



South Carolina

Full STEAM Ahead:

Connecting Library of Congress Primary Sources and Graphic Novels

Lesson Plan Template

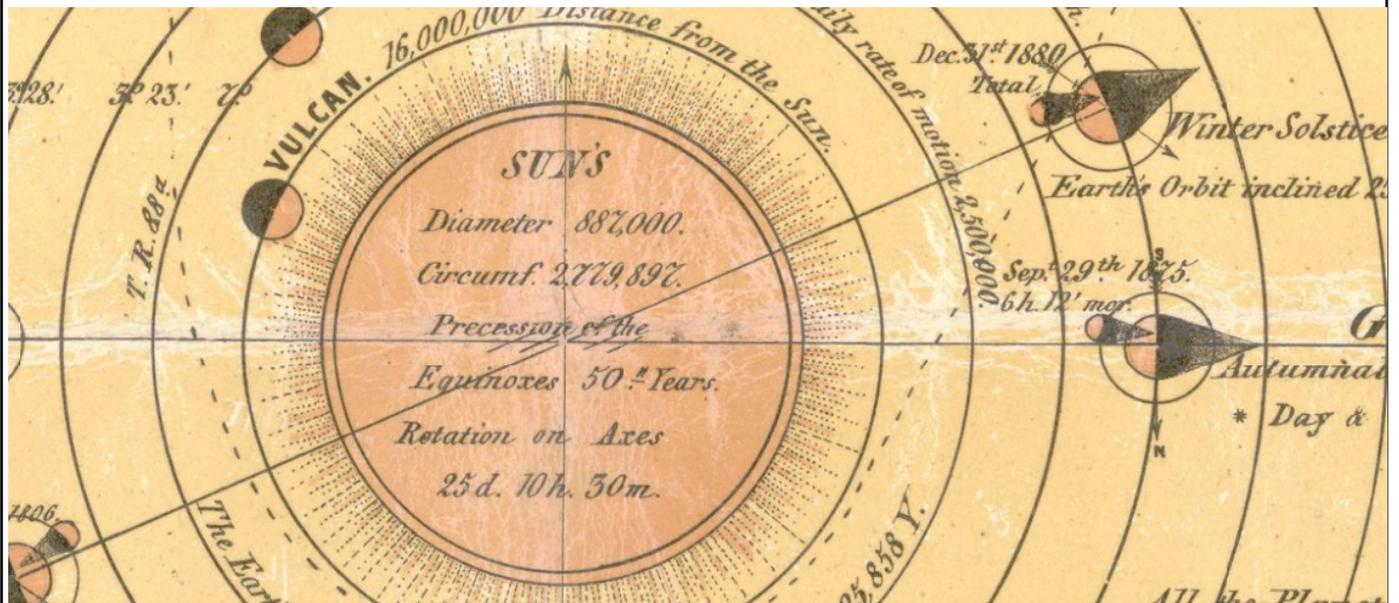
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Grade Level(s): 4

Subject: Science

Length of Class: 50 Minutes



Full Image Available at:

<https://www.loc.gov/resource/g3180.ct003790/?r=0.383,0.438,0.294,0.127,0>

Image Citation: Colby, H. & Jones & Newman. (1846) A plan or map of the Solar System projected for schools & academies. [Rochester, N.Y.: Publisher not identified, . New York: Lith. of E. Jones & G.W. Newman] [Map] Retrieved from the Library of Congress, https://www.loc.gov/item/2013593145/ .	
Lesson Title:	Past V. Present - The Solar System
Overview:	Students will view and analyze multiple solar systems models to compare how science has evolved from the past to the present.
Learning Objective:	I can use models of the solar systems to make claims and learn about the evolution of space knowledge.
Standards:	4.E.3A.1 Develop and use models of Earth's solar system to exemplify the location and order of the planets as they orbit the Sun and the main composition (rock or gas) of the planets. 4.E.3A.3 Construct scientific arguments to support claims about the importance of astronomy in navigation and exploration (including the use of telescopes, astrolabes, compasses, and sextants).
Essential Question:	How can I learn from past solar system models to better understand the science of the solar system in the present day?
Supporting Question(s):	What is a solar system model? How is our universe organized and what is Earth's place in the universe?
Digital Primary and Secondary Sources:	Primary Sources https://www.loc.gov/resource/g3180.ct003790/?r=0.383,0.438,0.294,0.127,0 https://www.loc.gov/resource/cph.3a44868/ https://www.loc.gov/resource/rbc0001.2008rosen0080/?sp=67# https://solarsystem.nasa.gov/resources/686/solar-system-sizes/

	<p>(Print the primary sources listed above for the lesson)</p> <p>Secondary Source (Print Source):</p> <p><i>Science Comics: Solar System - Our Place in Space</i> by Rosemary Mosco and Jon Chad</p>
<p>Required Classroom Materials:</p>	<p>Materials Teachers Need:</p> <ul style="list-style-type: none"> - Copies of Primary Sources of Solar System Models - Printer to make copies - Computer to share Google Slides presentation - Google Slides Master (Please Make a Copy): https://docs.google.com/presentation/d/1zyIvyNtjrwxduU01C9sXA24r1Tc5VsVhe6kNHvXqFNA/edit?usp=sharing - Copy of <i>Science Comics: Solar System - Our Place in Space</i> by Rosemary Mosco and Jon Chad (either in print or eBook format) - Document Camera or projector <p>Materials Students Need:</p> <ul style="list-style-type: none"> - Notebook or paper - Pencil - Computer
<p>Classroom Environment:</p>	<p>For this lesson, the room should be arranged in a way that is conducive to students working in pairs - no more than 3 students in a small group. Additionally, it will be helpful for the room to be arranged in a way that students can easily see a projected image as teachers will find it useful to project a page from the <i>Science Comics</i> book, especially if there are limited copies available.</p> <p>The classroom should be arranged in a way that all students can participate and hear one another during whole group sharing time.</p>
<p>Differentiation and Adaptations:</p>	<p>This lesson may be differentiated in the following ways:</p> <ul style="list-style-type: none"> - The number of solar system models students are asked to analyze at the introduction of the lesson may be decreased from 4 to 3 models. - For students who need additional support, they may find it helpful to orally discuss their observations with a peer and the teacher instead of writing them down. - All information may be read aloud to assist students who may have needs in reading.

	<ul style="list-style-type: none"> - For advanced learners, they may go into more details with their observations and do additional research on how the solar system models have changed over the years.
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Lesson Sequence/Procedures	
Estimated Time Needed	Detailed Description of Teaching and Learning
10 minutes	<p>Introduction: Timeline of Solar System Models</p> <ul style="list-style-type: none"> - Begin the lesson by reviewing what a solar system model is and how we understand the way in which the universe is organized. - Point out the main essential question for the lesson, as well as student objectives. - Pass out the 3 solar system models from the links listed above that have been printed. Give each group of 2, the three models in print. Give them 5 minutes and tell them to sort them from oldest to newest. - Discuss with students their guesses - ask them why they think certain models are older and certain ones are newer. - Tell them the answers at the end of the discussion. Make the point that science has changed a lot over the years and that we are continuously learning more about space even now!
15 minutes	<p>Deeper Analysis of Primary Source</p> <ul style="list-style-type: none"> - If students have 1:1 devices, share with students the Google Slides presentation located in the materials section of the lesson - use the feature on Google Classroom, Canvas, or other education platform, to make each student a copy of the slides. - Students will follow the directions on slides 2-3 as they analyze one of the primary sources they looked at in the introduction of the lesson.
15 minutes	<p>Comparing the Past to the Present/Using Graphic Novels</p> <ul style="list-style-type: none"> - Pull up p. 23 from the <i>Science Comics: Solar System - Our Place in Space</i> by Rosemary Mosco and Jon Chad - either project it through a document camera or have enough copies for students to share

	<ul style="list-style-type: none"> - Use the discussion questions on slide 4 of the Google Slides presentation that students are working on to compare the primary source with the graphic novel.
10 Minutes	<p>Wrap-Up/Summary</p> <ul style="list-style-type: none"> - Remind students of the essential question: How can I learn from past solar system models to better understand the science of the solar system in the present day? - Ask each student to go to the last slide of their Google Slides presentation and answer the Exit Question (which is the essential question). - Allow sharing of responses if time permits once students are finished.

Assessments:	<p>Students will be informally, formatively evaluated in this lesson. Formative assessments include: observation, discussion, writing down of observations, group sharing, and the information written on the Google Slides presentation.</p> <p>This evaluation connects with the learning objectives since students are showing they can analyze how solar system models have changed, and they can learn from these changes to better understand today's solar system. The exit question and student observations and discussions will show their learning. The teacher will give oral feedback during the lesson, as well as feedback through reading the students' work on their Google Slides where comments will be made in the place where students are accustomed to receiving feedback (dependent on which learning management system the school uses).</p>
Learning Extensions:	<p>Students could extend their learning by doing research on the scientists who have developed different solar system models. They could do a Google Slide on the scientist and give a brief timeline of his/her life and explanation of the model.</p> <p>Students could also connect this lesson to a Social Studies lesson in which they compare how a historical event has been retold at different points in history, thus showing that just as science changes, even history can change as we</p>

	learn more information about the past and new accounts unfold.
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