

Suggestions for Teachers of Statistics

- Emphasize that uncertainty is often unavoidable; we can best deal with it by seeking to know where it may occur and trying to estimate how large it is.
- Be willing to say, "I don't know" when appropriate.
- Point out the differences between ordinary and technical uses of words.
- Be sure to include some discussion of skewed distributions.
- Emphasize that every frequentist statistical inference technique depends on model assumptions.
 - Form the habit of checking if the model assumptions are reasonable before applying a procedure.
 - Expect your students to do the same.
 - Give assessment questions that ask the student to decide which techniques are appropriate.
 - Discuss robustness of procedures.
- When a test fails to reject the null hypothesis, do not accept the null hypothesis unless a power calculation has shown that the test will detect a practically significant difference, or unless there is some other carefully thought out decision criterion that has been met.
 - Expect your students to do the same.
- Remember, and emphasize, that one study does not prove anything.
 - In particular, do not use strong language such as "We conclude that ...", "This proves that ...", "This shows that ... is"
 - Instead, use more honest language such as, "These data support the claim that ..." or "This experiment suggests that ..."
 - Expect your students to do the same.
- In introductory courses, try to caution your students about the problems with multiple inference and the file drawer problem, even if you can't go into detail.
- In advanced courses, be sure to discuss the problems of multiple inference and the file drawer problem.
- Try to choose a textbook that includes the points above. The books by David Moore and co-authors generally are good for this at their level.
- For more suggestions for introductory courses, see American Statistical Association (2005), *Guidelines for Assessment and Instruction in Statistics Education (GAISE) College Report* (can be downloaded from <http://www.amstat.org/education/gaise/index.cfm>)
- Make use of other resources for professional development for statistics teachers:
 - The Consortium for the Advancement of Undergraduate Statistics Education (CAUSE, <http://www.causeweb.org>) offers workshops, webinars, and links to resources for statistics teachers.
 - The Journal of Statistics Education is available online (<http://www.amstat.org/publications/jse/>) to anyone for no charge. It publishes three issues per year containing peer-reviewed articles related to statistics education. Their home page has information on how to receive e-mail announcements when new issues are published, as well as links to an Interactive computing Archive, a Data Archive, and other resources.

- Join the (<http://www.amstat.org/>) and its Statistical Education Section. The latter will give you access to a listserv that can be useful for asking questions about teaching statistics.

Note: A version of these suggestions with embedded links can be found at <http://www.ma.utexas.edu/users/mks/statmistakes/suggestionsteachers.html>.