



The Teaching-Research Nexus

A guide for academics and policy-makers
in higher education

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Examples from Australian universities

Linking Teaching and Research in Postgraduate Astronomy

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Broad discipline area:

Natural and Physical Sciences

- Astronomy

Year level:

- Postgraduate coursework

TRN strategy:

- Infuse teaching with the values of researchers
- Teach research methods, techniques and skills explicitly within subjects
- Place the latest research in the field within its historical context
- Draw on personal research as you design and teach courses

Teaching and learning context:

- Online/blended learning
- Mentoring of individual students
- Assessment (assignment)

Brief description of the initiative:

The academic delivers two online classes as part of his teaching commitments. These are *History of Astronomy* and *Major Project: History of Astronomy*. Both of these subjects are generally taught at a graduate level and can be taken as part of either the Graduate Certificate of Science (Astronomy)/Graduate Diploma of Science (Astronomy)/Master of Science (Astronomy) with typical enrolment numbers of 20-30 students (*History of Astronomy*) and 3-6 students (*Major Project: History of Astronomy*).

Research is infused into these postgraduate subjects in multiple ways. The academic regards it as very important to keep up to date with disciplinary research so his students learn about the most current work in the discipline. He speaks to the students about his own research into 1830's astronomy during the relevant online presentation. In the *Major Project: History of Astronomy* he asks students to undertake a literature review of a particular point in the history of astronomy. Students are able to choose a topic from a list provided for them or are able to negotiate their own area of interest

with the Senior Lecturer. Each student has a supervisor (project supervisors include both academic staff and research-only staff) with whom they can seek guidance from during the course of the project. As this is an online course, this communication is generally done via email. Students are also able to support each other through the development of the literature review, project proposal and project report. Online newsgroup discussions have been organised for this purpose. These newsgroups enable students to post material at any time. The online format allows the academic to keep in regular communication with all of the students, even when he is away at conferences or at another location doing research work. He has received feedback from students indicating that they enjoy hearing about what he is doing in his research and being kept up to date.

The research process focus of the *Major Project* unit has led to the publication of three papers in peer-reviewed astronomy and history of astronomy journals, as the student projects have resulted in original scholarly contributions. The papers are as follows:

Libel, D.S., & Fluke, C. (2004) Investigations of the interstellar medium at Washburn Observatory 1930-58, *Journal of Astronomical History & Heritage*, 7, 85.

Inderhmuehle, B., Burton, M.G., & Maddison, S.T. (2005) The history of astrophysics in Antarctica, *Publications of the Astronomical Society of the Pacific*, 22, 73.

An electronic copy is available from: <http://www.publish.csiro.au/?paper=AS04037>

Peterson, J., & Mackie, G. (2006) A brief history of the astrophysical research consortium and the Apache point observatory. *Journal of Astronomical History & Heritage*, 9, 109.

In each case, the first-named author is the student, and the other author(s) are the project supervisors.

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