



# Engaging Students in Quantitative Methods Courses

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## Abstract

Courses in quantitative methods can be anxiety provoking for students. Student anxiety related to these courses can lead to poor academic performance. In this poster I discuss methods I have used to increase engagement in quantitative methods courses with a goal of subsequently reducing student anxiety. Methods include catering to student research interests, expressing enthusiasm for course materials and its applications, and engaging students in creative work related to course content.

## Anxiety and Performance

- Many students in social and behavioral sciences identify statistics and quantitative methods courses as the most anxiety-inducing of their coursework (Zeidner, 1991)
- As many as 80% of graduate students in social and behavioral sciences report statistics anxiety (Onwuegbuzie and Wilson, 2003)
- Statistics anxiety can lead to procrastination and poor academic performance in quantitative methods courses (Onwuegbuzie, 2004)
- Increasing student engagement in quantitative methods courses may reduce procrastination and disrupt the relationship between anxiety and performance

## Increasing Engagement

- Make course topics relatable toward students
  - Use examples from relevant published research
  - Develop assessments based on student research interests
  - Match assessments to problems students will face in their future careers
- Express enthusiasm for course topics, and how methods can be used
  - Reframe statistics as a way to see what information data contains instead of as a chore
- Engage students in creative projects related to course topics

## Use Examples from Relevant Research

- Make use of open data and open materials for course examples
  - Open Stats Lab (McIntyre, 2021) provides data analysis examples from studies published in Psychological Science: [openstatslab.com](https://openstatslab.com)
    - Original data, example activities, open access original articles are freely available.
  - Use national data sets for example data (e.g. ECLS-K, Add Health, GSS)
    - Students gain experience cleaning data
    - Diverse samples
    - Longitudinal data
    - Wide variety of samples
  - Data repositories for published studies (e.g. OSF (<http://osf.io>), ICPSR (<http://icpsr.umich.edu/>))
    - Raw data from published studies
    - Require preparing and cleaning before using for course examples

## Develop Assessments Based on Student Research Interests

- Assess student research interests at the start of the semester
- Use student research interests for assignments on problem sets and exams
  - Provides a wide range of topics for questions
- Assign final projects based on topics of interest
  - Generate a fake research study based on student research interests and have students analyze data
  - Students complete a research project that requires them to analyze data they, or their advisors have collected
    - This project allows students to have a “hands on” experience using the analysis techniques discussed in class
  - Many class projects have been presented at regional or national conferences or published in peer reviewed journals

## Creative Projects Based on Course Topics

- Assignments include creating poems, memes, or Halloween costumes that are related to course content
- Examples:

Brain is exploding  
ANOVA, you are to blame  
Give me relief, please

Matrix Algebra  
leaves you scratching your head, huh?  
Let's find a new way !

Oh, mediation  
How often the researcher  
Does you injustice

Structural equation modeling  
Makes me need some coddling  
For this poor old brain  
Keeps falling off the train  
As I continue dawdling



## References

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- Zeidner, M. (1991). Statistics and mathematics anxiety in social science students: Some interesting parallels. *British Journal of Educational Psychology*, 61(3), 319-328.