Making it Big: Strategies for Success in Large Courses

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MAY 2, 2024
1. students teaching students
2. teamwork as a pedagogical and logistical tool
3. student-generated data
4. standardizing TA grading
Students teaching students

Barb Vanderbeld

There is no better way to learn than to teach.

Benjamin Whichcote
Jigsaw Strategy: Biotech Challenge

Bio athletes travel from their teams (“Home Groups”) to one of four training camps (“Expert Groups”).

**Training Camps** [*Expert Groups*] ~ 30 minutes
Work together to complete training sheets for one topic:
- components of a gene
- restriction enzymes
- DNA cloning
- primers and PCR

**Team Practice** [*Home Groups*] ~ 30 minutes
Members teach teammates about their respective topics.

**Competition** ~20 minutes
Teams answer questions/solve problems posted on the projector screen. The team to provide the first correct response most often wins!
Scoring

Team Competition Success
1\textsuperscript{st} place team: 4/4 +
2\textsuperscript{nd} place team: 3.9/4
other teams: 3.8/4

Individual Participation
possible deductions for:
- unrelated conversations
- not making a clear contribution to the team effort
Challenges and Solutions

• student absences resulting in uneven group sizes
  ➢ TA readjusts groups as needed
  ➢ two home group members may go to the same expert group

• students teaching each other incorrect information
  ➢ expert groups = multiple students working together = built-in triple checking
  ➢ TA supervision

• academic accommodations
  ➢ all training material posted in advance
  ➢ options and alternatives available
Teamwork as a pedagogical and logistical tool

Howard Teresinski
Teamwork as a Pedagogical Tool

• Second year laboratory methods course
  • **Groupwork as a means and an objective**
    • SASS groupwork page is an AMAZING resource
      - [https://sass.queensu.ca/resources/online/group-work](https://sass.queensu.ca/resources/online/group-work)
  • Team charter activity (highlight diverse skills).
  • Teach strategies to work **“as a group”** not **“in a group”**.

Now in use in other larger 300-400 student courses.

• 2nd year Biology
• 120 students
• 40 students / lab section
• 4 students / group
• 3-hour lab sessions
Teamwork as a Logistical Tool

• **Logistic benefits of groupwork:**
  - Do more (learning) with less (time, money).
  - Builds comradery and collegiality.
  - Efficient use of TA time (less grading).

• **Things to watch out for**
  - Add/drop dates.
  - Accommodations and considerations.
    - Strong syllabus – clear expectations.
  - Group complaints (team charter helps).
Student generated data

Anna Rooke
Students collect data: during lab, in tutorial, on field trip, at home, synchronously, asynchronously

**Advantages**

- **Increased engagement, collaboration & investment** by students
- **Unique answers** for each group/class section (reduces academic dishonesty across sections)
- **Exciting to teach** (never know what you will find)

**Disadvantages**

- Can be **logistically complex** to get good quality data
- **Multiple unique answer keys** required for grading which means extra preparation time every year
- **Scary to teach** (never know what you will find)
R Markdown: generates formatted answer keys for each set of data at a push of a button

Above-ground plant Height

Salt tolerance (%)

$t = -0.44, \text{df} = 46.3, P = 0.66$
Standardizing TA grading - collaboration

Baharul Choudhury
Activities
In-person group assignment
  • Problem solving and quantitative skills
  • Apply concepts to the real world

Challenges
  • 18 – 20 TAs – different levels of experience
  • Marking assignments uniformly across different sections
Step 1: Pre-marking exercise
- Sample assignment
- Detailed marking guide
- TAs send back marks and comments

Step 3: TA meeting
- Review marking guide/rubric
- Discuss marking approach
- Adjust marks

Step 2: Summarize
Diverse TA experience = Diverse marking approaches

Fig: Points for two questions from pre-marking exercise
Making it Big: Strategies for Success in Large Courses

- Don’t underestimate the challenges of making it big, but don’t despair!
- You can develop strategies to help make large classes feel smaller, both for your students and for yourself!