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Equation structure and the meaning of the equal sign: the impact of task selection in eliciting elementary students' understandings.

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Summary: This paper reports results from a written assessment given to 290 third-, fourth-, and fifth-grade students prior to any instructional intervention. We share and discuss students' responses to items addressing their understanding of equation structure and the meaning of the equal sign. We found that many students held an operational conception of the equal sign and had difficulty recognizing underlying structure in arithmetic equations. Some students, however, were able to recognize underlying structure on particular tasks. Our findings can inform early algebra efforts by highlighting the prevalence of the operational view and by identifying tasks that have the potential to help students begin to think about equations in a structural way at the very beginning of their early algebra experiences.

Classification: H32 H33 E42 E43 C32 C33

Keywords: algebra; equations; grade 5; grade 4; grade 3; student evaluation; mathematical concepts; concept formation; equal sign; early algebra

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