

1125-VH-2730 **Cynthia L Stenger*** (clstenger@una.edu) and **James A Jerkins**. *Using computer programming to improve mathematical thinking*. Preliminary report.

As colleagues in a Mathematics/Computer Science department, we found that many of our undergraduates were not able to participate successfully in the full range of STEM course offerings. In response to this need, we formed a partnership with regional high school teachers and developed a strategy for explicit instruction in mathematical abstraction and generalization. Our instructional design is grounded in a theory of mathematical learning that uses computer programming to induce students to build the mental frameworks needed for understanding a math concept. The design includes writing mini programs to explore a mathematical concept, finding general expressions in the code, making conjectures about the relationships among general expressions, and writing logical arguments for the conjectures. We share results from a longitudinal study of 106 middle and high school math teachers attending professional development workshops employing this teaching method over a period of 3 years. Our results indicate the teachers showed significant improvement and maintained the improvement over subsequent sessions. (Received September 20, 2016)