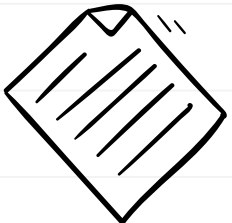
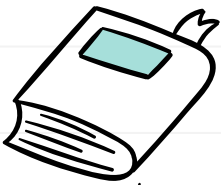
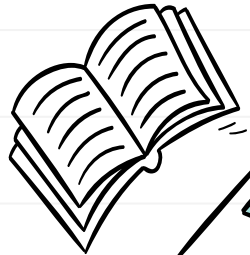
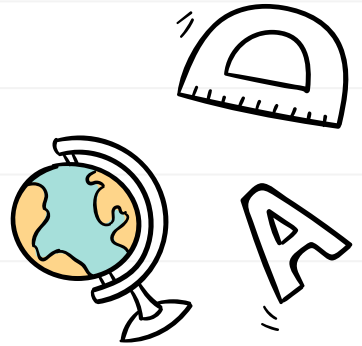


# TEACHING RESEARCH METHODS AND STATISTICS: HELPFUL ONLINE RESOURCES



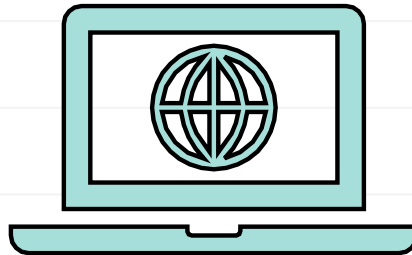
Last updated 8/6/2020

# INTRODUCTION

Due to the COVID-19 pandemic, many institutions of higher education will be shifting to online or hybrid instruction for the 2020-2021 school year. This shift can be daunting from a pedagogical standpoint.

The Federation of Associations in Behavioral & Brain Sciences has developed this methods/statistics resource in an effort to support our affiliate members.

These slides describe a few online resources that assist educators in creating a more interactive and accessible educational experience for students.



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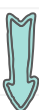
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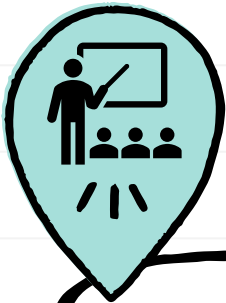
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# INSTRUCTION



## **SYNCHRONOUS LEARNING**

*Real-time or live instruction*

### Benefits:

- More student-instructor interaction
- Allows for peer interaction and activities
- Feedback/student questions can be dealt with immediately

## **ASYNCHRONOUS LEARNING**

*Pre-recorded or pre-developed instruction materials*

### Benefits:

- Instructors don't need to deal with tech issues (e.g. connection issues).
- More flexible for students (i.e., students learn at their own time/pace)

# WHICH SHOULD YOU CHOOSE?

WHY NOT BOTH?

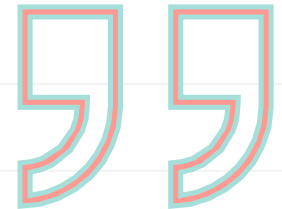
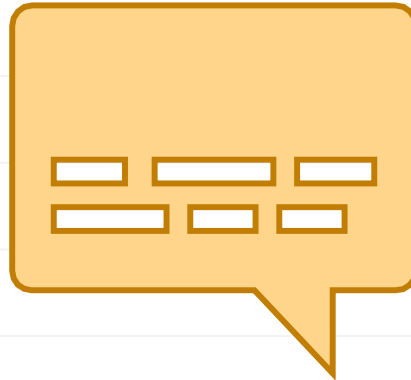
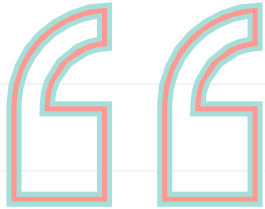
WHAT MAKES THE MOST SENSE FOR YOUR COURSE WILL DEPEND UPON THE CLASS SIZE, STRUCTURE, AND STUDENT POPULATION

THERE IS NO "RIGHT" CHOICE

# CLOSED CAPTIONS

To make virtual classroom instruction more accessible for all students consider adding “closed captions” to pre-recorded or live videos using the following tools:

- [Google slides with captions \(also has brail support available\)](#)
- [YouTube caption resources \(editable and allows for multiple translations\)](#)
- [Skype captions and subtitles \(multiple languages\)](#)
- [VoiceThread captions \(editable\)](#)



# LESSON PLANS



## 1. GOALS (LESSON OBJECTIVES)

What do I want to accomplish this lesson?



## 2. MATERIALS (HANDOUTS, DOWNLOAD SOFTWARE ETC.)

What is needed in advance of the lesson?



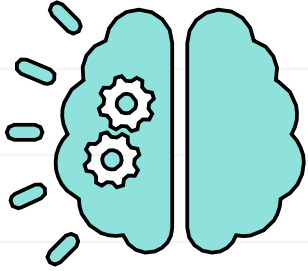
## 3. OUTLINE (ALL ACTIVITIES AND TIME ALLOTTED)

What will I be doing/how much time will it take?

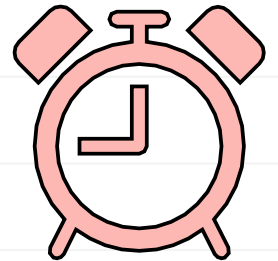


## 4. REFLECTION (HOW DID STUDENTS RESPOND; FUTURE CHANGES ETC.)

How engaged were students?  
What changes (if any) are needed?



**AFTER 15-20 MINUTES OF  
LECTURING, STUDENTS LOSE  
FOCUS; PLANNING VIDEOS  
AND/OR ACTIVITIES CAN KEEP  
STUDENTS ENGAGED!**

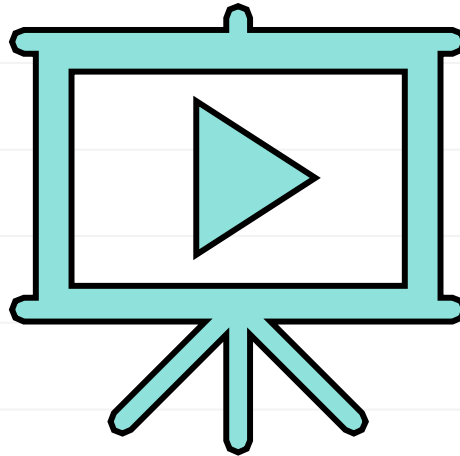




# VIDEOS

1. TeachPsychScience.Org has a repository of useful videos for substantive and methodological/statistical psychology courses:

- <https://teachpsychscience.org/index.php/category/research-methods/>
- <https://teachpsychscience.org/index.php/category/statistics/>



# VIDEOS (CONT.)

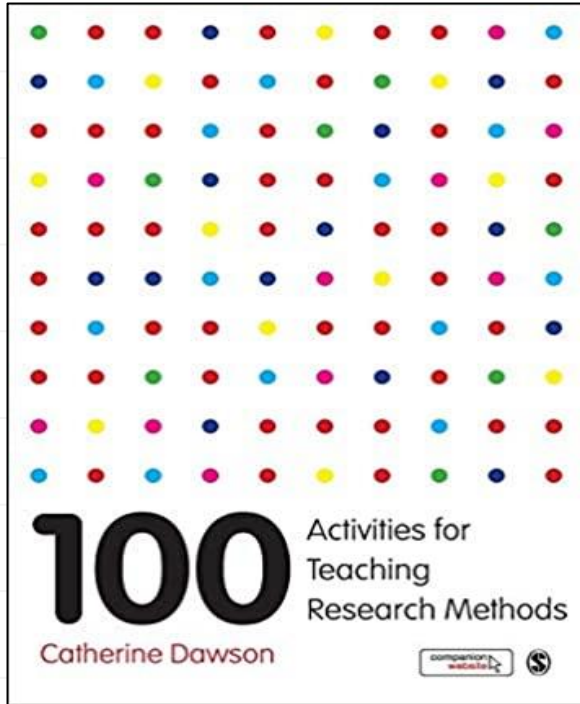
## 2. Ted and TedEd talks focused on research methods topics or concepts:

- The mastery of methods (Birte Karoline Manke)  
<https://www.youtube.com/watch?v=u4iOeHXObok>
- Not all scientific studies are created equal (David H. Schwartz)  
<https://ed.ted.com/lessons/not-all-scientific-studies-are-created-equal-david-h-schwartz>
- Is there a reproducibility crisis in science (Matt Anticole)  
<https://www.youtube.com/watch?v=FpCrY7x5nEE>
- How to spot a misleading graph (Lea Gaslowitz)  
<https://www.youtube.com/watch?v=E91bGT9BjYk&vl=en>
- Why you should love statistics (Alan Smith)  
[https://www.ted.com/talks/alan\\_smith\\_why\\_you\\_should\\_love\\_statistics?language=en](https://www.ted.com/talks/alan_smith_why_you_should_love_statistics?language=en)
- How statistics can be misleading (Mark Liddell)  
[https://www.ted.com/talks/mark\\_liddell\\_how\\_statistics\\_can\\_be\\_misleading/transcript?language=en](https://www.ted.com/talks/mark_liddell_how_statistics_can_be_misleading/transcript?language=en)
- How juries are fooled by statistics (Peter Donnelly)  
[https://www.ted.com/talks/peter\\_donnelly\\_how\\_juries\\_are\\_foiled\\_by\\_statistics?language=en](https://www.ted.com/talks/peter_donnelly_how_juries_are_foiled_by_statistics?language=en)
- How do focus groups work (Hector Lanz)  
<https://www.youtube.com/watch?v=3TwgVQIZPsw>

# ACTIVITIES

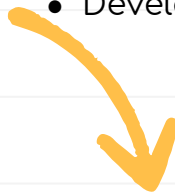
1. Get inspired from previous APA TOPSS Charles T. Blair-Broeker Excellence in Teaching Awards; modifying one of their 2-day lesson plans to work with undergraduate students like this one on thematic content analysis:
  - <https://www.apa.org/ed/precollege/topss/lessons/swanson-lesson.pdf>
2. Browse research methods and statistics activities compiled by the Society for the Teaching of Psychology (STP):
  - <http://teachpsych.org/page-1603066#stats>
3. For higher-level undergraduate or graduate level courses, try some statistics exercises developed by the Social Science Research & Instructional Center (uses SPSS and PSPP):
  - <http://www.ssrc.org/trd/exercises>

## ACTIVITIES (CONT.)



4. Peruse Catherine Dawson's 100 Activities for Teaching Research Methods which includes 100 learning activities and step-by-step instructions divided into the following sections:

- Finding and using sources of information
- Planning a research project
- Conducting research
- Using and analyzing data
- Disseminating results
- Acting ethically
- Developing deeper research skills



Sample activities (in part) found here:

<https://us.sagepub.com/en-us/nam/100-activities-for-teaching-research-methods/book248142#preview>

# FINDING DATASETS



**SEARCH GOOGLE**

<https://datasetsearch.research.google.com/>



**PEW DATA**

<https://www.pewresearch.org/download-datasets/>



**HEALTH DATA**

<https://guides.lib.berkeley.edu/publichealth/healthstatistics/rowdata>



**CRIME DATA**

<https://www.ucrdat.atool.gov/>



**EDUCATION DATA**

<https://www.ed.gov/open/plan/data-gov>

# FREE SOFTWARE

## 1. CHECK WITH IT

It is always good to first check with IT or the appropriate department to find out what is available for free or discounted

## 2. USE A TRIAL VERSION

If you only need software for a single class, consider having students use a free trial subscription:

- [IBM SPSS Statistics](#) (14-day trial)
- [STATA](#) (1-week trial)
- [Excel](#) (1-month trail)

## 3. GO OPEN SOURCE

For long-term software use without a subscription consider the following open-source options:

- [R Studio](#) or [R](#)
- [Python](#)
- [PSP](#) (SPSS alternative)
- [Open Epi](#)
- [JASP](#)
- [Jamovi](#)

*Note.* Though not “free” [NCSS](#) is a popular lower-cost option to SPSS.

# LEARNING STATISTICAL SOFTWARE ONLINE

There are many ways to learn how to use software online. Below we have included a few sites that may be useful to instructors and students new to working with open-source *or* proprietary software:

1. <https://stats.idre.ucla.edu/> (simply browse the “Software” tab to get help with R, Stata, SAS, SPSS, Mplus, G\*Power, SUDAAN, and Sample Power)
2. [Ben Whalley’s \(free\) eBook called Just Enough R](#) (is generated by [R code found on GitHub](#))
3. [Introduction to Statistics: A Modeling Approach](#) (an online, interactive book in R)
4. [Georgia State University Recorded Workshops](#) (an introductory guide to R, Python, SAS, STATA, SPSS, and NVIVO)
5. [Social Science Research & Instruction Center Tutorials](#) (found under “Textbooks”; for SPSS and PSPP)



# ONLINE LABS IN R AND PYTHON



Instructors can create a [GitHub](#) repository and then use [mybinder](#) to share the lab materials using a link with students.

- Creates separate 'work' environments for each student
- Only requires an internet connection

Labs formatted as [Jupyter](#) notebooks have the following advantages:

- Code is interactive and feedback instantaneous
- Students never need to download software
- Output can be easily saved





# NEED MORE INFORMATION, CHECK OUT ...

MyBinder tutorials:

- [Zero to MyBinder in R](#)
- [Zero to MyBinder in Python](#)

Jupyter notebook resources:

- [Getting your class going with Jupyter](#)
- [Python & Data 1: Intro to Python for Data Analysis](#)

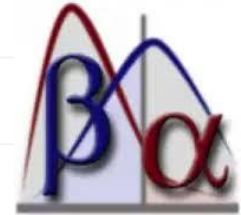
# TIPS FOR RUNNING LABS USING OTHER SOFTWARE

**TIP 1:** Teach students how to save their code or output in lesson one

**TIP 2:** Consider either pre-recoding lab sessions or providing students with an annotated version of code/output

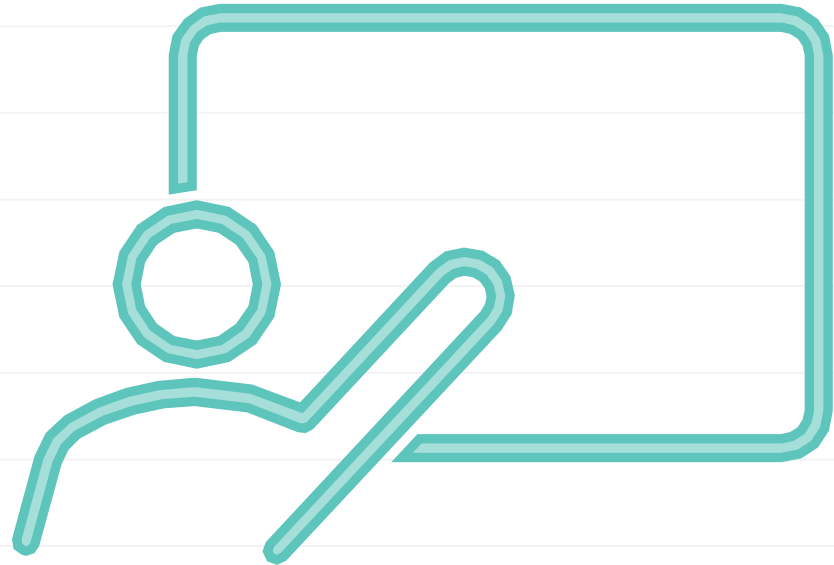
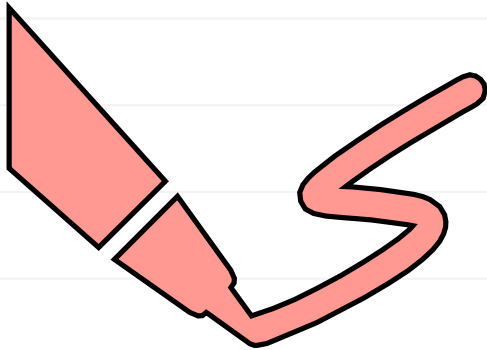
**TIP 3:** Host virtual office hours for labs

**TIP 4:** Post replies to common lab questions on the course message board



# ADDITIONAL TOOLS TO ASSIST WITH LABS

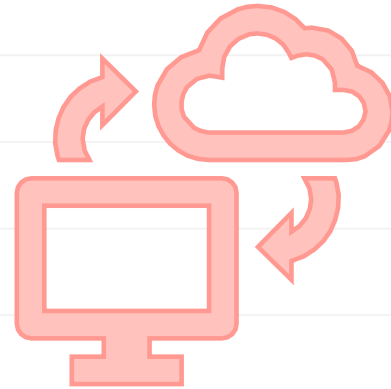
To mimic writing on the board there are few tools that may help with “problem-solving” on the fly such as [Google JamBoard](#), [Zoom whiteboard](#), and [SketchTogether](#) (has Slack integration making it a great option for group work).



# QUIZZES, SURVEYS, AND POLLING

During a live lecture or lab session, short quizzes, surveys, or polls can be a great way to keep students engaged in the learning process. The following tools can be used to administer quizzes or polls virtually:

- [Survey Monkey](#)
- [Poll Everywhere](#)
- [iClicker Reef](#)
- [Google Forms](#) (add [Flubaroo](#) to grade)
- [Zoom polls](#)



# PROCTORING, EXAMS, AND ALTERNATIVE ASSESSMENTS

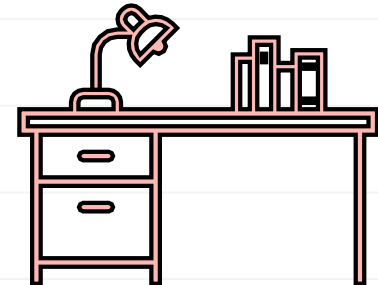
Instructors can administer timed exams using university learning management systems (Canvas, Blackboard, etc.) or [Gradescope](#). If using R, consider the [R/Exams package](#).

To prevent cheating, different proctoring options exist (e.g., [Lockdown Browser](#), [Eximity](#), and [ProctorU](#)). Check with your university to see what they recommend. Be aware *some* online proctoring tools require that students have a webcam.



More flexible methods/statistics assessments include:

- Take-home exams
- Qualitative or quantitative course papers
- Coding portfolios based on commands learned in labs



# HOPE THESE RESOURCES WERE HELPFUL!

If you have any questions or comments (including any great resources we missed) please feel free to send an email to Diana Liao at [info@fabbs.org](mailto:info@fabbs.org).



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