

## **Academic literacy brokering for Masters-level students of biotechnology: A curriculum-based integration of discipline and language knowledge to support development of publication skills**

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In a recent blog post, Mary Jane Curry wrote of academic literacy brokers that “their knowledge of the discipline trumps language brokers’ specialist knowledge of academic English” (<https://doctoralwriting.wordpress.com/2015/03/20/getting-published-in-english-its-not-just-about-language/>). Combining the two sets of expertise (discipline and language) has been suggested as an effective way to address the needs of students using English as an additional language in the early stages of their development as researchers, but research investigating the effectiveness of this combined approach in specific discipline settings is rare. In this paper we present such a collaborating-colleague approach as incorporated into a 2-year internationally-focussed coursework and research Master of Plant Biotechnology program in an Australian university. After a brief description of the rationale for the approach taken, we describe the scaffolded development of publication skills and their assessment in written formats. These move from critique through question development to method choice, data analysis and interpretation, to presentation of findings and conclusions in a manuscript targeted to the editors/reviewers/reading audience of a selected journal in the field. We then present analysis of student evaluative data and interviews with program alumni and teaching and supervisory staff. The aim is to investigate the effectiveness and outcomes of this integration in implementations of the program from its inception in 2007 to 2013. We conclude by discussing implications of the research for potential improvements to current practices and materials for training, mentoring and coaching novice authors of science research articles.

### **Biodata**

Margaret Cargill D.Ed. is an applied linguist specialising in the development of research communication skills for scientists who use English either as a first or an additional language. She has over 20 years' experience working intensively with early career researchers and their supervisors. Her current research and teaching interests lie in developing, delivering and evaluating appropriate collaborative pedagogies to enable scientists and language specialists together to assist inexperienced authors in getting their research published in the international refereed literature. She is co-author, with Dr Patrick O'Connor, of *Writing scientific research articles: Strategy and steps* (Wiley-Blackwell 2009, 2013, [www.writeresearch.com.au](http://www.writeresearch.com.au)).

Professor Amanda Able was the inaugural coordinator of the Master of Plant Biotechnology program and currently teaches the Foundations course that uses integrative learning to establish skills in scientific critical review and communication. Although her primary research interests lie in molecular plant pathology, she has published research on consensus approaches to curriculum design and the impact of research skill development in plant science undergraduates. She is a member of the team responsible for the development of the Australian Agriculture Learning and Teaching Academic

Standards ([www.agltas.edu.au](http://www.agltas.edu.au)) and is Associate Dean (Curriculum) for the Faculty of Sciences at the University of Adelaide.

Chad Habel is a Senior Lecturer in the Faculty of Arts, University of Adelaide, and received his PhD in English literature from Flinders University in 2007. With a background in academic support and student development, Chad contributed to the communication/academic literacy component of the Master in Plant Biotechnology and also collaborated on the evaluation and research of the activity. Chad now works in enabling and liberal arts education and has research interest in teaching and learning, enabling education, equity in education, and educational technologies.

Professor Diane Mather is the JAT Mortlock Chair in Crop Improvement at the University of Adelaide, where she conducts research on plant molecular genetics and its application to plant breeding. For several years, she was the coordinator of the Master of Plant Biotechnology program and research project course into which publication skill development is integrated. She teaches a course in Molecular Plant Breeding that includes a small-group discovery learning activity that challenges students to develop innovative solutions to contemporary problems and to prepare consultancy reports.