

# Departmental Colloquium

**Darcy Hallett,  
Memorial University**

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1:00pm, HH-3017**

## **How Mathematical Cognition Research Informs The Conceptual-Procedural Debate in Math Education**

**ABSTRACT:**

There is a long-standing conflict in math education, sometimes called the “Math Wars”, that questions whether one should focus on the teaching of concepts or the teaching of procedures. The concepts side of this debate has inspired what has been called the “new math”, while the procedure side often talks of the need for children to learn their times tables. This talk will approach this debate from the psychological perspective and review the evidence for both sides in the field of mathematical cognition. I will describe some of the studies that demonstrate support for conceptual approaches by looking at relational understanding as well as the understanding of quantity. I will also describe the studies in support of automatization of procedures, and how the reduction of working memory load can be beneficial for math learning. However, I will also review studies, including ones done in my own lab, that question this either/or dichotomy. I will argue instead that both types of learning are important, that students might differ in whether they are more conceptual or more procedural, and that future research should focus on the appropriate balance between these types of learning.