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The unit of analysis in mathematics education: bridging the political-technical divide?

Summary: Mathematics education is a complex, multi-disciplinary field of study which treats a wide range of diverse but interrelated areas. These include the nature of mathematics, the learning of mathematics, its teaching, and the social context surrounding both the discipline and applications of mathematics itself, as well as its teaching and learning. But research and researchers in mathematics education fall loosely into two camps: On the one hand there is technical research, drawing on mathematics, psychology and pedagogy, concerned with narrow questions about the teaching and learning of mathematics. On the other hand there is political and social research drawing on sociology and philosophy, addressing large scale problems of social consequence. These two camps tend to draw on different theoretical underpinnings as well as having different interests. Is it possible to find a shared theoretical element, a single unit of analysis for mathematics education which provides a unified approach to both analysing and explaining all of these diverse aspects? Can such a unit provide a bridge across the technical-political divide? Methodological and ontological senses of the term 'unit of analysis' are distinguished. Units of analysis in the ontological sense are proposed for each of the four listed subdomains of mathematics education. Drawing on Blunden's interdisciplinary version of cultural historical activity theory a single over-arching unit of analysis, the collaborative project, is proposed for the whole field of mathematics education. This is applied to the case study of a single learner, illustrating the practical utility of this approach, as well as the way the technical-political divide might be bridged in our field.