

HERDSA Conference 2010 abstract

## Reshaping graduate outcomes of science students – the contribution of undergraduate research experiences

Kelly E Matthews, William J M Probert and Paula Myatt

Today's science graduates require substantially different skills compared to yesterday's graduates given the changing nature of modern science. As higher education institutions struggle to reform curricula and pedagogy, undergraduate research experiences (UREs) are increasingly being incorporated to enhance undergraduate science curricula. This study is situated within a traditional Bachelor of Science degree that offers students some voluntary opportunities to participate in UREs. This study explores two graduating science cohorts (n=272), comparing those who did and did not participate in UREs. A survey investigated student perceptions (importance, confidence and improvements) of five graduate outcomes in the context of science: writing skills, communication skills, quantitative skills (QS), teamwork skills and content knowledge. Cross-tabs and a linear discriminant analysis were used to investigate perception change between the two groups. The notable differences in perception scores in this study were consistently higher in QS, perhaps indicative of UREs emphasising the need for such skills in science or from students gaining increased confidence as a result of utilising QS within an authentic context. Our results reveal little difference in other student outcome areas, which raises questions around the role of UREs as a broad strategy for enhancing the achievement of graduate outcomes in science. This study is limited to a single institution and is focused on specific graduate outcomes, so only limited conclusions can be drawn. However, further research to determine the graduate outcomes gained from UREs would benefit the sector, particularly science disciplines, in the changing focus of government policy on student learning outcomes.

### **Please reference as:**

Matthew KE, Probert WJM and Myatt P. (2010). Reshaping graduate outcomes of science students – the contribution of undergraduate research experiences. In the Proceedings of the 33<sup>rd</sup> annual *Higher Education Research and Development Society of Australasia Conference*, Melbourne, 6-9 July.