Improving learning experience through student peer mentoring in laboratory classes

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Introduction: In the Bachelor of Biomedical Sciences degree at Victoria University (VU), student success is limited by the fact that many students have not studied Biology and Chemistry at VCE, enter university having achieved low ATAR scores, come from low socio-economic backgrounds, are generally the "first in the family" to attend University and have culturally and linguistically diverse backgrounds. A survey of Biomedical Sciences students commencing at VU in 2011 revealed that 33% frequently felt overwhelmed by coursework, 40% had difficulty in motivating themselves and 25% had difficulty in adjusting to the learning environment at university (Tangalakis *et al.*, 2012). To aid in the transition into the university learning environment we have re-designed and trialed peer-assisted laboratory component of the 1st year core unit Foundations of Biomedical Science B (RBM1502) to provide a collaborative and supportive learning environment. Whilst many universities offer avenues in which students are able to learn from their peers, the literature has few examples of formalised cross-year peer teaching scenarios that are embedded in the curriculum. The aims of this project were to improve laboratory-based hypothesis-driven enquiry and to strengthen learning experiences and outcomes of 1st year students. Specifically, the project aimed to: i) improve the learning environment through peer communication by the use of 3rd year students acting as peer demonstrators; ii) enable students to demonstrate the application of their peer mentoring experience with follow up non-peer assisted laboratories; iii) improve the scientific laboratory skills of students through a student-centred, problem-based learning approach; and iv) enhance the development of graduate capabilities such as teamwork, problem solving, working independently and communication skills.

Methods: The laboratory sessions were re-designed to a peer-assisted format where 3rd year students acted as peer demonstrators to small groups of 1st year students. The 3rd year students were given formal instruction and training as to the experimental process and the expectation placed on them as peer demonstrators. This included providing the 1st year students with OHS protocols, scientific methodology (hypothesis testing, accuracy, reproducibility, statistical analysis of results) and instruction in basic lab skills (pipetting, making solutions). The experimental protocol was designed by the 3rd year students. Evaluation surveys were distributed to capture 1st year and 3rd year student responses to the new laboratory format. Students were surveyed at the end of the laboratory session. Survey questions comprised of closed questions with a 5-scale Likert scale (1 = strongly agree to 5 = strongly disagree) and one open question. The survey data was analysed using SPSS to generate descriptive statistics and primarily frequencies for items within survey response sets.

Results: 1st year student responses (60%) to Working with peers indicated that they felt more comfortable talking to their peer demonstrator than their teacher; 71% agreed that they were able to perform more effectively in the lab, working with fellow students in a small team; 50% agreed that they had gained more confidence since taking these lab workshops, with 42% asking more questions and 64% not afraid to make mistakes in the lab.

Conclusion: From our preliminary data we can conclude that significant support was expressed by both 1st and 3rd year students for this method of peer demonstrating in laboratory classes, with many students expressing increased confidence using this format. The fundamental aspects of laboratory work such as working in teams, performing of laboratory skills and working independently were improved. Significantly, 3rd year peer demonstrators reported improved leadership and teaching capabilities.

Tangalakis, K., Kamphuis, C & Skelly, D. (2012). Improving the student experience in a socially amd culturally diverse biomedical sciences cohort. *15th International First Year in Higher Education*: conference poster.