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**Gaining meaning for expressions with Grid Algebra: developing the CAPS framework.**

Adams, G. (ed.), Proceedings of the British Society for Research into Learning Mathematics (BSRLM). Vol. 35, No. 2. Proceedings of the day conference, Durham University, UK, June 6, 2015. London: British Society for Research into Learning Mathematics (BSRLM). 1-6 (2015).

Summary: Through examples from the early stages of a study with Grade 7 low-attaining learners from Malta using Grid Algebra, we argue for the significance of actions, pictures and symbols in learners developing concepts for formal expressions. The interrelationship between these forms the basis of the CAPS (Concept, Action, Picture and Symbol) framework as an analytical tool, which is presented in this paper.

*Classification:* H23 U73 C33

*Keywords:* educational research; lower secondary; low achievement; early algebra; notation; arithmetic; expressions; precept; mathematical software; computer as educational medium; concept formation; visualisation

<http://www.bsrlm.org.uk/IPs/ip35-2/BSRLM-IP-35-2-01.pdf>