

UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

Exploration as a Learning Strategy to Support Children's Pattern Learning

Permalink

<https://escholarship.org/uc/item/0343n9wq>

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 44(44)

Authors

Ngoon, Tricia J.
Leung, Vivian
Goldwater, Micah
et al.

Publication Date

2022

Peer reviewed

Exploration as a Learning Strategy to Support Children's Pattern Learning

Tricia Ngoon

Carnegie Mellon University, Pittsburgh, Pennsylvania, United States

Vivian Leung

University of California, San Diego, La Jolla, California, United States

Micah Goldwater

University of Sydney, Sydney, Australia

Caren Walker

University of California San Diego, La Jolla, California, United States

Abstract

Knowledge of repeating patterns is foundational for early mathematical thinking. While interventions that rely on direct instruction help children to master specific patterns, they often struggle to transfer this knowledge to new patterns. This paper investigates exploration as a learning strategy for abstract patterning and improving knowledge transfer. In a yoked, between-subjects design, 5- and 6-year-old children ($n = 90$) were tasked with finding up to three hidden stars in a repeating shape pattern (ABB). Exploration participants ($n=45$) explored pattern materials themselves, while demonstration participants ($n=45$) observed the experimenter revealing the contents of each shape in the same order as the exploration counterpart. In a transfer task, children saw the same repeating pattern with different stimuli. We found that 6-year-olds significantly outperformed 5-year-olds in the exploration condition and used more sophisticated patterning strategies. These findings suggest that exploration may support and extend older children's emerging understanding of underlying repeating pattern units.