

# The Impacts of Place-Based Education in a Middle School Science Classroom

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## Conceptual Framework

Place-Based Education (PBE) is grounded in teaching and learning in the immediate environment, fostering students' connection to place, creating vibrant partnerships between schools and communities. PBE seeks to remedy the consequences of students having less exposure to the natural world, due to digital screen time saturation, which are particularly relevant to science education and to instilling a love of science and nature in children.

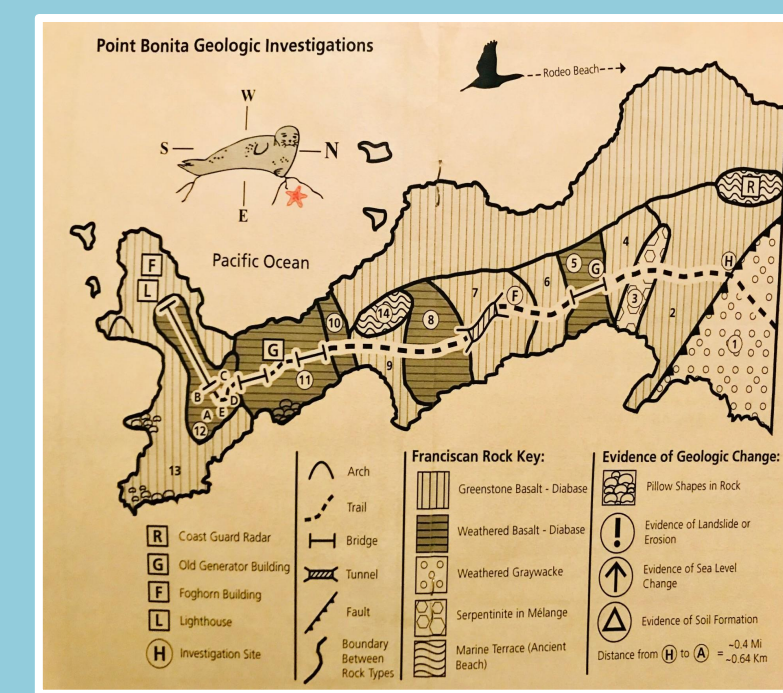
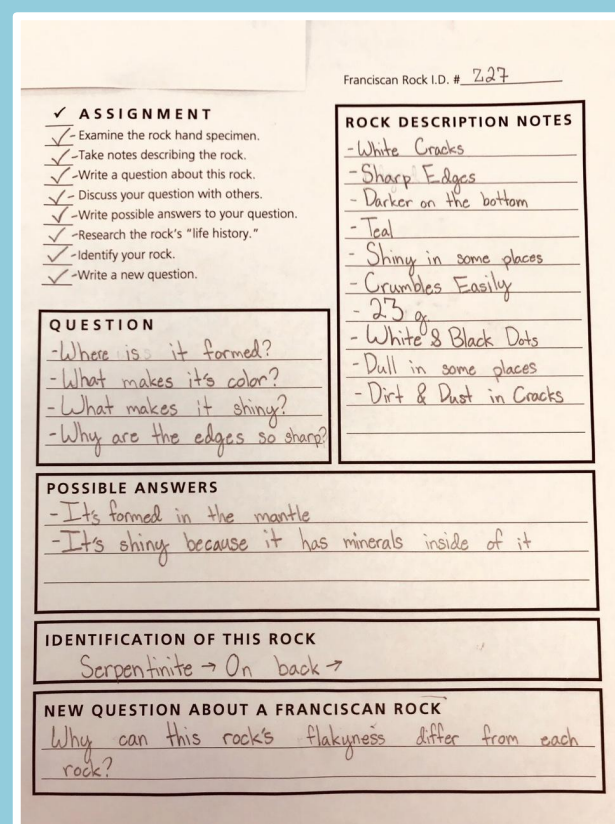


## Research Question

Does Place-Based Education have more of an impact on science comprehension, curiosity about the environment and local surroundings, or attitude/interest in subject matter?

## Methodology

- Study conducted on 33 6<sup>th</sup> graders at Sea Crest School, an independent school in the San Francisco Bay Area.
- PBE-focused curriculum was implemented over a three week period, in partnership with the National Park Service, followed by three weeks of traditional inquiry.
- Study measured whether PBE had more of an impact on: (1) science comprehension, (2) curiosity about and connection to the local landscape, or (3) attitude and interest in the subject matter.
- The PBE curriculum related plate tectonics to unique geological places and events in the Bay Area. The essential question of the program was:  
*How do I recognize geologic change in my environment?*
- Students collaborated in teams to choose what geologic formations they would investigate and developed investigation questions for out in the field.



## Noteable Student Interview Responses

*"It really opened my eyes to see what cool stuff was around me and now I think we really have to conserve it."*

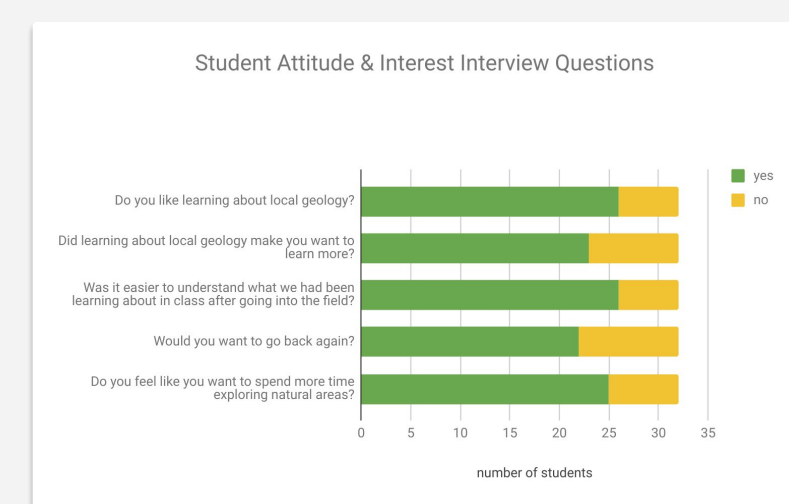
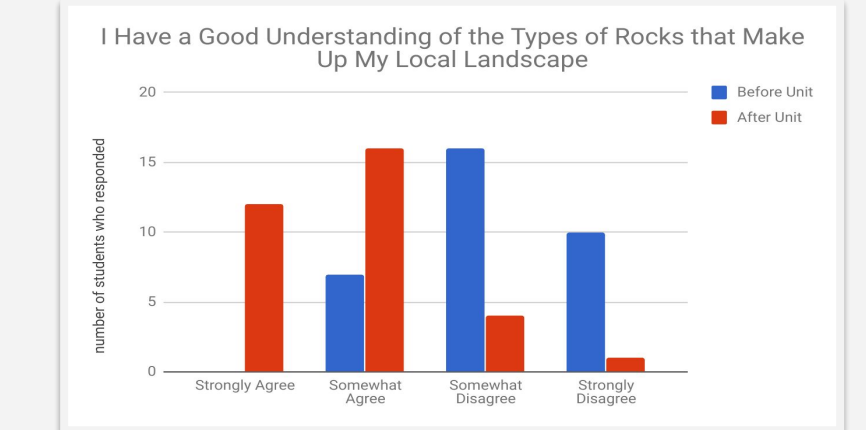
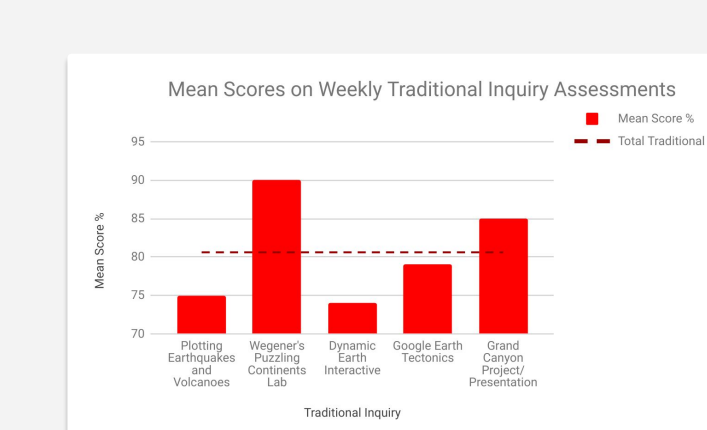
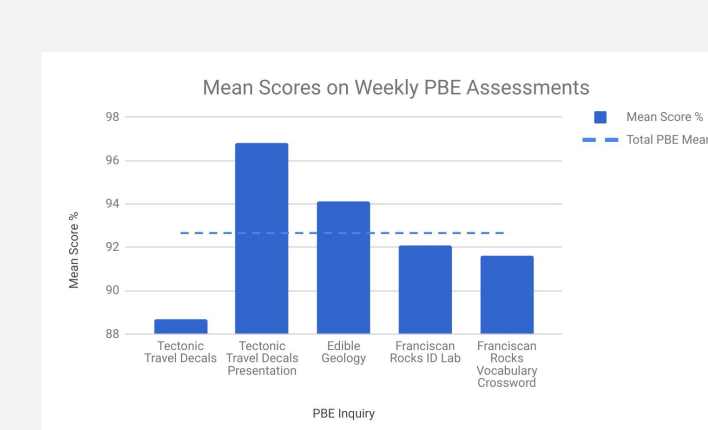
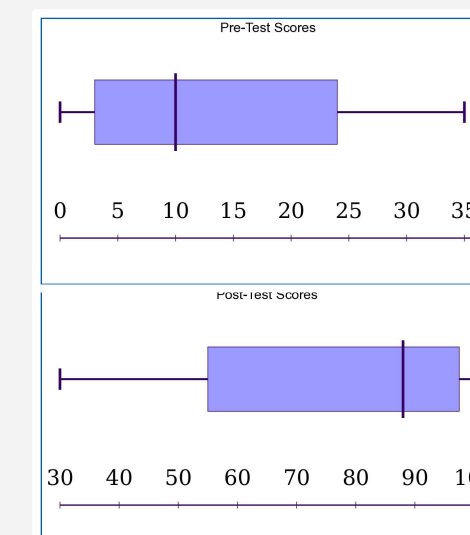
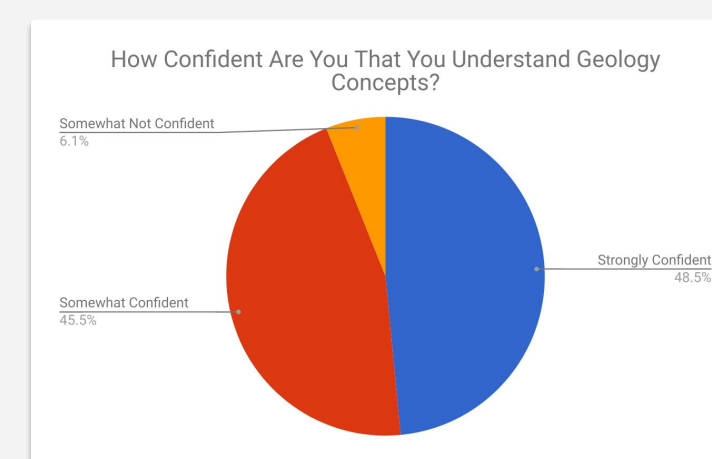
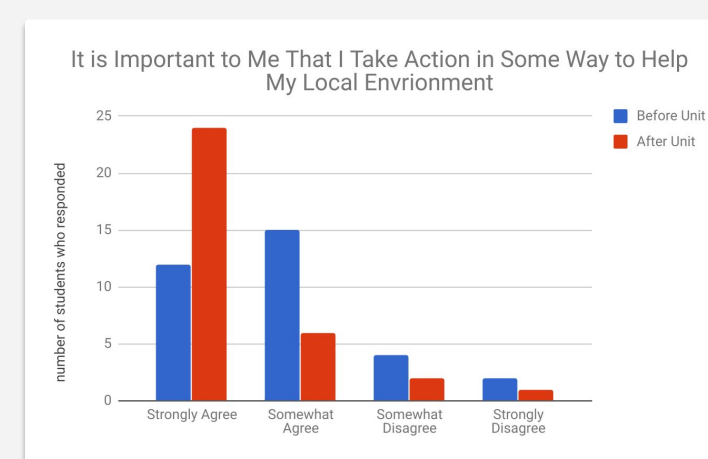
*"It helped me understand by actively seeing examples in person, not on a screen."*

*"I feel that it was fun to learn about stuff that happened in my area."*

*"We got to see changes the tectonic plates have caused, and it was right in front of us. We got to understand how rocks actually look in the field."*

## Data Analysis

- Students demonstrated consistent growth on almost all metrics.
- PBE learning gains were even higher, ranging from .80 to .90 average normalized gain vs. .52 to .73 for traditional inquiry methods (N=33).
- At least 69% of students answered yes when asked: *Did learning about local geology make you want to learn more?*
- Post intervention 72% of students answered *strongly agree* to: *It is important to me that I take action in some way to help my local environment* which represented a gain of 36%.



## Conclusion

- This comparison study supports that PBE boosted academic outcomes, positively impacted student's sense of place and stewardship, and increased student engagement, with the strongest impact on student learning.
- PBE combines the power of inquiry with the power of place; multiple indicators show that PBE enhanced student curiosity and motivation.