



OUR SOLAR SYSTEM

Margaret A. Lorenz
University of Cincinnati



Ohio Learning Standard
5.ESS.1 The solar system includes the sun and all celestial bodies that orbit the sun. Each planet in the solar system has unique characteristics

Objectives
Students will understand the diversity of our solar system, and Students will understand the proportion of planets and their distance from one another and earth.

Pedagogy
This Lesson pulls off the ideas of a Constructivist classroom by hands on experience and also the Universal Design for Learning for making it accessible and engaging for all students

Conclusion
Students got to experience and discover concepts about the planets in our solar system. Overall students ended up gaining a learning experience that fostered communication, groupwork, and critical thinking skills in the classroom.

Abstract
This lesson, designed intentionally for Middle School Students, focuses on the scale of our solar system and its planets. Part one of this lesson focuses on students' gaining an introduction to our Solar System's Planets. Student will use the NASA app to research each planet and complete a fact sheet on them. To accomplish part two of this lesson, the class will utilize three of the NASA classroom activity plans: Planetary Travel Time, Kinesthetic Radial Model of the Solar System, and Solar System Scroll. From these activities, student will be able to understand the diversity and vastness of our Solar System. Students will also be able to express the proportion of distance and size of planets to one another and the Earth.

Activity Plan Outline

Part 1: Activity 1 NASA App with Planet Fact Sheet	Part 2: Activity 1 Solar System Scroll Activity	Part 2: Activity 2 Planetary Time Travel Activity	Part 2: Activity 3 Kinesthetic Radial Model of the Solar System
Students will use the NASA app <i>Featured Section</i> and then the <i>Planets Module</i> to guide them through exploring each planet. Students should be given a worksheet that allows them to track information from the <i>in-depth</i> and <i>missions'</i> tabs within the module. Students will then hold a class discussion over their discoveries.	Individually, or in pairs of two, Students will first use their strip of paper to estimate how far they think the planets are from one another. Students will then follow along with the instructions for folding and draw in marker where planets actually are. This activity will help students grasp the misconceptions they had about the scale of distances in space. This should be followed up with a discussion.	As a whole class the students and teacher will work through the guided worksheet. Students will first share their guess for how long it would take to travel to the planet. Next the class will work together to find the actual time for them to travel there if they were on a "mission". After talking about the expected vs actual. From this, student will also be using Mathematical calculations so make sure to walk through these steps as a class very clearly.	Since this is a more advanced activity for 5 th grade, have the model set up before the class so that the students can just utilize the visualize and moving parts of the model. Walk the students through the model in small groups and have them answer the questions from the activity. Address any misconceptions. They can use their fact sheet from Part 1 Activity 1 to help them answer the questions.

Student Engagement
Bloom's Taxonomy Levels meet: Create, Evaluate, Understand, and Remember. Level of Webb's Depth of Knowledge meet: Extended Thinking, Skills and Concepts, Recall and Reproduction

Results
Students will be turn in/share their fact sheet and Solar System Scroll. They will also be able to share or write a written reflection about their learning during the Kinesthetic Radial Model of the Solar System Activity and Travel Time Activity.

- Resources**
1. Nasa App
 2. Fact sheet with each planet listed and key characteristics needed to look up
 3. Planetary Travel Time Activity by NASA
 4. Kinesthetic Radial Model of the Solar System Activity by NASA
 5. Solar System Scroll Activity by NASA
 6. Ohio's Learning Standards and Model Curriculum (5th grade)
 7. basic school supplies needed