

MENTOR ROLE IN RESEARCH SKILL DEVELOPMENT OF SECOND YEAR PLANT SCIENCE UNDERGRADUATES

Amanda J. Able, Fran Doerflinger, Beth Loveys

Presenting Author: Amanda J. Able (amanda.able@adelaide.edu.au)
School of Agriculture, Food and Wine, The University of Adelaide, Glen Osmond SA 5064

KEYWORDS: research skill development, student-mentor relationship, inquiry-oriented learning

Background and Aim

The development of a student's ability to apply skills and knowledge to problem solving in real-life situations is integral to their success as a graduate and their employability (McSweeney & Rayner, 2011). Therefore, students should experience research-based or inquiry-oriented learning approaches as soon as possible in their undergraduate learning to enable information literacy and quantitative skill development, regardless of discipline. Inquiry-oriented learning is more academically rewarding and exciting (Mears, 2013) as well as being useful for subsequent studies and employment (Willison, 2012). Since 2011, we have delivered an inquiry-oriented learning experience for students in the Bachelors of Applied Biology, Agricultural Sciences and Viticulture & Oenology in the second year unit *Foundations of Plant Science II*. Students must work in small groups to complete an independent research project across one semester (12 weeks) under the informal guidance of an academic mentor. We have previously shown that scaffolding the experience with tutorials about the research process was essential (Loveys et al. 2014) but anecdotal evidence also suggests the student-mentor relationship is important. A good relationship can allow students to observe how a researcher thinks and overcomes problems as well as to identify potential career paths (Lopatto, 2003). We therefore aimed to further examine the role that mentors play in the learning experience of undergraduates.

Design and methods

Input from current and past students and mentors was sought by surveys using Likert scales and open-ended questions. Student surveys explored how students perceived the experience and skills gained; and; how important their mentor was in the learning process. Past students were also asked how the learning affected later studies. Mentors were asked about their impressions of student learning as well as their own experience.

Results and Conclusions

The responses to survey suggest that students perceive an increased ability to discover appropriate literature, use statistics, formulate questions; and; to perform and present their research. Although most responses were positive when students considered whether the guidance given by their mentor was sufficient, 20% reported a negative experience. These appeared to be correlated with perceived lack of time spent with the mentor, the prior capability of the students, and the type of guidance given by mentors. Inexperienced mentors noted their difficulty in knowing the most effective way to guide students. Concurrent development of mentor skills in building a relationship with their student groups therefore appears necessary to ensure delivery of outcomes that contribute to career readiness.

References

- Lopatto, D. (2003). The essential features of undergraduate research. *Council on Undergraduate Research Quarterly*, 23, 139-142.
- Loveys, B. R., Kaiser, B. N., McDonald, G., Kravchuk, O., Gilliam, M., Tyerman, S., & Able, A. J. (2014). The Development of Student Research Skills in Second Year Plant Biology. *International Journal of Innovation in Science and Mathematics Education*, 22(3), 15-25.
- McSweeney, P., & Rayner, J. (2011). Developments in Australian agricultural and related education. *Journal of Higher Education Policy and Management*, 33(4), 415-425.
- Mears, A. (2013). Findings from student focus groups. In Kirkup, L., *Inquiry-oriented learning in science: Transforming practice through forging new partnerships and perspectives* (pp. 74-78) Canberra: Office of Learning and Teaching.
- Willison, J.W. (2012) When academics integrate research skill development in the curriculum. *Higher Education Research & Development*, 31(6), 905-919.

Proceedings of the Australian Conference on Science and Mathematics Education, The University of Queensland, Sept 28th to 30th, 2016, page 6, ISBN Number 978-0-9871834-5-3.