Title

Student Learning Trajectories and Knowledge Transfer in Early MathematicalEquivalence Interventions

Permalink

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 42(0)

Authors

Johannes, Kristen
Davenport, Jodi

Publication Date

2020

Copyright Information

Peer reviewed

Student Learning Trajectories and Knowledge Transfer in Early Mathematical Equivalence Interventions

Kristen Johannes
WestEd, Alameda, California, United States

Jodi Davenport
WestEd, Alameda, California, United States

Abstract

Many students fail to develop adequate understanding of mathematical equivalence in early grades, which impacts later algebra learning. Work from McNeil and colleagues proposes that this failure is partly due to the format of traditional instruction and practice with highly similar problems, which encourages students to develop ineffective mental models of problem types (McNeil, 2014, McNeil & Alibali, 2005). In the current study, we explore students learning trajectories in two matched equivalence interventions. We show that, relative to an active control, the principle-based treatment intervention gives rise to a greater number of successful learners, a designation that, in turn, leads to improved performance on distal transfer assessments. We further demonstrate a predictive relationship between students engagement with the intervention, via workbook completion, and likelihood of becoming a successful learner. Our findings have implications for early detection of learning and subsequent scaffolding for low-performing students.