Using Peer Groups for Student Learning

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Motivation for using peer groups:

• Pioneered by Eric Mazur (Physics) at Harvard in 1991
  – students could answer difficult quantitative problems, but
  – students could not correctly answer simple qualitative questions

Models for Learning in Peer Groups

In Class:

Lectures supplemented by
• Peer Instruction (Eric Mazur)
• Problem-based learning (PBL)
• Problem-guided inquiry learning (POGIL)
• Guided Peer Review

New classroom design for peer group learning:
• Scale-UP (Robert Beichner)
• Teal (MIT adaptation)
• Now in > 100 US universities

Out of Class:

• Tutorials or workshops: peer-led team learning (PLTL)
• Peer-facilitated study groups

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Out of Class:

Value of Peer Review

• Teaches writing as a process
• Allows students a comparison for their own work
• Builds confidence in writing ability
• Provides valuable feedback
• Students become invested in each other’s learning

In Class: Guided Peer Review

Students provide written feedback on papers written by other students

Overlooked teaching technique in undergraduate classes
Guidelines for Peer Review (what has worked for me)

• Part of a staged writing assignment
• Utilize small groups
• Focused set of directions
• Graded assignment
• Opportunity to discuss review with evaluator and instructor
• Opportunity to revise

Avoiding Chaos

Clear instructions
bring two copies of paper to class
no late papers accepted
Assign papers with the following in mind
paper topics
writing ability
dependability
personal relationships

Outcomes

• Benefits of giving feedback
  – Demystifies the writing process
  – Provides models of good and bad writing
• Benefits of getting feedback
  – Validates instructor/TA comments
  – Reinforces idea of writing as a process
• And… STUDENTS ENJOY IT!

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Peer study groups

• Introductory Biology class (240 students)
• 110 consented to be involved in study
• Study group facilitators recruited in first week
• Study groups met weekly
  – Emphasis on higher level thinking skills
• 60 students participated in study groups

What are higher level thinking skills?

Bloom levels 1 & 2 are lower level thinking skills

- Passive Learning: sufficient for lower thinking levels (levels 1-2)
  - Read text
  - Highlight or underline
  - Review notes
  - Write index cards
  - Review notes
  - Memorize notes

Bloom 1956, Anderson & Krathwohl 2001
What are higher level thinking skills?

Bloom levels 3-6 are higher level thinking skills

For higher level thinking both active and passive learning are required
- Active Learning: required for higher thinking levels (levels 3-6)
  - Create new diagrams
  - Compare and contrast structures and processes
  - Break down a complex process step-by-step
  - Apply to a new context
  - Apply to your own life
- Passive Learning: sufficient for lower thinking levels (levels 1-2)
  - Read text
  - Highlight or underline
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higher level thinking levels

Active Learning:

- Create new diagrams
- Compare and contrast structures and processes
- Break down a complex process step-by-step
- Apply to a new context
- Apply to your own life

Passive Learning:

- Read text
- Highlight or underline
- Review notes
- Write index cards
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What are higher level thinking skills?

Teaching large lecture classes

One-way flow of communication
Little feedback

Teaching large lecture classes with peer-led study groups:

- Apprenticeship system
- Weekly team meetings
- Week’s class material
- Questions
- Misconceptions
- Active learning practice
- Leadership training
- Weekly study groups
- 1 hour on campus
- Groups choose topics
- Facilitators: active learning
- Feedback
- Students
- Study group facilitators

Results: Course Retention & Grades

- Peer study groups: Higher retention than rest of class
- Peer study groups: Higher grades than rest of class

Results: Final Exam Performance

- Peer study groups: perform better on the final exam
- Control for GPA
- ANCOVA
  - SG significant
  - Across GPA range

Stanger-Hall et al. 2010
Feedback from study group participants

Participating in a study group allowed me to…
- Work with my peers for deeper understanding
- Work together to transfer knowledge
- Be more motivated to keep up with reading and class
- Ask questions in a less intimidating situation

Teaching Team: Instructor, TA, Peer Facilitators (+CTL staff)

Benefits for the instructor include…
- More ways to reach students
  - Address misconceptions
  - Promote active learning
- Improved feedback from students on learning difficulties

Learning in Peer Groups at UGA

In Class:
- Lectures supplemented by Peer Instruction (BIOL 1103)
- Problem-based learning (PBL)
- Problem-guided inquiry learning (POGIL)
- Guided Peer Review

Out of Class:
- Tutorials or workshops: peer-led team learning (PLTL)
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New classroom design for peer group learning:
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- Teal (MIT adaptation)
- Now in > 100 US Universities
  - Instructor & student comments: http://scaleup.ncsu.edu/MinnVideo/MinnVideo.html

Summary

- Peer Groups help students learn
- In class and out-of class
- Can be used to practice
  - writing
  - higher-level thinking
- Community-forming

• Thinking about peer groups?
• We would love to help:
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  – Kathrin Stanger-Hall
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Peer Instruction at UGA: BIOL 1103


Front of the room

Armstrong et al. 2008