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Elizabeth B. Uptegrove* (uptegrovee@felician.edu), Department of Mathematics, Felician College, 223 Montross Avenue, Rutherford, NJ 07070. *Using Videos to Enhance Preservice Teachers' Understanding of Mathematical Justification and Proof.*

This report illustrates how videos, from a publicly available online database showing elementary and high school students working on problems in combinatorics, were used in a junior-level math class for students planning to be middle school or high school math teachers (preservice teachers). The preservice teachers worked on combinatorics problems themselves and then analyzed videos of elementary and high school students working on the same problems. The videos show that young students are capable of doing serious mathematical work. Because preservice teachers have limited opportunity to observe how students construct solutions to problems, access to online videos provided them with an opportunity to study the representations and heuristics employed by the students. It also provided them with insight into how younger students think about and do mathematics. Further, these videos also gave the preservice teachers an opportunity to study young students' informal justification processes, showing them how informal justification can be related to formal proof. By the end of the semester, the preservice teachers had demonstrated improvement in two areas: 1) their ability to identify the reasoning of younger students and 2) their ability to generate accurate mathematical proofs. (Received September 17, 2013)