander, and Patrol Plane Instructor Pilot. His next assignment was VP-31 as Fleet Replacement Squadron Instructor Pilot. During this time, he attended the US Naval Test Pilot School; after graduation, he reported to Force Warfare Aircraft Test Directorate as test pilot for the Joint Primary Aircraft Training System. He flew numerous variations of the P-3 Orion, the T346, and the DeHavilland Dash 7. Commander Herrington was then assigned to the Bureau of Naval Personnel Sea Duty Component.

NASA selected Commander Herrington for the astronaut corps in April 1996. He trained for 2 years at Johnson Space Center and was assigned to the Flight Support Branch of the Astronaut Office. He served on the Astronaut Support Personnel Team and was responsible for shuttle launch preparations and post landing operations. Recently, he flew aboard STS-113; logging 330 hours in space and 3 EVA's totaling 19 hours and 55 minutes. His flight aboard Endeavour began on Nov. 23 and ended Dec. 7, 2002. It was the 16th STS mission to dock with the ISS. The mission included delivery of the Expedition 6 crew, delivery and installation of the P1 Truss, and cargo transfer from the shuttle to the Station. Commander Herrington performed 3 EVA's for a total of 19 hours, 55 minutes. STS-113 brought home the Expedition 5 crew from their 6-month mission onboard the ISS. STS-113 spent 13 days, 18 hours, and 47 minutes in space.

In his relatively short career, Commander Herrington has received the: Navy Commendation Medal, the Navy Meritorious Unit Commendation, the Coast Guard Meritorious Unit Commendation, the National Defense Medal, and three Sea Service Deployment Ribbons.

Commander John Herrington is currently in the NASA Astronaut Program.

Astronaut Study Questions for Students

1. Using the Index on an Oklahoma map, find the birth town or special Oklahoma location for one of the Oklahoma astronauts.
2. Find the direction finder or compass rose on the map. What direction from **your town** is this birth or special town in question #1? Using the Mileage Chart, how far is your town from the astronaut's special location?
3. What map grid coordinates are used to locate the town from question #1?
4. Is there an airport in this town? If so, according to the Legend, what kind of airport is it?
5. Is there an airport located at **N-8**? If so, what kind of airport is it?
6. What is the scale of this map? 1 inch = _____.
7. According to the Legend, how large is a town if its symbol is a circle with a plus sign in the center?
8. Find 2 historic travel routes on the Oklahoma map. What are they?
9. On the reverse side of the Oklahoma map there are several cities and towns that are enlarged. On the Oklahoma City and vicinity map, what does the symbol of a circle with a star inside signify?

Suggestions for Group Work:

Divide the class into small groups. Assign a flight from 1 destination to another within the state of Oklahoma to each group.

What is the distance of the flight?

What route would the pilot take? (Often pilots follow roads in their flight plan.)

Assign a refuel scenario, where would each team need to land and refuel?

If your plane developed engine trouble $\frac{1}{2}$ way to the destination, where would they need to land? Where should they NOT land? Why?

If your plane averages 120 mph, how long will it take to arrive at your destination?

Divide the class into 5 groups. Assign each group one of Dr. Shannon Lucid's space flights to research. They can discover the activities and accomplishments of each flight. NASA's Human Space Flight link has this information. Have each group share with the class. It is truly amazing what she has accomplished.

People + Places = Geography

Oklahoma Astronauts

Pat Smith
Broken Arrow, OK

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1. Fifth grade students will understand the characteristics of maps, globes, aerial and other photographs, satellite-produced images, and models.

Oklahoma PASS 4th grade: Standard 2

- 2: Identify, use, and interpret basic political, physical, and thematic maps and globes.

Oklahoma PASS 5th grade: Standard 7:

2. Identify, evaluate and draw conclusions from different kinds of maps, graphs, charts, diagrams, and other sources and representations, such as aerial and shuttle photographs, satellite-produced images, the geographic information system (GIS), encyclopedias, almanacs, dictionaries, atlases, and computer-based technologies; and an understanding of mental mapping, relative location, direction, latitude, longitude, key, legend, map symbols, scale, size, shape, and landforms.

Resources: <http://edspace.nasa.gov>
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<http://spaceflight.nasa.gov/>
www.ou.edu/okage
www.okhighered.org/oasis