An on-campus example of a work-integrated-learning activity in postgraduate biotechnology

La Trobe University

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Initiative description

The learning activities described here were the result of staff wishing to create an authentic learning environment for students within a coursework degree that offered the students the chance to learn and develop a range of skills that will benefit them as they embark on various careers within the biotechnology sector.

The initiative was implemented in the subject Bio-Business Management (BIO5BBM), a postgraduate coursework subject. It involves students creating the documentation to apply for a job within a virtual biotechnology company; performing an interview to showcase the transferable skills that they possess and relate them to selection criteria; and performing the job for which they applied *via* a group assessment task. Ultimately, this initiative was designed to provide students with experiences that they could recount and use as actual examples of skills in action as they applied for jobs upon graduation.

Context

The Master of Biotechnology and Bioinformatics was one of the first postgraduate coursework programs offered in the sciences at La Trobe University. Molecular Sciences had a strong research culture, and most students studying at AQF level 9 would have been enrolled in an Honours program, with a focus on a year-long research project culminating in a thesis. The Master of Biotechnology and Bioinformatics was launched with the aim of providing a rigorous training program to equip graduates with the capabilities and requirements for both work in the biotechnology industry and higher degrees by research. While there was a strong focus on scientific content and discipline-specific skills throughout the course, it was evident that we needed at least one subject with an emphasis on preparation for work in the biotechnology sector.

A team of academics in the School commenced work on the design and development of the subject, but the real strength was the collaboration with the Careers and Employability team. At the time, this central division provided extra- and co-curricular support to students, but rarely became involved in development or delivery of subjects. This partnership became essential to the success of the subject, as the academics were able to provide context and content, while the Careers team provided a strong foundation for the implementation of work-integrated learning activities and assessment. The subject has now run continuously for ten years, and while the structure and activities vary from year to year, the core principles, and the teamwork between the academic unit and the Careers team, remains.

Implementation process

The delivery of the subject is in two parts: an employability module and a business management module, however the key learning objectives can apply to both activities. During the employability module, students are asked to write a cover letter, resume and perform an interview to apply for a job within a virtual biotechnology company. During this process, they are guided by professionals from the Careers team and are encouraged to highlight their skills in a way that would be appropriate for an actual job application, but also to consider what the industry requires and which skills they need to still acquire or develop further. Students perform the interview in an environment that replicates an actual job interview with a panel made up of professionals (Careers and academic staff) and also other students. Each student is required to sit on at least 3 interview panels through the course of the exercise.

In the second half of the subject, students form virtual biotechnology companies and work together to present a plan to manufacture and market a commercially valuable biomolecule. During this task, they are encouraged to investigate any strategies that they can access, as long as they are scientifically plausible and evidence based, and perform a cost analysis of the project. While performing the project, students are encouraged to reflect on the employability module and work on the particular attributes that they found they were lacking in their job applications. These may include: an example of solving a scientific problem as part of a team; an example of managing time to complete a complex research project; an example of performing scientific research and enquiry as part of a team. Guidance is provided by academic staff (providing assessment guidelines and project goals) and by industry experts as guest lecturers covering relevant

examples of biotechnology innovations and commercialisation strategies within the sector. While these classes are taught face-to-face, there is no formally assessed lecture content and the students can manage their project in the way they see most appropriate for their team with the only restriction being the deadline for their proposal.

Enablers and challenges

The key enabler to the success of the initiative was the collaboration with the Careers team. The two-step model where students firstly reflected on their employability capabilities and applied for a virtual position, followed by the running of the virtual company, provided a platform to introduce students to the core employability concepts. This enabled students to interrogate their prior knowledge while bringing all students to a standard understanding before commencing the virtual work task.

The freedom and flexibility given to the teaching team to develop the concept was also crucial to its success. While it is important that a program has a suite of discipline-specific threshold concepts, the autonomy to explore a novel way of embedding work-ready skills at postgraduate level has contributed not only to the success, but also to the staff engagement and enthusiasm in managing the subject.

One key current challenge is the struggle to embed sustainable industry engagement in both the learning activities and assessment. The involvement of local companies and industry representatives helps to craft the authentic nature of the tasks, reinforcing the link to life beyond university. Industry contacts have been extremely valuable in offering up their time and expertise voluntarily, but this relies on goodwill and availability. A way of bringing university and industry together in a formal, sustained manner, possibly through a 'Professors of Practice' model, requires further discussion.

Achievements and impact

One of the intended outcomes of the initiative was a stronger understanding of the biotechnology industry and the way in which scientists are required to interact with other professions to achieve outcomes. The predominant international cohort, whose strengths lay in strong and deep knowledge of scientific content, were also able to develop skills in time management, communication, workplace culture and teamwork. They were also able to reflect on their own strengths and weaknesses, and begin to envisage life and work post-studies.

It was with some surprise on behalf of the academics that students embraced the model with strong commitment and dedication. Students would research job descriptions for their role, and in their own time, reach out to companies for advice. Once in teams, they would organise regular meetings with agenda and minutes. Their final assessment submissions were not only accurate and sound but slick and professional! It was a wake-up call to staff that a subject with no exams, few lectures and a significant requirement for self-directed learning can be one of the most well received subjects in a program.

The subject is now used as a good example of an alternate approach to WIL. Most academics and students will still gravitate towards industry placements as the archetype of a work-integrated-learning experience, and while this may have some truth, the cost, resourcing and industry requirements may make placements prohibitive. By creating a hypothetical situation that mirrors the workplace, students can develop a range of industry-based skills, both soft and hard, while on-campus. The Careers and Employability unit has also undergone significant changes over the last ten years, and one of these has been a substantial increase in the interconnectedness of the Careers staff with academics throughout the university. This has added rigour and a strong WIL attitude to many subjects, as well as broadening the range of WIL-based activities beyond the placement.

Plans for further development of this project include moving the team assignment from a student-directed alternative to placement, to a virtual internship where students can have access to industry experts working in an external environment. This interaction could take place in real time via on-screen meetings or by providing interactive pre-recorded content addressing the issues of an actual biotechnology company. Both scenarios would offer the students a WIL experience without having to leave the classroom and could become an even more realistic alternative to having to provide an industry placement for each student.

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