

## **Section 1:            Executive Summary**

The climate of change current in universities around the world makes this an appropriate time to initiate a benchmark project at two leading research-intensive universities. This change includes reviewing financial management as well as educational practice across the sector. The focus of this study is about the biology and chemistry taught at first year level to students at the Universities of Melbourne and Sydney. The information gathered, in the short term, will help identify practices that could be used to improve teaching in these areas and, in the long term, act as a snap-shot of current practice against which change may be evaluated.

### ***The findings of the project team included:***

- Similar size, structure and governance at the two universities, each with a Faculty of Science of similar discipline areas
- Very different approaches to Faculty of Science transition programs with a program in place from 1996 at the University of Sydney and one from 2000 at the University of Melbourne. The program at the University of Sydney is one of the few in the Australian higher education sector that has a Parents' Program as an integral part. Research at the University of Sydney has also shown the student program to have a significantly positive affect on students in transition. The program in Melbourne is a unit of study that all first year students take. It aims to provide students who are new to University with a set of basic skills with which to tackle first year subjects; create links to fellow students and staff; facilitate progress to second year Science; and familiarize students with the services available to them.
- A Talented Student Program is offered by the Dean at the University of Sydney to incoming students, based on their entry scores. This enables students to plan a program of study to suit their special interests. Students in Melbourne, whilst still at school, can undertake the Melbourne University Program for High Achieving Students (MUPHAS) while in year 12 which enables them to complete some of first year university before entering the university and thus gain appropriate credit towards a degree.
- More service teaching in Chemistry and Biology at the University of Sydney, leading to many more units of study being offered, and an increased administrative load.
- Remarkable similarities associated with the teaching and learning of biology and chemistry at both universities. This was in terms of the mode of presentation, the demography of the students (mostly school leavers), and the additional support resources.
- The online delivery platform at the University of Sydney is WebCT, whilst at the University of Melbourne the delivery platform is an in-house one called WebRaft.
- The use of the same on-line (on Web) learning modules in Chemistry at the two universities. These were originally developed at the University of Melbourne and

adopted (and modified) by the University of Sydney. Surveys of student use and student perceptions of usefulness of these resources show very similar responses between the two universities. The students appeared to engage with the resources and it was felt that this “modern delivery for modern students” was an integral part of their learning.

- A vastly different approach to the use of on-line materials in Biology at the University of Sydney with the development of a large group of modules designed specifically for self-assessment purposes to help the large numbers of students assess their level of understanding of the materials, and the provision since 1996 of a Virtual Learning Environment (predating the introduction of WebCT).
- Large portfolio on research into student learning of science at the University of Sydney and this has informed the development and use of teaching and learning materials.
- There was only one significant difference identified with respect to staffing. At the University of Melbourne the first year biology staffing included seven level A fractional appointments who worked almost full time during semester and not during the student vacation. This group of dedicated teachers was viewed by the project team as being able to offer high quality education to first year biology students at the University of Melbourne. This was not the case at the University of Sydney where the first year biology students are taught in the lab classes by a range of up to 75 people, primarily employed on a casual basis with a concomitant range of quality offerings.

***Future work of the project team in benchmarking will include:***

- Curriculum design - further investigate details of curriculum to see if there are major differences in approach;
- Assessment - map the role of assessment within the learning opportunities (formative, summative, continuous, final etc); and
- Generic skills development - map the way in which the generic skill “communication”, both written and oral, is developed within biology and chemistry at the two universities