

IODP School of Rock : An Enduring Legacy from Two Decades of IODP programming and Opportunities in the U.S and Beyond

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U.S. Science Support Program

EGU

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Drilling for Science

Scientists have been using drilling technology to understand Earth's history since 1958.

- Project Mohole (1958 -1966)
- Deep Sea Drilling Project (1966 - 1983)
- Ocean Drilling Program (1983 - 2003)
- Integrated Ocean Drilling Program (2003 - 2013)
- International Ocean Discovery Program (2013 – 2024)
- IODP3 and Onwards?





Major Science Themes

- Using records of past climate and ocean change to inform the future;
- Exploring deep life, biodiversity, and environmental forcing of ecosystems;
- Understanding deep Earth processes and how they impact Earth's surface;
- Investigating geological processes and hazards that occur on human time scales.



School of Rock history

- | Since 2005, the School of Rock Program has aimed to:
 - provide educators with increased knowledge of the International Ocean Discovery Program (IODP), Earth science, and scientific ocean drilling processes, while highlighting related STEM careers.
 - assist educators in becoming familiar with how IODP Earth science research relates to science education standards and societal relevance
 - create a cadre of ambassadors for IODP throughout the education community

*



A Flexible Model

- ┆ We tried to do it on the ship: transits and tie-ups
- ┆ Otherwise, at a port call or university
- ┆ Or the Gulf Coast Repository
- ┆ And online, School of Rock (SOR) 2020!!

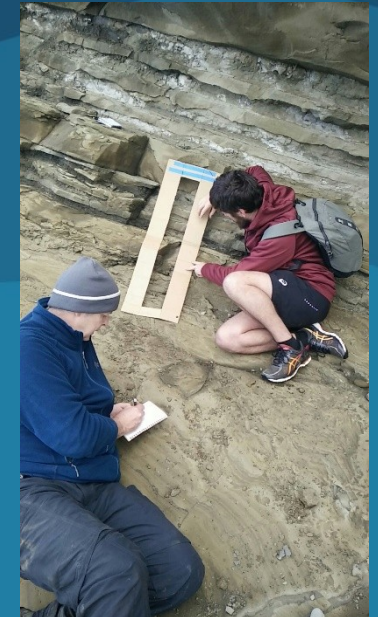


School of Rock 2018, New Zealand



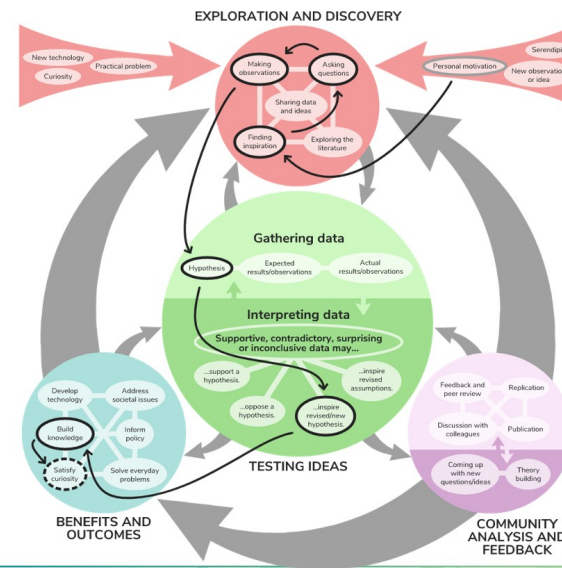
Ambassadors for
STEM
Training to
Enhance
Participation

- Collaboration with ANZIC (Australia and New Zealand IODP Consortium)
- Encourages use of UC Museum of Paleontology resources to communicate how science works



School of Rock 2019, San Diego

- Gulf of California geology and JOIDES Resolution port call
- Shore-based field trips led by scientists from Scripps Institution of Oceanography
- Emphasis on the evidence for deep sea sedimentation from coastal exposures



October 2023 School of Rock

- | The 2023 program was a new collaboration among:
 - | U.S. Science Support Program
 - | American Geosciences Institute
 - | Morehouse Center for Excellence in Education and Atlanta University Consortium (AUC) Data Science Initiative
 - | *JOIDES Resolution* Science Operator



School of Rock and Learning Activities

www.joidesresolution.org

CLASSROOM ACTIVITIES

Search the database of more than 60 downloadable activities, posters, and resources for educators. All activities shown by default. To search our database of lessons, hover your mouse over the Activity Type, Topics Covered, or Grade Level and then click the options. Multiple selections are possible by checking multiple fields. To reset your filters and view all activities again, press the top button in each drop down or simply refresh the page.

Don't have time to search through the site to find what you need? The links below house a collection of resources on a specific topic.

- Climate Change
- Plate Tectonics
- Microbiology
- Careers at Sea

ACTIVITY TYPE: TOPICS COVERED: GRADE LEVEL:

DISCOVERY UNDER THE OCEAN FLOOR
Education: Plate Tectonics, Seafloor Mapping

DIGGING DEEP FOR EVIDENCE OF CHANGES ON EARTH
Climate Change, Education: History of Earth

FIGURE 1. MANTLE CONNECTION
Education: Physical Properties, Plate Tectonics

CRUSTAL CLUES: INVESTIGATING SEAFLOOR SPREADING
Education: Plate Tectonics, Sedimentology

PUT A CORE IN IT: MONITORING CONDITIONS UNDER THE SEAFLOOR
Earthquakes, Education: Plate Tectonics, Volcanoes

CYCLES AND SEDIMENTS: THE LAYERS IN OCEAN SEDIMENT CORES REVEAL...
Climate Change, Education: History of Earth, Sedimentology

CLIMATE FLUCTUATIONS

342-U1407B-24X

COLLECTING CORES FROM THE SEAFLOOR

joidesresolution.org/for-educators/

FOR EDUCATORS

The Education and Outreach Department is part of the United States Science Support Program (USSSP) for the International Ocean Discovery Program (IODP) at the James Watson Earth Observatory. Our mission is to raise awareness about ocean drilling science and its central role in our understanding of the Earth's past, present and future, teach science content and process, and inspire careers in science, technology, engineering and math. Our approach includes use of authentic data, inquiry centered activities and interdisciplinary explorations drawing from the adventures of the JODP Revolution ship and the earlier ocean drilling ship, the Glomar Challenger.

NEW: WE ARE PREVIEWING A FRAMEWORK TO LOOK AT OUR MATERIALS -- ALL ORGANIZED BY THE CATEGORIES IN THE 2020 SCIENCE FRAMEWORK. CHECK IT OUT NOW!

MATERIALS AND RESOURCES

- Teaching Kits and Cores
- Pencils, Posters, and More
- Classroom Activities
- Free Children's Books
- Free Video Games

OPPORTUNITIES

EVENTS ABOARD THE JR
Offers live to the pilot and live provide the video broadcasts also available with the educators and scientists on board the ship during every expedition.

sercarleton.edu/iodp/school-of-rock2020/index.html

IODP School of Rock 2020

IODP School of Rock 2020

IODP School of Rock 2020

- Program
- Participants
- Teaching Activities
- Participant Workspace

The 2020 IODP School of Rock took a virtual tour through the cutting-edge, hot off the presses 2020 Framework for Scientific Ocean Drilling that will guide the next 30 years of scientific ocean drilling research. Participants worked with each other – a highly motivated, creative, and enthusiastic group of educators from across the US – to adapt and curate existing IODP educational materials.

Program

The program consisted of a blend of synchronous webinars interspersed with individual and collaborative asynchronous activities. All webinars took place at 4:00 PM Pacific / 7:00 PM Eastern. Recordings of the webinars are available on the program page.

Teaching Materials Collection

The 2020 School of Rock curated and adapted educational materials, available in this searchable collection of K-12 teaching activities about scientific ocean drilling. You can also explore the full IODP educational materials collection.

Exploring Earth by Scientific Ocean Drilling 2020 Science Framework

Some data from School of Rock

Retrospective Survey of all School of Rock Alumni

Sent to 202 program alumni, 114 responses (56% response rate)

Expedition location:

- Ship-based 65%
- Land-based 27%
- Virtual 8% (2020 only)

Key Findings

Educators rated SOR as having impacted the **content they taught their students**; over two-thirds of participants rated this area of impact an "8" or higher on a 0-10 scale, and 21% rated this area a perfect "10."

Educators rated SOR as having impacted **the way they teach their students**; almost half of participants rated this area of impact an "8" or higher on a 0-10 scale, and 19% rated this area a perfect "10."

Over half of the educators (55%) said that the program **helped them increase their use of real data** with their students; 20% rated this measure a perfect "10."

Most participants thought that **SOR was much better than other professional development programs** in which they have participated; 61% rated SOR a perfect "10" on this measure.

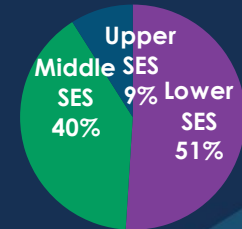
USE OF TOOL KIT

Which of the following have you done since the School of Rock program?	Not at all	Once	More than once
Continued your connection with IODP	7%	22%	70%
Continued your connection with your SOR cohort	13%	14%	72%
Developed curricula to be posted on the JOIDES Resolution website	53%	31%*	16%*

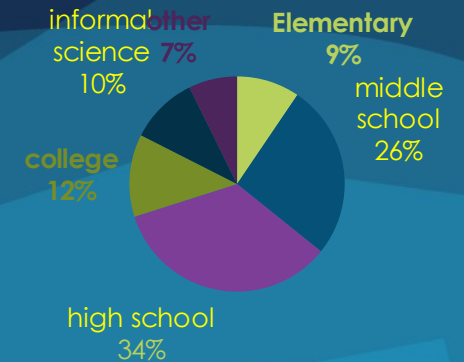
*significantly more likely to be ship-based than land-based or virtual, $\leq .05$.

Socioeconomic Status of Students Reached

Lower SES Middle SES Upper SES



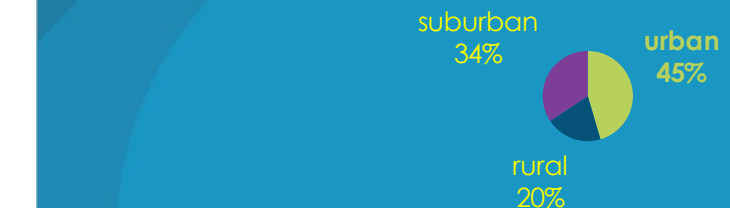
Grade Taught



Career Level



School Location



What's Next for School of Rock?

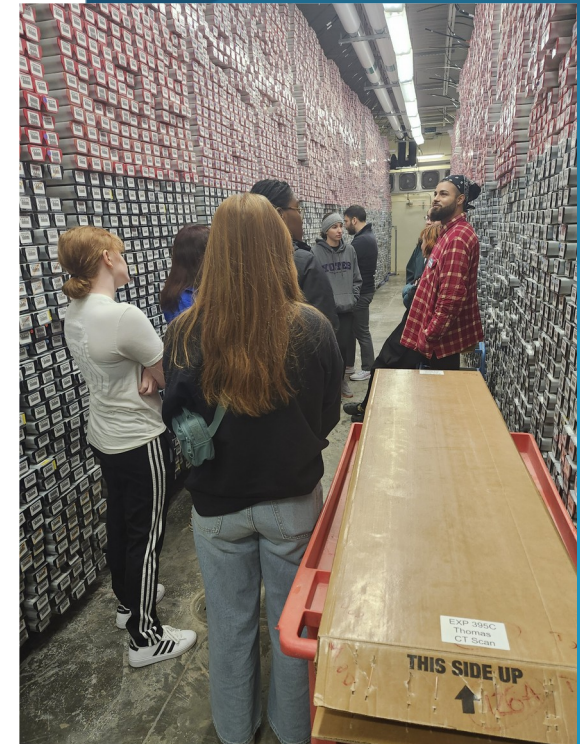
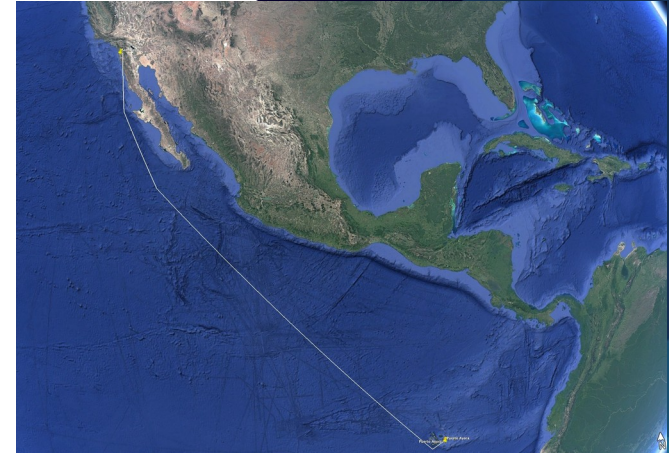
This summer:

- July on the *R/V Langseth*, San Diego to Galapagos
- Collaboration with Lamont Doherty Earth Observatory
- *In the steps of Darwin: the geological and natural history of the Ring of Fire and the Galapagos Islands*

AND

- August at the Gulf Coast Repository in College Station, TX
- *Using Legacy Cores to Enhance Collaborations between Scientists and Educators*

What else could we do together? We are open to collaborations!



SCIENTIFIC
OCEAN
DRILLING

Thank You!

