

ORAL ASSESSMENT IN SCIENCE AND MATHEMATICS: HOW, WHAT, AND WHY?

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ABSTRACT

Science educators seek to teach diverse skills, including effective communication and problem-solving skills, many of which cannot easily be assessed in written form or are well suited to non-written assessment forms. This workshop will explore some innovative uses of oral assessment to develop and assess key skills such as communication and problem-solving, aiming to use participants' experiences to inspire further innovation in assessment practice. It will explore *what* forms of oral assessment are used by science academics, *how* it is implemented, and *why* particular skills or attributes are being assessed or developed.

Participants are encouraged to come to the workshop prepared to discuss current practice, including the process, marking criteria, and broader purpose for oral assessments.

THE ISSUE

This workshop is designed to align with the conference theme, "Transforming practice: Inspiring Innovation", by discussing the transformation and innovative uses of oral assessment.

The mode and frequency of assessment of different Threshold Learning Outcomes for Science varies across disciplines: some disciplines use well-established assessment items with embedded assessment of communication and problem-solving skills, for example; others are more recently coming to emphasise broader skills in their assessments, perhaps through the adoption of criteria-based marking (Varsavsky, King, Coady, & Hogeboom, 2014). Additionally, assessing the problem-solving process, rather than simply the result of the process, is an area that has been recently developing more fully (Creagh, 2013; De Bortoli & Macaskill, 2014). Many of these skills are suited to oral forms of assessment.

In this workshop we will discuss some innovative uses of oral assessment to develop and assess key skills such as communication and problem-solving, aiming to use participants' experiences to inspire further innovation in assessment practice.

THE APPROACH

This session will discuss current practice in oral assessment across science disciplines. We aim to cover a broad range of approaches to this, building on some existing work in this area (Varsavsky et al., 2014; Creagh, 2013; De Bortoli & Macaskill, 2014), but ultimately guided by the participants in a "just-in-time" model (Novak, 2011).

Discussion will focus on what forms of oral assessment are used, and the underlying skills they aim to assess. We will aim for cross-disciplinary discussion, and will look for commonalities of form and purpose of oral assessment between disciplines. The workshop will offer potential for collaboration to develop these ideas further in the future.

REFERENCES

- Bishop, J.L., & Verleger, M.A. (2013, June 23-26). *The flipped classroom: a survey of the research*. Proceedings of the 120th ASEE Annual Conference & Exposition, Atlanta, GA.
- Creagh, C. (2013, September 19-21). *Work It Out: Enhancing students' problem solving skills by modelling how to "Work It Out" in a just-in-time learning environment*. Proceedings of the Australian Conference on Science and Mathematics Education, Canberra, ACT.

- De Bortoli, L., & Macaskill, G. (2014). *Thinking it through: Australian students' skills in creative problem solving*. Retrieved September 12, from <http://research.acer.edu.au/ozpisa/18>
- Novak, G.M. (2011) Just-in-time teaching, *New directions for teaching and learning*, 2011(128), 63-73.
- Seaton, K.A., King, D.M., & Sandison, C.E. (2014). Flipping the maths tutorial: A tale of n departments. *Australian Mathematical Society Gazette*, 41(2), 99-113.
- Varsavsky, C., King, D., Coady, C., & Hogeboom, K. (2014). *Developing a Shared Understanding of Assessment Criteria and Standards for Undergraduate Mathematics*. Retrieved September 12, 2015 from http://www.olt.gov.au/system/files/resources/ID12_2255_Varasavky_Report_2014.pdf

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