

Solar StormWatch Web Quest

SOLS	ES.1,b-c,f ES.2 ES.3,c ES.13,b	The student will plan and conduct investigations in which technologies, including computers...and geospatial technologies, are used to collect, analyze, and report data; imagery is interpreted; current applications are used to reinforce Earth Science concepts. The student will demonstrate an understanding of the nature of science... The student will investigate and understand the characteristics of the sun... The student will investigate and understand the origin and evolution of stars...using the H-R diagram.
Time	120 minutes	2 class blocks (one full class, then partial second block); depending upon time constraints, can easily be shortened.
Grade Level	9th-12th	
Objectives	Students will:	Be able to describe the structure of the Sun, including solar features. Explain how the Sun generates its energy. Compare and contrast our Sun to other stars in our galaxy, referring to the H-R diagram. Interpret and analyze stereoscopic images of the Sun. Explain the hazards of "space weather" to Earth and how we can forecast it. Have contributed REAL, VALUABLE data to an important scientific project.
Warm-Up	~5 minutes	Sun KWL chart
(Engagement)		Play Sun Song video (NASA / The Chromatics) http://www.astrocappella.com/
Discussion	~3 minutes	Discuss KWL.
Lecture (Explain)	15 minutes	The Sun PPT. Fusion animation. Structure of the Sun. Position on H-R diagram. PPT contains discussion points. Guided notes handout. Structure of the Sun graphic organizer Replay Sun Song, this time with lyric sheet. Reinforce vocabulary and concepts.
Lab (Exploration)	90 minutes	<u>Complete Solar StormWatch Web Quest.</u>
(Elaboration)		Stop at indicated checkpoints for discussion / formative assessment. Can be differentiated by altering modules used, completing challenging examples as a class, or assigning students challenging modules (such as the real-time data).

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Assessment

Students turn in Web Quest handout/lab report with their data and observations.
Students visit project blog, read several entries about the project results and write short report about the benefits of the project, **including how they personally contributed.**

(Evaluate)

Discussion

~5 minuts

Discuss student experience--what were the challenges? How accurate do they feel they were? Compare experiences and discuss objectivity vs subjectivity in science. Why can't computers do this?
Examine / discuss results of the project (website updates, notices, blogs...)

Exit Ticket

~ 2 minutes

Completed KWL chart.

Extension

variable

Part II of Sun PowerPoint on space weather (5 minutes).
Discuss how the StormWatch project will help protect us from space weather hazards (communication problems etc). What are the hazards?

Investigate space weather reports over a three week period. Assign each student a date and have them bring in the space weather report for that day. Keep a chart as a class and discuss trends/observations at the end of the 3 week period. (needs 2 minutes of daily class time to update chart)