Example Three – One-To-One Statistics Tutorials: Striking the Balance

Finalist students were given the opportunity to book one-to-one, 30 minute statistics tutorials for their honours projects. Tutors were under strict instruction as to what help we could give, as projects needed to be the student's sole work. This presented a range of challenges. Statistics and programming are some of the most widely disliked or perceived as difficult topics amongst undergraduates – particularly at institutions like Exeter which do not require maths A-level. Statistics in biology has evolved very rapidly over the last decade, and there are strong arguments within the STEM-education literature that rapid development inevitably leads to academic elitism, where only the strongest students with the correct background knowledge can keep up with the syllabus (Muller, 2014).

Trying to counter this difficulty in a single half-hour session proved challenging, especially in approach. A one-to-one tutorial focussing on the student's own work, where they must come to the correct end of their own accord, is a style of learning typically aligned with 'conceptual change' (Lueddeke, 2003; Trigwell and Prosser, 1996); however the nature of the task at hand – for which there is a simple right answer – is an exercise in 'information transfer'. This troubled me. I focussed on creating questions with the students which they needed to be able to answer to correctly perform their statistics, as well as spending up to a third of the sessions detailing where they would find suitable help – particularly textbooks. I convened with the other tutors, and accounts were similar amongst all of us; some tutors were giving much longer sessions for no pay. Having described my tactic of signposting where next to look, the other tutors incorporated that as part of their sessions, with apparently good results. I consider developing these abilities to teach one-on-one important; I expect that increasing individualised teaching will be a widespread response to the TEF, which will majorly influence my career.

The other major challenge was a discord between the level of ability students were expected to evidence according to the syllabus, and the approaches they were instructed to attempt by their supervisors - the latter more complicated. I believe this is part of a wider issue STEM where academics are researchers first, and teachers second (Porter et al., 2006); supervisors err on the side of getting publishable work out of dissertations. This is a researcher-oriented consequence of the wider context of H.E.: the academic landscape of 'publish or perish'. The students seeking help were typically not the most able, and so were the wrong candidates to push for an early publication. My reaction to this frequent problem was to make it clear what students needed to do to achieve the higher marks, and then framed the choice to undertake something more complicated in the context of their career ambitions. I called in to discuss this with the honours project convener for biology and discussed it at length with the other tutors. All agreed that this tactic was the best option, and our feedback provided a mandate for the problem to be raised amongst senior academics.

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