

# NHU/NASA Summer Institute

## Lesson Plan

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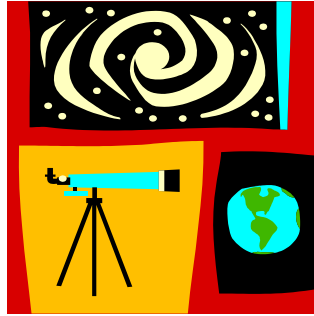
<b>Lesson Plan Title</b>	Knowing Your Solar System
<b>Grade Level</b>	High School Earth Science Class
<b>Concept/Topic to Teach</b>	<ul style="list-style-type: none"><li>• Information about planets, sun, and entire solar system.</li><li>• Research skills</li><li>• Presentation skills</li></ul>
<b>Standards</b>	<p>1. Astronomy and planetary exploration reveal the solar system's structure, scale, and change over time. As a basis for understanding this concept:</p> <p>a. <i>Students know</i> how the differences and similarities among the sun, the terrestrial planets, and the gas planets may have been established during the formation of the solar system.</p> <p>b. <i>Students know</i> the evidence from Earth and moon rocks indicates that the solar system was formed from a nebular cloud of dust and gas approximately 4.6 billion years ago.</p> <p>c. <i>Students know</i> the evidence from geological studies of Earth and other planets suggest that the early Earth was very different from Earth today.</p> <p>d. <i>Students know</i> the evidence indicating that the planets are much closer to Earth than the stars are.</p>
<b>General Goals</b>	<ul style="list-style-type: none"><li>• Students using guiding questions and matrix will discover as many facts about planets.</li><li>• Through presentations, students will utilize different learning modalities to spur on interest and learning.</li><li>• Students will produce material to use for future study.</li></ul>

<p><b>Specific Objectives</b></p>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Understand and describe the differences and similarities among the sun, terrestrial planets, and gas planets during formation and evolution.</li> <li>• Understand and describe specific facts about planet or sun and its relationship within the solar system.</li> <li>• Create and deliver an oral presentation that demonstrates understanding about assigned planet or sun and solar system.</li> <li>• Construct a fact sheet on assigned planet or sun.</li> </ul>
<p><b>Required Materials</b></p>	<ul style="list-style-type: none"> <li>• Project Instruction Sheet</li> <li>• Rubric</li> <li>• Computer</li> <li>• Textbook</li> <li>• Matrix</li> </ul>
<p><b>Anticipatory Set (Introduction)</b></p>	<p>a. <b>Assessing prior knowledge:</b> Have each student write on a sheet of paper at least 5 facts about any of the planets and/or sun.</p> <p>b. <b>Mind Set:</b> Question to ask students. When you are telling a story or trying to describe an important or complicated subject, do you ever feel like you can't organize your thoughts? Or present the subject correctly?</p> <p>c. <b>Purpose:</b> Today's activity will help you learn how to organize information and create presentations that are logical and informative. This is a useful skill to have because it allows you to organize thoughts and speak effectively. This skill can be utilized in school, college, and your future jobs.</p>
<p><b>Step-by-Step Procedures (Instruction)</b></p>	<p>a. <b>Provide Information:</b> Present the steps to creating fact sheets and developing oral presentations.</p> <p>b. <b>Model:</b> As a class, brainstorm 10 different facts about earth that the students have covered in class. Have each student take these facts and create a fact sheet.</p> <p>c. <b>Check for Understanding:</b> Using flash cards, randomly select different students to explain the process in detail.</p> <p>d. <b>Structured Practice:</b> As a class and teacher directed, select 5 more facts about earth for the student to put on their fact sheet.</p>
<p><b>Plan for Guided Practice and Closure</b></p>	<p><b>Guided Practice:</b> In heterogeneous group of 2 or 3 students, each group using the internet and text develop fact sheets on assigned planet or sun. Each group will be given a</p>

	<p>fact sheet, guiding questions, assignment outline, and rubric. Each group, using the fact sheet they create, will need to create an oral presentation 5 to 10 minutes in length. While students are working, instructor will walk around to praise, prompt, and leave. Creativity and individuality of groups will be encouraged.</p> <p><b>Closure:</b> Bring the class together and review key concepts of fact sheets and oral presentation.</p>
<b>Plan for Independent Practice</b>	For homework, each group will finalize fact sheet and oral presentation. Groups will be assigned a time to deliver presentation and turn in fact sheet.
<b>Assessment (based on objectives)</b>	<p>a. Group oral presentation will be evaluated on the criteria of the provided rubric. (See attached Rubric)</p> <p>b. Fact Sheet will be evaluated on the number and quality of facts.</p>
<b>Adaptations (ELL students or special populations)</b>	By the groups being created heterogeneously, this will accommodate for the different ability levels and promote the development of needed skills of all in the group.
<b>Extensions (for gifted students)</b>	By the groups being created heterogeneously, this will accommodate for the different ability levels and promote the development of needed skills of all in the group.



# Knowing Your Solar System



## Fact Sheet:

Each group will need to create a fact sheet for the sun or planet assigned to the group. The fact sheet should include the following requirements:

- List at least 20 facts about your assigned sun or planet
- Must be typed in the given matrix
- Facts must come from at least 3 different sources. (internet or text)
- Grouped in similar fact groups
- Give sufficient detail
- Be creative and interesting

Each group fact sheet needs to be turned in on day of oral presentation. Each group will be give a copy of each fact sheet for future assignment.

Guiding questions for Fact Sheet:

- Characteristics of planet
- Differences of planet from it origin
- Location and placement in solar system
- Additional interesting and need to know facts

## Oral Presentation:

Each group will need to work collectively to create a well developed and interesting oral presentation on the assigned sun or planet. Presentation will need to be 5 to 10 minutes in length. Groups will be assessed following criteria mapped out on the rubric.

## Project Duration:

Each group will be allowed two class periods to collect information and develop oral presentation. One class period will be given for presentations. Presentation will be randomly assigned.

### **Knowing Your Solar System Oral Presentation Rubric**

Criteria	<b>Oral Presentation is ready for Public Broadcast</b>	<b>Oral Presentation is being Edited and Refined</b>	<b>Oral Presentation is still in 1<sup>st</sup> Draft form</b>
<b>Planet facts and defining features</b>	O/P is excellent quality. Includes at least 15 facts on assigned planet  10pts	O/P is good quality. Includes at least 10 facts on assigned planet  7pts	O/P is a work in process. Includes at least 5 facts on assigned planet  2pts
<b>Quality of Research and Content Material Presented</b>	Content material is well developed and demonstrates knowledge of subject matter. All areas complete  10pts	Content material is developed and demonstrates some understanding of subject matter. Most areas complete  7pts	Content material is not developed. Most areas are not complete.  2pts
<b>Organization and clarity of material</b>	Organization and presentation of material, vocabulary, voice modulation, expression and tone of the highest quality and effort Full understanding of O/P criteria  10pts	Organization and presentation of material, vocabulary , and tone demonstrates high level of effort and understanding of O/P criteria  7pts	Organization and presentation is incomplete and still needs to be developed Some understanding of O/P criteria  2pts
<b>Group work</b>	Group demonstrated great team work in creating an excellent product  10pts	Group demonstrated some team work in creating a quality product  7pts	Group did not work together as a group to complete project  2pts

