

Designing for Learning

Transforming the assessment structure of our curriculum to maximise student achievement



Julie McIntosh

School of Biological Sciences | Te Kura Mātauranga Koiora
University of Auckland | Te Whare Wānanga o Tāmaki Makaurau

ABSTRACT

The School of Biological Sciences recently underwent a curriculum review resulting in a collective reflection of our current curriculum and the design of 9 subject pathways. The new structure included core course undertaken by all biology graduates and selected papers within individual pathways. My fellowship originally aimed to develop communities of practice within these pathways for reflection and redesign of assessment by pathway-focused groups. The aims of the project included mapping of graduate attribute development to ensure it is scaffolded through the years and to assess the inclusivity and diversity of assessment.

The challenges of 2020 and the ensuring lockdown resulted in a change to the scope of the project. My role in the department during the lockdowns and subsequently resulted in a review of many assessment practices has allowed the project to become a forward planning exercise including the development of resources to facilitate this mapping for these communities of practice in 2021.

Impacts of Covid on this project & assessment

The impacts of the pandemic and associated increased workload due to the rapid switch to emergency online teaching and continued dual-teaching ensured that staff did not have capacity for curriculum-wide assessment planning. For this project, this meant a renewed focus.

In addition to online course delivery, all assessment pivoted to the online and open book; these conditions represent a substantive shift from normal practice in SBS, prompting departmental-wide discussion. My departmental roles during Covid and subsequently, have allowed me to discuss these issues with many staff and gather school-wide opinions on assessment which will help shape future strategies for assessment.

Renewed outputs of Fellowship

- Literature review of assessment practice and design to guide discussion and anchor new initiatives on best practice.
- Review of pathway assessment and development of resources to facilitate discussion, including an analysis of assessment within pathways. This analysis was not intended to be an exhaustive study of individual assessment detail but rather an snapshot overview the pathway's assessment to stimulate discussion.

Resources include:

- Analyse assessment within pathways to create high level overview, an example is shown (right, orange boxes).
- Focus points for pathway members to discussion - (shown below, orange box).
- Mapping tools for skills progression - practical/experimental skills, ability to communicate (written and oral), critical thinking etc (not shown here).

Focus points for pathway-focused groups

- Do assessments progressively develop graduate skills in the vertical sequence of the pathway? Are assessments scaffolded at each stage to prepare students for successive stages?
- Is our assessment plan inclusive? Do they develop a coherent sense of diverse perspectives of biology, with particular emphasis on Mātaurangi Maori and the NZ perspective?
- Within pathways, is there sufficient diversity of assessment styles to optimise student achievement?
- Are there more opportunities to engage with industry partners and develop experiential learning experiences?
- Do our practices reflect best practice according to the scholarship of teaching and learning (SOTL)? Where could new innovative practices be included?
- Are the GA explicitly stated and tracked for students?

Context of assessment mapping

Biological Sciences is a broad range of disciplines united by the common theme of the study of life and living organisms. To encompass this subject area, SBS offers a wide range of courses which offers diverse learning opportunities and flexibility for our students. The challenge in such a diverse curriculum can be to ensure a coherent, progressive development of graduate skills and attributes across all course combinations.

The new BSc degree structure introduced in Biological Sciences included the development of 9 subject pathways that reflect the scope of subjects in SBS. These new pathways offered a way for students to map their learning through a single focus and allow this to be reflected on their academic record.

Considerations of assessment design

The goal of curriculum design is neatly summarised by questions outlined by Fink:

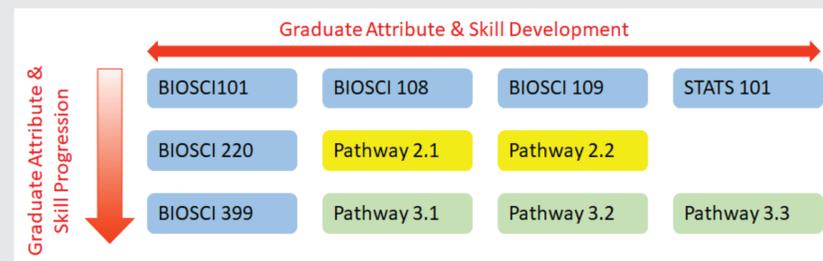
- “What is it I hope that students will have learned, that will still be there and have value, several years after the course is over?”
- “What would the students have to do to convince me that they had achieved those learning goals?”
- “What would the students need to do during the course to be able to do well on these assessment activities?”

These questions are useful to consider when reflecting on assessment design; in this setting, they challenge us to re-evaluate what we assess to deviate from content-focussed assessment that is common in science based disciplines², to a more inclusive approach which ensures appropriate assessment across all the desired graduate attributes (GA), especially at higher levels of the degree.

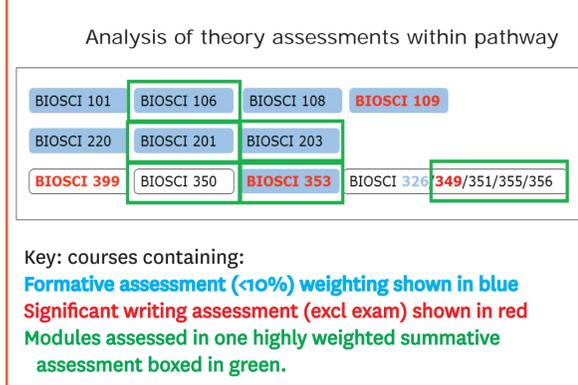
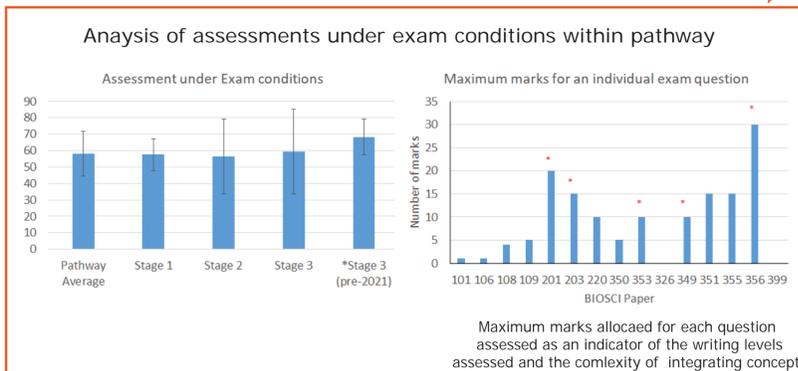
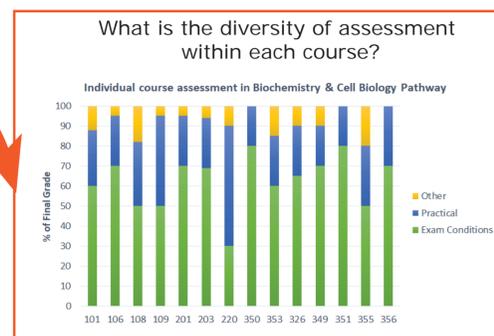
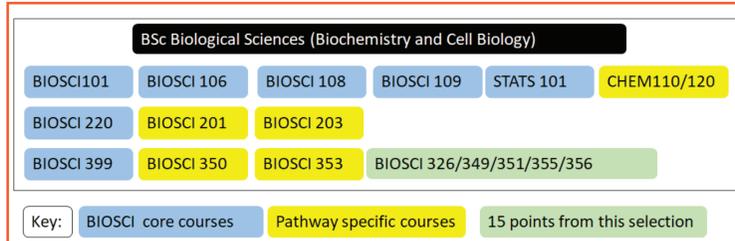
A figure with the common papers in the BIOSCI major are shown in the figure below; only the pathways-specific courses are shown. Each pathway includes:

- 4 common BIOSCI papers (indicated in blue in the figure)
- 2 Stage 2 and 3 Stage 3 pathway-specified papers (yellow/green).

The common courses within these pathways provide a means to focus on the individual student journey and map the development of graduate skills and attributes within each year and across the whole degree structure.



Example of assessment overview for SBS pathway



Conclusions and Future Directions

This project aimed to take a programme-wide approach to assessment design and the development of GA. Analysis revealed significant variability across of the pathways in the surveyed indices, including:

- variation in in the communication skill development (written and oral).
- diversity in the inclusion and progression of GA 5 across pathways.
- the reliance on (typically) content-based assessment under examination conditions.
- opportunities for the development and assessment of teamwork skills.
- the frequency and extent of formative feedback within courses.

The scope of this project changed and I have had to take a longer-term view of the transformative process; mindful that any transformation will need to be tethered on new initiative and policies that the UoA may introduce. Overall, this project is intended to develop stronger collaborative reflection and review of assessment both horizontally and vertically within our degree structure. This will be initiated at our pathway meetings and I anticipate that these practices will strengthen our teaching community and reinforce connections between courses and pathways across our discipline.

References

1. Fink, L. D. (2003). Creating significant learning experiences: An integrated approach to designing college courses. San Francisco, CA: Jossey-Bass
2. Herok, G., Chuck, J. & Millar, T. (2013). Teaching and Evaluating Graduate Attributes in Science Based Disciplines. Creative Education, 4, 42-49. doi: 10.4236/ce.2013.47A2008.10.1080/713611434.

3. Knight, P.T. (2000) The Value of a Programme-wide Approach to Assessment, Assessment & Evaluation in Higher Education, 25:3,237-251. DOI: 10.1080/713611434.
4. Teachwell@UoA: A Framework for Teaching at the University of Auckland. <https://www.auckland.ac.nz/en/staff/learning-and-teaching/teaching-course-development/teachwell-at-uoa.html>
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