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**Improving students' understanding of algebra and multiplicative reasoning: did the ICCAMS intervention work?**

Pope, Sue (ed.), Proceedings of the British Society for Research into Learning Mathematics (BSRLM). Proceedings of the British congress of mathematics education, BCME-8, University of Nottingham, UK, April 14–17, 2014. London: British Society for Research into Learning Mathematics (BSRLM). 167-174 (2014).

Summary: In this paper we report on the intervention phase of an ESRC-funded project, Increasing Competence and Confidence in Algebra and Multiplicative Structures (ICCAMS). The intervention was designed to enable teachers to use formative assessment in mathematics classrooms by evaluating what students already knew, then adapting their teaching to students' learning needs. A key feature was the use of models and representations, such as the Cartesian graph, both to help students better understand mathematical ideas and to help teachers appreciate students' difficulties. Twenty-two teachers and their Year 8 classes from 11 schools took part in the intervention during 2010/11. Pre- and post-tests in algebra, decimals and ratio were administered to the students of these classes, and compared to a control group of students matched from the ICCAMS national longitudinal survey (using propensity score matching). The students in the intervention group made greater progress than the matched control.

*Classification:* H23 D73

*Keywords:* elementary algebra; multiplicative reasoning; teaching; intervention; remedial teaching; evaluation; educational research; lower secondary; formative assessment; educational diagnosis; mathematical models; multiple representations

<http://www.bsrlm.org.uk/BCME8/BCME8-22.pdf>