Preliminary results of a course transformation in Research Methods Lab
Background RM Lab

• Lab component of the Research Methods class
  • RM Lab is 40% of overall course grade
    – Main lecture previously transformed by Ben Rottman
    – RM is required for Psychology Major
  • Lab meets for 3h and 20 min/week
    – Enrollment 150 – 200 students
    – 9-10 sections with 24 students each
  • RM Lab is a designated w course
Goals of RM Lab

• Provide **hands-on activities** related to:
  • Experimental design
  • Data collection
  • Data analysis

• Learn:
  • **Scientific writing**
  • Use APA formatting
  • Research literature
RM Lab and writing

- Research Methods is a W course
  - Writing intensive

W-Courses are designed to teach writing within a discipline through writing assignments that are distributed across the entire term. Students should produce at least 20-24 pages of written work; a significant portion of this work should be substantially revised in response to instructor feedback and class discussion.

http://www.as.pitt.edu/fac/teaching/general-requirements
Problem 1: Lectures in lab

- Lab contains several lecture parts
  - APA formatting
  - Statistics review
  - How to write a paper
  - How to research literature

Student perceptions assessed in March 2016 claimed that 47% of class time was spent on Statistics and APA style review!

Too much time is spend on review lectures

Takes away time from hands-on activities and writing
Review lectures

• Instructor view:
  • Review lectures are boring
  • Review lectures are **not effective**
    – Large proportion of mistakes in writing are related to statistics and APA formatting
  • Statistics is a pre-requisite for the class
    – Review is necessary, but should not take up 50% of class

Student behavior in class confirms
Problem 2: Assignments

• Students complete 8 homework assignments
  • Two papers
  • 6 “busy work” assignments
    – Simplified
    – Idealized
    – Unconnected

Assignments are not related to real-world examples and do not form a clear sequence.
How to solve the two problems

1) Too much time is spend on lectures and review

Eliminate in-class review
- Create online review materials
- Provide immediate feedback with online mini-quizzes
- Allows students to review once or multiple times, as needed

2) Assignments are not related to real-world examples and do not form a clear sequence

Replace assignments
- Create writing sequence based on published research
- Incorporate writing into class-time
- Early writing as low stakes assignments
Course Transformation

• Received dB-SERC grant to address these two specific problems

• Started implementation in Fall 2016

• Work in progress as materials get revised based on student feedback
TRANSFORMATION

Initial transformation used in Fall 2016
Course Transformation

• Fall 2016 class was divided into two syllabi
  • Old
    – 4 sections (about 24 students each)
  • Revised
    – 5 sections (about 24 students each)

• Most instructors were randomly assigned
  – Two instructors came from Anthropology and randomly split
    (one in old and one in revised)
  – Klaus Libertus was assigned Revised syllabus
    » To facilitate content creation
# Old vs. Revised Syllabus

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction, data collection</td>
</tr>
<tr>
<td>2</td>
<td>APA Style Review</td>
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<tr>
<td>3</td>
<td>Stats Review</td>
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<td>4</td>
<td>Library tutorial</td>
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<tr>
<td>5</td>
<td>Paper 1 analysis and outline</td>
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<td>6</td>
<td>Paper 1 peer review</td>
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<td>7</td>
<td>Stats Review 2</td>
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<tr>
<td>8</td>
<td>Paper 1 due</td>
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<tr>
<td>9</td>
<td>Study 2 Design</td>
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<tr>
<td>10</td>
<td>Data Collection</td>
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<tr>
<td>11</td>
<td>Data analysis</td>
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<tr>
<td>12</td>
<td>Paper 2 draft</td>
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<tr>
<td>13</td>
<td>Writing clinic</td>
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<tr>
<td>14</td>
<td>Paper 2 final</td>
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</table>

50% of sections used traditional syllabus

<table>
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<tbody>
<tr>
<td>1</td>
<td>Introduction, data collection</td>
</tr>
<tr>
<td>2</td>
<td>APA homework, In-class writing 1</td>
</tr>
<tr>
<td>3</td>
<td>Stats homework, In-class writing 2</td>
</tr>
<tr>
<td>4</td>
<td>Library tutorial</td>
</tr>
<tr>
<td>5</td>
<td>Paper 1 data analysis and outline</td>
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<tr>
<td>6</td>
<td>Paper 1 peer review</td>
</tr>
<tr>
<td>7</td>
<td>Stats homework 2, ICW 3</td>
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<tr>
<td>8</td>
<td>Paper 1 due,</td>
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<tr>
<td>9</td>
<td>Study 2 Design</td>
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<td>10</td>
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</table>

50% of sections used revised syllabus

IDENTICAL SECOND HALF OF CLASS
Review lectures ➔ Online videos

- Old syllabus retained lectures from previous semesters
  - But content was edited and updated
  - Overall content was shortened in comparison to past years

- Revised syllabus replaced APA formatting and Statistics lectures
  - Online lectures with same content
  - Provided to students via MyPitt Video (Panopto)

- Lecture content was identical in both cases
  - For initial transformation, future goal is to make better online lectures
Writing sequence

• Revised syllabus included 3 in-class writing activities
  • Time used for review lectures in old syllabus

• Sequence is based on published research article
  • Open data article
  • Students will “reverse-engineer” parts of the article
  • Compare their own writing to published article in the end

• Goal: Engaging with real, concrete research increases student interest in the material
Writing sequence

• Selected article:

• Article was NOT selected for its content
  • Study 2 uses an online survey and conducts t-test and Chi-square tests
  • Matches what is taught in Statistics review
  • Data is open and available for download

• Class does include a peer review segment
  • Implications of article for peer review were discussed
  • Main message: “Don’t get discouraged”
  • Not a main objective of this assignment
Discouraged by Peer Excellence: Exposure to Exemplary Peer Performance Causes Quitting

Todd Rogers\(^1\) and Avi Feller\(^2\)

\(^1\)Harvard Kennedy School, Harvard University, and \(^2\)Goldman School of Public Policy, University of California, Berkeley

Abstract

People are exposed to exemplary peer performances often (and sometimes by design in interventions). In two studies, we showed that exposure to exemplary peer performances can undermine motivation and success by causing people to perceive that they cannot attain their peers’ high levels of performance. It also causes de-identification with the relevant domain. We examined such discouragement by peer excellence by exploiting the incidental exposure to peers’ abilities that occurs when students are asked to assess each other’s work. Study 1 was a natural experiment in a massive open online course that employed peer assessment \((N = 5,740)\). Exposure to exemplary peer performances caused a large proportion of students to quit the course. Study 2 explored underlying psychological mechanisms in an online replication \((N = 361)\). Discouragement by peer excellence has theoretical implications for work on social judgment, social comparison, and reference bias and has practical implications for interventions that induce social comparisons.
EVALUATION

Preliminary results of transformation in Fall 2016

THERE'S A PROBLEM WITH THE NUT...
Measureable course goals

1. Performance
   • Overall Lab grades
   • Lab grades on Paper 1
   • Lab grades on Paper 2

2. Attitudes
   • 3 online surveys (Pre, Mid, Post)
   • Towards Psychology in general
   • Experience of Lab
   • Feeling prepared for writing
   • Class time distribution

3. Qualitative comments
   • Open comment field on survey
1) Performance

• Overall lab grades

• Grades on Paper assignments
  • Paper 1 after revision
    – Same topic for all sections
  • Paper 2
    – Different topic in each section
    – Note: Paper 2 is written in pairs
Results: Overall Lab grade

- Overall lab grades are not different between the two syllabi
  - 90.2% Old
  - 88.1% Revised

- Slightly lower and more variability in Revised syllabus
  - Both considered good
Results: Paper grades

• No significant differences between groups
  • Old syllabus seems to have slightly better grade on Paper 1

• Influences of teacher and expectation for class average

Next step: Have selection of papers graded by blind and independent rater
2) Attitudes

A. Towards Psychology

- 10 questions
- Rated on 7 point Likert scale
- Strongly disagree – Strongly agree
- 5 positive, 5 negative items
- Derived one composite score
Results: Attitude towards Psychology

- Ratings were slightly higher in revised class
  - Not statistically significant
  - Most likely ceiling effect – everybody loves Psychology

![Graph showing Likert Rating (Negative to Positive) for Old and Revised classes at Pre, Mid, and Post stages. The bars indicate slightly higher ratings in the revised class, but not statistically significant.]

😊
2) Attitudes

B. Lab Experience

- 5 questions
- Same 7 point Likert scale
- 3 positive, 2 negative items
- Derived one composite score

Please answer the following questions to describe your experience in the Research Methods lab class so far.

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree nor disagree</th>
<th>Somewhat agree</th>
<th>Agree</th>
<th>Strongly agree</th>
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<tbody>
<tr>
<td>Interesting</td>
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<td>Important for future</td>
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</tbody>
</table>
Results: Lab Experience

- Ratings significantly higher for Revised syllabus at Mid and Post
  - Overall lab experience has improved with revised syllabus
2) Attitudes

C. Preparation for writing

- Given before submission of Paper 1 and Paper 2
- 4 questions, all positive, composite score

At this point in Research Methods Lab, you are getting ready to submit your second full research paper (Paper 2). Please think back to the activities and assignments you completed in Lab so far and rate how prepared you feel to successfully complete this assignment.

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>I feel confident about my writing ability at this point</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>The writing activities and assignments in this class prepared me well for this assignment</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>This class offered multiple opportunities to practice writing</td>
<td>○</td>
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<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>My instructor helped me with my writing</td>
<td>○</td>
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</tr>
</tbody>
</table>
Results: Preparation for writing

- Students felt more prepared for writing using revised syllabus
  - Effect reduced for POST ($p = .078$)
Results: Distribution of class time

• Students felt that more time was spent on writing
  • Significant increase, 10% more time
  • Same pattern when compared to Spring 2016
3) Qualitative comments

- Post survey included open comment field
  - 50 students provided comments
    - 25 from old syllabus
    - 25 from revised syllabus

- Initial overview coding into Positive/Negative
  - Old: 4 positive, 21 negative (84%)
  - Revised: 6 positive, 19 negative (76%)

- Topic of negative comments:
  - Old: about the class in general and its content (in particular APA and Stats)
  - Revised: mostly about in-class writing being bad
    - For every negative comment about the homework videos there was a positive comment about them
Summary & Next steps

• No differences on performance measures
  • Next: Have blind rater grade random sample of papers from old and new syllabus
    – Gets rid of teacher/section effects

• Significant differences in attitude measurements
  • In predicted direction, transformation seems to work
  • Next: Improve quality of video lectures, fine tune in-class writing assignment
    – Will continue to change materials in Fall 2017
Feedback and comments are appreciated
  
  Feel free to make notes on handouts

Email me detailed suggestions:
  
  Klaus.Libertus@pitt.edu
Thank you

Special thanks to Beth Matway who helped develop the writing sequence
Special thanks to Carol Washburn for helping to design the revised syllabus

Special thanks to Barb Kucinski and Ben Rottman for their comments and suggestions on this transformation

Thank you for your attention and feedback