

Optimizing the category construction task to promote learning and transfer of knowledge in classroom instruction

Kenneth J. Kurtz
Binghamton University

Andy Cavagnetto
Washington State University

Garrett Honke
Binghamton University

Nolan Conaway
Binghamton University

John D. Patterson
Binghamton University

James C. Marr
Washington State University

Yan Tao
Binghamton University

Abstract: It is well established that spontaneous transfer of relevant abstract knowledge (i.e., a principle) occurs relatively rarely. There are techniques such as active comparison of co-presented analogous cases that improve performance markedly, but these treatments typically result in a majority negative outcome under optimal conditions and fall off drastically otherwise. Our recent research testing undergraduate participants in a laboratory setting has shown significant success in promoting spontaneous transfer using a category construction technique based on sorting a set of six unlabeled cases into two groups (three of the cases instantiate the target principle). The present work investigates the category construction technique for improving student learning and transfer of principles of evolution in 7th grade science classrooms. We report results showing the general promise of the approach and identify implementation options that improve outcomes for delivering effective category construction training in an authentic instructional setting.