

# **Concrete Materials in Mathematics Education: Identifying “Concreteness” and Evaluating its Pedagogical Effectiveness**

A Preliminary Research Report

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A growing body of research suggests cognitive difficulties associated with the use of concrete learning materials. I argue that this research program may benefit from a critical examination of its underlying assumptions. Thus, this report was motivated by a concern that extant approach to evaluating the pedagogical effectiveness of “concreteness” in education is by-and-large undertheorized, resulting suboptimal interpretation of reform-based philosophy and recommendations, ultimately to the detriment of students. I hope to open up a space for a discussion of a more nuanced conceptualization of both (1) “concreteness” as a concept and (2) the observed cognitive difficulties evident in classroom implementation of concrete materials.

Keywords: cognitive research, theoretical perspectives, concrete problems