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Authors

Matlen, Bryan

Gentner, Dedre

Simms, Nina

et al.

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Students Prefer to Learn from Figures that Include Spatial Supports for Comparison

Bryan Matlen

WestEd, Redwood City, California, United States

Dedre Gentner

Northwestern University, Evanston, Illinois, United States

Nina Simms

Northwestern University, Evanston, Illinois, United States

Yinyuan Zheng

Northwestern University, Evanston, Illinois, United States

Benjamin Jee

Worcester State University, Worcester, Massachusetts, United States

Abstract

Visual comparison is used in education to convey important commonalities and differences. This process is more effective when the figures are spatially aligned so that the corresponding parts and relations are maximally clear (direct placement) (Matlen, Gentner, & Franconeri, 2020). Yet science textbooks often fail to follow this principle arranging figures meant to be compared (Jee et al., in prep)—perhaps in service of visual appeal. To explore whether this choice in fact maximizes visual appeal, we gave middle-school students illustrations characteristic of textbook figures, along with modified versions that followed direct placement principles. Students were significantly more likely to choose the direct placement version when given the goal of helping other students see differences among the figures ($M=94\%$), than when given the goal to make the figure “look nice” ($M=61\%$). These findings suggest that direct placements improve the educational value of a figure without sacrificing its aesthetic appeal.