

1125-C1-3100 **Zackery Kevin Reed*** (reedzac@oregonstate.edu). *The Password Activity: An Instructional Tool for the Combinatorics Classroom.*

Elementary combinatorics provides students with a unique experience in mathematics where problems can be accessible and yet difficult to solve. When engaging with the material, students have the opportunity to develop rich understandings of mathematical structures and engage in fundamental mathematical practices like generalizing and proving. In this presentation, I present results from interviews in which we gave students a series of scaffolded combinatorial tasks that culminate in a proof of the Binomial Theorem. Through these tasks, students had the opportunity to build a robust understanding of the multiplication principle and binomial coefficients and to hone their generalization and proving skills. I discuss the mathematics and the implementation of the activity, and I offer episodes of specific examples of student interaction with the activity that demonstrate its affordances. The aim is to present the activity as a powerful instructional tool to implement in a variety of classroom settings. (Received September 21, 2016)