INTERDISCIPLINARY & TEAM TAUGHT COURSES

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Based on previous versions by
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Overview

- What is interdisciplinary?
- Your motivation
- Examples
- Challenges & solutions
- Design your own

Image: http://socialsciences.cornell.edu/wp-content/uploads/2015/04/Interdisciplinary-Learning.png

What is "Interdisciplinary?"

- Take a moment to think about how your research and teaching are / have been / will be interdisciplinary.
- What does interdisciplinary mean in the context of you?

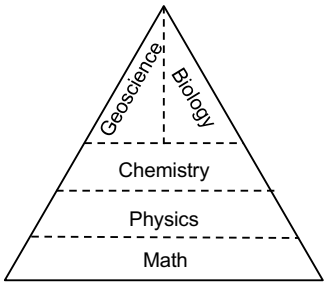
Interdisciplinary → "Between Disciplines"

- … Within the Geosciences
- … Between Sciences
- … Beyond Science

Within the Geosciences

https://www.eduweb.com/portfolio/earthsystems/parent_page.html

Between Sciences



Beyond Science

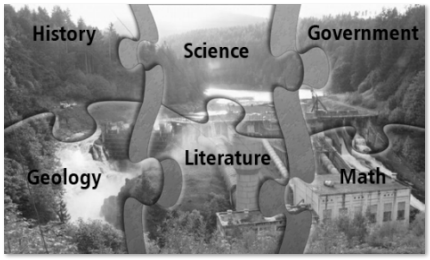


Image: Elwha Dam (https://www.naturebridge.org/blog/research-brief-interdisciplinary-learning-environmental-education)

Goals and Motivation for Interdisciplinary Teaching...

- Why do we, the scientist and professor, want to be more interdisciplinary in our teaching? How do we benefit?
- Why do we want to expose our students to more interdisciplinary learning? How do they benefit?

Motivation

- For our students:
  - Critical thinking
  - Ethical considerations
  - Prepare to solve problems
  - Appeal to student interest
  - New perspectives
- For the scientist / professor:
  - Geosciences are interdisciplinary
  - Increase enrollments
  - Staying relevant
  - Building networks / finding colleagues

School →

Life →

Marine, Earth, & Atmospheric Science Seminar

- Seminar course designed to bring together undergraduates from all three sub-disciplines
- Team-taught by faculty from each sub-discipline
- Topics covered include research methods, careers, applying to graduate school, ethics in science and science communication

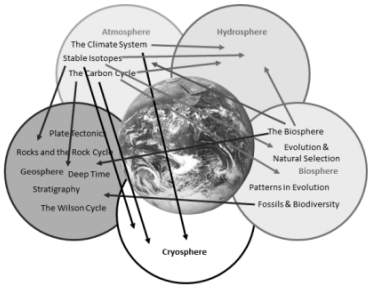
Earth & Life through Time (Historical Geology)

2nd semester geoscience majors

The Earth System through 4.5 billion years of history

The story of a planet → interdisciplinary

1 professor



Investigative Science II

For Elementary Education majors

Future K-6 teachers

Covers MN Science Standards for:

- Geology
- Astronomy
- Meteorology
- Life Science

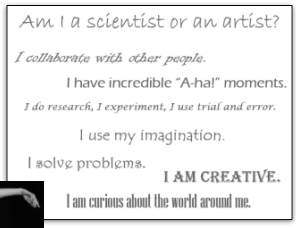
Geology & Biology Professors, but not together...

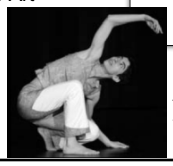
https://www.scholastic.com/teachers/blog-posts/alycia-zimmerman/becoming-ms-frizzle-managing-classroom-science-lessons/

Making Interdisciplinary Connections: The Science of Time

A Gen Ed Dance course that explored the idea of Time in science and art...

- Calendar & Astronomy
- Big Bang
- History of the Earth
- Performance Art
- Visual Art





Team-taught by myself, Geologist, and my ← colleague, Sharon Mansur, Prof. of Dance

Lots of other possibilities...

- Science & Policy & History
- Environmental Science
- Watershed Science
- Life in the Universe

- Field Trips
- Linked Courses
- Learning Communities

- Whatever you can think of...

By NASA/Apollo 17 crew; taken by either Harrison Schmitt or Ron Evans

Think – Pair - Share

- What are some advantages of interdisciplinary teaching?

- What are some of the challenges of interdisciplinary teaching?

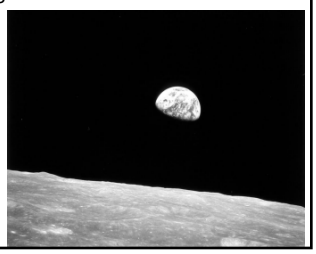
Challenges?

- What is the scope of the class? Where is "the edge?"
- Approaches: piecemeal vs. integrated sequential learning
- Teaching what you don't know
- Finding collaborators
- Different expectations/language/styles/perspectives
  - Communication and planning
- Attracting students & interpreting student feedback
- Words of caution – institutional / department values, "ownership" of classes

Solutions

- Find common interests
- With a course, start with 1 or 2 collaborators as the complexity grows quickly
- Set expectations for colleagues & for students
- Communication
- Planning
- Flexibility

- Embrace the unexpected



By NASA/Apollo 8 crew

Start Small

- Identify & talk with faculty and community partners
- Guest speakers in your class and other classes
- Field trips
- Partner with faculty from your department & other depts.
- Partner with others outside your college/university

Thinking bigger

- Linked courses
- Learning communities
- Organize a symposia on important and/or local issues
- New courses: One time special seminar vs. new course integrated into curriculum
- New major/minor/program

Develop Your Own Course/Module

- On your poster…
  - What course / module do you propose?
  - Audience for course / module?
  - What disciplines are integrated?
  - Approach?
  - Resources needed? (personnel, facility, other?)
- Post It note comments on peer posters…
  - Strengths?
  - Suggestions?
  - Other considerations?

Resources

- Interdisciplinary Approaches to Teaching: http://serc.carleton.edu/sp/library/interdisciplinary/index.html
- Interdisciplinary Teaching: Designing for Success: http://serc.carleton.edu/integrate/teaching_materials/interdisciplinary.html