

What's Happening

I N T H E U S A ?

BY LAWRENCE GABLE

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THE SPACE SHUTTLE MAKES ITS FINAL FLIGHT

In April 1981 the United States began its Space Transportation System. Most Americans would say that they never have heard of it, but that is not really true. They just know it as the Space Shuttle, whose launches and landings they have seen on television. In June an orbiter will make the program's final voyage into space.

The American space program began during the Cold War. Following World War II the U.S. and the Soviet Union were the world's superpowers. They competed with and feared each other, so when the Soviets launched a satellite in 1957, the U.S. responded. It launched its first satellite and created its space agency, the National Aeronautics and Space Administration (NASA) in 1958.

Everything was new in those early days of space exploration. The Soviets sent the first human into space in 1961. In April he orbited Earth once. In May America's first astronaut went on a flight that lasted only fifteen minutes. In 1962 John Glenn became the first American to orbit Earth, and the first moon landing took place in 1969. The competition lasted through the 1960s and into the 1970s.

Then both countries built space stations, satellites in which people live for months at a time. Many countries joined the Soviet Union and U.S. to build and operate the International Space Station. It has been in orbit since 1998, and is now the only space station in orbit. Space stations created the need for a way to shuttle people, equipment and supplies back and forth. NASA designed an orbiter that it could use over and over, the Space Shuttle.

The Space Shuttle's inaugural voyage took place in April 1981. The orbiter *Columbia* rode piggyback on a rocket from the Kennedy Space Center in Florida. It went on a two-day mission, becoming the first winged, manned spacecraft to achieve orbit and then land. *Columbia* and the other

orbiters in the program still are the only reusable space vehicles that ever have made multiple flights into orbit.

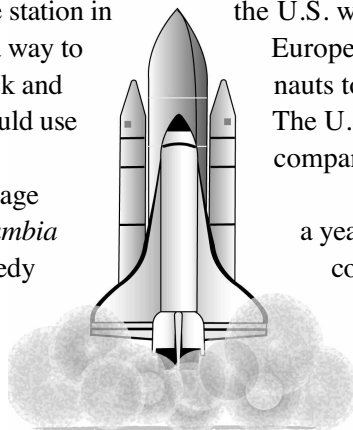
NASA used the orbiters *Columbia* and *Challenger* for its early Shuttle missions. The orbiters' large cargo areas could hold large pieces of material for the construction of the International Space Station. They also transported communications satellites and equipment for scientific experiments. However, disaster struck in 1986. Soon after launch *Challenger's* fuel tank tore apart and exploded. *Challenger* went into uncontrolled flight, broke apart and fell to the ocean. All seven crew members died.

The program shut down for nearly three years. The orbiter *Discovery* was the first to fly again. In further missions it flew to the International Space Station and took the Hubble Space Telescope into space. After *Columbia* broke apart and killed seven crew members in 2003, *Discovery* again was the first to fly. After its final flight in March 2011, it had spent more time in space than any other vehicle in history.

NASA still has two orbiters. *Endeavour's* final flight will be in May 2011, and *Atlantis* will fly in late June. When it returns, it will mark the end of a program that has internationalized and democratized space travel. More than 350 men and women will have gone into space. Among them were not only astronauts, but also engineers, astronomers, doctors, biologists, politicians and teachers. They came from the U.S. and 16 foreign countries.

Construction of the International Space Station is nearly complete. In the last two years orbiters have carried enough supplies, spare parts and science equipment there to last for another five to ten years. Now the U.S. will send cargo through Japanese and European space programs. It will send astronauts to the space station on Russian spacecraft. The U.S. also plans to use rockets from private companies someday.

The Space Shuttle costs about \$2.4 billion a year. Even though paying other countries and companies should be less expensive, NASA feels that the program has been well worth it. Over 30 years the Space Shuttle has added invaluable to human understanding of science and space.



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The American space program began during the Cold War. The U.S. and the Soviet Union were the world's superpowers. They competed with and feared each other. The Soviets launched a satellite in 1957, so the U.S. launched its first satellite in 1958. It also created its space agency, the National Aeronautics and Space Administration (NASA).

Everything was new in those early days of space exploration. The Soviets sent the first human into space in April 1961. In May America's first astronaut went on a flight that lasted only fifteen minutes. In 1962 John Glenn became the first American to orbit Earth. The competition lasted through the 1960s and into the 1970s.

Then both countries built space stations where people live for months. Many countries also helped to build and operate the International Space Station. It has been in orbit since 1998. The countries needed a way to shuttle people, equipment and supplies back and forth. NASA designed an orbiter that it could use over and over, the Space Shuttle.

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achieve orbit and then land. *Columbia* and the other orbiters are still the only vehicles that ever have made multiple flights into orbit.

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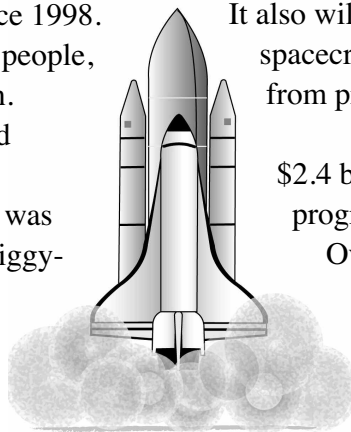
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The International Space Station is nearly complete. Now the U.S. will send cargo there through Japanese and European space programs.

It also will send astronauts there on Russian spacecraft. The U.S. also plans to use rockets from private companies someday.

The Space Shuttle now costs about \$2.4 billion a year. NASA feels that the program has been well worth it though.

Over the years the Space Shuttle has led to greater understanding of science and space.



Background Information

Atlantis's flight on June 28 will be the Space Shuttle's 135th mission. Every launch was from the Kennedy Space Center, and more than half of the missions landed here. All but one of the others landed at Edwards Air Force Base in California. *Columbia* landed once at White Sands Space Harbor in New Mexico.

The Soviet Union launched the satellite *Sputnik* on October 4, 1957. The U.S. launched its first one, *Explorer 1*, on January 31, 1958.

Yuri Gagarin was the Soviet Union's first cosmonaut. *Columbia's* first flight on April 12, 1981 was the 20th anniversary of his becoming the first human in space.

Alan Shepard was the first American astronaut.

NASA and the Air Force began to work on a design for a space shuttle in 1963.

In 1971 the Soviet Union launched the first station, *Salyut 1*. It was built in one piece, and all of its supplies were launched with it. At some point stations like that simply got used up. Later stations, including *Skylab* and *Mir*, had ports where supply vehicles could dock.

One orbiter never went into orbit. *Enterprise* was used only in tests for gliding, approaches and landing.

In April 2011 NASA announced where the four orbiters will end up. *Enterprise* will go to the Intrepid Sea, Air & Space Museum in New York. *Discovery* will be displayed at the Smithsonian's National Air and Space Museum in Virginia. *Endeavour* will go to the California Science Center in Los Angeles, and *Atlantis* will stay at the Kennedy Space Center's Visitor's Complex.

Columbia broke apart during reentry into Earth's atmosphere on its 28th flight. For two years after that NASA relied on Russian spacecraft.

It took just 8 1/2 minutes for the Space Shuttle's orbiters to reach orbit.

The crew of *Discovery* placed the Hubble Space Telescope in orbit in April 1990. *Discovery* also flew a repair mission to Hubble in 1997. The telescope has been sending thousands of images of outer space back to Earth.

The Space Shuttle also launched the satellites *Magellan* and *Ulysses* into their missions around the Solar System.

Topics for Discussion and Writing

Pre-reading:

- How does a Space Shuttle orbiter look different from other spacecraft?

Comprehension:

- Why did NASA want to develop a shuttle?

Beyond the Text:

- If you had been able to name a Space Shuttle orbiter, tell which name you would have chosen and explain why.
- Do you think that space exploration could change how humans think about themselves?
- Tell whether you would, or would not, be interested in going into space.

Vocabulary (*advanced article only)

Article-specific: shuttle; launch; voyage*; agency; astronaut; inaugural*; winged; manned; cargo; to democratize*; spacecraft

High-use: transportation; orbiter; satellite; to respond*; to achieve; multiple; mission; communications; disaster

Sources

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National Public Radio "Talk of the Nation Science Friday" April 22, 2011

Dayton Daily News April 10, 2011

Texas Monthly April 1, 2011

Voice of America News March 9, 2011

National Public Radio "Morning Edition" March 9, 2011

The Daily Mirror February 26, 2011

Orlando Sentinel April 4, 2010

CA Curricular Standards (4–12)

English-Language Arts

Reading 1.0 Vocabulary Development

2.0 Comprehension (Informational Materials)

Writing 1.0 Writing Strategies

2.0 Writing Applications

ELD—Intermediate and Advanced

Reading Vocabulary Development/Comprehension

Writing Strategies and Applications

Listening and Speaking

History-Social Science

7.10; 10.11; 11.8