Connecting Teaching & Learning: Measuring the Effects of Pedagogy on Course Evaluations

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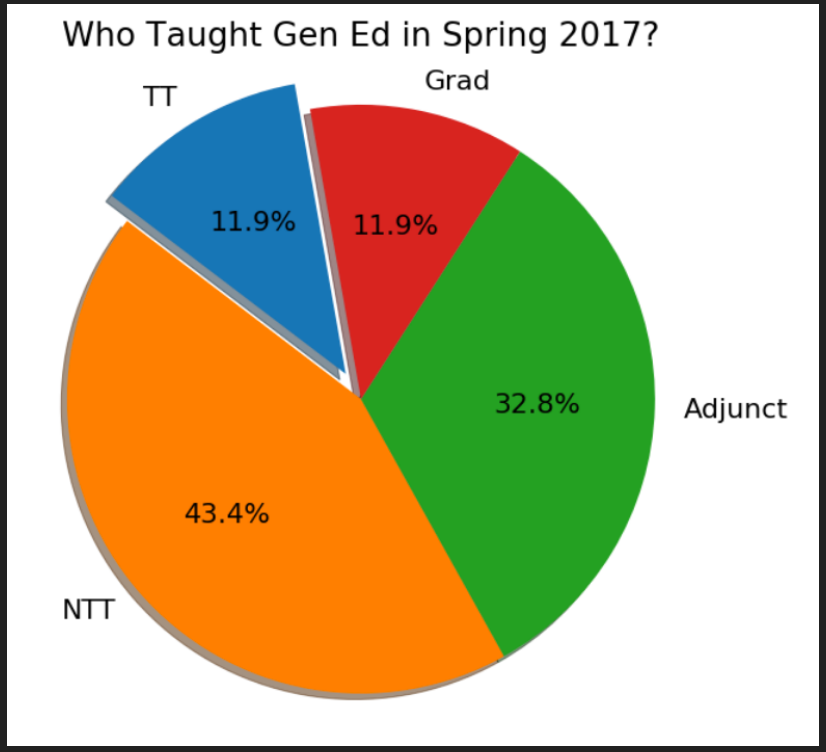
Some Facts About Temple University

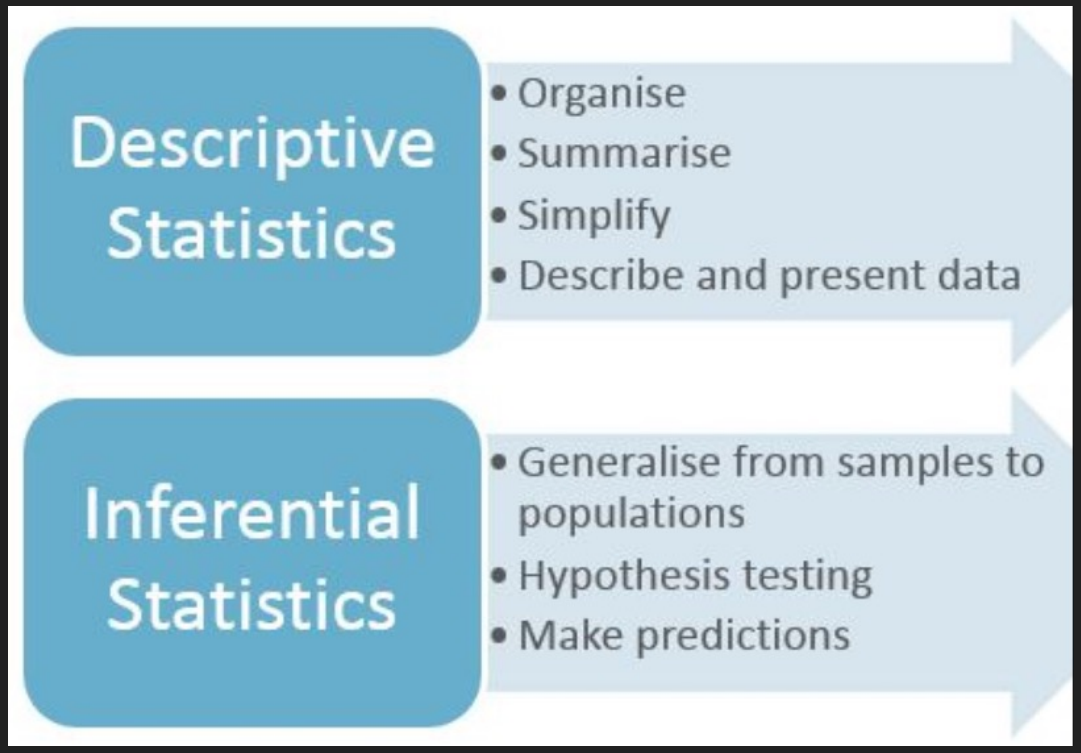
- We are a:
  - large, Research Tier I
  - state-related, urban institution with
  - 28,000 undergraduate students and 14,000 graduate and professional students.
- Our General Education Program is:
  - the required core curriculum for undergraduate students, itself
  - composed of 11 courses across 10 areas of learning and skill development and is
  - designed to fulfill program-wide and area-specific learning goals

Why Did You Do This Study?

- Most of our instructors are part-time and contingent, which means course evaluations play a key role in their evaluation and retention.
- However, many faculty (in GenEd and across the University) claim students evaluate instructors based on their grade, not on their teaching.
- **So is this true? If so, to what extent?**
- Our study was **NOT** designed to be evaluative but rather give us a bird's eye view of the whole program and allow us to find ways to support faculty *as a whole*.



Descriptive vs. Inferential Statistics



Descriptive Questions:

1. What is the average class size by college or department?
2. What percentage of students are transfers?

Inferential Questions:

1. Does class size influence student grades?
2. What factors influence student retention among first generation college students?

Share Your Thoughts! [5 mins.]

- Do you (or your office) perform analyses of institutional data in your assessment efforts around teaching and learning?
- If yes, do you use descriptive or inferential approaches?
- If no, what are some challenges associated with obtaining and using data at your institution?

What Data Did You Use?

- Population was ~10,000 course section spread across 15 semesters (Fall 2011 – Spring 2016, including summer session).
- During this period, course evaluations included survey questions **for instructors** regarding teaching techniques used in each section taught.
- Variables in study:
  - **Student:** GenEd student course grade, HS GPA, SAT Math & SAT Verbal Scores
  - **Instructor:** teaching techniques used
  - **Course:** course evaluation responses
- Wait! What about demographic variables?
  - We **DO** have data regard student gender and race as well as instructor gender and experience (e.g. rank, years teaching), **BUT** given the complexity of this model, we saved these variables for a follow up study,

Share Your Thoughts! [5 mins.]

- Does your institution include additional questions about instructor pedagogy in your course evaluations?
- If yes, have you drawn upon those questions or data in your assessment projects?
- If not, is there a possibility to add these types of questions?

Our Research Questions

Do traditional and nontraditional pedagogical techniques influence the relationship between course grades and course evaluations…

- ✓In STEM GenEd Courses?
- ✓In Social Science GenEd Courses?
- ✓In Arts & Humanities GenEd Courses?

Wording of Instructor Pedagogy Questions on Course Evaluation Forms

1. **Does this course make use of any of the following:**
   - ✓ 1) None (or little) required; 2) Some required; 3) Much required
2. **Which of the following items best represent the approaches used in this course?**
   - ✓ Used or Not Used
3. **Describe the course requirements with respect to the features listed below:**
   - ✓ 1) None (or little) required; 2) Some required; 3) Much required

Organizing Pedagogical Techniques

Organizing Pedagogical Techniques								
			STEM GenEds		Social Science GenEds		Arts & Humanities GenEds	
Variable Name	**Variable Description**	**Examples**	**Traditional Pedagogy**	**Non-Traditional Pedagogy**	**Traditional Pedagogy**	**Non-Traditional Pedagogy**	**Traditional Pedagogy**	**Non-Traditional Pedagogy**
lecture	Use of Lecture Style	Oral Lecture, Powerpoint Presentation	X		X		X	
discuss	Use of Discussion Section	Breakdown/Analysis of Lecture Component, Administer Exams	X		X		X	
seminar	Use of Seminar Style	Intense Small Group Discussion	X		X		X	
group	Use of Groupwork	Problem Solving Assignments, Group Projects	X			X		X
multimed	Use of Multimedia	Movies/Videos, Animations, Music	X		X		X	
math	Use of Mathematics Skills	Quantitative Problem Solving, Calculations	X			X		X
oral	Use of Oral Presentation	Oral Reports, Student Created PowerPoints		X	X		X	
writing	Use of Extensive Writing Assignments	Research Papers, Term Papers, Essays		X	X		X	
computer	Use of Computer Applications	SPSS, STATA, MATLAB		X		X		X
creative	Use of Creative/Artistic Design Projects	Creating Videos, Paintings, Dance Routines		X		X		X
explrn	Use of Experiential Learning or Practicum	Field Trips, Volunteering, Apprenticeship		X		X		X

Organizing Course Evaluation Questions

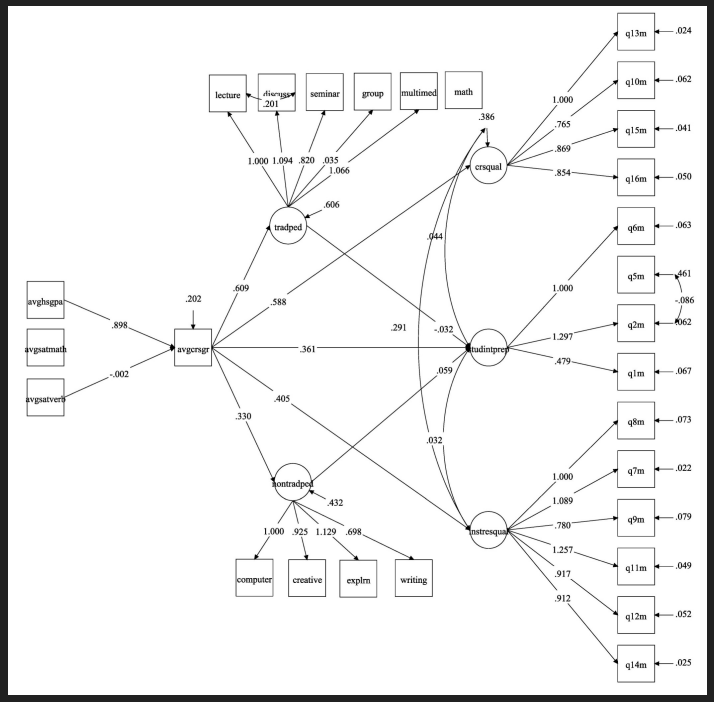
Organizing Course Evaluations Questions					
Group 1: Student Interest & Preparation		**Group 2: Instructor Responsibility & Quality**		**Group 3: Overall Course Quality**	
Variable Name	Variable Description	Variable Name	Variable Description	Variable Name	Variable Description
q6m	Came well prepared to class.	q7m	Clearly explained the educational objectives of this course.	q13m	Instructor taught this course well.
q2m	Expected grade in course.	q14m	Content was consistent with the educational objectives of this course.	q16m	Learned a great deal in this course.
q1m	Level of interest.	q11m	Provided useful feedback about exams, projects, and assignments.	q15m	Increased my ability to analyze and critically evaluate…
		q8m	Well organized and prepared for class.	q10m	Promoted a classroom atmosphere in which I felt free to ask questions.
		q12m	Applied grading policies fairly.		
		q9m	Conscientious in meeting class and office hour responsibilities.		

What Kind of Statistical Technique Did You Use?

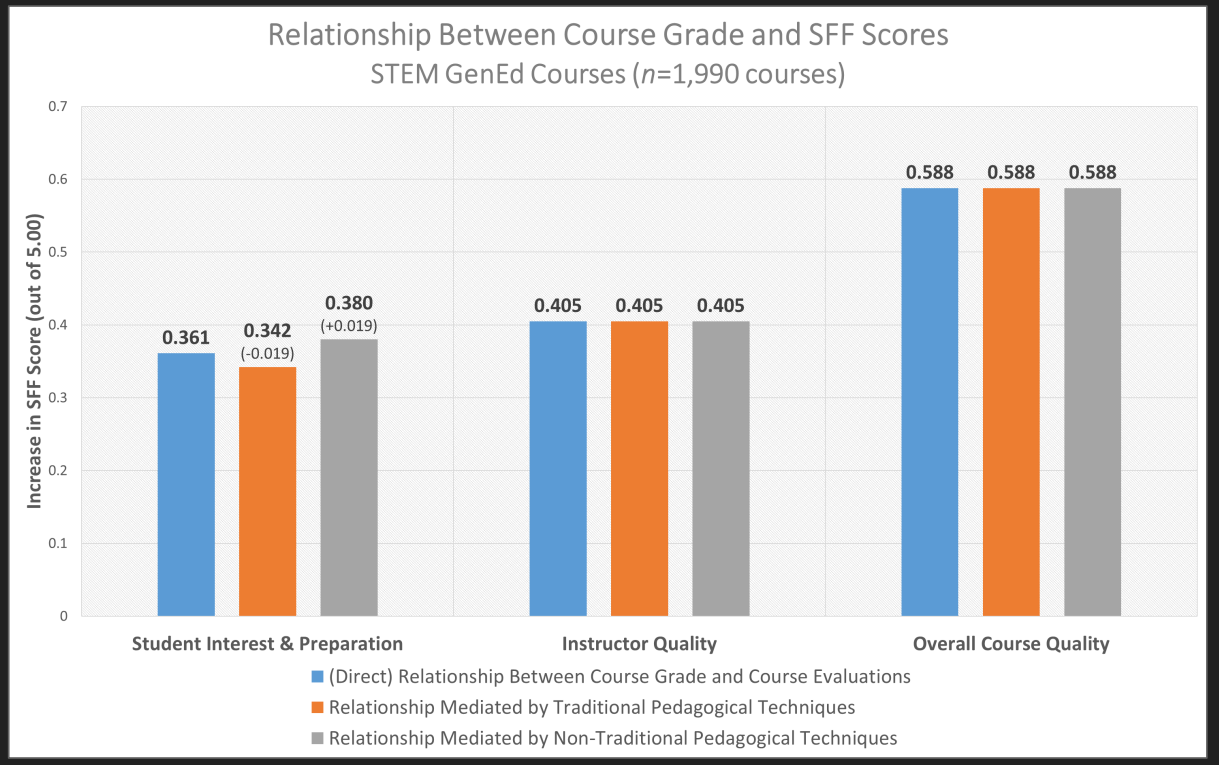
We used what are known as structural equation models (SEMs).

- ***What are SEMs?***
  - ✓ They show relationships between variables visually.
  - ✓ They also enable grouping of related variables to be treated as one unit (factor).
- ***Why use SEMs in this analysis?***
  - ✓ We need a way to map multiple relationships between standalone variables and factors.
  - ✓ We also want to understand the strength of these multiple relationships.
- ***How do you account for disciplines?***
  - ✓ Remember from the previous slide that "traditional" and "non-traditional" pedagogical techniques vary by discipline.
  - ✓ So we created three *identical* models (for each discipline) but with a key difference – the "traditional" and "non-traditional" factors were modified to reflect pedagogy in that discipline.

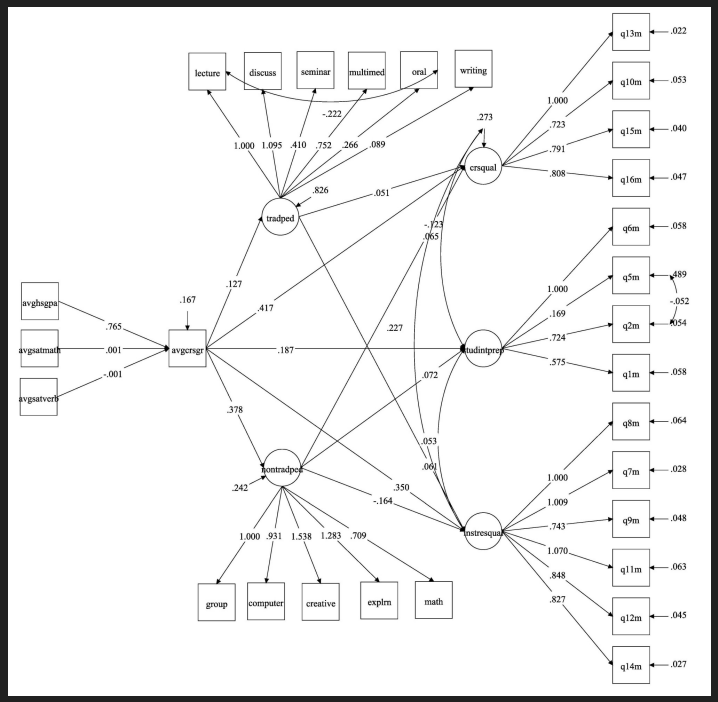
What Did You Find? [STEM GenEd Courses]



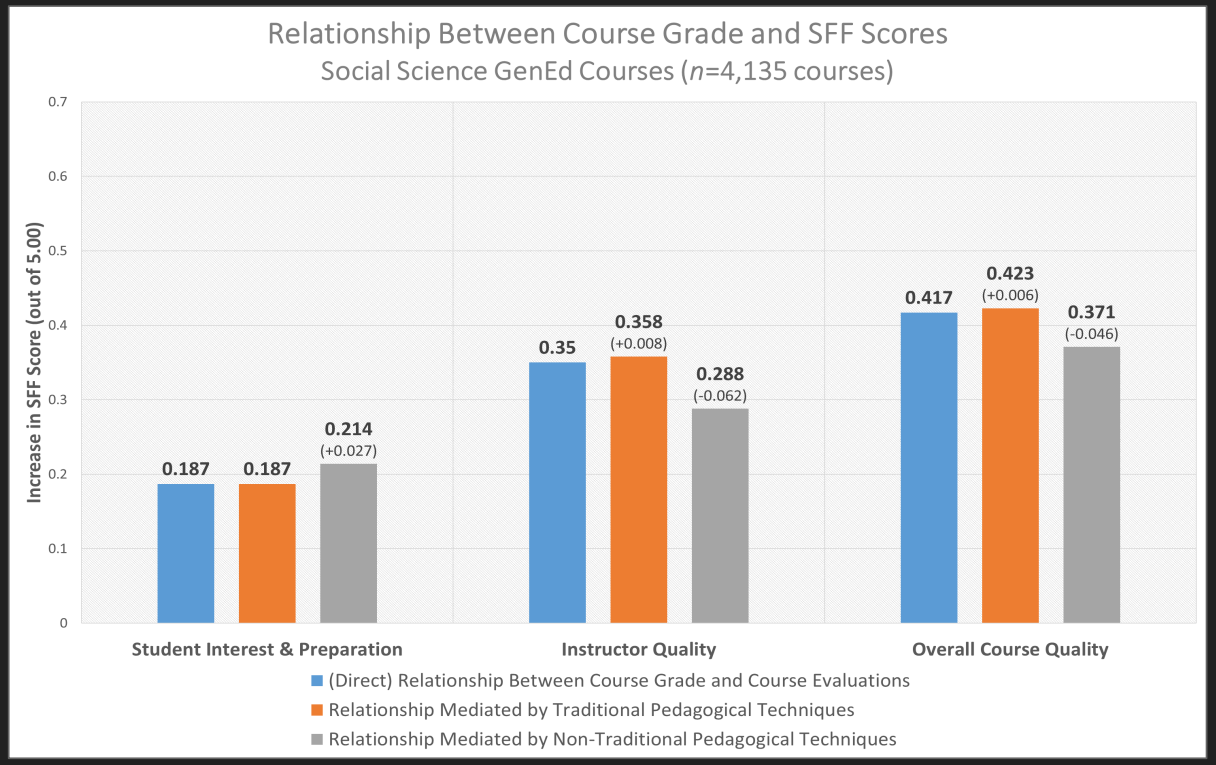
- ✓ Students cite **greater** interest when instructors use non-traditional pedagogical techniques.
- ✓ But this interest does **NOT** translate into higher perceptions of either instructional or overall course quality!



What Did You Find? [Social Science GenEd Courses]

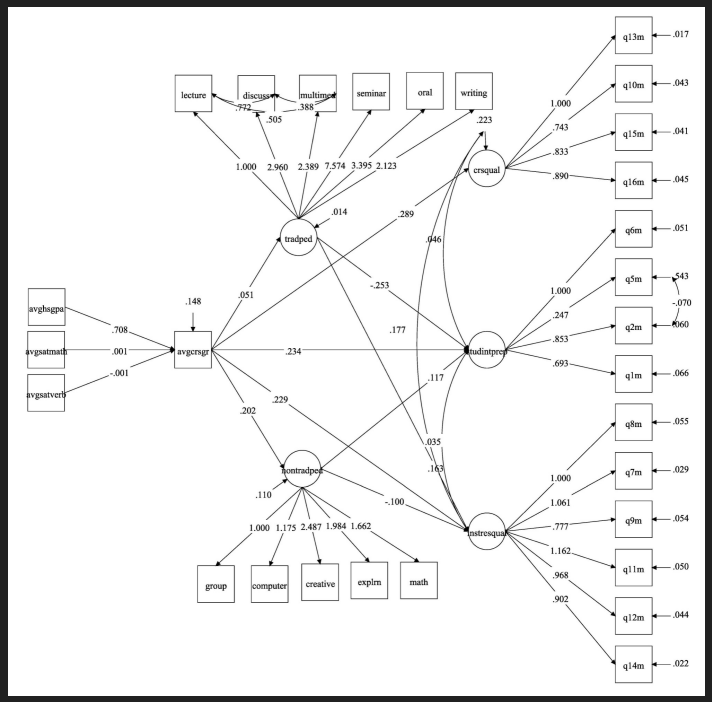


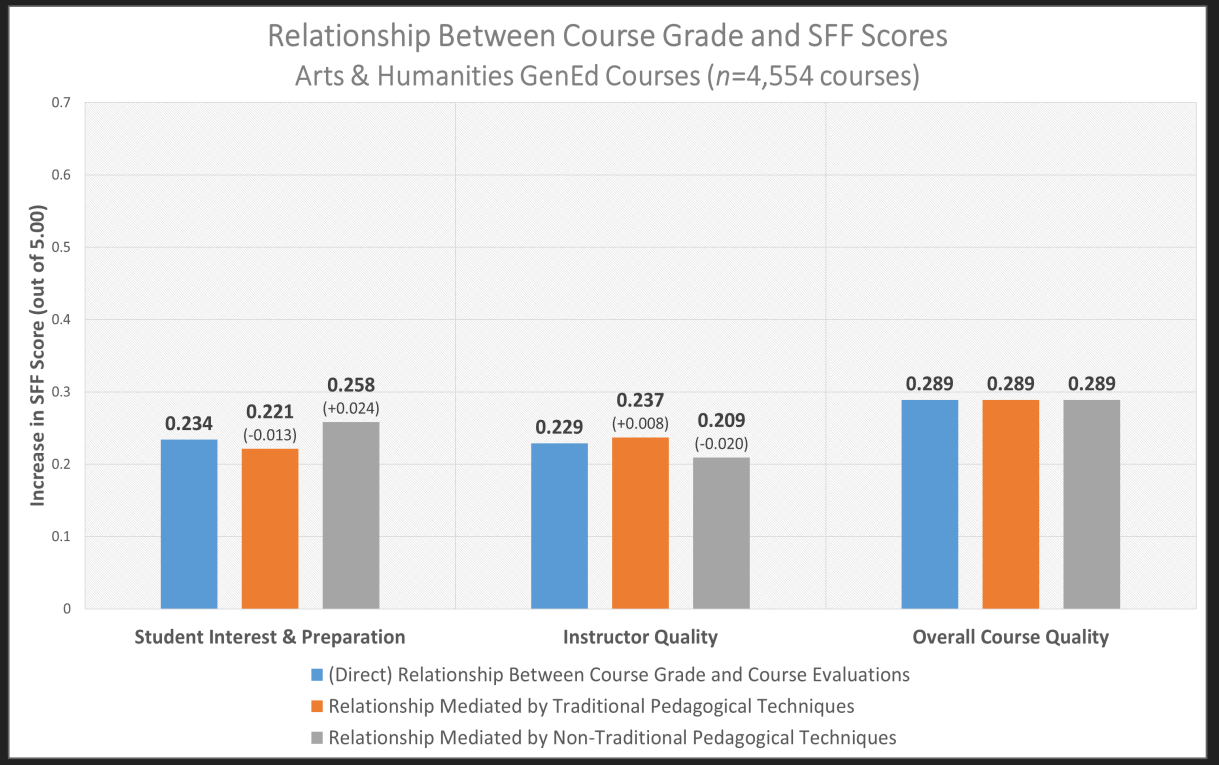
- ✓ Again, students cite **greater** interest when instructors use non-traditional pedagogical techniques.
- ✓ But this time, using non-traditional approaches results in **lower** perceptions of instructional or overall course quality!



What Did You Find? [Arts & Humanities GenEd Courses]

- ✓ Again, students cite **greater** interest when instructors use non-traditional pedagogical techniques.
- ✓ But this time, using non-traditional approaches results in **lower** perceptions of instructional quality but makes **no difference** when it comes to overall course quality!





Share your thoughts!

- What are your thoughts regarding these findings?
- Do these findings inform your practice in any way?

What Did YOU Take Away From This?

- Perception of teaching technique as traditional or non-traditional depends on the disciplinary area.
- In all three disciplines, using non-traditional teaching techniques DOES increase student interest and preparation!
- In STEM, students don't see this interest and preparation having any bearing on either the instructional or overall course quality.
- In Social Science and Arts & Humanities GenEds, students are "punishing" instructors for using non-traditional techniques.

So What are YOU Going to Do About It?

Provide More Resource and Support for Instructors

- **At the classroom level, instructors should consider:**
  - ✓ Be more explicit in their syllabi about both the technique being used and *why* it is being used.
  - ✓ If a technique (e.g. groupwork, computer application) requires some prior knowledge, provide students resources to learn or refresh that knowledge.
- **At the institutional level, we need to:**
  - ✓ Provide more instructional related professional development where instructors can exchange and discuss pedagogical techniques in a "safe space".
  - ✓ Find additional ways of instructor evaluation and support (e.g. peer coaching, mentorship) because of the strong relationship between grades and course evaluation scores.

Question & Answer Round [7 mins.]

Please feel free to ask questions related to the methodology or findings. Comments too are welcome!

BUT if you have a question about how this type of analysis can be applied to your institution or programme, I encourage you to contact me via email. (Next Slide)

During the Q&A period, please feel free to complete the session evaluation form. You can return it to me following the end of the session.

Thank You!

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