Does Learning Magnitude Knowledge help Students Learn Procedural Knowledge or Vice Versa?

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Abstract: The present study was designed to explore how learning magnitude knowledge and learning procedural knowledge, with respect to both whole numbers and fractions, might be causally related. Neither magnitude knowledge nor procedural knowledge is necessary or sufficient for learning the other, and yet, correlations between the two are ubiquitous (e.g., Siegler & Pyke, 2013). Using correlational data (Structural Equation Models) and accuracy data (Knowledge Space Theory), potential causal models to describe the data were tested. Structural equation models did not differentiate between learning magnitude knowledge helping to learn procedural knowledge or vice versa. However, knowledge space model testing models of accuracy data provides support for the notion that learning procedural knowledge helps learning magnitude knowledge, and evidence against the reverse notion that learning magnitude knowledge helps learning procedural knowledge.

Key Words: Magnitude; Procedure; Structural Equation Models; Knowledge Space Theory