LINN MURDOCH INNOVATION MIDDLE SCHOOL
5/6 Science Project
2007-2008

PROJECT/UNIT TITLE	WHERE IN THE UNIVERSE ARE WE?
Description	In this project students will investigate the enormity of the universe and the large scale of the numbers needed to describe size and distances. They will explore our solar system and the phenomena that influence our daily life, like day and night, the seasons and time zones. As students compare and contrast the properties of the nine planets, especially in relation to Earth, they will develop a deeper understanding of the conditions that exist on the planets and the ramifications the differences have for travel to other planets. Essential Questions: What would a trip through our universe be like? Where in the universe are we? How do interactions in the universe (between the Earth-sun-moon and beyond) create the predictable patterns of change we observe?
Developers	Melissa Kapeckas, Brook Doire, David Maier
Standards	Recognize that gravity is a force that pulls all things on and near the earth toward the center of the earth. Gravity plays a major role in the formation of the planets, stars, and solar system and in determining their motions. (8.E.8) Recognize that the earth is part of a system called the "solar system" that includes the sun (a star), planets, and many moons. The earth is the third planet from the sun in our solar system. (5.E.13) Recognize that the earth revolves around (orbits) the sun in a year's time and that the earth rotates on its axis once approximately 24 hours. Make connections between the rotation of the earth and day/night, and the apparent movement of the sun, moon, and stars across the sky. (5.E.14) Explain how the tilt of the earth and its revolution around the sun result in an uneven heating of the earth, which in turn causes the seasons. (8.E.11) Describe the changes that occur in the observable shape of the moon over the course of a month. (5.E.15) Describe lunar and solar eclipses, the observed moon phases, and tides. Relate them to the relative positions of the earth, moon, and sun. (8.E.9) Compare and contrast properties and conditions of objects in the solar system (i.e., sun, planets, and moons) to those on Earth (i.e. gravitational force, distance from the sun, movement, temperature, and atmospheric conditions. (8.E.10) Recognize that the universe contains many billions of galaxies, and that each galaxy contains many billions of stars. (8.E.12)

	Differentiate between weight and mass, recognizing that weight is the amount of gravitational pull on an object. (8.P.1)
Student Role	Astronomer, observer, creative writer, illustrator, author, travel agent
Major Rubriced Pieces (products) or Assessments (quizzes and tests)	• Planet/Astronomer Brochures & Presentations • Moon Journal • Lab Report • 1 – 2 Tests
MMS Outcomes	**Community Membership**: Students will work on being good community members during collaborative group work and lab work. **Self-Direction**: Students will be required to plan their time well to meet individual and group work deadlines. **Problem Solving**: Students will collect data of astronomical cycles and use it to build their understandings of the Earth-Moon-Sun system. **Effective Communication**: Students will research and present their findings about a planet in the solar system or an astronomer throughout time. They will also develop lab writing skills, as they make conclusions about an experiment and use their own data to support their conclusions.
Systems Thinking Connection(s)	Students will analyze behavior over time as they make observations related to the phases of the moon.
Technology Connection(s)	Students will use computers to create travel brochures to entice clients to visit one or more of the planets in our solar system.
Community Connection(s)	Visit to the planetarium
Creative Arts Connection(s)	Students will depict their science knowledge through scientific drawings. They will also use dramatic skills as they act as travel agent on a tour throughout the solar system or act as an astronomer throughout time.
Timeline	Quarter 3 and 4