

1145-VK-2924      **Tuyin An\*** ([tan@georgiasouthern.edu](mailto:tan@georgiasouthern.edu)). *Spotting “Fake” Theorems: Promoting Student Understanding of Disproof Using Dynamic Geometry Environments (DGEs)*.

Proof and reasoning play an important role in both mathematics and mathematics education across content areas and grade levels. In my teaching of various levels of geometric proof and reasoning, I noticed students were challenged by the role of disproof and the use of counterexamples in disproving false statements. Their creativity in visualizing and creating counterexamples was also limited by using paper and pencil. I felt the need to incorporate dynamic geometry environments (DGEs) in my lesson design. The goal of this presentation is to show how my students in an undergraduate level geometry class explore the usage of counterexamples creatively using the dragging feature of DGEs and to discuss the potential positive influence of this activity on their understanding of the role of disproof and the meaning of counterexamples. The task was designed to promote the logical thinking that “direct proof, disproof by counterexample, and proof by contradiction are three aspects of the same whole. We arrive at one or another by a thoughtful examination of the statement” (Epp, 1998, p. 711). The specific principle of logic regarding counterexamples embodied in the task is that one counterexample is sufficient to disprove a statement. (Received September 25, 2018)