

ZMATH 2011c.00818

Houston, Ken; Mather, Glyn; Wood, Leigh N.; Petocz, Peter; Reid, Anna; Harding, Ansie; Engelbrecht, Johann; Smith, Geoff H.

Is there "life" after "modelling"? Student conceptions of mathematics.

Math. Educ. Res. J. 22, No. 2, 69-80 (2010).

Summary: We have been investigating university student conceptions of mathematics over a number of years, with the goal of enhancing student learning and professional development. We developed an open-ended survey of three questions, on "What is mathematics" and two questions about the role of mathematics in the students' future. This questionnaire was completed by 1,200 undergraduate students of mathematics in Australia, the UK, Canada, South Africa, and Brunei. The sample included students ranging from those majoring in mathematics to those taking only one or two modules in mathematics. Responses were analysed starting from a previously-developed phenomenographic framework that required only minor modification, leading to an outcome space of four levels of conceptions about mathematics. We found that for many students modelling is fundamental to their conception of "What is mathematics?". In a small number of students, we identified a broader conception of mathematics, that we have labelled "Life". This describes a view of mathematics as a way of thinking about reality and as an integral part of life, and represents an ideal aim for university mathematics education. (Contains 1 table and 1 footnote.) (ERIC)

Classification: M15 C25

Keywords: undergraduate students; college mathematics; mathematical models; surveys; student attitudes; questionnaires; majors; nonmajors; phenomenology; concept formation; relevance

doi:10.1007/BF03217566