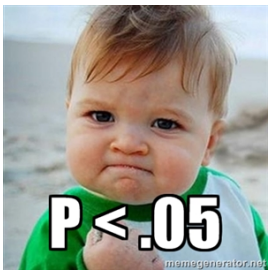
Master Class: Doing (better) TPRS Research

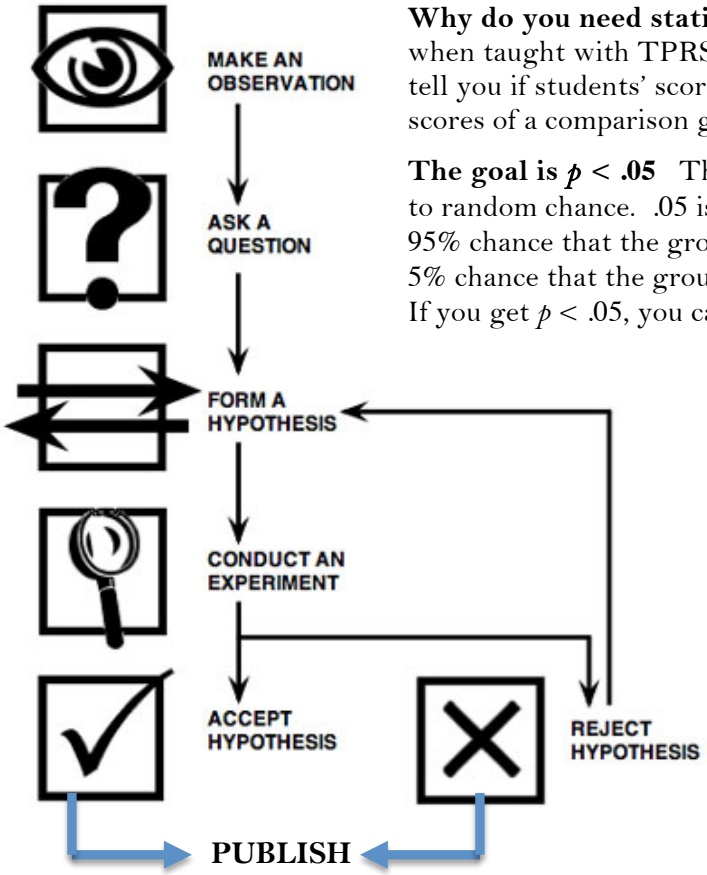
A handout for readers of research, graduate students, and teacher researchers

While there is more and more research on TPRS, not all of it meets the quality standards of the academic community-- so, a substantial portion of TPRS research doesn't reach publication. Whether you do a research study for your own information or as your masters or doctoral thesis, **make publication your goal** from the beginning. If you publish your research, hundreds of people will read it. In fact, everyone who does research on TPRS in the future will cite your study! You can add to the body of evidence that TPRS is effective.

If you are a teacher, **partnering with a graduate student or professor** is a great way to accomplish research. Teachers can supply the research question, access to their students (research subjects), and if the study includes a classroom intervention, the intervention itself. University-based grad students or professors can provide a review of the existing literature, statistical analysis, and ideas for where and how to publish. Dividing and conquering is more efficient than learning statistics from scratch!

Types of research: **Qualitative research** answers questions such as "What is ___ like," "What do people think about ___," or "Why does ___ happen." **Quantitative research** answers questions such as "Is this teaching method better than that teaching method," "How proficient are these students," or "(How much) do students improve after ___." There are two common quantitative study designs: comparing a group to itself (pretest/posttest), and comparing two or more groups to each other. Both of these designs can tell you whether there are statistically significant differences between the groups.





Why do you need statistics? Suppose you feel that your classes do better when taught with TPRS as compared to the way you used to teach. Stats tell you if students' scores on a given assessment are actually better than the scores of a comparison group, or if they just appear to be better.

The goal is $p < .05$ The letter p is the probability that the results are due to random chance. .05 is 5%. So if a study reports that $p < .05$, there is a 95% chance that the groups are really different from each other, and only a 5% chance that the groups are really the same and the results were in error. If you get $p < .05$, you can state that your results are **significant**.

t-tests and ANOVAs These are two ways to compare groups of students. T-tests can only compare two groups, but ANOVAs can compare three or more groups. For both tests, you start with a spreadsheet of students and their scores on an assessment. You get a number called t or F, which the statistical program uses to calculate the p.

Effect sizes Suppose that TPRS students do better, but the advantage is only 1 point on every test—not a very impressive effect. Effect sizes are described as small, medium, and large. A correlation of $r = 0.1$ is small, $r = 0.3$ is medium, and $r = 0.5$ is large. The advantage of TPRS over traditional teaching has been measured as a medium (Varguez, 2009) to large (Watson, 2009) effect size.