

NHU/NASA Summer Institute

Lesson Plan

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November 4, 2004

Lesson Plan Title:	The Moon and the Stars
Grade Level	3rd
Concept/Topic to Teach	Stars circulate stars just like Moons circulate planets
Content Standards Science 4.d And 4.e	Students know that Earth is one of several planets that orbit the Sun and that the Moon orbits the Earth. Students know the position of the Sun in the sky changes during the course of the day and from seasons.
General Goals	Students will be able to use their understanding of earth's orbit around the sun to grasp the 'term binary' stars and compare two different kinds of orbiting spheres
Specific Objectives Know the vocabulary and the concept of a binary orbit Students will draw pictures of the different orbit concepts with crayons and write a summary about what they learned	Teacher introduces vocabulary from the board or a poster: Orbit Sun Stars Binary Revolution Circulate Rotation Spin Axis Moon Planet
Required Materials	Internet access and the link to the NASA Solar Terrestrial Probes Education and Outreach homepage from http://stp.gsfc.nasa.gov for discovery of our star. Science Framework of CA Different sized rubber balls Permanent Ink Marker Navy blue, black, or white construction paper Crayons Pencils and erasers Dictionaries

	Nasa Literature and Videos that convey this concept Notebook paper
Anticipatory Set	Ask a student to explain the most common way a star in the outer galaxy orbits another star. Give the student the opportunity to show this with rubber balls. Then give a second student the opportunity to show the concept. Then draw the background knowledge for the students to fit their current understanding of the solar system into the lesson. Ask the students how many planets orbit the sun. Let them tell you if they know whether there are other planets besides Earth that have moons. Which ones? How many?
Step-by-Step Procedures	Teacher then marks a red rubber ball with two different shapes, a diamond on one side and an asterisk on the opposite side. The teacher marks a different color rubber ball with two other different shapes such as a circle and a triangle. Then the teacher puts down one of the big rubber balls and picks up a medium or small super ball, tennis ball, or other comparatively smaller ball. The teacher tells the class that what they are about to see is the concept of a planet orbiting the sun. “The big ball is the sun, the smaller one is the planet.” A volunteer is asked to hold ‘the sun’ and turn it around in its place by revolving in a circle on his or her feet. Then the teacher turns around on her feet and revolves around the sun to demonstrate Earth’s orbit. Next, the teacher asks the student to do the part of Earth.
Plan for Guided Practice	Finally, the teacher asks the class to volunteer to do a star the rotates on its axis and revolves around another star. The volunteer that stands up then revolves around the person rotating the Earth and the person holding the Sun sits down. The teacher guides them until both students standing are rotating their stars by spinning around in circles on their feet and revolving in ovals or circles around the other person holding a binary star.
Plan for Independent Practice	Students are given construction paper, pencils, crayons, and notebook paper. They are asked to draw planets, moons, suns, and/or stars that revolve around each other. They should make a drawing of each orbiting concept that they learned from the lesson.
Assessment (based on objectives)	Students will write a summary paragraph that describes the orbits of spheres of their choice (from real

	outerspace). They must be able to compare two kinds of orbits including the binary orbit of binary stars and at least one other – that of a moon or a planet in the solar system of planet Earth.
Adaptations (ELL students or special populations)	ELL and special populations will be assessed on their ability to copy the names of the outerspace objects to label their drawings and to draw lines with arrows that show how the orbit or rotation works in its place or path.
Extensions (for gifted students)	Gifted students will be asked to summarize an interesting link to the NASA Solar Terrestrial Probes Education and Outreach homepage from http://stp.gsfc.nasa.gov after spending some webquesting time in the independent practice portion.