Interdisciplinary Teaching

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A tip of the hat to my
interdisciplinary teaching partners
- Muriel Poston
- Joe McCormick
- Chuck Verharen
- Bruce Dahlin
- Greg Jenkins
- Rebecca Reviere

Thanks also to
- Barbara Griffin
- Teresa Redd
- Joe Reidy

What is interdisciplinary?
- Disciplinary
  - Focus on a discrete subject with its characteristic regimen of investigation and analysis
- Multi/cross/trans-disciplinary
  - Disciplines working side by side in an additive manner
  - Efforts to view one discipline from the perspective of another
  - Issues that go beyond the domain of a single discipline
- Interdisciplinary
  - Activity that occurs between, often unrelated, disciplines that results in productive synthesis

Will we know it when we see it?

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- Disciplinary
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Interdisciplinary requires:
- Consideration of multiple perspectives and approaches
  - Scientific method in the Natural Sciences
  - Deconstruction in the Humanities
- Integration of material
  - Often from widely different fields
- Team teaching (probably, if not always)
Some issues to consider

- Idea
- Team-teaching
- Subject
- Learning outcomes
- Scope & sequence
- Breadth & depth
- Organization
- Teaching strategies

Idea
- Genesis may be individual, but often arises through dialogue
- Team develops and implements
- And, a bit on teams since can be a major, initial concern

Team-teaching
- Useful traits of team members:
  - Open to diverse ways of thinking
  - Wary of absolutes
  - Able to admit not knowing
  - Flexible
  - Risk-taking
  - Self-reflective
  - Comfortable with ambiguity
- Join together
  - Usually for a single course, but
  - Could be for a “cluster” of courses
- Interactions in space & time
  - Serial v Parallel
    - segmented, coordinated, etc.
  - Discussions in class, or not
- Work together in development
- Integrate perspectives
- Common syllabus
- Remember that teams evolve through stages:
  - Forming
  - Storming
  - Norming
  - Performing
- While it helps to pick faculty with whom you have already worked (skip some of the stages), you must also
  - Be patient, recognize differing skills and points of view
  - And… realize that when a team changes constitution, you may have to go through the process again!

Subject
- Expect difficulty & confusion
  - Inventing a “new” subject
Normal focus on a topic (problem, issue, or theme)
Initial disciplinary exploration → problems
- Discipline bound
- Different points of view (power struggles)
- Varying assumptions & limitations
Keep in mind that dealing with these issues is part of the reason for the course → show students

**Learning outcomes**
- What do you want the students to take with them?
  - Recognize different perspectives
  - Synthesize
  - Think critically
  - Tackle meaningful issues
  - Not constrained by disciplinary boundaries
- Recommend using Bloom's *Taxonomy* (1956):
  - Knowledge
  - Comprehension
  - Application
  - Analysis
  - Synthesis
  - Evaluation
- To establish specific learning outcomes

**Scope & sequence**
- Scope → What are the boundaries for the course material?
  - Develop through dialogue
- Sequence → In what order will the material be presented?
  - Chronological may not be appropriate
  - Is there an inner logic?

**Breadth & depth**
- Debates often ensue about “inch deep-mile wide” coverage
  - Recognize impossibility of covering each of the disciplinary areas
- Something will have to be left out!
- Can depth be obtained elsewhere?
  - Reports, exams, projects, visits?
- Think re 100% of 10% v 10% of 100%

**Organization**
- Who will teach?
- When & where will it be offered?
- Credits?
- Assigned v recommended texts?
- TAs?
- FTE assigned to department, or not?
- Some of these issues will be deal-breakers.
- Unfortunately!

**Teaching strategies**  
- Lots of choices. Expect differences among team members.  
  - Training & coaching  
  - Lecturing & explaining  
  - Inquiry & discovery  
  - Groups & teams  
  - Experience & reflection  
- Combinations are often possible, useful, and exciting  
- Stretch your own boundaries. Learn something new!

**Why interdisciplinary?**

**SFA I**  (1996)  
- One way of stimulating research inquiry and teaching innovation is through the establishment of high quality interdisciplinary academic programs. These interdisciplinary programs could facilitate collaborative research, enhance collaborative core units, promote faculty participation from various departments, encourage joint appointments, and establish training of students by an interdisciplinary faculty...

**SFA II**  (2001)  
- Urged the University to:  
  - promote new interdisciplinary programs  
  - encourage all Howard students to conduct research  
- As the University moves forward in the new millennium, more interdisciplinary work at both the undergraduate and graduate levels is needed

**Curricular approaches to organizing knowledge**  
- Discipline-based  
- Competency-based  
  - Skills-based, professionally-oriented  
- Great Books  
  - Accumulated wisdom, St. John’s College  
- Student-centered  
  - Students choose, Evergreen College  
- Problem-centered  
  - Explore contemporary issues, UC Santa Cruz  
- Disciplinary constraints  
  - More and more about less and less.  
- Disciplines are isolated from one another  
  - By jargon, assumptions, perspectives  
- Disciplines tend to absolutize  
  - When you have only a hammer, it becomes the tool by which everything gets fixed  
- Disciplinary perspective downplays broader, complex and holistic issues  
  - Too reductive to be effective  
- Disciplines trivialize  
  - They lose sight of both the big and the little picture  
- New perspectives  
- New insights
Better understanding
- Education is no longer about transmitting information, but about enabling students to use the plethora of information in meaningful and effective ways
- And ultimately, to better prepare our students

Examples

Science & Public Policy
- With Dr. Joseph McCormick, Political Science
- Initial discussions began over lunch ~1990
- S&PP first offered in Spring 1994

Issues
- How to teach
  - Serial v parallel
  - Interactions: class, students, etc.
- Learning a new language and methodology
  - Natural v Social Science
- Adapting to one another
  - Style differences
    - Off-the cuff v deliberative style
  - Syllabus format
- How to list
  - BIOL204 and POLS139

Environmental Studies
- Dr. Bruce Dahlin - Sociology/Anthropology
- Dr. Joseph McCormick - Political Science
- Dr. George Middendorf - Biology
- Dr. Muriel Poston - Biology
- Dr. Charles Verharen - Philosophy
- Developed to fulfill ‘new’ interdisciplinary foundational requirement
- First offered ~Fall 2001

Issues
- How to teach
  - Serial v parallel (not 2, but 4!)
  - Interactions: class, students, etc.
- Learning new languages and methodologies
  - Natural v Social Science v Humanities
- Adapting to one another
  - Style differences
  - Syllabus format
- How to list
  - Jointly v independently in each department
  - Independently (subject to review re major credit BIOL802)

Introduction to Interdisciplinary Research
- The Katrina course-FRSM100
  - Dr. Gregory Jenkins - Physics
  - Dr. George Middendorf - Biology
- Writing for Research-ENGL003
  - Dr. Marlena Bremseth
  - Dr. TP Mahadevan
  - Dr. Pat Noone

Issues
- How to teach
  - Serial v parallel
  - Inter- v multi-disciplinary
  - Interactions: class, students, etc.
- Learning a new language and methodology
  - Natural v Natural Science
- Adapting to one another
  - Style differences
    - Invited speakers - 16!
  - Syllabus format
- How to list
  - FRSM100 linked with ENGL003 sections

Background to the course
- Katrina impacts New Orleans - August 29th 2005
- HU faculty begin discussing a symposium in response to Hurricane Katrina.
- ~400 students at Howard University impacted (directly or indirectly) by Katrina
- October 19th 2005 - Katrina Multidisciplinary Symposium on HU campus
  - NCEP/NASA and other participants
- Spring 2006 - 1st Alternative Spring Break
- Summer/fall 2006
  - Katrina course designed
  - Funded as pilot course by Mellon Foundation
- Spring 2007
  - Katrina course taught
- Undergraduate, freshman-level course
- Designed to equip students to understand not only how research works, but the context in which it is produced and used
- Adopting a variety of interdisciplinary approaches
- Instructors will work with the students to examine the process and methodology of research, including methods used in the design, analysis and interpretation of experiments
- **Hurricane Katrina** was the focus of this course
- Examined a variety of aspects, including:
  - How and why Katrina had such an impact
  - Environmental, legal, economic, sociological, and demographic processes associated with decision-making before, during, and after August 2005

Goals of FRSM 100
The course will provide opportunities for students to fulfill three goals:
1. engage in interdisciplinary ways of thinking about research
2. become self-directed life-long learners
3. conduct, write about, and present research
A Few Selected References