Using Government Art Sources for Chemistry, Geosciences, and Environmental Studies Library Research
February 25, 2021

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Past GPO FDLP webinars

Past Chemistry, Geosciences, and Environmental Studies webinars, Princeton University


July 2020: Library Research for Atmospheric and Oceanic Sciences (Including Climate Change) https://www.fdlp.gov/library-research-for-atmospheric-and-oceanic-sciences-including-climate-change

March 2020: Library Research for Water Resources https://www.fdlp.gov/library-research-for-water-resources


Since 1884, Princeton University has participated in the Federal Depository Library Program (FDLP)

https://libguides.princeton.edu/geo/librarianwebinars

Past webinars, U.S. Geological Survey (USGS)


USGS Library Materials for Water Resources Information https://www.fdlp.gov/usgs-library-materials-for-water-resources-information

USGS Library Materials for Earth’s Age https://www.fdlp.gov/usgs-library-materials-for-earth-s-age


Quick Bio

Emily C. Wild
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Schedule a Research Consultation:
Monday – Friday
Meet Our Specialists – Emily Wild

“Princeton in the nation’s service and the service of humanity”

Princeton University Library, 2018-Present
Chemistry, Geosciences and Environmental Studies Librarian
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Master of Library and Information Studies (MLIS), Univ. of Rhode Island
Bachelor of Arts (Geology), Hartwick College, Oneonta, New York

https://diatoms.org/what-are-diatoms
Analysis of Ancient Environments Through Lake Sediment Cores, Pine Lake, West Davenport, New York

Emily C. Wild
Baccalaureate Thesis
Department of Geology
Hartwick College
Spring 1995

Figure 14. Sketches of three most abundant diatoms.
• Why Art Museums and Art Collections?
• U.S. Geological Survey (USGS) Publications & Collections
• Department of the Interior Collections
• Princeton University Museum Collections & Exhibits
• Library of Congress Collections & Preservation
• Smithsonian Collections
• Chemistry in the Movies
Learning Styles

Visual Learners. Students who best internalize and synthesize information when it is presented to them in a graphic depiction of meaningful symbols are described as visual learners.

Auditory Learners

Reading/Writing Learners

Kinesthetic & Tactile Learners

https://www.metmuseum.org/
https://www.moma.org/
https://www.albrightknox.org/
Geology/Hydrology Field Notes

USGS Field Work Example
https://www.usgs.gov/staff-profiles/emily-wild

Geology in the Field
https://catalog.princeton.edu/catalog/305774
Strategies and Perceptions of Students’ Field Note-Taking Skills: Insights From a Geothermal Field Lesson

Jaci Dehaney, Erik Brogl, and Ben Kennedy

ABSTRACT
Field note-taking skills are fundamental in the geoscience but are rarely explicitly taught. In a mixed-method study of an introductory geothermal field lesson, we characterized the context and perceptions of students’ note-taking skills to derive the strategies that students use in the field. We collected several data sets: observations of the field lesson, hard-copy notebooks (E), and interview data (I). Our analysis of the notebooks revealed note-taking strategies on two dimensions, consistent with earlier findings in the literature: students’ ability to write in their own words (uniqueness U), and the amount of necessary information recorded (completeness C). We propose several factors that influence the students’ note-taking differences, previous field experience, and gender. Two different lectures (1 and 2) taught the lesson on two different days. The note-taking task covered similar content but was not scripted, resulting in lectures differences. Lecture 1 included rich peripheral information, and the other centered the need “to think for yourself” and focus on observations (resulting in higher U scores for lecture 2’s students). We also found that students with “higher” previous field experience had higher U scores. Interview data corroborated this finding, indicating that field experience helped students “to know what to look for.” Lastly, female students generally achieved higher scores than male students. FEMALES used more words (verbosely), and this likely led to higher values achieved. To improve note-taking skills, we suggest breaking down complex field lessons into simple, manageable parts to manage students’ cognitive load. © 2015 National Association of Geoscientists Teachers. [DOI: 10.5408/13.08.1]

Key words: field teaching, note-taking, geothermal geology, cognitive load theory, student perceptions

Figure 1. Young Ladies from the Village (1899) by Giuseppe Cauzioli. Oil on canvas. (935 x 561 cm.) This realistic landscape depicts an area in the Jura Mountains of France where Courbet grew up. The limestone outcrops in the background are the type locality for the Jurassic period. The Metropolitan Museum of Art. Gift of Harry Payne Bingham, 1940. (68.170)

Figure 2. The Mountain (1327) by Botticelli. Oil on canvas. (365 x 200 cm.) This modern depiction of the Jura Mountains is considered to be Botticelli’s answer to Courbet’s painting in Figure 1. The Metropolitan Museum of Art, gift of Mrs. J. P. Morgan, 1916. E. S. Ogden and Nathan Cummings Rogers Fund and The Alfred H. Barr Endowment Fund. (68.170)

Field Trips
Field trips may be the easiest way of introducing art to geology. Just as the Impressionsists did a century ago, we take our sketchbooks, pencils, pastels, and pencils to the field. We travel to Red Rocks Park, the site of a spectacular, tilted red sandstone formations in the foothills of the Rocky Mountains near Denver. As I explain the sequence of events leading to the formation of the Rocky Mountains, the students sketch the site knowing that these illustrations will be part of their field-trip report. A second field trip takes us to the National Center for Atmospheric Research (NCAR) in Boulder, Colorado to view exhibits illustrating the global climate change topics. NCAR is housed in a building designed by the well-known architect Lina Bo Bardi. It was inspired by Native American dwellings that he had seen in southwestern Colorado at Mesa Verde, and he tried to design the NCAR building so that it would integrate with the flatland countryside landscape. Special care was taken in choosing the color and texture of the concrete facing of the building so that it would match the red sandstone landscape. Here...
Vishnu Schist

https://artmuseum.princeton.edu/collections/objects/28869

Vishnu made of Schist
https://pubs.er.usgs.gov/publication/m2_1882
MARK KLETT
American, born 1952

BYRON WOLFE
American, born 1967

Details from the view at Point Sublime on the north rim of the Grand Canyon, based on the panoramic drawing by William Holmes (1882), 2007

Museum purchase, Fowler McCormick, Class of 1921, Fund 2019-380

Details from the view at Point Sublime takes as its starting point a meticulous panoramic drawing of the Grand Canyon made in 1882 by William Henry (W. H.) Holmes (1846-1933). As part of their project to revisit sites of historic depictions of the American West, Klett and Wolfe traveled to Point Sublime, taking hundreds of photographs there. They then overlaid their images onto an enlarged reproduction of Holmes's drawing, accentuating how its distortion of the scale of geological features simulates the experience of an encompassing vista. By recording ephemeral events such as an impending storm, the circling of a hawk, and the shifting light on the rocks as the sun moved across the sky, Klett and Wolfe's photographs imbue a historical document with a sense of the passage of time.


Evaluation of a Portable Sequentially Shifted Excitation Raman Spectrometer for Applications in Art and Archaeology
Earth’s Aquarium
September 22, 2014

https://geosciences.princeton.edu/research/climate-science

The ocean and the atmosphere interact with life to set the physical and chemical conditions of Earth’s surface. At Princeton, we use multi-scale models of varying complexity and observations to study the climate system, including stratosphere-troposphere interactions, the coevolution of atmospheric pCO2, ice volume and sea level, decadal to millennial oscillators in the climate system, ocean tracers as a means to understand the cycling of climatically important molecules and the importance of ocean circulation and biology in regulating climate.
The West Fjords are a series of peninsulas in northwestern Iceland. They represent less than one-eighth the country's land area, but their jagged perimeter accounts for more than half of Iceland's total coastline.
This stretch of Iceland's northern coast resembles a tiger's head complete with stripes of orange, black, and white. The tiger's mouth is the great Eyjafjorour, a deep fjord that juts into the mainland between steep mountains. The name means "island fjord," derived from the tiny, tear-shaped Hrisey Island near its mouth. The ice-free port city of Akureyri lies near the fjord's narrow tip, and is Iceland's second largest population center after the capital, Reykjavik.

Sources: Landsat 7
A series of rocky outcroppings are a prominent feature of this Sahara Desert landscape near the Terkezi Oasis in the country of Chad.

Sources: Landsat 7

Eerie Cloud Shadows
March 22, 2014


These cloud patterns cast eerie shadows on the landscape of southern Egypt. The clouds appear red and the desert below hazy blue in this infrared rendition.

Sources: Landsat 8
When landmasses collide, rock layers can break. Geologists call these breaks "faults." Rock layers are offset in this image in western China, making the faults remarkably clear. The different colors indicate rocks that formed at different times and in different environments.

**Sources:** Landsat 8
A vast, open expanse in Namibia is one of the largest salt pans in the world. The pan is within Etosha National Park, protected since 1907. The horizontal line across the image is the national park fence. The wild patterns in this infrared interpretation are from numerous episodes of water evaporation following seasonal rains. The salt from the water is rearranged into new patterns every time the shallow water dries out. The surrounding blue shades are dry bushland savanna.

Sources: Landsat 8

In 1869, Henry Wood Elliott was invited to join Ferdinand V. Hayden's United States Geological Survey of Colorado and New Mexico as the artist. The sketches are pencil, pen and ink, and watercolor, but are mostly black and white, except for no. 6 ct, 82050006 on Photos website.

Caption: Council Bluffs from Trainville Point, South Omaha, and crossing of Rail Road Bridge over the Missouri. Nebraska, 1869.
Brigham Young University Department of Geology

https://library.usgs.gov/photo/#/?collection1=brigham%20young%20university%20(byu)%20collection

https://library.usgs.gov/photo/#/item/51db4ffee4b02290dffa07b3

https://library.usgs.gov/photo/#/item/51dc18fae4b0f81004b77ec7
Glaciers & Colorado

https://library.usgs.gov/photo/#/?terms=Colorado&category1=glaciers

https://library.usgs.gov/photo/#/item/51dd747fe4b0f72b4471a880

Glaciers & Alaska

https://library.usgs.gov/photo/#/?terms=Alaska&category1=glaciers

https://library.usgs.gov/photo/#/item/51dd9e73e4b0f72b4471dba3
USGS Copper Plates

Copper Plates Gone (Sort of)

The highest successful bid was for $18,938 - Nantucket, Massachusetts;

The average successful bid was $489;

The lowest successful bid was $70 (the minimum set by GSA).

Based on the successful bids for sets sold to the public, the value of the engravings was more than $2.1 million, including:
Donated sets: $1,024,832 million (estimated from the average successful bid from comparable sales)
Public sale: $1,106,563 million (total of the successful bids). All of that money went to the U.S. Treasury

Other high dollar sets included:
1) Los Angeles and Ventura Counties - $11,050
2) Martha’s Vineyard, Massachusetts - $9,800
3) Sierra Nevada, California - $7,700
4) Santa Monica Mountains, California (geologic map) - $5,100

Vintage copper engravings of the greater St. Louis, Missouri area
Department of the Interior

https://www.doi.gov/interiormuseum

Interior Museum

https://www.doi.gov/interiormuseum/collections

https://artsandculture.google.com/partner/us-department-of-the-interior

https://artsandculture.google.com/exhibit/stories-in-miniature/dQLi00Xq8_VJJg
Awash in Color: The Interior Museum’s Hand-tinted Photographs
Cézanne: The Rock and Quarry Paintings
https://artmuseum.princeton.edu/art/exhibitions/3447


Organized by the Princeton University Art Museum, Cézanne: The Rock and Quarry Paintings will premiere in Princeton before traveling to the Royal Academy of Arts, London.

Nature's Nation: American Art and Environment
https://artmuseum.princeton.edu/art/exhibitions/2818

https://learn.ncartmuseum.org/artwork/bridal-veil-falls-yosemite-2/

https://americanart.si.edu/artwork/burning-oil-well-night-near-rouseville-pennsylvania-9887

https://artmuseum.princeton.edu/story/fitz-henry-lane%E2%80%99s-ship-fog-gloucester-harbor
Picturing Pandemics:
https://paw.princeton.edu/article/picturing-pandemics
Instrumentation Analysis Resources
https://www.loc.gov/preservation/scientists/instrumentation/index.html

Digital Microscopy and Imaging

*Qualitative and quantitative study of materials* — The color, morphology, and other optical properties of collection materials (and of the media contained on them) provide information about their identity, the impact of environmental factors on their longevity, and the effects of conservation treatments on their integrity. Digital documentation of the images is essential for the evaluation of materials over generations of preservation activities.

- Environmental Scanning Electron Microscopy
- Hyperspectral Imaging
- Compound Digital Microscopy
- Stereo Digital Microscopy and Image Analysis
- Image Analysis Workstation

Elemental Spectroscopy

*Spectroscopic determination of inorganic elements in a variety of collection and housing materials* — The elements studied include most of the periodic table; metals and nonmetals that are important both from a fundamental formulation perspective, as well as for their catalytic (and sometimes buffering) role in degradation.

- Energy-Dispersive X-Ray Spectroscopy
- Inductively Coupled Plasma — Optical Emission Spectrometry with Laser Ablation
- Portable X-Ray Fluorescence Spectrometry
Analytical Projects
https://www.loc.gov/preservation/scientists/analytical/index.html

Verin Noravank Gospels: Technical Study of Pigments, Inks and Coatings
https://www.loc.gov/preservation/scientists/analytical/noravank.html

The Forbes Pigment Reference Collection: Characterization Using Scanning Electron Microscopy (SEM) and X-ray Fluorescence (XRF)
https://www.loc.gov/preservation/scientists/projects/pigment_ref_coll.html
https://library.princeton.edu/find/all/ReAction%21%3A%20Chemistry%20in%20the%20Movies
Appendix 1

How to Use This Material in the Classroom

Chemistry instructors can use either entire movies or movie clips as part of their lecture strategy. Only a small subset of the movies is best suited for viewing in their entirety, as described in the next section. On the other hand, nearly all movies in this book have short “scientific explanation scenes” within their narratives that can be used in the chemical classroom to illustrate a chemical point or provoke a discussion. These 3- to 5-minute movie clips can be used for all the same reasons as lecture demonstrations.
Using the Space Program from Mercury to Apollo as Portrayed in the Movies The Right Stuff and Apollo 13 and in the Mini-Series From the Earth to the Moon as a Teaching Tool

James G. Golz

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Abstract

This chapter will examine how popular media related to the space program can be used to demonstrate the nature and motivation of scientific inquiry and science concepts. For over fifty years, the space program has inspired students of science and engineering. The United States manned space program from project Mercury to Apollo is the subject of two movies, The Right Stuff and Apollo 13, and the mini-series From the Earth to the Moon. Many documentary style television productions are available to supplement these movies and the miniseries. These documentaries provide recollections from astronauts, flight controllers, and flight directors. Moonsshot and To the Moon chronicle the manned space program during the Mercury, Gemini, and Apollo programs. The documentary To the Edge and Back inspired the movie, Apollo 13. The Science Channel’s Moon Machines shows many behind-the-scenes people who made the trips to the Moon possible. The History Channel used the manned space program as a subject for several of its series: Man, Moment, and Machine, Modern Marvels, 20th Century with Mike Wallace, and Failure Is Not an Option.
Thank You!

https://artmuseum.princeton.edu/es/collections/maker/3815

https://artmuseum.princeton.edu/collections/objects/31852

https://www.groundsforsculpture.org/

https://artmuseum.princeton.edu/campus-art/objects/31339