NOTE: THIS HANDOUT IS EXCERPTED FROM ANOTHER WORKSHOP

Increasing Achievement, Equity and Retention:
Applying The Scholarship of Teaching and Learning to make big differences in any college class

Craig E. Nelson
Professor Emeritus of Biology, Indiana University
Founding President, International Society for the Scholarship of Teaching and Learning

Email: nelson1@indiana.edu (where 1 is the numeral one)
Biology Department Page for me: http://www.bio.indiana.edu/facultyresearch/faculty/Nelson.html
SOTL focused CV with lists of my articles: Click on CV at http://iub.academia.edu/CraigNelson

Diversity requires reformed pedagogy

An introduction to some key active learning techniques and why I used each of them.

Some ways we keep ourselves from adopting well-known best practices in teaching:

KEY CONCLUSION FROM EXTENSIVE SOTL:
Most low grades in college courses could be eliminated by using revised learning designs.

* Case studies supporting this conclusion have been deleted from this excerpt.

* FOCUS HERE IS ON HOW TO CHANGE OUR TEACHING TO BE MORE EFFECTIVE.
IMPLEMENTING ACTIVE LEARNING IN YOUR CLASSES—THREE BASICS

1. Cognitive Focus: On An Important Topic & On Same Topic [& Ideally on Key Difficulty]
   EXPERT Question or Worksheet … [NOT “Any Questions?”]

   Make it Count ENOUGH in grade to get (almost) all to prepare
   General Knowledge, In-Class Reading or Lecture, Worksheet or Paragraph, Quiz…
   Example: Red-Pen Worksheets--SEE HANDOUT

How do you get nearly all students to prepare OR how might you get them to do so?

3. Social System (Groups & Roles). Every Student Participating Constructively [v Equally]
   [S-S Discussion; NOT Teacher-Student OR Student-Teacher “Recitation”]
   Write-Pair-Share For Short Times. Two-Minutes & Social Roles …
   Teacher Formed Groups of 5-6 for Longer Discussions
   Group Responsible For All Participating

How do you get nearly all students to participate constructively OR how might you get them to do so?

**********************************************************************

IMPLEMENTING ACTIVE LEARNING—THREE ADVANCED POINTS

1. Evaluation: Keep it Quick and Simple So YOU Will Use It
   [Worksheets & Red Pens]
   Credit for serious effort [NO need to discuss if you expect most to have correct.]

2. Get Prompt Feedback From Students and MODIFY Class As You Go
   Example: Personal Response Systems (“Clickers”) or other--See Great Sources Page

3. Get Quicker Student Acceptance—Avoid First-Use Drop in Evaluations
   Avoid Re-Inventing Square Wheels: Start with established methods and deviate with caution.
   Be sure to explain WHY you are teaching in atypical ways (increase learning and grades, etc.)
   Promise initially to make grades at least as good as before (lower perceived risk to grades)
   Then: Point out that grades are indeed better without any correction (they almost always are)
   “Mid”-Semester Reactions & Re-Explanations-
A FEW GREAT SOURCES FOR INTERACTIVE ENGAGEMENT & ACTIVE LEARNING

BOOKS (Great Sources for Proven Techniques):

REVIEW ARTICLES:


Academy of Inquiry-Based Learning http://www.inquirybasedlearning.org/AIBL/Home.html

Case Study Teaching in Science, National Center for. SUNY-Buffalo (Clyde Herreid) [How to and many cases.] http://ublib.buffalo.edu/libraries/projects/cases/case.html Don’t miss the links to other case studies sites.


Hotseat. Mobile web app. Students provide near real-time feedback in class. Faculty can adjust content and improve the learning experience. “Students post messages to Hotseat using Facebook or Twitter, by text messages, or by logging in to the Hotseat Web site.” http://www.itap.purdue.edu/studio/hotseat/

Just-in-Time-Teaching. “Students respond electronically to carefully constructed web-based assignments which are due shortly before class, and the instructor reads the student submissions "just-in-time" to adjust the classroom lesson to suit the students' needs….we are aware of approximately 300 faculty in 25 disciplines at approximately 100 institutions … who have adopted the JITT strategy.” http://web.physics.iupui.edu/jitt/jitt.html
• Scott Simkins & Mark Maier. 2009. Just in Time Teaching: Across the Disciplines, and Across the Stylus.

Mazur’s Peer Instruction [Brief lecture segments interspersed with carefully structured discussion.]

Process Oriented Guided Inquiry Learning (POGIL). “… students working in small groups on specially designed guided inquiry materials. ….The instructor serves as facilitator, observing and periodically addressing individual and classroom-wide needs. POGIL is based on research indicating that a) teaching by telling does not work for most students, b) students who are part of an interactive community are more likely to be successful, and c) knowledge is personal; students enjoy themselves more and develop greater ownership over the material when they are given an opportunity to construct their own understanding.” http://www.pogil.org/info/introduction.php


SCALE-UP = Student-Centered Active Learning Environment for Undergraduate Programs. http://scaleup.ncsu.edu Was “Student-Centered Activities for Large Enrollment Undergraduate Physics.” Now used more widely. Classes of 100 or more (or fewer), “most of the "lectures" are actually class-wide discussions.” Three teams per round table…

Nelson: Achievement +

**Answer: Actively Teach Core Academic Skills as Applied to Each Course**


**Even at Harvard:** Students in academic difficulty—Working harder but …

**Key Problem:** Many students don’t understand how to do course-specific academic tasks.

**Key Problem 2:** Different courses and disciplines have very different tacit expectations for these.


**KEY TAKE-HOME POINTS?**

*What would you say if asked about the importance of these ideas*

**CONCEPT:** Teach students how to do your core academic tasks.

This **does not mean just explain how.** Instead, you have to **provide meaningful, guided practice.**

= Get most or all students to do what successful (often privileged) students learned to do earlier.

**Example 2A: Deep Understanding of Readings & Synthesis.** Intensive Freshman Seminar:

Problem: Never learned to read and accurately summarize an argument. [v “What it is about.”]

First day. In-class, open book, Exam-Ready Essay question. Pairs and then groups …

**Example 2B: “Highlight” Readings Using Exam-Ready Questions As Study Guides**

Give the entire question pool or ....

Makes out-of-class group work possible and effective (v guess what prof is thinking).

Makes review sessions more productive. How far did you get?

Allows use of class time for processing to focus on topics not in book. Graphs, equations, …

Better than using lectures to highlight for many (most?) topics

**Example 3: Writing & Other Higher Level Outcomes: Create/Adapt & TEACH Rubrics:**

Give rubric and provide meaningful, guided practice.

Example: Practice sets to rate with rubric, including feedback, before doing assignments.

**Step 4. Create the rubric.**

- Mary E. Huba & Jann E. Freed. 1999. *Learner-Centered Assessment on College Campuses: Shifting the Focus from Teaching to Learning*. Allyn & Bacon
- Jon Mueller. Online. *Authentic Assessment Toolbox. Rubric @http://jonathan.mueller.faculty.nocctrl.edu/toolbox/rubrics.htm*

**THREE ACADEMIC SKILLS THAT ARE ESSENTIAL FOR SUCCESS IN YOUR COURSE?**


*For each, how do you or could provide meaningful, guided practice.*
**INCREASING ACHIEVEMENT... SOTL RESULTS 3:**
MORE FLEXIBILITY RE EXAMS & DUE DATES CAN IMPROVE LEARNING
DOES MY GRADING UNFAIRLY & UNNECESSARILY FAVOR PARTICULAR GROUPS?

Example 1: When I Give An Exam Only Once I Implicitly Assume:
   a. Student Knows When She Has Achieved "A" Level Mastery
   b. She Knows This so Well That She Allocates Enough Time
   c. She Has Control Over Her Time & Can Make That Allocation Stick
      (v Has Real Job or Is Single Parent With Sick Kids)
   d. Believes the Instructor Wants & Expects Her to Succeed (v “Stereotype Threat”--Steele)

   **Response:** Two Exams.... v Grading Effort; v “Coverage”

Example 2: Totally Fixed Deadlines For Papers, Lab Reports, Etc.

   **Responses:** Revisable Papers &/Or Set Number Of Late Days

   **Comment:** But... Professionals Need To Manage Time?
   Require Of Frosh v Elicit By End? Options ALLOW time-Management!! Seniors …

Example 3: My job is to teach how to get As. Should I count initial grades?

   **Story:** Co-valedictorian to D+ on first college English paper

   **Response:** Intensive Freshman Seminar. Daily quizzes. Initial ones only count if As

**POSSIBLE IMPLEMENTATION IN YOUR CLASSES?**
SOME IMPORTANT BASIC RESOURCES [TAKE-HOME]

AIM HIGH: Focus on Major Outcomes


“BACKWARDS DESIGN.” Use one of these in Designing or Revising a Course:


IS IT WORKING? ASSESS AND DOCUMENT WHAT IS HAPPENING IN YOUR CLASS

Treat ALL assessments as measures of the success of the learning design.

Use Some “CATs:” Check on how any course is actually working:


Course Portfolios.


LOOK BROADLY Two Major Collections of Teaching Resources:


GREAT FIRST DOWNLOADS: Each offers free summaries of research on key topics

- IDEAPapers. Topics include Improving Lectures, Improving Discussions, Improving Essay Tests, Improving Student Writing, Improving Grading, Evaluating Teaching and many more. 4-8 pages each, feature both techniques and introduction to literature. Free PDFs http://www.theideacenter.org/category/helpful-resources/knowledge-base/idea-papers
- POD-IDEA Center, Notes on Instructional Improvement. Free PDFs. http://www.theideacenter.org/node/64

BOOKS TO USE WITH STUDENTS (All on Amazon)

- Authoring Your Life: Developing an Internal Voice to Navigate Life's Challenges. Marcia B. Baxter Magolda, 2009 **
- Integrations: Reading, Thinking, and Writing for College Success by William S. Robinson & Pam Altman, 2002
- Learning to Communicate in Science and Engineering: Case Studies from MIT. Mya Poe, Neal Lerner, & Jennifer Craig, 2010
- Thinking Ahead for College Success: A First Year Student's Guide. Thomas B. Jones, 2011 *