DEPARTMENT OF MATHEMATICS
MASTER THESIS DEFENSE

UNIVERSITY OF
**CENTRAL
ARKANSAS**™

SPEAKER: Katie Burden, Graduate Student
Department of Mathematics

Title: Case Studies of Virtual Manipulative and Static Derivative Images

Date: Friday, July 21, 2017

Time: 2:00 pm – 3:00 pm

Place: MCS 220

ABSTRACT: Interactive computer images, known as virtual manipulatives (VMs), offer the ability to show continuous change in real time. Prior research indicates that the use of VMs can support positive effects on student achievement beyond the effects observed when implementing other instructional treatments. This study explored how VMs may support understanding of the derivative concept by presenting five case studies of students interacting with contextual and graphical representations presented using either a VM or a static image. Results were suggestive of how the VM might be supporting student understanding of derivative, but significant differences between the students using the VM and those not using the VM were not observed. In contrast, the results clearly indicated that contextual representations, seen in both VM and static images, supported students in conceiving of quantities related to the derivative. Students interacting with graphical images may cue off their interpretations of easily observed shapes and omit quantities related to the derivative.