Determining Sedimentary Sources and Environments:
Applications in a Secondary Science Classroom

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Overview

Researching Sediment Sources & Environments
- Background
- Problems
- Methods
- Results

Applications in the Secondary Science Classroom
- Inquiry unit development
- Implementation
- Outcomes
- Future plans
Determining Sedimentary Sources and Environments
Tidally-influenced environment

 Deposited $\approx 76$ million years ago
Research Problems

- Specific depositional environment?
- Source of the sediment?
  - Sevier vs. Laramide
Methods: Depositional Environment

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<th>Bed Structure</th>
<th>Grain Size</th>
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- Bed Structure
- Grain Size
Methods: Source of Sediment

Sediment Mineral Composition

Point Count Method

View in plane light

Quartz
Feldspar
Lithics
Results: Multiple Environments

- Tidal
- Shoreface
- Flood Tidal Delta
Results: Sevier Orogeny Sources

A

B

Q = Quartz
F = Feldspar
Lt = Lithics
Application in an 8/9 Geology Classroom, UW Lab School
Problem:
In what type of environment was the sediment deposited?

CCM Steps:
1. Commit to an Outcome
2. Expose Beliefs
3. Confront Beliefs
4. Accommodate the Concept
5. Extend the Concept
6. Go Beyond

Students:
1. Make predictions
2. Share predictions
3. Perform research
4. Make conclusions
5. Relate to studies
6. Develop more Q’s

# Clues: Depositional Environment

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<th>Sorting</th>
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Student Inquiry in Action

Observations & Predictions

Field Data Collection

Lab Data Collection
Outcomes

Students demonstrated:

- **Content knowledge**
  - Environments change over time
  - Sedimentary rock can record environmental history

- **Science skills**
  - Use of evidence to support or refute a hypothesis
  - Interest in investigating further questions
Future Plans

- Continue using Conceptual Change Model
- Additional work teaching science skills
- Vary levels of inquiry based on student needs
Acknowledgements

WySTEP
Barbara Kissack
Dr. Anne Sylvester
Dr. Joseph Stepans
Erin Hotchkiss
Rick Matlock

Geology & Geophysics
Dr. Barbara Carrapa

College of Education
Dr. William Medina-Jerez

UW Lab School
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