Case Study 3: Building Equity into a Large Student Cohort Module

Dr Declan A. Doyle, University of Southampton, School of Biological Sciences, Highfield Campus, Southampton, SO17 1BJ, UK. Tele: 02380594307. Email: D.A.Doyle@soton.ac.uk

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Life Sciences' undergraduate degrees generally include a first-year teaching module that covers core skills and information that all students require. These essential standardised scientific approaches utilise, the language, style, values, ethics and basic knowledge that a scientist requires. However, these abstract ideas and agreed concepts can be confusing, disconnected and even old fashioned to new students, especially those coming from diverse educational backgrounds. At the University of Southampton, previous modules covering this material assessed students' knowledge using only MCQs. Based on student feedback, this left the majority not recognising the importance of the material. This lack of engagement was compounded by the fact that full use of this knowledge and skills only took place two years later as part of their final year research projects.

Therefore, we decided to develop a new replacement module in the School of Biological Sciences (SoBS). This had additional considerations including dealing with a cohort of ~300 students per year, incorporating biology-based and biochemistry-based programmes with a 1:4 split, respectively. Additional key considerations included student engagement, a departure from the standard lecture series approach and the inclusion of pastoral care for our diverse student cohort. The latter was important as we were keen to strengthen the connection between students and personal academic tutors (PATs) and build a supportive platform for the coming academic years.

To signpost the importance of the module to our students, the module name was changed to one that strongly identified the primary teaching goal, hence, "BIOL1030 *How to Think Like a Scientist*". Assessment using MCQs was dropped and an authentic assessment approach adopted. In this case, students were asked to generate two science reports (SRs), one per semester. We also asked students to give one oral presentation as together these are the main modes of scientific communication. Both were adopted as part of the teaching but only SRs were used for summative assessment; 40% for semester 1 and 60 % for semester 2. The presentation was used as formative assessment only.

Teaching involved a lecture and tutorial alternating weekly, hence, student numbers per session also alternated between the full cohort in lectures to ~6 students per tutorial. Thus, all SoBS' tutors contribute to teaching on this module, bringing a more personal touch. Lectures focused on global overviews such as the construction of a SR, ethical considerations, experimental design, basic experimental approaches, etc. Tutorials, however, taught in-depth details for each SR's sections. To capture students' imagination, PATs used one of their own publications as the basis of their teaching. After each tutorial, students were given a task to complete which was then used to initiate conversations in the next tutorial. This meant that tutorials had to be timetabled in conjunction with lectures to ensure the learning outcomes

were delivered in a coherent manner. Activities within tutorials were partly prescribed. This provided structure for new PATs along with flexibility for those with more experience. This approached helped break down tutor-tutee barriers and offers tutees specific help with learning as required. Importantly, PATs marked the SRs which gave an opportunity for detailed feedback.

Data was provided for the semester 1 SRs but students were expected to include data interpretation of the data as part of their write ups. To instil a greater sense of ownership over their learning, students generated their own data for the second SR. This occurred either in the laboratory or field depending on the discipline of their programme.

In summary, to promote equity in education, the University of Southampton revamped its Life Sciences core first year module to enhance engagement and support for diverse students. By replacing MCQs with authentic assessments and integrating pastoral care, the new approach ensures all students can develop essential scientific skills without being disadvantaged by their backgrounds.