Immediate Introduction to Multiple Procedures Supports Procedural Flexibility in Equation Solving

Kelley Durkin
Vanderbilt University

Bethany Rittle-Johnson
Vanderbilt University

Jon Star
Harvard University

Abstract: Knowing multiple procedures and using them adaptively is important for problem-solving. We examined how different methods for developing procedural flexibility affected novices learning equation solving. Students (N = 198) were assigned to one of three conditions that differed in whether multiple procedures were introduced immediately or after practice with one procedure (no delay vs. delay) and in whether comparison of examples was supported. Students in the no delay condition had greater procedural flexibility and accuracy than students in either delay condition, regardless of whether they compared examples. Differences in students' explanations during the intervention suggest reasons for the benefits of immediate introduction to multiple procedures. Students in the no delay condition more frequently compared and evaluated efficiency of procedures than students in delay conditions. They also more frequently used efficient procedures during the intervention. Immediate introduction to multiple procedures supports attention to and adaption of efficient procedures, which benefits flexibility.