

Chemical Engineering Seminars – HT 2011

*Week 6, Tuesday February 22nd 2009, 4:00PM-5:00PM
Lecture Room 3, Thom Building, Engineering Science*

Identifying and supporting students through the troublesome and yet critical threshold in chemical engineering curricula

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Abstract

In every curriculum there are critical transformatory concepts to master, which some students find tricky and others find very straight forward. For the students who get stuck these 'thresholds' can be troublesome and confusing especially as lecturers, who themselves may not have had the same issues, are at a loss as to how to support students in passing through the thresholds. In recent years research has been conducted which suggests that focusing on these critical transformatory areas can be an important way to approach a curriculum reform. Meyer and Land (2003) describe threshold concepts as 'akin to a portal, opening up a new and previously inaccessible way of thinking about something'. They discuss complex numbers as an example of something that is often considered absurd, even though it is a 'gateway' to approaches to understanding and solving problems in maths and science. They suggest that the threshold concepts are likely to be transformative i.e. that they mark a shift in the perception of the subject by the student, and irreversible. The transition can be problematic, troubling and often humbling, and students often mimic the new status without understanding the meaning of what they are doing.

Biography

Caroline is Chair of Engineering Education for the Faculty of Engineering, Computing and Mathematics at the University of Western Australia and Visiting Professor at the Oxford Learning Institute. Caroline has also worked as Chair of Engineering Education Research and Development at Queens University, Canada where she was cross appointed into the Department of Chemical Engineering, and as lecturer in Materials at Imperial College and Sydney University.

Caroline continues her research and practice in materials engineering, whilst maintaining an alternative research profile in engineering education and a service role in education development. Caroline's role at UWA is to enhance the learning experience of engineering students across the Faculty, to support the staff in their teaching, the students in their learning and to facilitate a more scholarly approach to engineering education. She draws on all areas of Higher Education research, Education Development, Science Education and Critical Pedagogy to support her research and development work. Caroline has worked for many years on the development of creative and critical thinking in engineering students. She also draws from the recent work on threshold concepts and transformative learning theory.

Caroline has more than 180 publications in Materials Engineering and Engineering Education including 19 books in Engineering and Engineering Education including practice and development, teaching and supervision, science and engineering knowledge development, education and social justice.