

Instructional Recipe

How is Our Solar System Organized?

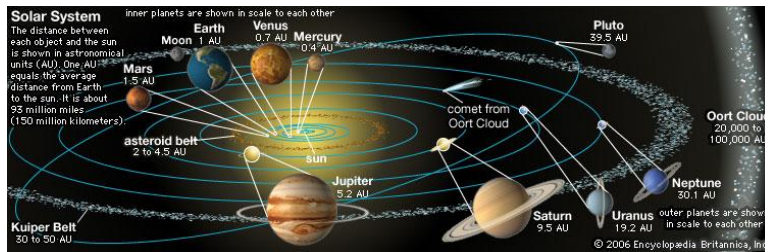
Third Grade, Science & Language Arts

Step 1 – Ask

Objectives: Students will create a model of the solar system and evaluate the model's limitations in representing the natural world. Students will explain important facts about the planets in our solar system.

Introduction: Read the following article about the controversy over the classification of Pluto as a planet. Discuss.

Eight is Enough. Time for Kids, 9/1/2006, Vol. 12 Issue 1, p3-3, 1/3p, 1 color; Reading Level (Lexile): 600; (AN 22298439)



solar system." Online Art. Encyclopædia Britannica Online School Edition. 7 Aug. 2008 < <http://school.eb.com/elementary/art-90402> >.

Ask:

- ★ What is a planet?
- ★ What is a solar system?
- ★ What are some interesting facts about the planets in our solar system?
- ★ What is the Sun like?
- ★ How are the planets in our solar system organized?

Vocabulary:

- ★ planet
- ★ solar system
- ★ orbit

Science TEKS:

(3.8) **Earth and space.** The student knows there are recognizable patterns in the natural world and among objects in the sky. The student is expected to:

- (C) construct models that demonstrate the relationship of the Sun, Earth, and Moon, including orbits and positions; and
- (D) identify the planets in Earth's solar system and their position in relation to the Sun.

English/Language Arts TEKS:

(26) **Research/Gathering Sources.** Students determine, locate, and explore the full range of relevant sources addressing a research question and systematically record the information they gather. Students are expected to:

- (A) follow the research plan to collect information from multiple sources of information, both oral and written, including: (ii) data from experts, reference texts, and online searches; and (iii) visual sources of information (e.g., maps, timelines, graphs) where appropriate; (C) take simple notes and sort evidence into provided categories or an organizer; (D) identify the author, title, publisher, and publication year of sources; and
- (E) differentiate between paraphrasing and plagiarism and identify the importance of citing valid and reliable sources.

Technology Application TEKS:

- (4) **Information acquisition.**
- (A) apply appropriate electronic search strategies in the acquisition of information including keyword and Boolean search strategies.
- (5) **Information acquisition.**
- (A) acquire information including text, audio, video, and graphics.

Step 2 – Investigate

Search using Boolean logic: planets OR “solar system”. Also, search for names of individual planets.

K-12 Databases Resources:

- [IS THE RED PLANET ALL WET?](#) By: Kranking, Kathy; Thompson, Sharon. National Geographic World, Sep2000 Issue 301, p4, 1/5p, 1 color; Reading Level (Lexile): 640; (AN 3528494)
- [Our Solar System](#). Weekly Reader - Edition 2, Mar2010, Vol. 79, Special section p2-3, 2p; (AN 48023561)
- "solar system." [Britannica Elementary Encyclopedia](#). 2008. Encyclopædia Britannica Online School Edition. 8 Oct. 2008
< <http://school.eb.com/elementary/article?articleId=353789> >.

Additional Websites:

- Distance Between Planets- Visualization
http://www.classzone.com/books/earth_science/terc/content/visualizations/es2701/es2701page01.cfm?chapter_no=27
- NASA- Solar System Exploration <http://solarsystem.nasa.gov/kids/index.cfm>


Books: *Extreme Planets* by Mary Kay Carson
Our Solar System by Amanda Davis



Step 3 – Create

Students will take notes from online and print resources. They may use a note taking format such as the following.

Planet (or Sun)	Notes	Source of Information

 Technology Link – Students may use a word processing program, such as Microsoft Word, to create a table in which to type their notes.

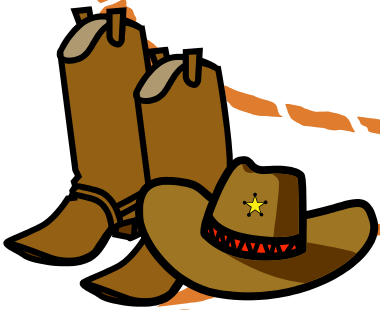
Step 4 – Discuss

- ★ **Solar System Model-** Small groups of students will use their notes to create a model of the solar system. Students should be able to explain how their model is limited in representing the actual solar system (E.g., planet sizes and distances between planets can not be represented accurately on a small-scale model).
- ★ **Poster-** Students will create a poster featuring drawings of and facts about the Sun and planets in our solar system.

Students will share their model/poster with the class via a Gallery Walk.

🔗 Technology Link – Students may create the written materials for their poster using a word processing program such as Microsoft Word.

Note: There is some controversy about whether or not Pluto is a planet. Use the latest available resources to make that determination. The rubric below includes Pluto as one of nine planets.



Step 5 – Reflect

Allow students to present their projects to the rest of the class. Use the following suggested rubric to assess the students' work. Make sure that the students are familiar with the rubric *before* they begin creating their project. They should refer to the rubric repeatedly to monitor their progress in creating their project.

🔗 Technology Link: You can also create your own rubric with your students at <http://rubistar.4teachers.org/index.php>.

Rubric—Solar System Model

CATEGORY	5	4	3	2	1
Planets	All 9 planets present	7-8 planets present	5-6 planets present	3-4 planets present	No planets present
Order of the Planets	All objects are correct order	1-2 objects out of order	3-5 objects out of order	6-7 objects out of order	8-9 objects out of order
Relative Size of the Planets	Correct size in relation to one another	1-2 objects off in size in relation to one another	3-5 objects off in size in relation to one another	6-7 objects off in size in relation to one another	8-9 objects off in size in relation to one another
Color of the Planets	All objects are the colors studied in class	1-2 objects are the wrong color	3-5 objects are the wrong color	6-7 objects are the wrong color	8-9 objects are the wrong color
Facts about Planets	Includes a fact about each planet	Includes a fact about 7-8 planets	Includes a fact about 5-6 planets	Includes a fact about 3-4 planets.	Includes a fact about 1-2 planets.