

“HUMANS, NOT SCIENCEBOTS” – THE NEED FOR ACKNOWLEDGING OTHER WAYS OF KNOWING IN STEM HIGHER EDUCATION

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STEM graduates operate in workplaces and societies reshaped by advancements in AI, interdisciplinary demands, globalisation, sustainability, diversity and inclusion, virtual collaboration, and a constantly evolving ethical and social context. It is evident that in this climate, STEM graduates require not just core technical knowledge and ability, but also wider competencies in cultural and social skills, an appreciation of different knowledge systems, global awareness and an open but critical mindset.

This presentation will “trouble” STEM educators with a call to move beyond the boundaries of disciplinary content in preparing future graduates for the evolving world of the 21st century. The notion of troubling originates from Kumashiro (2002) and refers to “looking beyond the theories and methods that we already know” (p. 9). Most of us who are trained in STEM disciplines are generally socialised into a postpositivist paradigm (Harding, 2006; Boisselle, 2016). Postpositivism assumes that objectivity is possible if one is guided by the scientific method. STEM subjects are dominated by the belief that the Eurocentric scientific method is above all other ways of knowing because it is considered to be objective and neutral (Bhambra et.al., 2018).

We argue that for our STEM graduates to function in workplaces and social contexts of ever-increasing complexity, they need a level of understanding of other knowledge systems alongside the dominant Eurocentric scientific method. While students need to understand and apply the scientific method in their work, they equally need to embrace other ways of knowing to successfully navigate the context of that work, ethically and with cultural and social competency.

Introducing this knowledge and the corresponding critical thinking skills requires us as STEM educators to be open to explore other epistemologies with our students. At present, many of these skills and ideas may be taught in our courses, but students and staff often perceive them as external to the business of doing science. We advocate for reform, with these approaches becoming an integral component of all STEM courses and, as such, articulated as a Threshold Learning Outcome for Australian STEM higher education.

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