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Testing Cognitive Science Principles in a Middle School Mathematics Curriculum

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Abstract: Is student learning enhanced when a math curriculum is revised using research-based principles? The National Center for Cognition and Mathematics Instruction, funded by the US Department of Education, aims to determine whether and how applying research to practice improves student outcomes. A full year of student and teacher materials for Grade 7 math were revised according to principles of visual mapping, using worked examples, spacing learning over time, and formative assessment. Ninety-one teachers at 64 schools with a total of 6,541 students participated in the study. Classes were randomly assigned to either the revised or existing materials at the school level. Data sources included demographic data, pretest, attitudes survey, teacher pedagogical content knowledge, teaching logs, unit posttests, and an end of year measure. Complete data were available for 4,749 students. We will report results from HLM analyses and discuss practical considerations for applying research to practice.