

PBL Unit Plan

The Great American Eclipse Unit



Standards (Learning Targets)

Standard 1: Choose standards relevant to your grade level/subject.

Standard 2:

Standard 3

Grade Level	Unit Length	2.5 weeks
PBL Overview	Students will explore several total solar eclipse resources to develop a complete understanding of why, how, and when these events occur. Students will present their findings to the teacher/whole class/younger students etc.	
PBL Driving Question	How can we, as planetary scientists, create an eclipse timeline presentation that explains when, why, and how a total solar eclipse occurs?	
Hook Event	Simulate a solar eclipse in the classroom: https://sunearthday.nasa.gov/2007/materials/eclipse_smallmoon_bigsun.pdf	

Scaffolding Activities	<p>Class Activities:</p> <p><u>Solar eclipses</u> for students—students independently complete a graphic organizer to sort information about total solar eclipses.</p> <p>The <u>Javascript Solar Eclipse Explorer</u> lets you calculate the visibility of solar eclipses from any city for hundreds of years in the past and future—students can be assigned a timeframe to calculate the visibility of solar eclipses from their city and other assigned locations.</p> <p>Station Activities:</p> <p><u>Search engine</u> for solar eclipses by date interval, type, and magnitude, and plot the results on Google maps. Students can be assigned ‘total solar eclipses’ to research and create a world map that shows a timeline for total solar eclipses within a given timeframe.</p> <p>The <u>Fifty Year Canon of Solar Eclipses</u> contains maps of every solar eclipse from 1986 to 2035 along with path coordinate tables for all central eclipses—students can use these map resources to develop their own timeline.</p> <p>Workshop:</p> <p>Safe eclipse <u>viewing techniques</u>—students should review with the teacher before the solar event.</p>
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Calendar Overview				
Monday	Tuesday	Wednesday	Thursday	Friday
<p>Hook Event: Solar Eclipse Simulation</p> <p>Workshop: Safe eclipse <u>viewing techniques</u></p>	<p>Review Rubric with Students</p> <p>Class Activities: <u>Solar eclipses</u> for students w/ graphic organizer</p>	<p>Class Activities: <u>Solar eclipses</u> for students w/ graphic organizer</p>	<p>Check point</p> <p>Class Activities: <u>Javascript Solar Eclipse Explorer</u> activity</p>	<p>Class Activities: <u>Javascript Solar Eclipse Explorer</u></p> <p>Check point</p>
<p>Station Activities: <u>Search engine</u> for solar eclipses</p>	<p>Station Activities: <u>Search engine</u> for solar eclipses</p> <p>Check point</p> <p>Review Rubric with Students</p>	<p><i>Additional Activity for Accelerated Students</i></p> <p>Station Activities: <u>Fifty Year Canon of Solar Eclipses</u></p>	<p>Check point</p> <p>Presentation Development</p>	<p>Presentation Development</p>
<p>Presentation Development</p>	<p>Summative Assessment: Student teams present their findings</p>	<p>Summative Assessment: Student teams present their findings</p>		

Culminating Event	Summative Assessment: Student teams create a detailed presentation including a timeline and diagram of solar eclipse events and then effectively present their findings to the class/teacher/younger student.
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Summative Assessment

<i>School Logo</i>	PBL Rubric		Mini-PBL: _____ Student: _____ Date: _____
	Advanced	Proficient	Needs Improvement
Standards / Learning Targets	Create a detailed presentation including a timeline and a complete diagram of how a solar eclipse occurs.	Identify past and future eclipse events. Diagram a total solar eclipse event.	Contains partial diagram of a total solar eclipse. Does not identify past and future eclipse events.
Process Skills	All proficient items plus below items: *Acknowledges the strengths and limitations of their ideas. *Builds on the thinking of others and checks back for agreement. *Supports equal participation by asking clarifying or probing questions, paraphrasing others' ideas and synthesizing group thinking.	*Understands and follows group created norms and processes and helps others do the same. *Works to include others in discussion and shows interest in new perspectives. *Provides ideas or arguments with convincing reasons. Builds on the thinking of others.	*Shares ideas, and explains the reasons behind them. *Acknowledges others' thinking. *Follows group norms and processes but only with modeling and/or reminders.
Minimum Requirement Components (must be included to be graded)	All proficient items plus below items: *5 past and 3 future eclipse events *Creates a timeline of eclipse events *Provides evidence to support timeline *Thoroughly explains the solar eclipse process	*Identifies 4 or fewer past and 2 or fewer future eclipse events *Complete diagram of a total solar eclipse *Presentation of 3-5 minutes	*Communicates incomplete findings *Lacks evidence or research base

Grades	100-Advanced 85-Proficient 70-Not Proficient 0-No Work		
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Vocabulary	
Content Area / Course Name	Glossary of eclipse terms: https://eclipse.gsfc.nasa.gov/SEhelp/SEglossary.html