

Reading analogies can lead to illusions of understanding in Geoscience

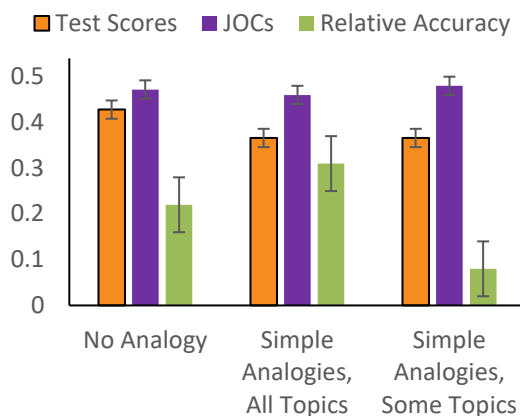
#2300990: Effects of instructional analogies on illusions of understanding in Introductory Geoscience

Geoscience textbooks often include analogical comparisons

Textbook Excerpt with Simple Analogy:

Mountain glaciers flow down their valleys, and continental glaciers spread outward from their thickest point. **If you've ever poured honey onto a plate, you've seen a similar process of gravitational spreading that occurs with continental glaciers.**

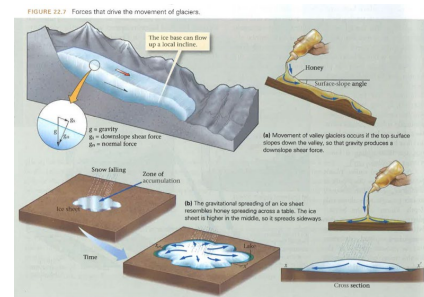
Simple analogies do not improve understanding, but inflate judgments



Geoscience textbooks sparsely elaborate on analogical comparisons

Elaboration:

Although the honey comes out of the squeeze bottle in a stream, it does not build up into a narrow column on top of the plate because it's too weak. Rather, it flows laterally away from the point where it lands and extends in all directions to form a wide, thin layer.



Elaboration with images improves understanding and monitoring



Methods

Mapping

Metacomprehension

- Undergraduates with no prior geoscience course
- 6 topics (Weathering, Plates, Uplift, Groundwater, Glaciers, Earthquakes), ~1000 wd textbook excerpts
- 5 MC test items, JOCs out of 5, Relative Accuracy is the intra-individual correlation between the two.

Spatial Skills

Paper folding scores predict comprehension and monitoring in all conditions

Textbook Analysis

