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**Knuth, Eric J.; Stephens, Ana C.; McNeil, Nicole M.; Alibali, Martha W.**

**Does understanding the equal sign matter? Evidence from solving equations.**

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Summary: Given its important role in mathematics as well as its role as a gatekeeper to future educational and employment opportunities, algebra has become a focal point of both reform and research efforts in mathematics education. Understanding and using algebra is dependent on understanding a number of fundamental concepts, one of which is the concept of equality. This article focuses on middle school students' understanding of the equal sign and its relation to performance solving algebraic equations. The data indicate that many students lack a sophisticated understanding of the equal sign and that their understanding of the equal sign is associated with performance on equation-solving items. Moreover, the latter finding holds even when controlling for mathematics ability (as measured by standardized achievement test scores). Implications for instruction and curricular design are discussed.

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*Keywords:* equations; elementary algebra; learning; grades 5-8; lower secondary

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