Harnessing interdisciplinary groups to articulate fundamental assumptions and perspectives

Aubrey: When we design a study we frame the question and everything outside of that question as "settled." How can we invite students to look at that frame and consider what has been left out?

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A fundamental challenge for interdisciplinary courses: bringing groups together and being productive

Make that bug into a feature by using learning from each other to clarify “fundamental assumptions and perspectives”– think about what’s outside the frame.

From Jodi’s syllabus “Identify the fundamental assumptions/perspectives. What is the larger context for this work? What is at stake for the author? What does the author think s/he is contributing to the discussion (and which discussion)? Why does the author think this matters?”

We will discuss a case study of one exercise we used to try to convey the assumptions and context to people from other academic fields (and on the way perhaps asking us all to reexamine some of the assumptions in our own fields).

“Gender and the Brain”: bring together students from different backgrounds to study how scientists have looked for sex/gender and sexuality differences in the brain

What tools can we provide to students to help them critically evaluate scientific literature on the brain?

What tools do students bring that they can share with peers?

1. Decide what (if any) parameters of brain and behavior are worth investigating for gender difference
2. Learn strengths and limitations of available techniques
3. Review findings of existing studies
4. Investigate influence of stereotypes and preconceived conclusions on existing studies

→ Be prepared to make an informed assessment of the quality of future studies of gender and the brain

How to bring students with such different preparation to the table for productive discussion? "Course and a half" structure to deliver different content to different students

- Principal course content delivered via in-class lectures and student presentation of primary literature, while background readings are tailored to fit the needs of individual students
- Online course content and discussion boards enable matching students with personalized instructional material
- Track A: mostly introductory neuroscience, Track B, mostly introductory STS and gender/sexuality studies, eventually merge to shared homework in last weeks of course

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- About 40% of in-class time devoted to student presentations of primary literature
- At last week's session we discussed the importance of using language that reaches students
- Proceed from specifics and have the students find, name, and apply the ideas as they encounter primary scientific literature at the same time as they encounter formal STS literature

Grading rubric for scoring presentations in BioNB 3215, "Gender and the Brain"

	Does not meet expectations	Meets expectations	Exceeds expectations
Background	Repeats information provided by authors in the introduction, who will preferentially cite sources supporting their argument	Also searches textbooks and Wikipedia for any basics (e.g. what the part of the brain being studied does) and follows up on papers cited in the authors' introduction	Also pursues papers not cited in the authors' introduction to verifies or questions the authors' characterization of the source material.
Methods	Repeats text from paper	Does additional research (or techniques worked (inclusion of irrelevant information that distracts from the presentation deducts.)	Also understands why the alternatives, and what the trade-offs were.
Results	Shows the figures and reads from the legend	Selects and annotates only those figures necessary to highlight key results and explain why they're important. Searches in the results and holds the authors accountable.	Also determines whether results have been independently verified, and how the results are currently
Textual analysis	Does not consider word choice, narrative, and tone.	Touches on word choice, narrative, and tone.	Thoughtfully analyzes how word choice, narrative, and tone affect the interpretation of the results.
Preparing for discussion and leading discussion	Does not prepare questions. Reads slides from group.	Composes specific questions in advance. Calls on classmates them demonstrate their understanding of the paper.	Also calls on classmates with probing questions that raise facilitates discussion by leading classmates into addressing one another.
Teamwork	One group member speaks far more that the other in both the prepared presentation and in leading the discussion.	One group member speaks somewhat more than the other, or one member's contributions are significantly more substantive.	Both members contribute substantively to both the prepared presentation and the discussion almost or completely equally.
Overall impression	A poor presentation that merely stated *what* the experiments were	A good presentation that explained *how* the experiments worked	An excellent presentation explained *why* the results stood up to scrutiny or fell short.

Week 1: What is the purpose of studying sex differences in the brain? What is the definition of biological sex and how is it different from gender?

Assumptions:

-- We know what we mean when we use the terms “sex” and “gender”

-- When we encounter papers we will read about “men” and “women,” which will divide all participants into binary categories

-- We know what “the brain” is separate from the body

First step: have students meet to discuss terminology together, decide on the language we’ll use, not assume we share a vocabulary

Week six: do men and women experience different emotions?

Assumptions:

-- We know that describing what a part of the brain "does" in an oversimplification

-- We know what emotion is

-- We know how to quantitatively measure emotion

All students read primary literature and present in class

Students can choose to learn more about the current tools used in the neuro field …

Week 6: Mars, Venus, etc.: personality traits (Mar 15-17)
Questions: how is it possible to study internal states in humans? Are there sex or gender differences in emotions like empathy?
Technique: human psychological testing
Reading: Weisberg 2011, Hyde 2005
Track A: how do neuroscientists define emotion, and how can we study emotion in the brain?
Track B: two views of the relationship between gender and emotion in humans
- Reading: Maibom 2012, Christov-Moore 2014

Or choose to read and contrast two reviews, one from a neuroendocrinologist and one from an STS scholar and compare what they think are the "foundations"

Week six: do men and women experience different emotions?

Follow up in class with exercises to share outside assignments with group, including:

-- Take excerpts from discussion board as prompts for group

-- Word choice exercises

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Group discussion section: Identify some of the challenges of interdisciplinary courses, share and get feedback on all of our courses.