Introducing Challenging Coursework: Using partner work to improve student attitudes towards challenging tasks

Dr. Janet Casagrand
Dept. of Integrative Physiology
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Challenging Coursework

Neurophysiology
- Challenging conceptual material
- Lecture
- Problem solving - homework assignments (F05), clicker questions (F06), HELP room (F08)
- Attitudes on interventions & Measure of performance

Course
- Challenge
- Typical format: teacher-centered
- Interventions: student-centered
- Outcome Measures

Critical Thinking: Neurobiology of Disease
- Reading & interpreting primary scientific literature
- Teacher feedback
- Partner work
- Pre/post attitudes & learning (performance)
Calibrated Peer Review (CPR)

• What is CPR?
  – web-based tool (www.cpr.molsci.ucla.edu)
    • facilitates use of writing as a learning & assessment tool
    • enables frequent writing assignments without increasing instructor grading load
    • discipline & level independent

• How does it work?
  – students submit a writing assignment
    • usually roughly a paragraph
    • we did 1-2 pages (gave guiding questions on detailed rubric)
  – 3 calibrations (calibrate students as reviewers)
  – review 3 peer papers
  – self-assessment
  – students get feedback
# CPR Intervention

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<th>F07</th>
<th>Sp08</th>
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<td>CPR</td>
<td>CU Learn - mimic CPR</td>
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- **Assignments**
  - Practice Intro
- **Small group discussion**
- **Final Papers**
- **Presentation**

**Tear Factor**

- **Spr08**
- **Fall08**
- **Spr09**

| Students: too challenging |
| Instructor: ready to give up |
| Students: all about writing |
| Instructor: CU Learn too cumbersome |

**GRR**

- *Focused on content*
Partner work increases extent to which students find CPR helpful.
Partner work is viewed as beneficial

- 94% responded ‘somewhat’ or greater
- When asked to explain answer:
  - 75% felt improved quality;
    - 42%: different opinions led to better / less biased / more standardized [evaluation]
    - 26%: said one person could catch things the other missed
  - 26% discussions led to better understanding of assignment

F08, n=19
Student quotes about partner work for CPR

- “Working with someone is great b/c it makes you feel like you’re understanding the material better if you agree with your partner. It also allows for some help when you miss key points in papers, or read something wrong.”

- “Talking with a peer made it much easier to see what we were thinking and then trying to talk it though to explain why we thought it was A, B, or C. [You] notice much more.”

- “The other person might have a completely different view than yours on certain topics. Its good to listen to their reasoning and explain yours and come up with an agreement on which reasoning is more valid and makes sense”

- “Not everyone grades in the same way. While it can be beneficial to view other people's opinions, it can also be a tedious process”
Partner Discussion Rated Highest in Helpfulness (F08)
Which type of feedback is most helpful in passing calibrations?

- 72% chose some form of peer discussion:
  - *classroom discussion* (small group discussion with some instructor feedback) (39%)
  - or *partner discussion* (33%)
Focusing on content led students to feel they acquired more general skills

very much

quite a bit

some

a little

mean ± SE

* p<0.05

# p<0.1

Average Likert Score

Neurodegenerative Diseases

Writing

General Reviewing/critiquing skills
Focusing on content helped students feel they learned more about how to read & interpret primary literature.
Other observations...

• When students worked with partners:
  – significant improvement in whether they felt CPR was worth their time
  – performed better on last 2 calibrations (for results, & significance and implications)
What’s Next?

• Critical Thinking
  – Independent reviewers rating answers to rubric summary questions & overall score for final papers to assess performance

• Potential COLTT workshop on CPR in August
Acknowledgements

Critical Thinking

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  • Franny Benay, M.S., STF

– **Performance**
  • Dr. Teresa Foley, STF
  • Dr. Kate Semsar, STF
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Neurophysiology

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Critical Thinking

– Attitude surveys
  • Dr. Kate Semsar, STF
  • Franny Benay, M.S., STF

– Performance
  • Dr. Teresa Foley, STF
  • Dr. Kate Semsar, STF
Evolution of Critical Thinking Course

Primary literature review
- need practice
  - 2 practice assignments (write portions)
    (teacher feedback)
  - need more practice
- Small group discussion of articles
  (write portions - practice)
- In-class critique of examples
  - need more practice,
  - but grading overload

**Student Problem:** understanding how to read primary literature & what it means to look at data

**Instructor Problem:** limit to feedback can provide