

Title: Function Composition and the Chain Rule in Calculus
Preliminary Report

The chain rule is a calculus concept that causes difficulties for many students. While several studies focus on other aspects of calculus, there is little research that focuses specifically on the chain rule. To address this gap in the research, we are studying how students use and interpret the chain rule while working in an online homework environment. We are particularly interested in answering three questions: 1) What characterizes student's understanding of composition of functions? 2) What characterizes student's understanding of chain rule? and 3) To what extent do students' understanding of composition of functions play a role in their understanding and ability to use chain rule in calculus?

Keywords: Calculus, precalculus, procedural knowledge, conceptual knowledge, technology