

# Predicting Online Student Outcomes From a Measure of Course Quality

Shanna Smith Jaggars  
Di Xu

Community College Research Center  
Teachers College, Columbia University

American Educational Research Association  
April 16, 2012, Vancouver BC

# The Study

- Part of larger qualitative study on teaching and learning in the online environment
- Fieldwork at 2 community colleges in Virginia
- Observed 19 instructors' online courses (23 courses, 35 sections taught spring 2011)
  - Accounting, Business, Chemistry, English, History, Humanities, Information Technology, Math, Music, Psychology, Sociology
- For all students enrolled in those 35 sections, received demographic & complete transcript data

# Creating a Quality Measure

- More holistic, not just checking off items
- Based on:
  - Existing literature and quality measures
  - Faculty, administrator, and student perceptions of quality
- Four areas (each rated 1-3):
  - Organization & presentation
  - Clarity & connection of learning objectives
  - Interaction
  - Technology

# Organization & Presentation

- Course has easy to navigate interface that is generally self-explanatory and helps students identify and manage course requirements (e.g., easy to find tasks/materials for each week)
  1. Unclear navigation in presentation of course and no instructions of how to approach navigation.
  2. Clear navigation in presentation of course, but no instructions of how to approach navigation.
  3. Clear navigation in presentation of course with step-by-step instructions of how to approach course navigation.

# Learning Objectives

- Learning objectives & performance standards clearly specified; connections among them articulated to provide explicit rationale & coherence across instructional activities.
  1. No course-level or unit-level objectives. No indication of or unclear expectations for assignments.
  2. Includes some, but not all of course-level and unit-level objectives, and expectations for assignments.
  3. Course-level and unit-level objectives, along with clear expectations for assignments.

# Interaction

- Plentiful opportunities for students to meaningfully interact with the instructor and other students in ways that enhance knowledge development.
  1. No to limited visible instructor presence and/or useful interactions amongst students.
  2. Moderate visible instructor presence and/or useful interaction amongst students.
  3. Strong visible instructor presence and useful interaction amongst students.

# Technology

- Technologies are effectively used in service of particular pedagogical goals, facilitate diversification of instructional activities
  1. No or limited use of technology.
  2. Consistent use of technology, but with limited tools and/or no link to course objectives.
  3. Consistent use of a variety of technological tools linked to course objectives.

# Overall Rubric Scores

$N = 23$

Subscale	Mean (SD)	Org&Pres	LearnObj	Interaction
Org & Pres	1.78 (0.60)			
Learn Obj.	2.00 (0.74)	0.31		
Interaction	2.04 (0.77)	0.42*	0.32	
Technology	1.78 (0.80)	0.47*	0.62**	0.46*

- Tended to have higher ratings in terms of Interaction and Learning Objectives
- Moderate intercorrelations

# Completers in the 23 Courses

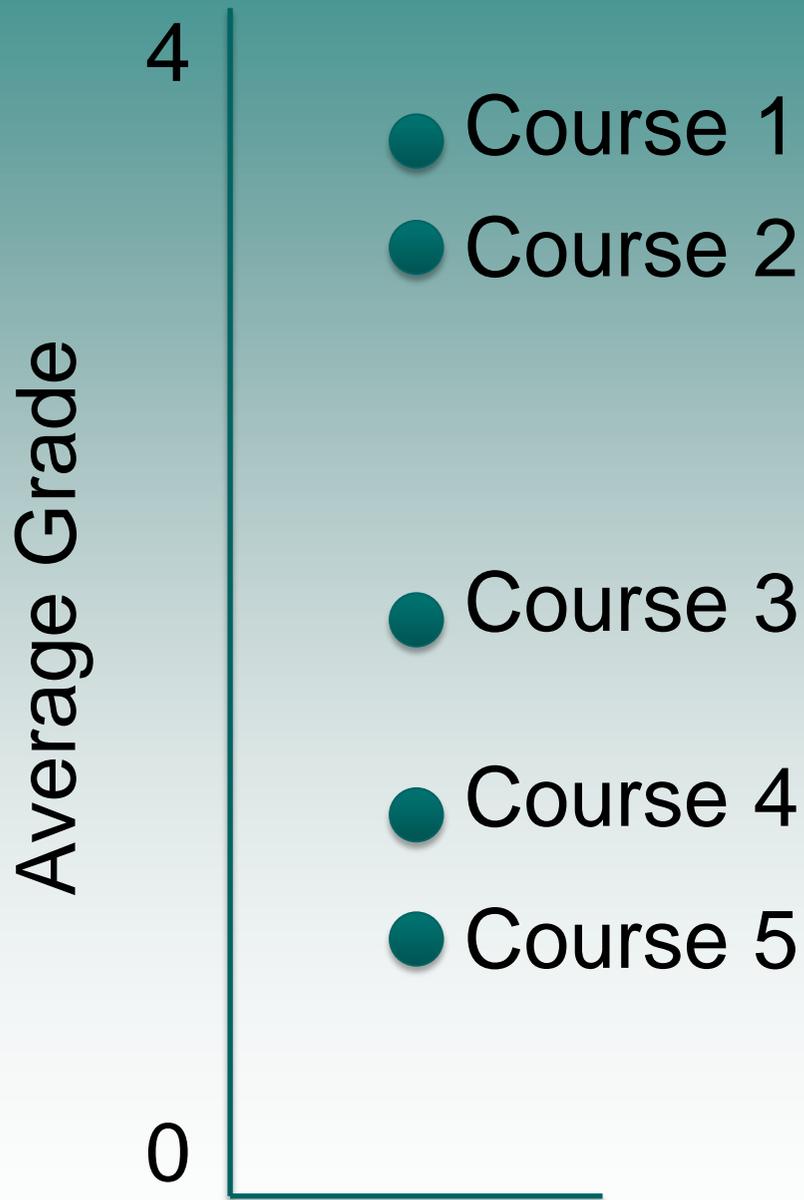
$N = 678$

- 76% Female, 56% White, 34% Black
- 54% under age 25, 51% currently full-time
- 87% continuing students (28 previous credits, prior gpa = 2.74)
- 69% previous online
- Average end-of-course grade for target courses = 2.32

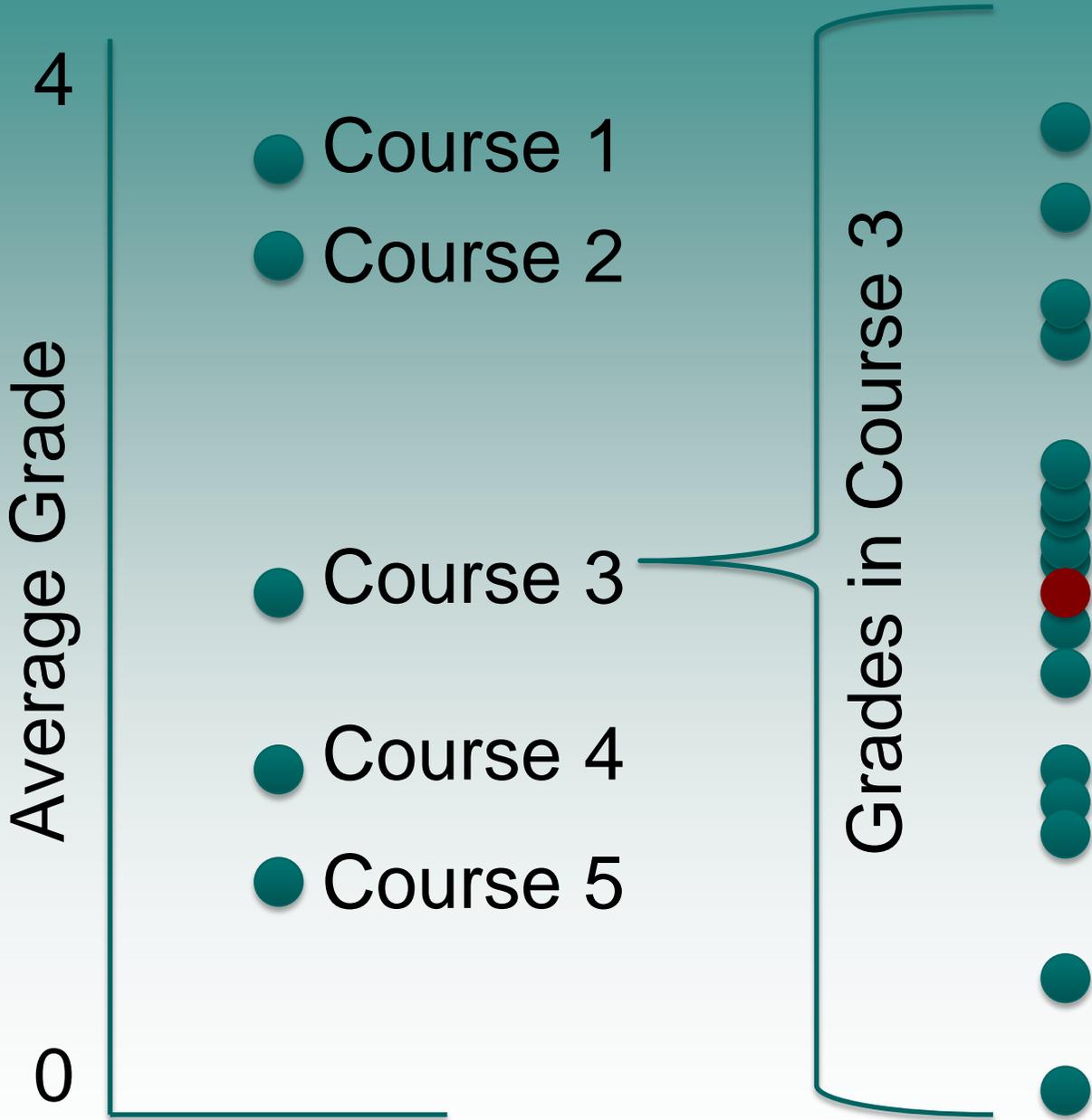
# Raw correlations with grade

$N = 678$

Subscale	$r$	sig.
Org & Pres	-0.05	<i>n.s.</i>
Learn Obj.	0.05	<i>n.s.</i>
Interaction	0.15	$p < 0.001$
Technology	0.12	$p < 0.01$



- We can predict variation in course-level outcomes...
- using course characteristics (like rubric subscales)
- using aggregated student characteristics (like % female)

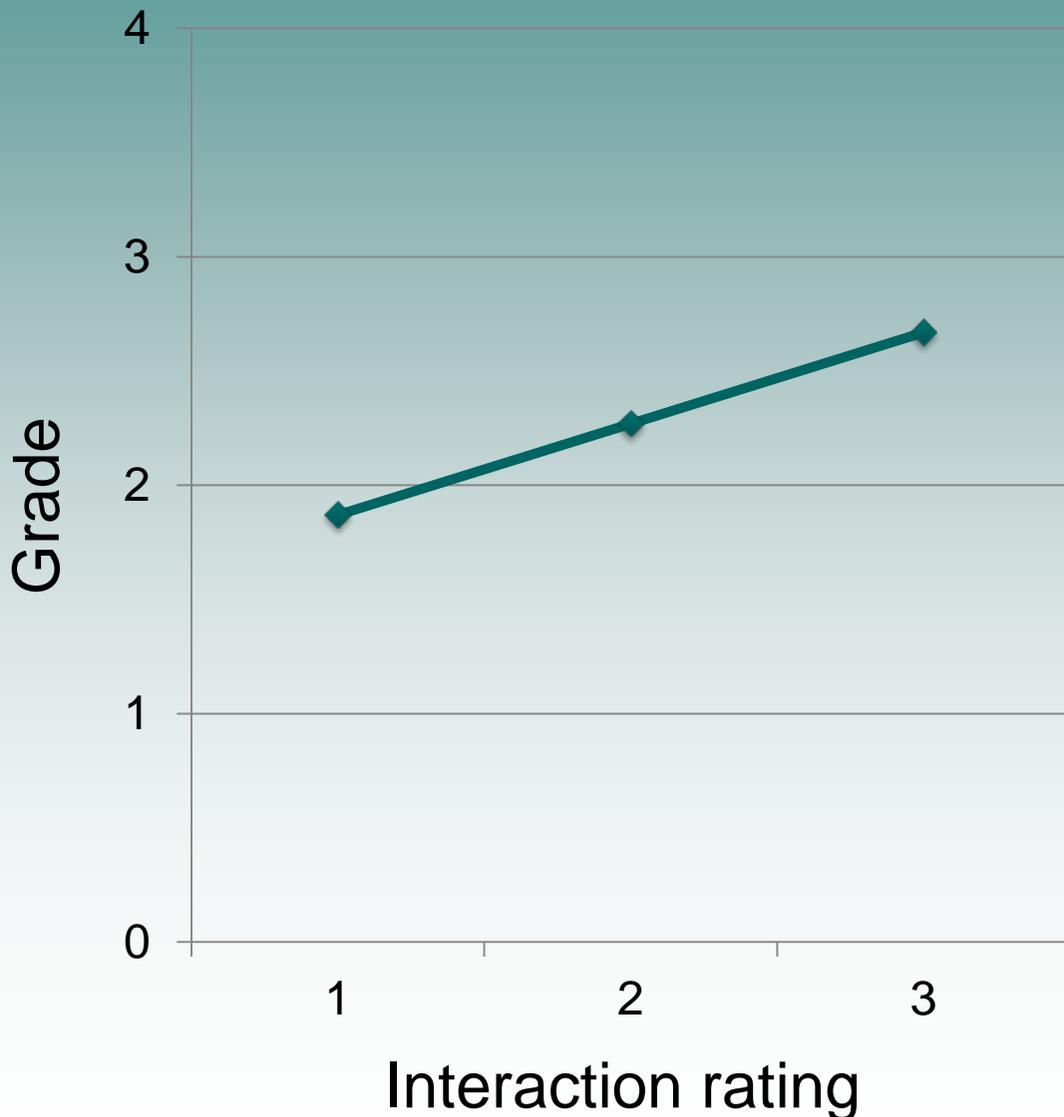


- We can predict variation in student-level outcomes within a course
- Using student chars (like individual is female)

# Model Results

- Student-level predictors explained 6% of student-level variation, 8% of course-level
- Adding four subscales increased explanation of course-level variance to 23%
- All of that additional explanatory power came from Interaction.
- Interaction  $b = 0.40$  (0.19),  $p < .05$

# Estimated Effect of Interaction



- Courses with Interaction of '2' average grade = 2.27 (C-)
- Interaction '3' = C+
- Interaction '1' = D+

# High Instructor Interaction

- Regular announcement reminders, multiple communication options (including f2f), timely responses, solicit & respond to student feedback
- Sense that instructor “cares”
  - “She really has a passion for it. . . She was like, ‘You don’t get it; well, what can I [do]?’ She really wants you to understand it... She took the time to learn how to use the live chat and the communication discussion board, you know, audio... She’s just a ‘one of a kind’ type of instructor. She’s someone I’ll never forget just because of her passion and how much she cares.”

# Student-Student Interaction

- In most classes, limited to required but perfunctory posts and responses
- Instructor:

“That’s a piece of it that I’m sort of ‘up in the air’ on, and don’t really know how to bring it together. I used to have discussion boards out there for ‘chapter one discussion board,’ ‘chapter two discussion board,’ where they could go out there and post something about the chapter, and either I would respond or someone else would respond...No one ever did...So the point with this conversion over the spring, I didn’t even bother...Because it hadn’t worked in the past.”

# Interaction

## Discussion Board Grading Rubric

Read instructions carefully. To enter the discussion board, click on the title.

Once inside the discussion board, click on the Add Thread button.

Timely posting is essential! Do *NOT* wait until the last minute to post your thoughts and replies.

Waiting until the last minute to post hampers your classmate's abilities to complete *their* work too, as they need to post replies.

Grading Rubric:

10 pts possible for excellent threads	Focus	Specificity	Support	Thoughtfulness	Use of Language
<b>Excellent (2 points for post)</b>	Comments make vividly clear references to specific readings	Majority of comments include specific details	Comments are well-supported and documented	Comments are articulate and show a high level of thought	Writing is well-organized, unified and error-free
<b>Good (1 point for post)</b>	Comments make some reference to readings	Some comments include specific details	Comments are somewhat well-supported	Comments show some thought	Writing is somewhat organized and unified, with some errors
<b>Fails to meet Expectations (0 points)</b>	Comments make no reference to readings	No comments include specific details	Comments are not supported	Comments show no thought	Writing is not organized or unified; errors impair communication

**Excellent Reply: (5 points)** Reply addresses all points or questions made by the author and draws upon readings to validate their position

**Good Reply: (2.5 points)** Reply addresses some points or questions made by the author

**Reply That Fails Expectations: (0-1 points)** Reply basically says "Me, too!" or "I agree with Bob."

**Total Possible Points: 10 for each post and 5 for two replies= 20 points**

**Posts and replies received after the due date will receive a 5 point reduction per day.**

# Summary

- Created an online course quality rubric including four quality subscales
- Identified Interaction as the only significant indicator of student grades
- High-interaction courses employed a set of strategies that seemed to signal instructor caring
- High-interaction courses clearly specified expectations of student postings to facilitate meaningful student interaction

# For more information:

Nikki Edgecombe: [edgecombe@tc.edu](mailto:edgecombe@tc.edu)

Shanna Smith Jaggars: [jaggars@tc.edu](mailto:jaggars@tc.edu)

Rachel Hare Bork: [hare@tc.edu](mailto:hare@tc.edu)

Zawadi Rucks-Ahidiana: [rucks@tc.edu](mailto:rucks@tc.edu)

Please visit us on the web at

<http://ccrc.tc.columbia.edu>,

where you can download presentations, reports,  
*CCRC Briefs*, and sign-up for news announcements.

Community College Research Center  
Institute on Education and the Economy, Teachers College, Columbia University  
525 West 120th Street, Box 174, New York, NY 10027

E-mail: [ccrc@columbia.edu](mailto:ccrc@columbia.edu)

Telephone: 212.678.3091