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Using modeling eliciting problems to examine students' understanding of early functional reasoning.

Hitt, Fernando et al., Psychology of mathematics education (PME-NA XXI). Vol. 2. ,. 593-598 (1999).

A model eliciting approach specifically engages students in the activities of creating meaningful symbolic, graphical, and numerical representations and descriptions of situations when solving non routine problems. The study reported in this paper focused on the modeling cycles that emerged as children solved one model eliciting problem. The modeling eliciting approach discussed in this paper provides learners with an opportunity to create and continually refine their early functional understanding by grappling with the problem of how to represent the relationship between two variables in such a way that decisions can be made. The characteristics of each stage of the model eliciting task are illustrated by collaborative small group examples. Student multiplicative reasoning about the relationships between and among quantities is discussed. The results of this classroom-based case study suggest that students were able to move from naive additive understandings to more sophisticated multiplicative understandings and create generalizable systems (or models) for making decisions. (Abstract)

Classification: I20