

Higher Education Bioscience Teacher of the Year Award 2016

Case study: Enhancing feedback, reducing marking

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Background

Topics in Biodiversity and Evolution is a final year undergraduate module designed to give students an insight into the biological research within their department, something they are often unaware of (Jenkins et al 1998, Brew 2006). A description and evaluation of the module is published (Morrell 2014), and summarised here. Eight research seminars (~45 minutes) are each followed by a student-led discussion with the speaker. Students are provided in advance with two research papers relevant to the seminar, and the seminar/discussion allows them to clarify their understanding (a 'flipped' learning approach) and explore the topic in depth. For each seminar, students write up one of the papers as a 500-word "news & views" article (an authentic science communication task found in top journals). The novel feedback strategy surrounding these articles is the basis of this case study.

Reasons for introducing the teaching method

Acquisition of factual knowledge about our research (although important) is not core to the module ethos; the emphasis is the development of key communication skills, particularly scientific writing. Although understanding the material is recognised in the module learning outcomes, the ability to write about core knowledge in a concise, scientific style is a fundamental skill transferable across modules, helping improve students' writing in other assignment types regardless of biological topic.

Students will develop higher-level scientific writing skills if they practice writing and engage with feedback, which is key to learning (Carless et al 2011). Colleagues often report a lack of student engagement with feedback, and students may lack appreciation of its value in preparing future assignments (the 'feedback loop'; Orsmond and Merry 2013). The reduced frequency of assignments and use of coursework as both formative and summative assessment (Boud and Molloy 2013) reduces the opportunity for students to do this, potentially limiting their ability to write about biology effectively. The assessment for *Topics* allows students to practice interpreting and writing about research papers, without generating a time-consuming and overwhelming marking load.

Each student receives feedback on their first submitted news & views report (within one week of submission to ensure effective use in the next). I then provide feedback on only two of each student's subsequent seven submissions ("randomly selected reports"). Crucially, all marked reports are available to all students via the VLE (anonymously). So in a class of 30, students see around 60 examples of feedback, rather than only their own. At the end of the module, students self-assess (Dochy et

al 1999; Orsmond 2011) their eight submissions, and select their two best for summative assessment (“chosen reports”).

Benefits

This strategy provides students with individual feedback, the opportunity to practice, and access to a wide range of marked exemplars against which they can compare their own progress. Students engaging with the feedback acquire knowledge of features that identify both high-quality and weaker submissions, and apply that knowledge to future assignments and when self-assessing their work for summative submission.

Evaluation of the assessment strategy over the first 3 years (N = 87 students) was published (Morrell 2014), and with data from 6 years and 182 students, the patterns remain. Marks for randomly selected reports were significantly higher than those for the first report, and those for the chosen reports were higher still (figure 1a). Students choosing one or two reports that had not previously been marked (self-assessing) achieved a greater increase in marks (relative to their marked assignments) than those who chose 2 from the 3 that had previously been marked (figure 1b). Furthermore, marks increase over the course of the module (figure 1c), and students achieving lower marks for their first report show the greatest improvement in overall mark (figure 1d), highlighting the benefit of practicing and choosing for these students particularly. These benefits are reflected in student perceptions (‘student perspective’).

Staff perspectives

I present a seminar, coordinate (including module introduction and feedback sessions), assess all assignments, and facilitate discussion sessions. I enjoy seeing the students engage and develop understanding, and observing the development of writing skills as the semester progresses is very satisfying. Contributing colleagues comment positively on the experience, highlighting the quality of the discussions and student engagement with the content.

“This is the kind of course I would have loved to have taken as an undergraduate”

– Prof Stuart Humphries, former contributor, now Lincoln.

I receive considerable positive feedback on the module from academics within and outside my institution. Internally, I was invited to be part of an *Academic Enquiry Seminar Series*, and to present to the Faculty of Arts and Social Sciences.

“It’s good to see so many students doing well in a module.”

– Prof Graham Scott, Associate Dean for Learning & Teaching, Hull.

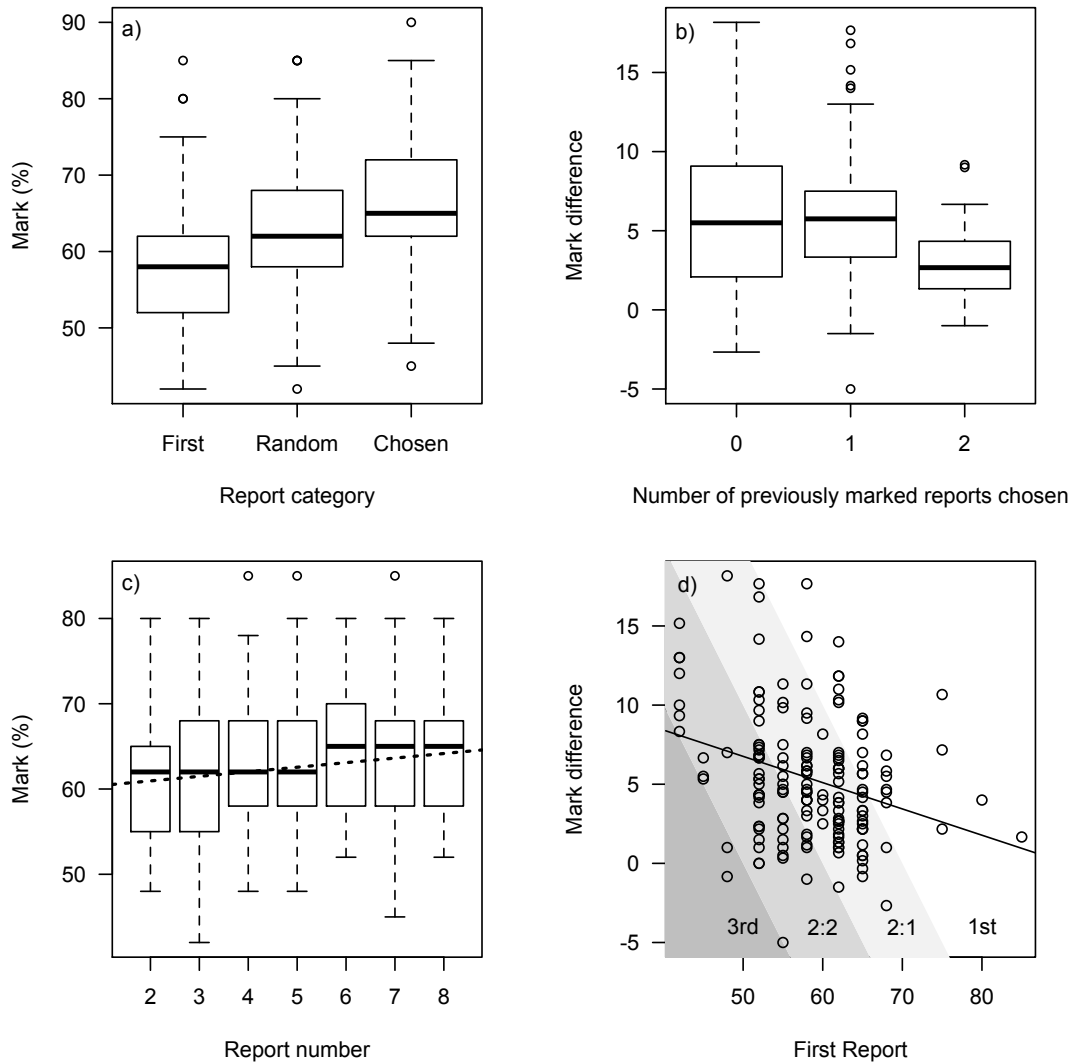


Figure 1: **a)** Marks for first, randomly selected and chosen reports. **b)** Increase in marks depending on number of previously marked reports chosen. **c)** Marks for randomly selected reports. **d)** Relationship between marks for first and chosen reports. Shading indicates the final degree class of chosen reports.

After publication, Dr Alan Cann (Leicester) positively highlighted the assessment in *Science of the Invisible* (2013). I was then invited to contribute to a workshop on “Crowdsourcing in HE” (I was unable to attend) and to a HUBS-funded workshop on “Assessments that reward learning and feedback that builds resilient students” (Bristol).

“I was struck particularly by your decision to allow students to choose for themselves the two pieces of work that would be marked summatively. I thought this inspired...”

– Dr Phil Langton, Academic Director of Educational Innovation, Bristol.

Student perspectives

The students enjoy the module, and the majority understand the benefits of the assessment strategy. In end-of-module evaluations, 97.6% “agreed” or “definitely agreed” with positive statements about the quality of delivery/teaching. In free-text comments, students highlight the diversity of topics that they wouldn’t normally be taught. Responses to the assessment are positive: 80% of students responded positively to questions about the quality, quantity and timeliness of feedback, and their free text comments reveal they find the feedback very useful, and are able to use it in the way that it is intended.

“Best module so far. The structure of the assessments is fantastic and the teaching was faultless” – 2015/16

“The feedback was incredibly useful from both my own work and others” – 2015/16

“Feedback was very detailed and I saw an improvement in marks because of this” – 2015/16

Students also highlighted the relevance of the module to other assignments throughout the year:

“This has been the most valuable module I have taken in my degree. It has improved the way I read papers by changing how I find the most important information [...]. I have therefore been able to apply this to other modules. The amount of feedback has been excellent and the class participation has improved the way I listen in lectures” – 2012/13

“...improved my understanding of mark schemes and how to apply [them] more successfully to my own work” – 2014/15

“The feedback on reports and language was hugely useful when writing my 40-credit research project.” – 2014/15

“It has enabled be to refine my own work well. It has also given me skills which are transferable to other modules” – 2011/12

Issues

This assessment approach does not suit every student, and some find it challenging to apply the feedback to their own work. The assessment strategy takes students out of their comfort zone, and being asked to self-assess is novel to many of them. My impression is that they would prefer to have all their work marked, and have the best count.

“I struggled a bit with the assessments – struggled to apply the feedback to my work” – 2014/15

“Learning from others’ feedback did not work for me” – 2015/16

A further issue is the scalability of the strategy. The workload associated with marking 1/3 of the reports on a weekly basis would be challenging, but not impossible, with larger classes.

Reflections

I am interested in understanding factors affecting student engagement with the module and their ability to use feedback: some ‘get it’ rapidly, while for others it takes time, and for a subset of students there is little evidence of improvement at all. The challenge is to reach those who do not benefit from or appreciate the assessment/feedback. I try to manage expectations, including detailed discussion of the assessment and its effectiveness, and the incorporation of feedback sessions (including the use of exemplars; Bloxham 2012), but each year a similar proportion of students express concern about choosing their best reports.

My growing interest in skills development led to my taking what I have learnt through *Topics*, and applying it to the development of *Professional & Research Skills for Biologists/Biomedical Scientists* (core level 5/2nd year modules for all students within the School), which I designed and coordinate. This experience assisted me in guiding the redesign of *Behavioural Ecology*, and in mentoring other staff in the development and redesign of their modules as part of a School wide curriculum revision. Developing and critically evaluating the success of *Topics* triggered my interest in understanding student learning, and has led to my involvement in a number of other pedagogical projects (e.g. Morrell & Joyce 2015; Henri et al 2015).

Publications & Dissemination

Morrell LJ. (2014) Use of feed-forward mechanisms in a novel research-led module. *Bioscience Education* 22: 70-81.

Seminar and conference presentations on *Topics*:

- 2016** Invited contributor to “Assessments that reward learning and feedback that builds resilient students” workshop, University of Bristol, Royal Society of Biology and HUBS network funded.
- 2015** Invited contributor to Academic Enquiry Seminar Series, and invited presentation to the Faculty of Arts and Social Sciences, University of Hull.
- 2014** Part of an invited contribution to an HEA new-to-teaching workshop for STEM subjects, London.
- 2013** Oral presentation at the HEA STEM Conference, Birmingham.

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