

Science Education Seminar

Date: Tuesday 15 August 2017
Time: 3.00pm – 5.30pm
Venue: Graduate School of Education
Corner of Stirling Hwy and Hampden Rd
Education Conference Room,
Second Floor, Room 2.34
RSVP: katherine.carson@uwa.edu.au
before Monday August 14



Seminar 1: How can we get more students to study STEM subjects once these are no longer compulsory?

Professor Michael Reiss, University College London, United Kingdom
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Michael Reiss is Professor of Science Education at UCL Institute of Education, Visiting Professor at the Universities of Kiel, Leeds and York and the Royal Veterinary College, Honorary Fellow of the British Science Association and of the College of Teachers, Docent at the University of Helsinki and a Fellow of the Academy of Social Sciences.

A former Director of Education at the Royal Society, he is also a Priest in the Church of England and President of the International Society for Science and Religion. His research and consultancy interests are in science education, bioethics and sex education.

Seminar 2: Teaching higher order thinking to low achieving students: do they make a marriage?

Professor Anat Zohar, The Hebrew University of Jerusalem, Israel
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Anat Zohar is a Professor at the School of Education of the Hebrew University of Jerusalem. From 2006-2009 she served as the Chairperson of the Pedagogical Secretariat at the Ministry of Education. In this capacity she led a process of educational change in the Israeli education system whose main emphasis was the integration of thinking and understanding in various school subjects.

Her areas of academic expertise include: science teaching, learning and instruction, the development of students' thinking, metacognition, teachers' professional development in the context of teaching thinking, gender and science learning, gender and education for the gifted, bridging the gap between educational policy and changes in learning and instruction, and how to integrate educational projects in the field of developing students' thinking for the entire system.

Seminar 1: How can we get more students to study STEM subjects once these are no longer compulsory?

Professor Michael Reiss, University College London, United Kingdom

There is a shortage of studies in mathematics and science education that examine student engagement over time and research the reasons for the take up or non take up of mathematics and science once these subjects become optional.

In the UPMAP (Understanding Participation rates in post-16 Mathematics And Physics) Project we studied these issues with particular reference to mathematics and physics. Once students are no longer required to do certain subjects, participation depends at least in part on how students see both themselves and the subjects. Each can shift as a result of experiences inside and outside the classroom.

In Strand 1 we designed student questionnaires to include items from established psychological constructs alongside validated subject-specific conceptual tasks so that possible relationships between performance, confidence and intrinsic and extrinsic factors could be explored. A total of approximately 30,000 questionnaires were returned from 141 schools across the UK. In Strand 2 we worked with 12 of our Strand 1 schools in more depth, undertaking a total of 254 student interviews. In Strand 3 we interviewed 51 first year undergraduates across four Higher Education Institutions. This seminar will present our key findings.

Seminar 2: Teaching higher order thinking to low achieving students: do they make a marriage?

Professor Anat Zohar, The Hebrew University of Jerusalem, Israel

Although learning theories see the development of students' thinking as an important goal for ALL students, informal conversations with teachers indicate that teachers perceive teaching thinking as appropriate only for high-achieving students. According to this view, low-achieving students are, by and large, unable to deal with tasks that require thinking and should thus be spared the frustration generated by such tasks. This view may become a self-fulfilling prophecy by causing teachers to treat students in a non-egalitarian way that will increase achievement gaps.

The seminar will synthesize the findings of three studies in this area. The first study investigated teachers' beliefs regarding teaching thinking to low-achieving students in a formal way. The second study investigated whether low-achieving students actually gain from learning processes that are designed to foster thinking skills. The study presents a secondary analysis of assessment data from four different programs whose goal was to teach thinking in science classrooms. The findings show that by the end of each of the 4 programs, low-achieving students made considerable progress with respect to their initial scores. The third study investigated instructional means for supporting the development of students' thinking, showing that explicit instruction of meta-strategic knowledge has dramatic effects on reasoning abilities of low-achieving students. The implications for programs that aim to teach students to think will be discussed.