

Recommendation 3:

Stress conceptual understanding rather than mere knowledge of procedures

EXAMPLE: Confidence intervals

Teaching using “mere knowledge of procedures”:

- Give the formula for a 95% confidence interval.
- Construct a phony example and plug numbers into formula.
- Say “we are 95% confident that this interval covers the true value of the parameter.”

End of story.

Teaching to stress conceptual understanding:

- Start with a real example of a confidence interval from the news.

Example: cnn.com, 11/4/05:

Poll: Parents struggle to get kids off the couch

Lack of exercise edged out easy access to junk food as the main concern of the 21 percent of parents who conceded in an AP-KOL poll that their children are overweight. ... Parents' big frustration is how to change sedentary habits.

More than half the parents surveyed said their children had expressed a desire to exercise more, and 30 percent said their child wanted to lose weight.

....

The AP-KOL poll of 961 parents of children between ages 6-17 was conducted from Oct. 5-23 and has a margin of sampling error of plus or minus 3 percentage points.

- Discussion of above quote. What does “margin of sampling error” mean? What is this poll trying to assess?
- Stress that there are real-world questions the poll is attempting to answer.
- Stress concept of confidence *level* in addition to confidence *interval*.
- Use applet to demonstrate confidence interval ideas.
- Use hands-on project to demonstrate the thought process, from start to finish, of answering a research question with a confidence interval.