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APPROACHES TO STUDY AND CONCEPTIONS OF BIOLOGY: DIFFERENTIAL OUTCOMES FOR GENERALIST AND VOCATIONAL DEGREE STUDENTS

Rosanne Quinnell[a], Elizabeth L. May[a], Mary Peat[a], Yvonne C. Davila[a,b]

Presenting author: Yvonne Davila (Yvonne.Davila@uts.edu.au)
[a]School of Biological Sciences, Faculty of Science, The University of Sydney, Camperdown NSW 2006, Australia
[b]Faculty of Science, University of Technology Sydney, Broadway NSW 2007, Australia

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BACKGROUND

Students have diverse learning styles and a raft of instruments have been created and validated to examine learner characteristics such as approaches to study (Biggs, 1987; Biggs, Kember & Leung, 2001) and conception of discipline in various science-based courses, including mathematics (Crawford, Gordon, Nicholas & Prosser, 1998), physics (Prosser, Trigwell, Hazel & Waterhouse, 2000) and biology (Quinnell, May, Peat & Taylor, 2005). Student survey response data can be analysed statistically in a number of ways: for example, students returning similar responses (i.e. students who adopt similar orchestrations) can be characterised using hierarchical cluster analysis (see Trigwell, Hazel & Prosser, 1996; Trigwell Prosser & Waterhouse, 1999; Prosser et al., 2000). Such analysis has allowed us to monitor changes in these learning orchestrations over the course of a semester by extending the work of Prosser et al. (2000) and employing *sequential* hierarchical cluster analyses in a process we refer to as 'Learner Profiling' (Quinnell, May & Peat, 2012). We have demonstrated that 48% of students in an introductory university biology course changed their learning orchestrations from the start to the end of their first semester at university, with some orchestrations being more persistent than others (Quinnell et al., 2012). Biology, like other enabling science courses at first year level, involves service teaching to some extent, and we were interested to see whether students enrolled in vocational or professional degrees engaged with our curriculum differently from students enrolled in generalist degrees. With this in mind we are beginning to explore the notion of differences in learning agendas of our students and if this has an impact on how students engage with our biology curriculum.

AIM

Our aim was to evaluate our learner profiling method as a means to inform curriculum design which must, by necessity, be suitable for students across a broad range of degree programs, i.e. generalist and vocational degrees.

DESIGN AND METHODS

We profiled biology students as described previously (Quinnell et al., 2012) and employed *post-hoc* analyses to see how elements of the curriculum (good teaching, clear goals, independence, assessment, workload; as defined by Ramsden, 1991) correlate with the changes in Learner Profile. We also identified students as 'generalist' or 'vocational' based on their degree program.

RESULTS

Interestingly, although perhaps not surprisingly, students enrolled in generalist degrees demonstrated greater engagement with our biology curriculum than those enrolled in vocational degrees. Our data provide some evidence that our curriculum:

1. supports generalist degree students whose conception of biology is sound and whose study approach is intrinsic,
2. is less than ideal for meeting the needs of students in vocational degrees, and
3. has failed to engage students who demonstrated dissonance at the start of semester.

CONCLUSIONS

Our findings suggest that a course in biology literacy would be more suitable to students in vocational degrees and a course that is biology content-rich would suit our generalist-degree students.

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