CLASSROOM-READY EXAMPLE LESSON

CLIMATE VARIATION: "BACK TO THE FUTURE"

COMPLETE LESSON AVAILABLE AT: HTTP://LEARN.K20CENTER.OU.EDU

LESSON INFORMATION:

PROVIDED BY: K20 LEARN & EPSCOR GIS (Geological Information Survey)

TIME: 2-3 class periods

SUMMARY: Students will explore climate variation in different environments using EOMF (Earth Observation and Modeling Facility), GIS data, weather and climate data; use their observations and data to make predictions about future environmental change and possible effects on local populations; and analyze, interpret, and present their findings.

FOCUS C3 STANDARD: HS-ESS2-4

STUDENTS WHO DEMONSTRATE UNDERSTANDING CAN: Analyze and interpret data to explore how variations in the flow of energy into and out of Earth's systems result in changes in atmosphere and climate.

ESSENTIAL QUESTION: How do human interactions with the environment affect the environment?

LESSON SNAPSHOT:

ENGAGE: Students will view time-lapse footage over a 30-year period to observe environmental change.

EXPLORE: Using the EOMF website, students will find a location and create their own 30-year time-lapse footage.

EXPLAIN: Using data from gathered satellite images, as well as climate and weather data bases, students will research and display weather and climate data on a graph.

EXTEND/EXPAND: Students will compare their locations with other predetermined locations and make predictions about climate and environment change based on their observations and data.

EVALUATE: Students will cite supporting evidence and present findings, data, time-lapse footage, photos, and predictions to class using PowerPoint®, Prezi® or other audiovisual communication tool. Presentations will be graded using included rubric.

FIND THESE LESSONS–AND MORE–ON THE K20 LEARN WEBSITE

ENERGY TRANSFER –"THERMAL MAPPING"
Students will create a thermal map of the school building using student-gathered data. Students will collect and analyze temperature data looking at reliability of data in relation to the design of an experiment. Students will use this data to create a thermal energy map of the school and prepare a report for the school as "energy consultant."

ENVIRONMENTAL CHANGE–"CAT FISHIN"
This lesson integrates math and science using varied approaches to research. Research will center on the population decline of the Mekong River Delta giant catfish. Students will analyze data mathematically and also use visual and verbal representations.

SCIENCE LITERACY –"ENERGY CRISIS"
Students will research, present, and analyze the pros and cons of various forms of alternative energy.

WEATHER AND CLIMATE –"THE PARCHED PLAINS"
Students will explore meteorological data as well as news articles to examine modern and historical droughts. Students will determine the weather and climate events that can cause a drought, and identify indicators used to predict future droughts.

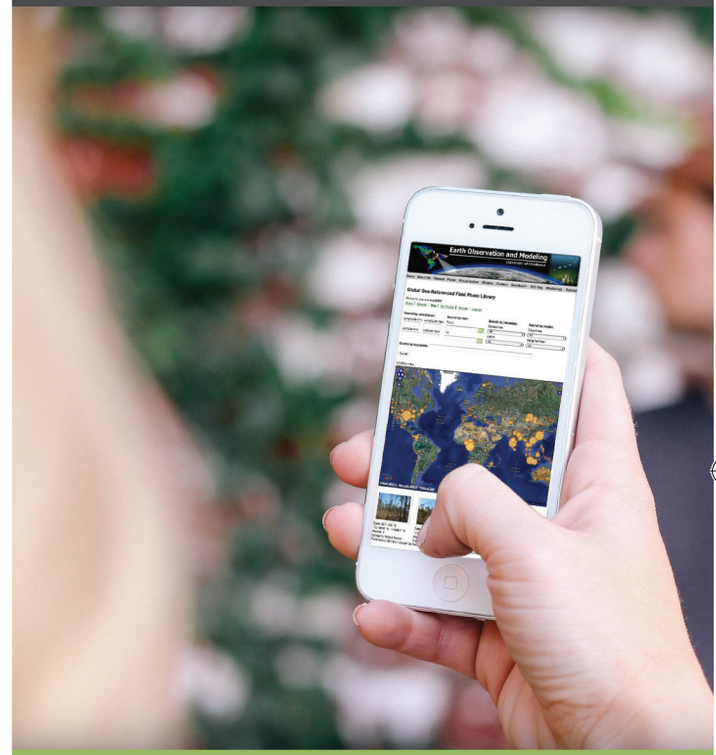
*K20 LEARN IS HOUSED AT THE **K20 CENTER**, LOCATED AT THE UNIVERSITY OF OKLAHOMA'S SOUTH RESEARCH CAMPUS. LEARN MORE ABOUT THE K20 CENTER ONLINE AT: **K20CENTER.OU.EDU • FACEBOOK.COM/K20CENTER***

K20CENTER The University of Oklahoma

LEARN MORE ABOUT

EARTH OBSERVATION AND MODELING FACILITY

VISIT EOMF ONLINE TO EXPLORE DATA LIKE THAT USED IN THE EXAMPLE LESSON "CLIMATE VARIATION: 'BACK TO THE FUTURE'"



GEO-REFERENCED FIELD PHOTO LIBRARY AT THE UNIVERSITY OF OKLAHOMA

This photo-library is a citizen science data portal for sharing and archiving geo-tagged field photos of various environments.

All photos are linked with satellite images (e.g. MODIS) from 2000 to present.

SHARE YOUR FIELD PHOTOS, SHOW YOUR TRAVEL FOOTPRINT, SUPPORT MONITORING OF PLANET EARTH.
HTTP://WWW.EOMF.OU.EDU/PHOTOS

VISIT K20LEARN ONLINE TO FIND

MORE FREE CLASSROOM RESOURCES

HTTP://LEARN.K20CENTER.OU.EDU

K20LEARN OFFERS FREE CLASSROOM RESOURCES FOR K-12 TEACHERS, SUCH AS:

- Free, easily searchable library with Interdisciplinary, Differentiated and Authentic lessons, all aligned to Oklahoma Academic Standards (OAS).
- Create lesson plans with ease using our lesson editor.
- Access to hundreds of research-based instructional strategies and web 2.0 tools that can easily be embedded directly into your lesson.

K20 LEARN

OKLAHOMA EPSCOR

AUTHENTIC RESEARCH EXPERIENCE

FOR TEACHERS

WHAT:

Four-day Authentic Research Experience for teachers, with follow-up.

WHERE:

On-site, with research scientists. Locations to be announced.

WHEN:

Elementary: Summer 2015. 2017

Secondary: Summer 2016, 2018

WHO:

Oklahoma science teachers in grades K to 12.

TO REGISTER:

http://k20.ou.edu/9

FOR MORE INFORMATION:

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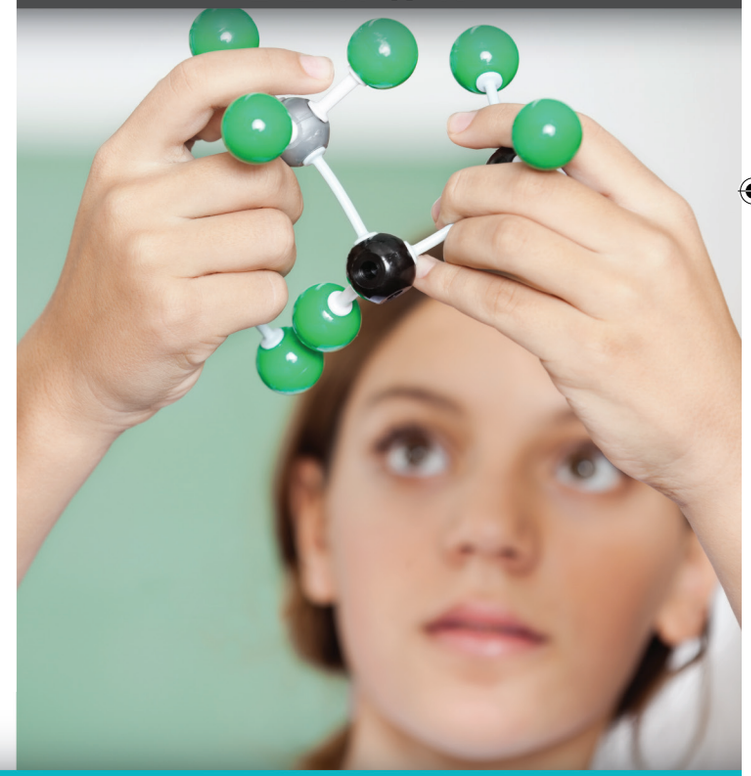
DISCOVER CLASSROOM-READY LESSONS

K20 LEARN



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