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Solving additive problems at pre-elementary school level with the support of graphical representation.

Chick, H. L. (ed.) et al., Proceedings of the 29th annual conference of the International Group for the Psychology of Mathematics Education, PME 29, Melbourne, Australia, July 10–15, 2005. Vol 1-4. Melbourne: University of Melbourne, Dep. of Science and Mathematics Education. Part IV, 161-168 (2005).

Summary: This research offers empirical evidence of the importance of supplying diverse symbolic representations in order to support concept development in mathematics. Graphical representation can be a helpful symbolic tool for concept development in the conceptual field of additive structures. Nevertheless, this symbolic tool has specific difficulties that are better dealt with when graphics are combined with symbolic-manipulative tools like building blocks. This combination showed to be effective in the context of a didactic sequence addressed to students in the beginning of elementary school level and aimed to support conceptual development in the domain of additive structures. It provides a theoretical backing for the proposal of using diverse symbolic representations in concept development in mathematics.

Classification: F21 C31 U61 A61

Keywords: additive structures; arithmetic; concept formation; symbolic representations; manipulative materials; building blocks; pre-school education

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