

Out of This World Jobs

Subject Area: Science

Unit Title: Careers in Earth Science & Beyond

Grade Level: 4th & 5th grade

Objectives: To gain an understanding of the different types of careers relating to earth and space science.

Colorado Content Standards to be covered:

SCIENCE

Standard I - Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.

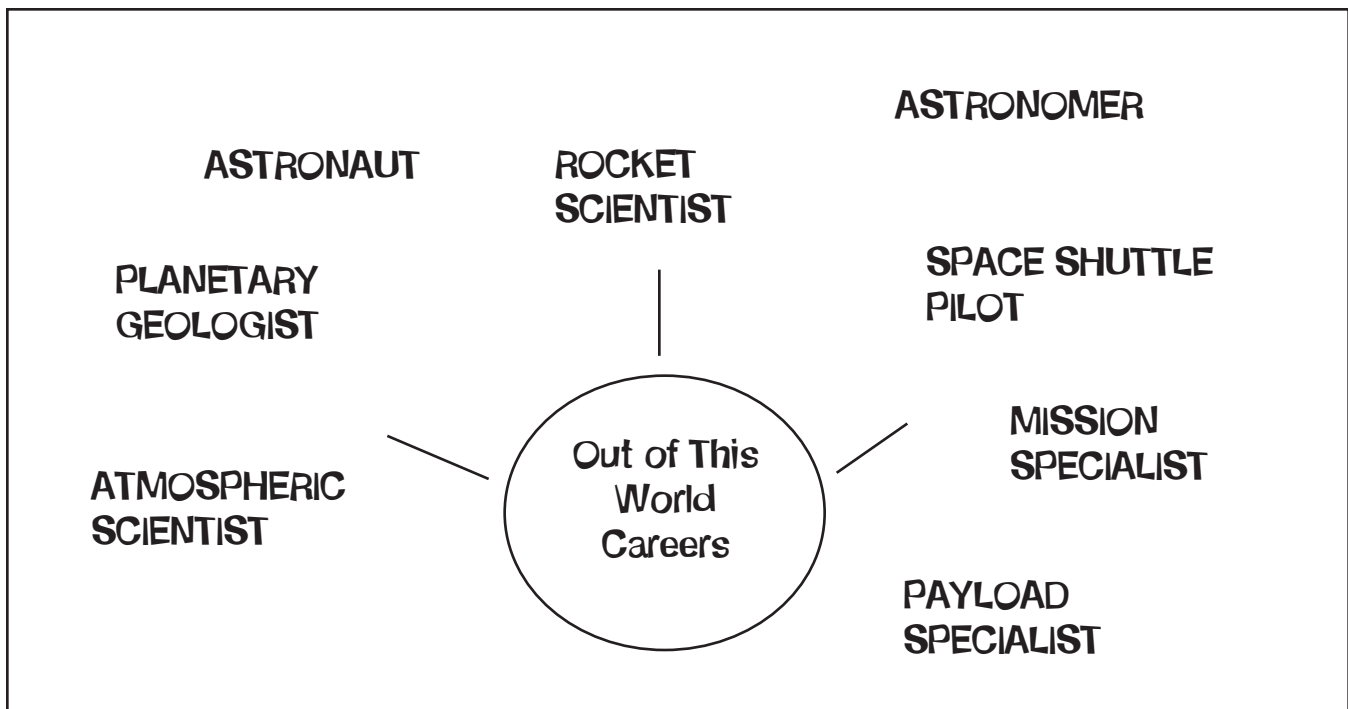
Standard IV - Earth and Space Science: Students know and understand the processes and interactions of earth's systems and the structure and dynamics of earth and other objects in space.

Materials:

copies of astronaut word search (last page)

- Large sheet of paper
- Tape
- Dirt or stamp pad
- Ruler or meter stick
- Vocabulary chart (review before lesson)

Anticipatory Set: Brainstorm with your students and ask them to list as many “Out of This World” careers they can think of. Post the ideas on the board in a mind map (see below for ideas.)



Input (See Mind Map of types of Geologist toward end if you want to model it as you proceed):

Exploring Our Planet: Earth

We live on an amazing planet. It is sometimes called the “third rock from the sun.” Almost everything we do each day is connected to our planet in some way. The food we eat, the water we drink, our homes and schools, the clothes we wear, the energy we use and the air we breathe all come from the land, water, atmosphere, plants and animals the earth provides.

Let’s learn about some of the people who explore and study the earth. Since the beginning of time, rocks and minerals have been used as a way to study the earth's history. **Geologists** are scientists who study rocks and minerals to learn more about the earth. They analyze the rocks, looking for deposits of certain minerals, and then they decide if it is worth spending money to mine these minerals.

There are many areas in which geologists can specialize. There are **exploration geologists** (looking for mineral deposits), **petroleum geologists** (studying petroleum deposits), **hydrologists** (studying surface and underground water) and **research geologists** (researching and studying the earth).

Out of this World Jobs

Planetary Geologist - There are many cool “earthy” jobs, but there are also some great “out of this world” jobs, too. Planetary geologists study planets, moons, asteroids, comets and meteorites to understand the solar system.

Geological studies of the moon are based on observations by telescope, measurements made by spacecraft and the samples of rock and soil. Most of the moon has not been explored, so there is much more to learn.

Atmospheric Scientist - Atmospheric science is the study of the atmosphere – gases and clouds that surround the planets in the solar system. In some ways, an atmospheric scientist is similar to a **meteorologist** because they study weather and temperature trends, how clouds and precipitation are formed, and how oceans affect the atmosphere.

Astronomers - Astronomers are scientists who study space and the objects within it. Astronomers study the position, size and motion of planets, stars and other objects in space. Our universe is vast and interesting. Many astronomers become specialists on galaxies, stars, planets, the sun or the search for life. Other astronomers help plan and support space missions.

Aerospace Engineers - Aerospace engineering is the design of airplanes, spacecraft, missiles, rockets, satellites and the space shuttle. It is sometimes called rocket science. A team of engineers, each specializing in their own branch of science, work together to design and construct these highly technical vehicles. Rocket scientists need knowledge in engineering, science and math.

Astronaut - The word astronaut comes from the Greek word meaning star sailor. An astronaut is a person trained to command, pilot or work on a spacecraft. The Space Shuttle crew includes astronauts, a commander, a pilot, mission specialists and sometimes a payload specialist. The commander is in charge. He or she has responsibility for the vehicle, crew and safety of the flight. The pilot assists the commander in controlling and operating the vehicle.

The first U.S. astronauts were selected in 1959. Thousands of people have tried to become astronauts, but according to NASA in 2008, only 321 have been selected so far. The astronauts of the future could explore our moon, Mars and beyond.

Checking for Understanding: At the end of this section choose one of the following for a quick check: ask the students to partner share and think, pair and share, do a quick 3 word write up as an exit slip, do a quick sketch or give each other a quick thumbs up or down to check for understanding. Determine the level of mastery for each student and provide individual remediation as needed.

Procedures/Activities:

How High Can You Fly?

Do you ever dream of being able to fly? The good news is, you probably can! The bad news is, you cannot fly very high or stay up very long.

How high do you think you can you jump? Get some of your friends together to find out.

1. Tape a large piece of paper to the wall (brown wrapping paper or sheets of newspaper will do). The shortest person in your group should be able to reach the bottom of the paper without standing on tiptoes.
2. Dip one finger in dirt or ink. While standing with your feet flat on the floor, stretch your arm as far as you can and mark the highest point you can reach on the paper.
3. Now jump and mark the paper by touching it at the top of your jump. Try it a few times and challenge your friends to jump higher. Label each person's standing and jumping marks with initials or have each person use a different color of ink or dirt.
4. Use a ruler or meter stick to measure the vertical difference in height between your standing and jumping marks. This is how high you can jump. Surprised?

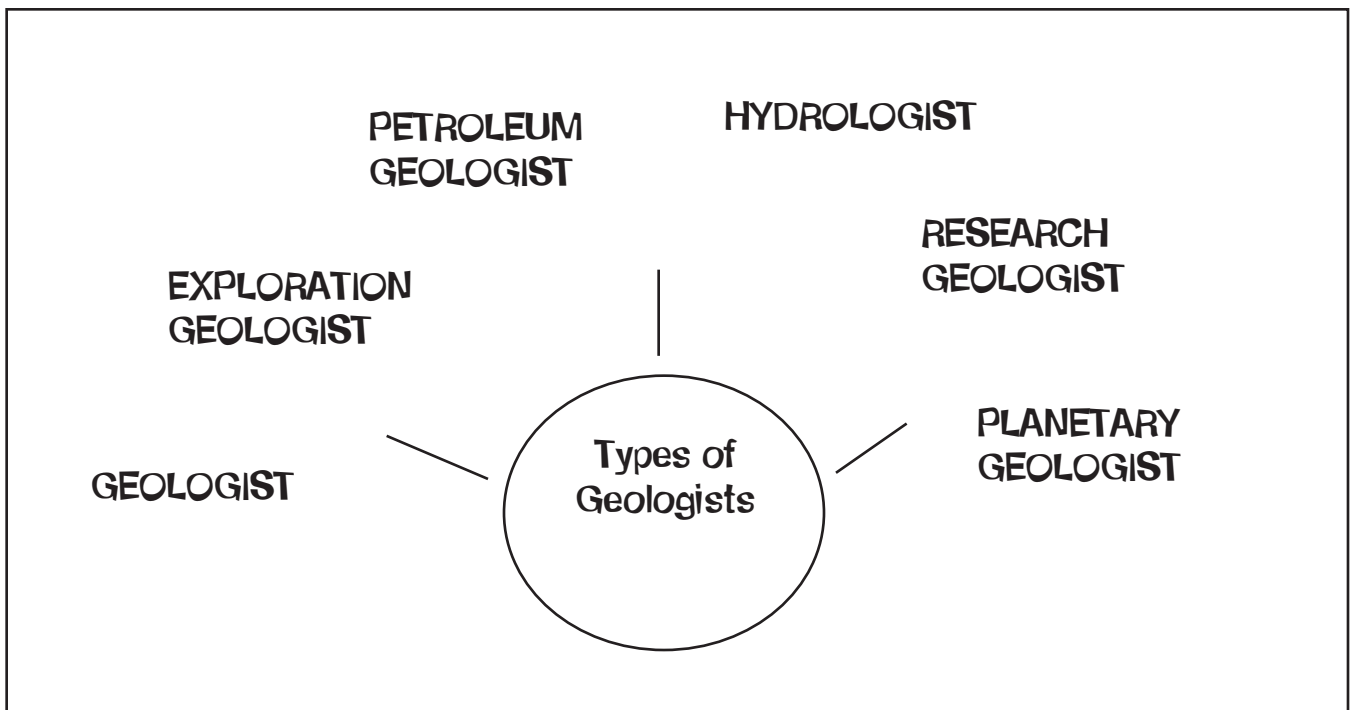
Adapted from the Smithsonian Institute Education website at www.smithsonianeducation.org/educators/lesson_plans/how_things_fly/lesson1_b.html

Closure:

Lead a classroom discussion of the various “out of this world” careers in the lesson, and ask each student for their ideas on which career was most interesting and why. Hand out the word search for students to complete.

Extension:

Pick one career and write about your(student’s) life as that person.



Word Search:

L D K S K R K N R H H I E S P
 N A Y L A G E E O Y S L N Q E
 E O B F N F S M D I T L N N T
 R L S M V E E R O T S T F O R
 E Y H R A F O T U N U S W O O
 H A V R A L O H Y A O J I M L
 P P C X O M S P N M N R U M E
 S H U G T I L O V S Y V T H U
 O P I T F A R C E C A P S S M
 M S R A N T D N A M M O C R A
 T T D E S E X P L O R E Q O Q
 A U T A T T P Y H N L L G C M
 G E O L O G I S T O L I P K E
 O D E C A E C M R C D N M E G
 B P S L Y K E R G B Z F R T N

Word Bank:

ASTRONAUT
 ASTRONOMER
 ATMOSPHERE
 COMMAND
 EXPLORE
 GEOLOGIST
 HYDROLOGIST
 MARS
 MISSION
 MOON
 PAYLOAD
 PETROLEUM
 PILOT
 PLANET
 RESEARCH
 ROCKET
 SAFETY
 SHUTTLE
 SPACECRAFT

Answers

Word Search:

L D K S K R K N R H H I E S P
 N A Y L A G E E O Y S L N Q E
 E O B F N F S M D I T L N N T
 R L S M V E E R O T S T F O R
 E Y H R A F O T U N U S W O O
 H A V R A L O H Y A O J I M L
 P P C X O M S P N M N R U M E
 S H U G T I L O V S Y V T H U
 O P I T F A R C E C A P S S M
 M S R A N T D N A M M O C R A
 T T D E S E X P L O R E Q O Q
 A U T A T T P Y H N L L G C M
 G E O L O G I S T O L I P K E
 O D E C A E C M R C D N M E G
 B P S L Y K E R G B Z F R T N