Paper presented at ARTIST Roundtable Conference on Assessment in Statistics
held at Lawrence University, August 1-4, 2004

CLASSROOM ASSESSMENT LINKING TEACHING TO LEARNING

Roxy Peck
Cal Poly, San Luis Obispo
rpeck@calpoly.edu

Peter's Analogy

- Quality "Control"

versus

- Quality Improvement

Final Exam is too late to find out there is a problem! Teaching needs to be adaptive.

"Learning can and often does take place without benefit of teaching—and sometimes in spite of it—but there is no such thing as effective teaching in the absence of learning. Teaching without learning is just talking."

Angelo and Cross

What is Classroom Assessment?

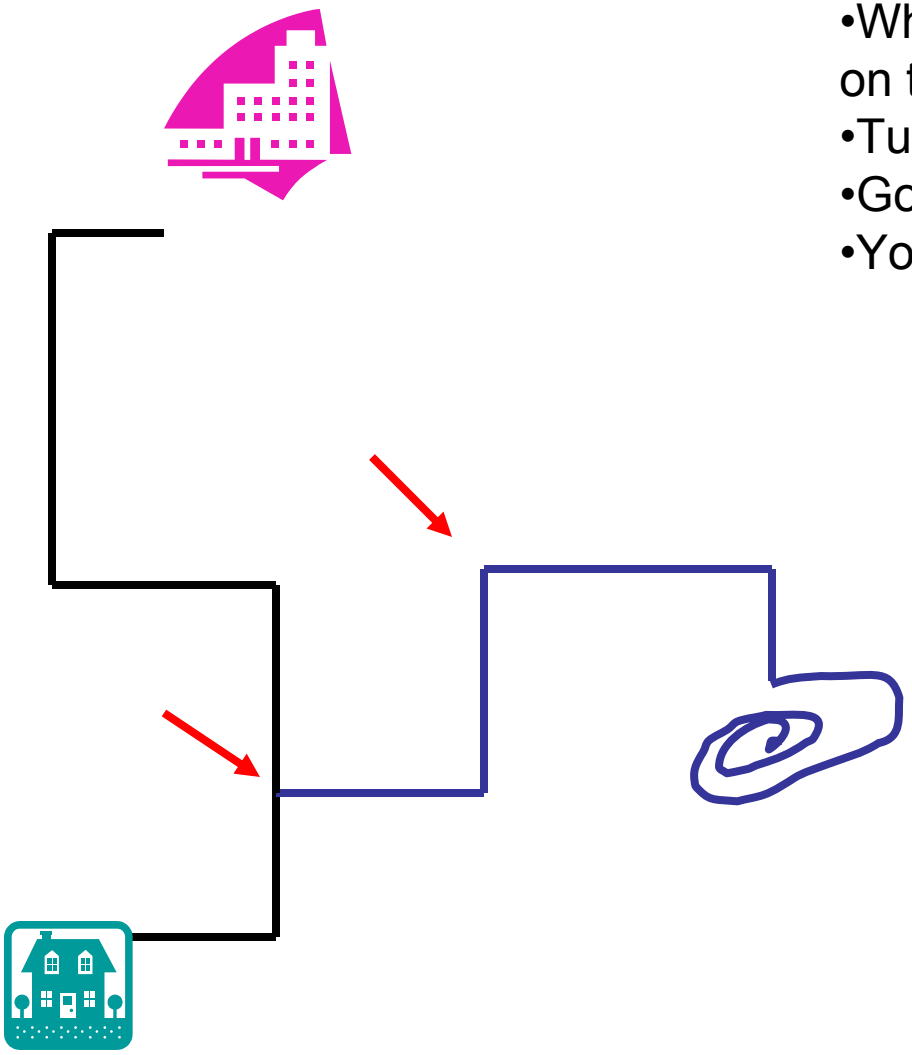
- Systematic collection and analysis of information to improve educational practice
- Method for understanding student learning.
- Based on belief that the more you know about what your students know and how they learn, the better you can plan your learning activities and structure your teaching.

Classroom Assessment… How is it different?

- Assessment of students
  - Grades are global evaluations of proficiency and don't tell you about student performance on individual learning goals.
- Assessment of Teaching Effectiveness (Retention, Tenure, Promotion)
  - Teaching effectiveness should be judged based on the quality and extent of student learning, but in fact RPT evaluations rarely use evidence of student learning.

Directions

- Turn right out of the driveway
- Turn left at the stop sign
- When you get to the light, go right on through
- Turn left at the next light
- Go two blocks and then turn right
- You should see the hospital on the left



???

Credit Where Credit is Due…

- Angelo and Cross, *Classroom Assessment Techniques*, 1993, Josey-Bass Publishers.

- National Research Council, *Evaluating and Improving Undergraduate Teaching in Science Technology, Engineering, and Mathematics*, 2003, The National Academies Press.

Benefits of Classroom Assessment

- Helps to clarify your teaching goals and what you want students to learn.
- Provides credible evidence regarding whether or not learning objectives have been achieved.
- Provides specific feedback on what is working and what is not working.
- Provides increased understanding about student learning in your classroom, allowing you to adapt your teaching as the course progresses.
- Helps you to become a better teacher!

(One Possible) Strategy for Classroom Assessment

- Start Here — S
  - Think — T
  - Articulate — A
  - Translate — T
  - Select — S
  - Ponder — P
  - Inform — I

(One Possible) Strategy for Classroom Assessment

- Think about
  What do you want your students to know and learn?
  What do you know about what your students are actually learning?
- Articulate learning goals for your course (broad concepts and skills)
- Translate goals into learning outcomes
  What are the specific skills, abilities and behaviors that would indicate the outcome is being met?
  At what point in the course should students develop this knowledge and/or ability?
  What evidence would convince a skeptic that your students are achieving the learning outcome?
- Select or develop tools to measure student learning and collect data.
- Ponder—analyze and reflect.
- Inform—use the information gathered to improved teaching and student learning by adapting pedagogy, materials, curricula.

OtherThoughts

- Starting with goals and learning outcomes encourages reflection and self-assessment about teaching.
- Need to make goals and learning outcomes explicit and specific in order to get informative feedback.
- Getting from broad teaching goals to specific assessable outcomes can be difficult, but it is even more difficult to carry out meaningful assessment without clearly articulated learning outcomes.
- Sustained classroom assessment requires commitment!

And one caution…

- Angelo and Cross point out that many begin by focusing on problem areas. They say "The 'problem-first' approach has proven less than satisfactory for many faculty because, in general, their informal judgments about what is not working are quite accurate."
- Our judgment is not always so accurate on the things that we think students are learning well…

(A few) Classroom Assessment Techniques (CATs)

- Minute paper
- Muddiest point
- One sentence summary
- Directed paraphrasing
- Analytic memo
- Problem recognition tasks
- Documented problem solutions
- Student generated test questions and model solutions

A Trial Run

- Cal Poly course outlines for
  - Stat 130
  - Stat 217

- Stat 130 learning outcome (a) Understand basic concepts of sampling and be familiar with several common sampling plans

A Group Exercise

Stat 130 g

Stat 130 h

Stat 217 c

Some Final Observations

- OK to start small
- Think about what, how, when
- Ask the right question at the right time
- Do classroom assessment for the right reasons…
  - for yourself
  - for your students

- Throw away the magic eight ball!