



Assessment of Peer Assessment in Student Presentations: Enhancing Student Engagement And Understanding

Russell Brinkworth, Giuseppe Posterino and David Saint

School of Molecular and Biomedical Science

Physiology In Action

- Practical component of 3rd year Physiology for BSc
 - 1x 4 hours lab time per week
 - 1x 15 minute support session per fortnight
 - 3x 1 hour workshops per semester
- Students put in groups of (3 or 4) and placed into laboratories to conduct year long research project
 - Projects based on research conducted in host laboratory
 - Some attempt to match students with interests
- Group numbers based on available staff, post graduate students and affiliates to host students
 - 52 students and 8 academic staff in semester 1 2007

Goals Of Course

- A) Have an understanding of the scientific method, and its application to research in physiology
- B) Have a basic understanding of the principles of a range of techniques used in experimental research in physiology.
- C) Have developed a methodical approach to the collection, storage and analysis of experimental data
- D) Have developed the capacity to identify and evaluate a problem and define the important elements required for its solution
- E) Be able to communicate scientific information clearly and concisely in written and spoken English
- F) Develop an appreciation of the context in which research is conducted, its aims and role in society

Alignment With University Graduate Attributes

1. "Knowledge and understanding of the content and techniques of a chosen discipline at advanced levels that are internationally recognized"
 - A, B, D and F.
2. "The ability to locate, analyse, evaluate and synthesise information from a wide variety of sources in a planned and timely manner"
 - A, B, D, E, F.
3. "The ability to apply effective, creative and innovative solutions, both independently and cooperatively, to current and future problems"
 - B, C, D E, F.
4. "Skills of a high order in interpersonal understanding, teamwork and communication"
 - No specific goal, however project is group work.

Alignment With University Graduate Attributes

- 5. A proficiency in the appropriate use of contemporary technologies
 - B, C.
- 6. A commitment to continuous learning and the capacity to maintain intellectual curiosity throughout life
 - D, F.
- 7. A commitment to the highest standards of professional endeavour and the ability take a leadership role in the community
 - Covered elsewhere
- 8. An awareness of ethical, social and cultural issues and their importance in the exercise of professional skills and responsibilities
 - F

Previous Assessment

- Semester 1
 - 1. Group Research Project Synopsis 30%
 - 2. Individual Research Project Proposal 50%
 - 3. Research Manual Completion 20%
 - Total 100%
- All written assessments
- No interaction between groups
 - Focus of this talk
- No focus on ethical, social or cultural issues
 - Covered another way

Perceived Weakness In Course

- B) Have a basic understanding of the principles of a range of techniques used in experimental research in physiology
 - Techniques limited to those used in the host laboratory
 - Many more techniques than can possibly be covered in one project
 - Assessment of a written project methods, while in depth knowledge of a specific area, does not provide for a range of techniques

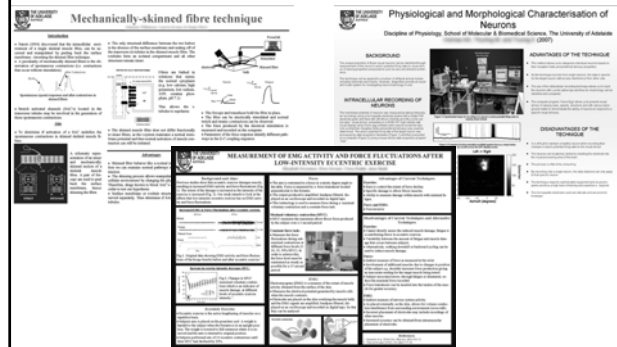
How To Achieve A Broader Understanding

- Get students to present their experimental techniques to other groups
- How to ensure students pay attention?
 - Previous experience with presentations has been that students have little participation
 - as evidence by student questions
- Get students to ask questions of other groups and grade the *'quality'* of questions

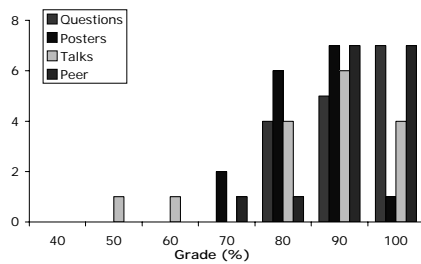
Changes to the assessment

- Introduce presentation sessions
 - 16 posters in 2 sessions, 5 minute presentation, plus questions
- Students assigned to ask questions as a group
 - Not informed beforehand which group to critique
- Staff assessment of (25% of total grade):
 - Quality of poster 15 marks
 - Presentation & answers to questions 5 marks
 - Quality of questions asked (critique group) 5 marks
- Peer assessment on (5% of total grade):
 - Presentation & answers to questions 5 marks
- Note appropriate weighting of components

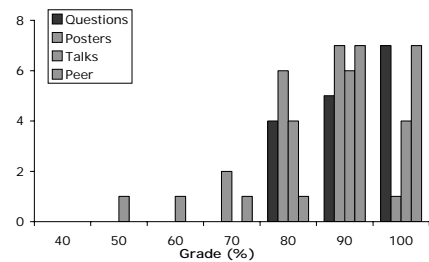
Student Posters



Quantitative Results



Quantitative Results



- Quality of student questions higher than expected, need to 'recalibrate' grading?

Example Student Questions

- Question:
 - “Once the membrane is peeled away, and the soluble contents lost, doesn’t that affect the normal cell function? If so, how do you know that what you are measuring is a valid representation of what actually happens inside the cell in normal function?”
- Demonstrates an understanding of the processes involved and a clarification on a perceived limitation of the approach
 - Graded very highly

Example Student Questions

- Question:
 - “If Red Bull contains both caffeine and Taurine, how can you separate out the effects- should you run a third experiment with caffeine only (or Taurine only?)”
- Shows an understanding of the experimental approach and identifies a possible flaw in the procedure
 - graded highly

Example Student Questions

- Question:
 - “What applications would these results have?”
 - “What is the next experimental step?”
- Shows little critical appraisal or understanding of the approach and missed the point of the exercise
 - Graded poorly

Staged Questions

- Type and delivery of some questions and answers was evidence of collaboration between groups
- Students did confer and set up questions
- Goal was to ensure students familiar with a range of techniques
- Is inter-group collaboration necessarily a bad thing?

Student Feedback +

- “I do feel as though most, if not all students, took from the sessions an appreciation of the different ways/method that are used in different labs.”
- “I think that this exercise is a great introduction for those students who want to experience what an honours year may feel like and I hope the oral communications sessions are run in a similar fashion.”

Student Feedback +

- “I actually thought that the afternoon where all the groups walked around and talked to each other worked really well, and served the function of getting the individuals prepared for their own sessions.”
- “It was good to know everyone had read and understood your work, and then they could ask you proper questions about your project. And it was nice to learn what everyone else in the course was doing.”

Staff Feedback +

- “I also think marking students on their questions to their peers is of great importance. They should learn how to assess the quality of research outside their own field of expertise. A big thumbs up from me.”

Andrew Lavender
Postdoctoral Research Officer

Staff Feedback +

- “I thought that the poster session was excellent and very well run. The new format worked well. It particularly encouraged discussion from the floor, i.e. the students. The level of interest from the students and their attendance was higher than usual.”

Tim Miles
Professor of Physiology
24 years teaching experience

Staff Feedback +/-

- “The poster concept this year was a very good one but I received heaps of negative feedback, not just from my own students but from others regarding the workload required to come up with questions for other groups.”

“I would like to see the concept continue in a slightly modified form - good work.”

David Wilson

Physiology Lecturer

Member of the Learning and Teaching Committee

Work Load Issue

- Is it reasonable to make the students look at the posters made by other groups?
 - Students liked that others paid attention to their work
 - 16 groups in all
 - 2 sessions so only needed to look at half the posters
 - 2 to 5 members in each group (normally 3 to 4)
- Each group member need only look at between 2 and 4 posters
 - Posters up a week before the presentations
- Confident students need not prepare questions

SELT Results

	2005	2007
Satisfied with course quality	79%	85%
Workload was too heavy	47%	58%
Stimulated enthusiasm for further learning	76%	90%
Part of group committed to learning	76%	94%
Assessment permitted demonstration of understanding	63%	88%
Course helped Develop thinking skills	84%	94%
Research skills increased	N/A	98%

- Standard 7 point Likert scale used.
- All results represent ≥ 5 except workload which was ≥ 6 .

Future Changes

- Groups will be provided with a list of 3 - 4 presentations that they will need to ask questions of
- Have a specific time set aside for all students to look at posters to encourage interaction before the presentations
 - Not possible with talk abstracts

Summary

- Getting students to ask the questions made them engage in the process
- Workload an issue but can be managed
- Very positive direct feedback
 - Students may not feel comfortable giving negative feedback even with anonymous web based forum
- Exposes students to a range of techniques
- Little direct staff involvement required
- Are 'planted' questions and collusion a problem?

Bachelor of Science degrees - Graduate Attributes 1

Knowledge

A broad scientific knowledge with a deep understanding of one or more science disciplines, commensurate with the highest international standards in science education.

To understand the observational and experimental character of science and to have skills in field and laboratory techniques and experimental design.

Bachelor of Science degrees - Graduate Attributes 2

Intellectual & Social Capabilities

The skills of inquiry, objective criticism, logical thought and problem solving that are considered to be the foundations of the scientific method.

The ability to communicate scientific information effectively, both orally and in writing.

To have a high order of numerical and analytical skills

To possess scientific curiosity and the attitudes, knowledge and skills necessary for a commitment to life long learning.

To have experience with learning opportunities made available by new technologies and to be equipped with computing and information technology skills.

To have the skills required to tackle scientific problems as a member of a team.

Bachelor of Science degrees - Graduate Attributes 3

Attitudes & Values

To appreciate the central role of science in society.

An enthusiasm for, and enjoyment of, the ethos of science and the process of scientific investigation.

To value the close relationship between scientific research and the development of new knowledge.