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Contingent teaching to low-achieving students in mathematics: challenges and potential for scaffolding meaningful learning.

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Summary: The study set out to discover what characterizes the meaningful learning of mathematics among low-achieving students (LAS) and to highlight the challenges their characteristics pose for scaffolding, in particular for its adaptive core: contingent teaching. The setting was an extracurricular program for teaching meaningful mathematics to LAS through a combination of learning in context, interactive computerized activities, and contingent teaching. Using microgenetic analysis of lesson transcripts, videotaped computer activities and worksheets, and data from teachers' and students' pre- and post-program interviews, we traced the learning processes of 11 fifth grade LAS over 2 months in which they studied the subtraction of decimal numbers. Our findings reveal that nine of the LAS showed evidence of meaningful strategy construction and use. However, their learning processes were inconsistent and difficult to predict, and were characterized by progressions and regressions, as demonstrated in two case studies. Theoretical and pedagogical implications related to scaffolding are discussed.

Classification: D43 C33 F43

Keywords: scaffolding; low-achieving students; complex learning processes; contingent teaching

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