Parallel Primary Sources for Enhancing STEM Experiences
Notice of recording

This session is being recorded. If you choose to participate, any of your comments or questions will become part of the Library’s collections.
Please introduce yourself in the chat!

- Your first name
- Where you’re joining us from
- Your subject area and grade level

Please select **ALL PANELISTS AND ATTENDEES** in the To: box.
Welcome!

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2021-22 Albert Einstein Distinguished Educator Fellows

https://science.osti.gov/wdts/einstein
Objectives

- Connect historical documents to STEM topics, using the Observe-Reflect-Question protocol
- Use parallel primary sources to observe a phenomenon from multiple perspectives
Parallel Primary Sources

- Primary sources about the same or similar topics
- That provide opportunities for close examination of multiple items to make comparisons
- Focusing on multiple perspectives
Community Response to Disasters using Parallel Primary Sources
Community Response to Disasters using Parallel Primary Sources
About this Item
Title
Barber Shop located in Ninth Ward, New Orleans, Louisiana, damaged by Hurricane Katrina in 2005
Contributor Names
Highsmith, Carol M., 1946-, photographer
Created / Published
2006 April 13.

About this Item
Title
"We will rise" mural detail celebrating Puerto Rico after the 2017 Hurricane Maria. 719 Bruckner Blvd., Bronx. By Tats Cru, 2018
Contributor Names
Vergara, Camilo J., photographer
Created / Published
Side by Side Comparisons

- Primary source analysis
- Two different perspectives
- Thinking Routine: Compare and Contrast
- Multidisciplinary approach
The Johnstown Calamity
A slightly damaged house.
Spot the Difference

- Take a look at the photos side by side - can you spot the differences between the two photographs?
- Feel free to toggle back and forth with the slides shared in the chat
- Which photo was taken first? What evidence do you have?
The Johnstown Calamity
A slightly damaged house.
Teaching the Fossil Record

- Fossils are like snapshot in time
- Scientists work together to determine the order in which these “photographs” are taken
- As new “photos” are added to the fossil record, we have a better understanding about the sequence of events at different moments in time
Side by Side Comparisons

- Primary source analysis
- Same perspective
- Thinking Routine: Sequencing
- Nature of Science
- Content Connection: Earth Science, Evolution
Observe
Reflect
Question
The tiniest particle of Radium throws off a continuous stream of Energy Rays. An Energy never diminishing, never ceasing, day or night, year in, year out. A force a million times more powerful than any other known.

These Radium Rays are particularly valuable in effect upon the human skin. Dr. Louis Wickersham and Dr. Degrais, specialists in the St. Lazare and the St. Louis Hospitals of Paris, have proved what Radium will do for even the most dreaded skin diseases.

Rays of Radium, in fact, energize and revivify any living matter with which they come in contact. They are “accepted by the human system as harmoniously as is sunlight by the plant.”

This wonderful force for betterment has now been embodied in “Radior” Toilet Requisites, thus placing the power of Radium at the command of every woman who uses a face cream or powder, hair tonic or soap.
Zoom out to show additional detail and prompt new thinking.
Hearing a doctor testify that she was certain to die from effects of radium poisoning, Mrs. Catherine Donohue collapsed, right, as four other women, above, also believed victims of the “living death,” fearfully looked on in a courtroom at Ottawa, Ill. Mrs. Donohue, who now weighs only 70 pounds, told an arbiter for the Illinois Industrial Commission that her superiors in a radium watch dial plant at Ottawa said to her in 1931, “Your limping will cause talk. We’re sorry, you’ll have to go.” Along with 13 other women, she seeks compensation for incapacities attributed to work with radium in the factory. Nine women already have died. The young women in the above pictures are Frances O’Connell, Margaret Glacinski, Helen Munch, and Marie Rossiter.
Sequenced Comparisons

- Primary source analysis
- Change in perspectives
- Nature of Science
- Content Connection: Chemistry, Biology
Alexander Graham Bell’s notebook from May 6, 1878.
Original direction $A \times B = A' \times B'$

Find direction $A \times B = A' \times B'$

Again the atoms have different exchange conditions.
Alexander Graham Bell’s notebook from May 6, 1878
Before impact, forces resolved into direct + tangential forces.

After impact, direct + tangential forces in dark lines remain perpendicular. Original motion dotted lines.

See over.

Original direction: \( A \times B = \overrightarrow{A} \times \overrightarrow{B} \).

Final direction: \( A \times B = \overrightarrow{A'} \times \overrightarrow{B'} \).

Again the atoms under impact exchange conditions.

Angle of impact = 90°.
Investigate following cases

1  2  3

4  5  6

7  8

\[ \begin{align*}
    \mathbf{A} + \mathbf{B} &= \mathbf{R} + \mathbf{R}' \\
    \end{align*} \]
Sequenced Comparisons

- Primary source analysis
- Evolving perspective
- Nature of STEM
- Content Connection: Physics, Engineering, Math
The **Observe-Reflect-Question** protocol invites students to engage with primary sources, and connects STEM ideas across the curriculum.

Parallel Primary Sources provide multiple and evolving perspectives for students to …

- compare, contrast, and sequence ideas
- understand the nature of STEM fields
Thank you!

For joining us today and sticking with your students these last two years!

Questions?
● Library of Congress: https://loc.gov/
● Ask a Librarian: https://ask.loc.gov/
● Teacher Resources: https://www.loc.gov/programs/teachers
● Teacher Blog: http://blogs.loc.gov/teachers/

Lesley Anderson: landerson@loc.gov
Peter DeCraene: pdecreane@loc.gov
Resources

- Community Response to Disasters
  - Barber Shop located in Ninth Ward: [https://www.loc.gov/item/2010630024/](https://www.loc.gov/item/2010630024/)
  - “We will rise” mural: [https://www.loc.gov/item/2020637196/](https://www.loc.gov/item/2020637196/)

- Slightly Damaged House
  - Image #1: [https://www.loc.gov/resource/stereo.1s09424/](https://www.loc.gov/resource/stereo.1s09424/)
  - Image #2: [https://www.loc.gov/resource/ppmsca.51087/](https://www.loc.gov/resource/ppmsca.51087/)
  - Image #3: [https://historicpittsburgh.org/islandora/object/pitt%3A20190919-hpjaha-0031](https://historicpittsburgh.org/islandora/object/pitt%3A20190919-hpjaha-0031)

- Radium
  - And Beauty: [https://chroniclingamerica.loc.gov/lccn/sn83030214/1918-11-10/ed-1/seq-54/](https://chroniclingamerica.loc.gov/lccn/sn83030214/1918-11-10/ed-1/seq-54/)
  - Poisoning: [https://chroniclingamerica.loc.gov/lccn/sn86063811/1938-02-14/ed-1/seq-1/](https://chroniclingamerica.loc.gov/lccn/sn86063811/1938-02-14/ed-1/seq-1/)

- Alexander Graham Bell Notebook
  - Image 34: [https://www.loc.gov/resource/magbell.29800101/?sp=34](https://www.loc.gov/resource/magbell.29800101/?sp=34)
  - Image 35: [https://www.loc.gov/resource/magbell.29800101/?sp=35](https://www.loc.gov/resource/magbell.29800101/?sp=35)
  - Image 36: [https://www.loc.gov/resource/magbell.29800101/?sp=36](https://www.loc.gov/resource/magbell.29800101/?sp=36)
  - Image 37: [https://www.loc.gov/resource/magbell.29800101/?sp=37](https://www.loc.gov/resource/magbell.29800101/?sp=37)
  - Image 38: [https://www.loc.gov/resource/magbell.29800101/?sp=38](https://www.loc.gov/resource/magbell.29800101/?sp=38)