

# Student creativity and the research – teaching link agenda

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1. Advances in science depend just as much on creativity/original thinking/use of imagination as in the arts.
2. But, much of our teaching in the sciences concentrates on the transmission of information. This isn't wrong, but it is incomplete...

### 3. Personal influences:

- Free group discussion as a technique in the UG degree I took (1960s),
- Discovery of Liam Hudson's work on the education of arts/science students.  
(Book: "Contrary imaginations"; booklet: "Originality" – well worth reading still).  
His conclusion: the physics/maths mind wanted to find the right answer; the arts mind wanted to find as many answers as possible. Biologists were in the middle somewhere. The need in the biosciences can be to devise as many hypotheses as possible, since even unlikely ones can turn out right.
- Long-term interests in development of teaching and learning techniques that encourage student creativity.

#### 4. The research-teaching link agenda

- Do undergraduate courses benefit in identifiable ways from research proceeding in the students' own institution (other than through the diversity of final year projects)?
- Much of the hands-on research is done by post-docs and post-grads, who do little teaching and rarely about their research (especially to junior level UGs).
- How to facilitate interaction of junior students with researchers, to help them understand the research process/life, and the need for creative thinking...

5. One solution: mentored science communication projects. How our scheme works:

- Level 1 or 2 students (small groups 4-5) are linked up with a mentor who is a post-doc or advanced post-grad researcher.
- The UGs are to find out what the researcher's work is about, by talking to the researcher and/or looking at the researcher's website/publications.
- The UGs have to present the researcher's work in three ways:
  - a) Individual UGs write up an interview with the researcher in the form of a newspaper profile piece, emphasising what it's like to be a research scientist.
  - b) The whole group prepares a poster presenting the researcher's work, aimed not at a scientific conference, but at a general public audience.
  - c) The whole group prepares and makes a five minute television programme based on the researcher's work. They are encouraged to think hard about the format. The researcher is not expected to take part.

## 6. Comments:

- Each output is assessed. For the group outputs, we use peer review.
- For year 1 or 2 students, some of the research is hard to grasp, so this is a demanding project. We do our best to match mentors to students' interests.
- We have not found it hard to get enough mentors, but we do pay them, and our class size is small (30-40).
- Perhaps surprisingly, overseas researchers are keen to participate: they see this as a chance to improve their communication skills – benefits all round.
- The undergraduates clearly have to demonstrate creative thinking at several points, mainly in how to make a piece of research interesting and accessible to a non-specialist audience.