

A DBER Science Education Seminar

Measures of science literacy in Universities & their relevance to learning, reasoning & metacognitive self-assessment

Ed Nuhfer

Professor of Geoscience. Director of Faculty Development
Director of Academic Assessment, California State Universities (retired)

Monday, 3 February 2020 Porter BioScience B121 @ 3:30 PM

Discussions of "science literacy" involve measures of cognitive competence on understanding of science as a way of knowing and comparisons of these measures with participants' self-assessed competency of science literacy. We used a validated instrument, the Science Literacy Concept Inventory (SLCI), for the cognitive measures. We measured self-assessed competencies by global responses to single questions and granular responses to validated 25-item knowledge surveys. In this presentation, we will see results from over 25,000 participants' on their ability to understand science as a way of knowing. The paired measures of (a) directly measured and (b) self-assessed competence come from over 5000 participants. We will see how results varied across varied ethnic groups, genders, and across diverse kinds of institutions. The findings from the paired measures have upset 20 years of peer-reviewed literature in behavioral science on self-assessment (Dunning-Kruger Effect) and reveal new ways to use such paired measures to understand the effects of differential privilege and to assess educational quality across varied kinds of institutions of higher education. Participants who would like to obtain their own paired measure from the SLCI and receive the confidential feedback report that students taking the inventory received can do so at <https://tinyurl.com/KlymkowskyCU>.

Relevant peer-reviewed references underlying this presentation:

http://pachyderm.cdl.edu/elixr-stories/resource-documents/knowledge-survey/KS_a_too_for_all_reasons.pdf

<https://www.asmscience.org/content/journal/jmbe/10.1128/jmbe.v17i1.1036>

<https://scholarcommons.usf.edu/numeracy/vol9/iss1/art4/>

<https://scholarcommons.usf.edu/numeracy/vol10/iss1/art4/>

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University of Colorado **Boulder**