Incorporating Research into the Classroom

HOW TO SUCCEED
HOWARD HIGH SCHOOL OF TECHNOLOGY

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Integrated Science

Physical Science

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Goals

- Incorporate actual research into the classroom setting
- Higher level transfer through problem-based learning strategies
- Targeting these activities to the DE state standards

General Activities

- More labs, hands-on activities, demonstrations, presentations

- Transfer tasks:
  1. Inquiry
  2. Material Separation lab
  3. Plate tectonics
  4. Astronomy Museum exhibit
  5. Ecology: Hg contamination

- Journaling

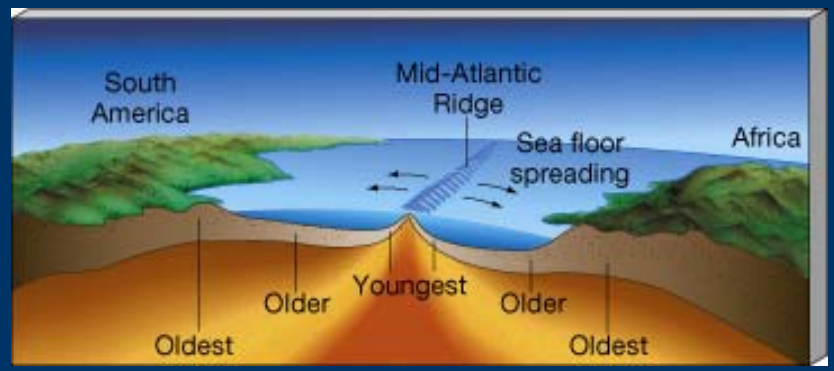
Newton’s 1st Law

Newton's 3rd law

Balloon Rockets

Presentations

- Fundamentals of geology and plate tectonics



- Rapa Nui as a model for resource exploitation and ecological disaster

Transfer Tasks:
Inquiry

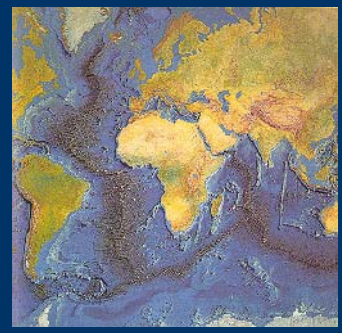
Goals:

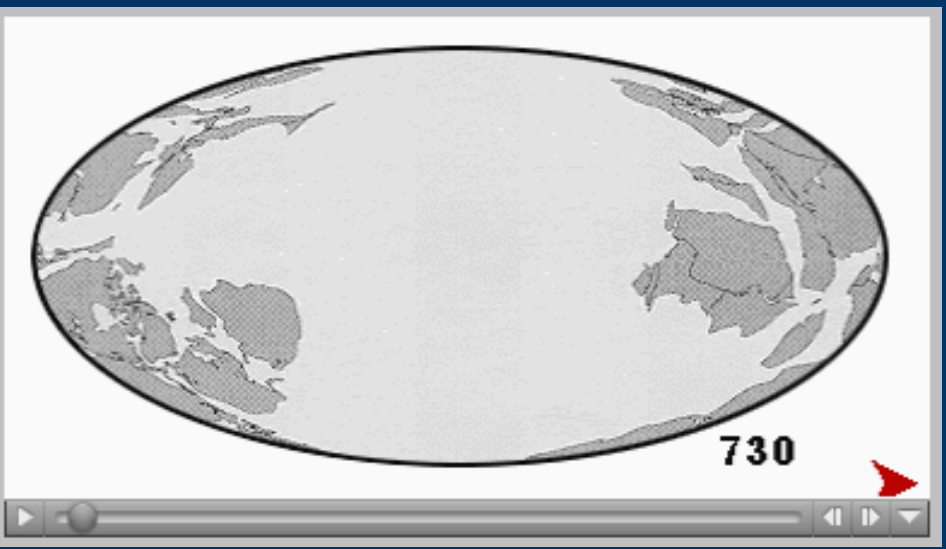
- Devise an experiment that will test the effects of salt on temperature
- Write their own procedure, materials, etc.

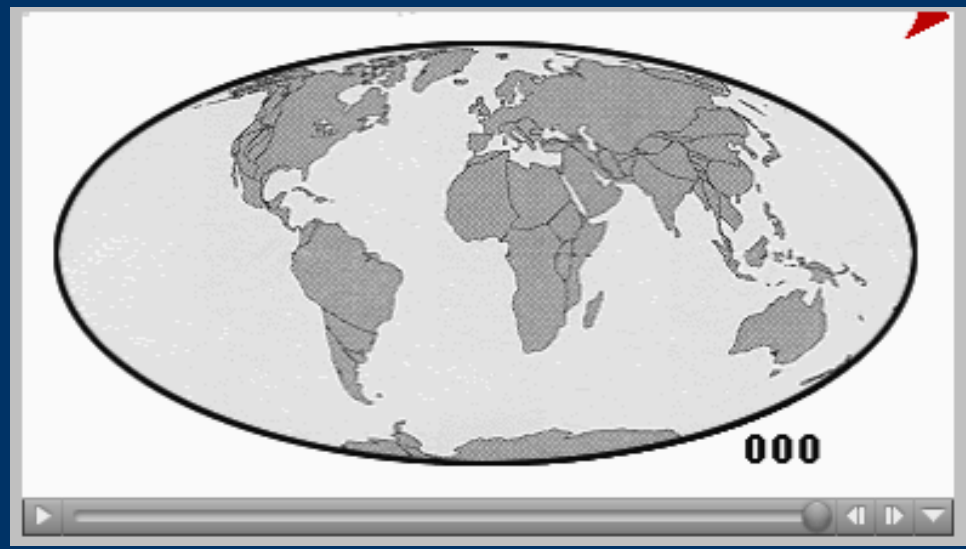
Transfer Tasks:
Material Separation

- Student put in role of coastal geologist
- Must separate a “contaminated mixture” into components
- Student devise their own materials and methods

Plate tectonics







Quicktime animation with guided questions

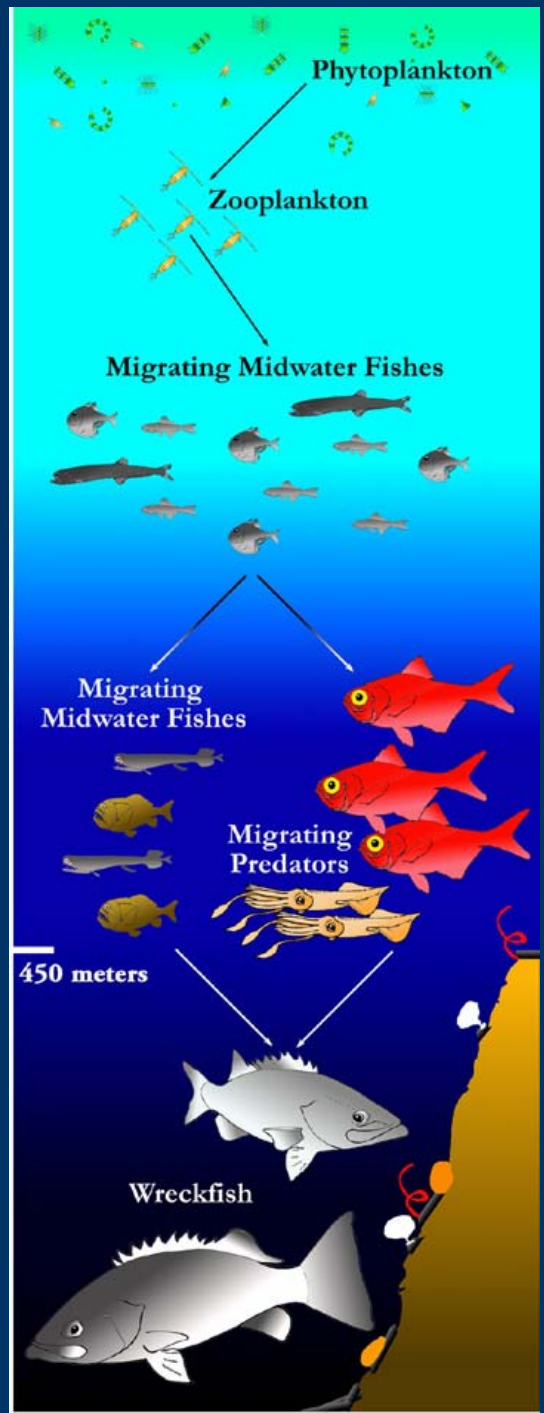
Transfer Tasks: *Astronomy exhibit*

Goals:

- Understand basic astronomy principles
- Assessed on: ability to work in groups, understanding of principles, creativity, thoughtfulness

Transfer tasks:
Food webs and Hg cycling

- Scenario: Hg contamination of a recreational water source
- Based on my research
- Various roles for students to select:
  1. Doctor
  2. Citizen
  3. Scientist
  4. Environmentalist
  5. Industry employee



Journaling

- Using Maggie's concept of organized, focused journaling
- Prompt assessment
- Emphasizing critical thinking and writing skills
- Provides students with an opportunity to reflect

Reflections

- Communicate science
- Understand how students learn
- Work with experienced educators
- Engage and motivate high school students
- Learn and implement effective teaching strategies

Goals for next year

- Field trips: engaging students in data collection in a field setting
- Data analysis
- Use of physical models to demonstrate scientific principles
- More PBLs
- Publications of results and experience