Using Media Articles to Drive a Quantitative Literacy Course

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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*

Source: *New York Times*, April 7, 1995.

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)*

QRCW at Central Washington University

- 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"

QRCW at Central Washington University

- 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% [News of the Day]
  - 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 (+1.5/17)
  - Written paragraph on "importance of QR"

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