ZMATH 2012b.00247

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A transfer-in-pieces consideration of the perception of structure in the transfer of learning.

J. Learn. Sci. 19, No. 4, 443-479 (2010).

Summary: Many approaches to the transfer problem argue that transfer depends on the recognition of the same or similar abstract "structure" in two different situations. However, mainstream cognitive perspectives and contrasting Piagetian constructivist accounts differ in their conceptualizations of structure. These differences, not clearly articulated in the literature, have significant implications for accounts of transfer. Using interview data involving undergraduates learning elementary principles of probability and statistics, and Wagner's transfer-in-pieces perspective, I extend existing constructivist accounts of transfer in at least two ways. First, I show how the notion of a "concept projection" reveals fine-grained mechanisms of transfer that demonstrate how people structure situations and that elaborate on the Piagetian processes of "assimilation" and "accommodation." Second, I examine how what experts consider a "single" mathematical concept or principle may come to be recognized through a "variety" of assimilatory cognitive resources whose usefulness is influenced by contextual factors. That is, an individual might structure two contextually dissimilar situations differently while perceiving the same mathematical principle at work in both. Similarly, two or more individuals may agree on the relevance of a particular mathematical concept in a situation, even though each structures the situation differently.

Classification: C30 K50
Keywords: transfer of training; constructivism (learning); undergraduate students; mathematical concepts; probability; statistics; cognitive processes; context effect; case studies; research; cognitive science; cognitive psychology; interpretive knowledge; perception of structure; law of large numbers; concept projections; interviews; knowledge transfer