Using Media Articles to Drive a Quantitative Literacy Course

- Stuart Boersma, Central Washington Univ.
- Caren Diefenderfer, Hollins University
- Shannon Dingman, U. of Arkansas
- Bernie Madison, U. of Arkansas
Origins of QRCW

- Concerns regarding Finite Mathematics courses spurred initial development at the University of Arkansas
- First course offered in Fall ‘04 to volunteers; Spring & Fall ‘05 for journalism majors; Spring ‘06 to general audience
- NSF-funded QRCW project bridged the efforts at 3 universities regarding instruction in Quantitative Literacy
QRCW at the University of Arkansas

- First course offered in Fall ‘04
- Currently 3 sections offered; by Fall ‘09, department plans 5-6 sections using QRCW materials
- Other sections of MATH 2183 currently use *For All Practical Purposes*
- Course requirements:
  - College Algebra prerequisite
  - Satisfies mathematics requirement for BA degree
QRCW at the University of Arkansas

- 40 students per section; meetings twice a week for 80 minutes each; 30 total meetings per semester
- Fall ‘08: began using Madison & Dingman’s “Case Studies for Quantitative Reasoning” (note packets used prior)
- Mathematical topics include measurement, number sense, rates of change, probability & statistics
QRCW at the University of Arkansas

- Classroom organized for group work and class investigations
- Students invited to share “News of the Day” and to discuss the mathematics involved
- Assignments include exercises and case studies from the textbook as well as in-class investigations and unit quizzes
Sample questions from the case study:

- Describe what the data in each of these graphs represent. Can both of these graphs be correct? Explain why or why not.
- If one assume the tax cut is $245 billion, how much are taxes cut (in dollars) for families in the $200,000 and over income bracket?
- How much are taxes cut in the $20,000 - $30,000 income bracket?
Course Assessment

- **Student Assessment:**
  - HW, Quizzes, Class Investigations (50%)
  - Midterm Exam (20%)
  - Final Exam (20%)
  - Attendance & Participation (10%)

- **Course Overall:**
  - Student Pre/Post-Test (+3 gain; other sections show much smaller gains)
  - Strong support from faculty in arts, humanities, and social sciences
  - Positive feedback from students (course suited to their needs and likes)
Course taught: Fall 2008
Enrollment: 24 students
QL Requirement:
◦ Satisfies our “Math for Liberal Arts Major” requirement.
◦ Other sections of Math 101 use Bennett and Briggs’ text
Text: *Case Studies for Quantitative Reasoning* by Madison and Dingman
10 week quarter, 5 days a week, 50 mins. a day.
QRCW at Central Washington University

- Introduction: readings from “A Case for Quantitative Literacy” & “Importance of Quantitative Literacy”
- Students read and completed 11 case studies from text: small group work, class discussions, individual write ups
- Additional assignments: Create your own index, Medical Accuracy, Credit Card case study, reading of Best’s “Birds—Dead and Deadly: Why Numeracy Needs to Address Social Construction”
News of the Day (2 required per student)
- Copy of article & source
- Short oral summary of article which classifies the type of numerical information (factual, experiment, survey, etc.)
- Brief description of numerical information and how it is used/presented
- Focus on:
  - Comparisons (Identify and comment on appropriateness.)
  - Accuracy (Numbers seem reasonable? Is the math correct? Corroborate with another source?)
  - Graphs (Clearly labeled, easy to read? Support/strengthen article?)
Assessment

- **Students:**
  - 4 quizzes (percent change, indices, compound interest, false positives): 33%
  - Homework: 42%
  - NoD: 17%
  - Attendance: 8%

- **Course**
  - Pre/post written assessment
  - Pre/post MC test (+2.5/17)
QRCW at Hollins University

- Course taught: Spring 2008 and Fall 2008
- Enrollment: Approx 20 students each time
- Two QR Requirements for Gen Ed (q & Q):
  - Satisfies our “q” requirement. Required for students who do not receive “q” via entering assessment
- Main Text: Bennett & Briggs
- Supplemented with *Case Studies for Quantitative Reasoning* by Madison and Dingman
- 13 week semester, 3 days a week, 1 hour class period
QRCW at Hollins University

- Two class sessions per week based on Bennett & Briggs text
- One class session per week is a “news” case study
- Four case studies completed with Excel
- Six “news” case study assignments, resulting in a QR in the news portfolio
QRCW at Hollins University

- Use of the Case Studies
  - One class session to discuss and critique a given case study/sometimes in class, sometimes in the lab with excel
  - Written assignment that allows students to find a recent article for comparison/personalize the information
Assessment

- Students (Total of 850 points)
  - “daily” homework (100 points)
  - Three in class tests (300 points)
  - Four excel labs (100 points)
  - Six “QR in the News” papers (100 points)*
  - Final Exam (150 points)
  - Attendance/Participation (100 points)

- Course
  - Spring 2008 Pre/post MC test (+1.5/??)
  - Written paragraph on “importance of QR”

*definitely the hardest (and most significant) part of the course