

Learning across cultures: Engaging international students in biotechnology & enterprise

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Subject Area: Biosciences

Accompanying video is available to view at <http://www.youtube.com/watch?v=v5bshGYZxhY>
The case study chosen was BB40078 – Biotechnology & Enterprise. The course was completed last semester but a large cohort of Indian students are currently on placement in India. The video captures the 'student voice' (home and international) to add to the student perspectives below.

Background

International students enhance the diversity of university populations. However, the value this diversity can provide is dependent on the learning experience of these students. Postgraduate international students, in particular, have very little time to adjust and adapt to the 'academic shock' of UK education, which can include different teaching and learning approaches, relationships between teachers and students and forms of assessment. One of the challenges (or opportunities) of building cross-cultural learning communities was getting these students to interact and collaborate together. At Bath, this opportunity arose through my course on Biotechnology & Enterprise. This unit is an option for final year students on the Biochemistry and Molecular Cell Biology programmes, and typically attracts home students who have completed their 12-month placement in industry. This unit also attracts a large proportion of international students on various postgraduate taught programmes in the department.

Reasons for introducing this teaching method

The course was previously run using a conventional lecture-only format and student numbers had declined over the years. I re-designed and refined the course over the past 4 years, informed by reflection, student feedback and the wider research literature. The introduction of a team work-based goal, wherein groups had to identify a novel biotechnological idea with a strong commercial potential, was primarily to challenge students and make learning fun without the pressure of exams. It would also help students see the value of group work as a means of learning and encourage cross-cultural interactions outside the classroom, the opportunities for which are often quite limited.

Initial ice-breaker activities helped the students get to know each other better. Allocation of teams was based on personal aptitude and skills (Belbin profiles among others) and an 'engineered' balance of home and international students. Roles of responsibility were decided by consensus within teams (Team leader, finance, marketing etc). 'Inspirational' lectures from bioscience entrepreneurs and business development workshops were designed to support teams in developing their ideas. The workshops also included little tasks that rewarded member's diverse skills and cross-cultural experiences ('NASA Moon Game', 'Squirrel test'), encouraging them to convert their knowledge into a team asset (for example, someone with creative talent who finds oral presentations difficult or someone with good financial skills but poor written English).

Observing and monitoring group activity is particularly important in multicultural groups, in order to minimize potential conflicts and also ensure equal participation from all individuals. Ground rules on participation, discussion, communication and managing conflict were also built into a low stakes peer assessment. Teams had to post their discussions in the chat forum on Moodle, which was used to track progress within teams. A formative feed forward session was held halfway through the semester to guide teams on their idea generation and development. The questioning process encouraged them to reinterpret and elaborate on their original ideas, and to listen as well as talk.

A 'Dragon's Den' pitch provided a fun but meaningful opportunity for all teams to showcase their ideas in a 'safe' environment. This, along with a detailed business plan, was the culmination of the

group work requiring students to analyse and evaluate the process at every stage, think both creatively and critically, learn how to pull together as a team (drawing upon their individual strengths) – arguably one of the best ways to learn.

Lecturer's perspective

Introducing this unconventional course (in the departmental and institutional context) was a challenge initially and student numbers were low in the first cohort in 2008 (probably due to its unusual nature). The course has evolved well since and student numbers have increased hugely, attracting a balanced mix of able home and international students. Its value in terms of learning and employability is reflected in the student's comments in the video, where Will semi-seriously suggests that the *'course should be made compulsory'*. Whilst these comments are reassuring, some aspects of the course are more difficult to control. If there was a huge imbalance in the numbers of home and international students, team formation strategies may have to be reconsidered (at least 2 international students in a team of 4) and ensuring group management issues are monitored and supported adequately.

There is an argument that judging individual effort is problematic, but perhaps more so in multicultural contexts where peer assessment is used. However, this has not been a huge issue with this course, where peer grading has been consistent with individual performance indicators and no evidence of tactical collusion (in fact marks have ranged from 15 - 85% when individuals mark the effort and contribution from their team members). This may be due to a combination of clearly defined marking criteria and monitoring strategies being made explicit to students at the start of the course.

Students perspective

The accompanying video captures a snapshot of views from a small group of students from 2011-12. The end-of-semester unit evaluation questionnaires from the past few years have been used to provide an overall student perspective. A vast majority of the respondents (87%) were very supportive of the course and its structure, agreeing that they have learnt a lot from taking this course. The guest lectures were universally popular (*'inspirational; their experiences of how they transformed their idea into a business'*). The workshops were *'thought-provoking'* and *'doing the Dragons Den was exciting'*. Interestingly, learning about how groups work across different cultures were also featured in the comments (*'interacting within and outside the group'*) and reiterated by Biyun in the video as – *'Chinese students are thought as hard-working...but I think UK students are also hard-working, sometimes even more than Chinese student'*).

Group discussions outside the classroom environment (library and home) were highlighted by students as the main reason they were able to sustain their motivation to learn. In fact, they have since formed study groups (study pals) for other units too. The wider implication of cross-cultural group work has been particularly significant among international students, who report getting better at *'being critical rather than descriptive'* in other coursework. Increased confidence in *'asking questions'* and *'learning how to listen and talk'* were additional benefits, directly as a result of interacting with home students academically and socially.

Thinking commercially and writing a financial spreadsheet was still a challenge to some students, who found the switch from *'thinking science'* to *'thinking business'* difficult. This is an ongoing area for improvement with plans for more specific support on accounting and finance.

Issues

One issue relates to *'managing conflict'*, which is inevitable in multicultural groups. Whilst there is almost unanimous agreement from international students on the benefits of this mode of cross-cultural learning (based on student feedback over the past few years) and captured in the accompanying video (Biyun and Srijana), it has not always been unanimous in the case of home students, particularly those who have had high-quality, year-long placement experiences in Ivy league institutions or global pharma companies. Setting clear ground rules and responsibilities,

group management advice to the team leader, and monitoring activities to 'spot the early warning signals' have helped mitigate any potential conflicts. Having performance criteria such as 'cross-cultural communication' and 'managing conflict' built in to reward individual effort, and which contributes towards the summative peer assessment mark, have also been factors to reduce these issues.

Benefits

A key benefit of this mode of teaching and learning is the opportunity for multicultural groups to study and work and learn from each other; learning about themselves, learning from their peers and learning about potential future professions, other than research alone. This real-life learning has had a wider impact on students from both groups, applying the skills learnt from this course in a wider context (ranging from other coursework assignments to setting up their own business after graduation).

Within the teaching context, the design and evaluation methods used in this course have been based on my published pedagogical research on evaluating the effectiveness of peer assessment strategies in different teaching activities (Hejmadi 2011) and using blended learning approaches to enhance student learning (Hejmadi 2007) among others. As a recently appointed Director of Studies for MSc programmes with a large proportion of international students, I have used these approaches successfully in induction programmes and formative tutorials to improve the learning experience of international students. An international impact of this course is the development of an innovative MSc Industrial Biotechnology & Enterprise, delivered jointly with an Indian institution, funded by the UK-India Education Research Initiative.

Reflections

My approach to teaching has always been through the eyes of a learner and self-reflection has been at the centre of all my activities. The successes in cross-cultural learning outlined in this case study comes from a personal educational journey across continents, which have helped define and refine the approaches used here. I continue to research, publish and share my work in the wider educational community through peer-reviewed publications, some of which relate directly some of my innovation projects (most of them funded through successful competitive bidding to institutional Teaching Development Funds) and JISC TechDis and JISC/HEA open educational projects (2010; 2011). The outcomes from some of these projects have led to institutional reviews and policy changes (for example placement learning). Building communities of practice within and outside the institution, through enquiry, consideration, debate and reflection are fundamental to what I do. For example, sharing practices with colleagues, contributing to central staff development teaching workshops, Annual Innovations Week and mentoring probationary lecturers from various disciplines in their professional development. The long term impact of building these communities on enhancing student learning is still ongoing.

Publications:

- 1) **M V Hejmadi** (2007) *Improving the effectiveness and efficiency of teaching large classes: Development and evaluation of a novel e-resource in cancer biology*. Bioscience Education Vol 9-2 (<http://www.bioscience.heacademy.ac.uk/journal/vol9/beej-9-2.htm>)
- 2) **MV Hejmadi** (2008) *Mentoring scientific minds through group research projects* <http://www.heacademy.ac.uk/TeachingGuides>
- 3) K. Bullock, Gould G, **Hejmadi MV**, Lock G (2009) *Work Placement Experience: Should I Stay or Should I Go?* Higher Education Research Development 28: 5, 481 — 494.
- 4) Lock G; K. Bullock, Gould G and **Hejmadi MV** (2009) *Exploring the industrial placement experience for mechanical engineering undergraduates*. Engineering Education Vol 4 (1) pp 42-51.
- 5) **M V Hejmadi** (2009) *How effective is peer assessment and feedback? An evaluation across diverse teaching activities* (SLTC conference 2009)

- 6) **M V Hejmadi** (2009) *Laboratory practicals: Strategies to enhance student learning* (SLTC conference 2009)
- 7) **M V Hejmadi**, K. Bullock, Gould G and Lock G (2011) *Is choosing to go on placement a gamble? Perspectives from bioscience undergraduates*. *Assessment and Evaluation in Higher Education* 31(5):551–567 [DOI](#)
- 8) K. Bullock, **M V Hejmadi**, and Lock G (2012) *Bioscience Placements: Are they really necessary*. *J Biological Education* 46(1): 4-11.