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Authors

Jee, Benjamin

Matlen, Bryan

Simms, Nina

et al.

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Supports for Visual Comparison in STEM textbooks

Benjamin Jee

Worcester State University, Worcester, Massachusetts, United States

Bryan Matlen

WestEd, San Francisco, California, United States

Nina Simms

Northwestern University, Evanston, Illinois, United States

Dedre Gentner

Northwestern University, Evanston, Illinois, United States

Abstract

Many science and mathematics concepts involve complex relationships. Educational materials, such as textbooks, often convey these systems through visualizations (e.g., Jee et al., 2010; Mayer, 1993). To abstract the key relationships, students must compare corresponding elements of these visualizations-parts of a structure, steps in a process, etc. Yet, little is known about the ways in which visual comparisons are presented in textbooks. The present study evaluated images in science and mathematics textbooks from top U.S. publishers with respect to the support for visual comparisons. The research team identified several factors that could help vs. hinder visual comparison based on prior research on visual comparison and analogy, including the spatial arrangement of corresponding elements (Matlen, Gentner, & Franconeri, 2014), the number intervening elements between them, and the ways in which comparisons are formally encouraged through both verbal and non-verbal cues.