

# ENGAGING STUDENTS IN THE NATURE AND PROCESS OF SCIENCE: EMBEDDING TLO 1 UNDERSTANDING SCIENCE IN YOUR SUBJECT

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## THE ISSUE

The Learning and Teaching Academic Standards Project (LTAS) in Science, led by OLT discipline scholars, Professors Sue Jones and Brian Yates, generated five Threshold Learning Outcomes (TLOs) for science undergraduates. The first of these, *TLO 1: Understanding Science* requires that:

- Upon completion of a bachelor degree in science, graduates will demonstrate a coherent understanding of science by:
- 1.1 articulating the methods of science and explaining why current scientific knowledge is both contestable and testable by further inquiry
  - 1.2 explaining the role and relevance of science in society
- (Jones, Yates & Kelder, 2011).

Traditional science undergraduate teaching has focussed largely on the knowledge produced by science (the 'products' of science) and some of the skills and procedures that future scientists may need. However, less attention has been paid to helping students develop a holistic understanding of the nature and process of science and how science and society interrelate. *The Good Practice Guide for TLO 1: Understanding Science* (Yucel, 2013), outlines some broad approaches to teaching TLO 1 and provides a list of learning and teaching resources. It also provides a small number of good practice examples of subjects dedicated to teaching concepts related to TLO 1. However, there has not yet been any exploration of embedded approaches to TLO 1 in existing discipline-focussed subjects.

The **issue to be addressed** in this ideas exchange is: How can science academics embed the teaching of TLO 1 in the curriculum of existing discipline-focussed subjects? What practical examples can be generated and shared during the ideas exchange?

## STRUCTURE OF THE SESSION

The ideas exchange session will:

1. Briefly introduce the LTAS project and TLO 1: Understanding Science
2. Briefly outline some possible general approaches to embedding TLO 1 in subject curricula
3. Ask participants (in small groups) to brainstorm some specific approaches to embed TLO 1 in the undergraduate subjects they teach
4. Provide a one page handout of useful resources for embedding the teaching of the nature and process of science in undergraduate curricula.

## REFERENCES

- Jones, S. M., Yates, B. F., Kelder, J-A. (2011). *Learning and Teaching Academic Standards Project: Science Learning and Teaching Academic Standards Statement*. Sydney: Australian Learning and Teaching Council. Retrieved August 30, 2014 from <http://www.olt.gov.au/resource-learning-and-teaching-academic-standards-science-2011>.
- Yucel, R. (2013). *ALTC Learning and Teaching Academic Standards in Science Project: Good Practice Guide (Science) Threshold Learning Outcome 1: Understanding Science*. Sydney: Office of Learning and Teaching. Retrieved August 30, 2014 from <http://tinyurl.com/ph453os>.

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