1125-M5-743 **Ahmed Benkhalti*** (benkhaaa@nmsu.edu), **John Selden** and **Annie Selden**. *The Role of Operable Interpretations of Definitions in Writing Proof Frameworks.*

Many mathematics departments have instituted transition-to-proof courses for second semester sophomores to help them learn how to create proofs to prepare them for proof-based courses in their later years. It is our understanding that many community colleges may want to begin teaching such courses. We have students start by writing a proof framework which is based on the logical structure of the theorem statement and associated definitions. Often there are two levels to a proof framework. Generating a first-level proof framework is often easy, provided the theorem is stated in the standard 'If ..., then ...' form. However, formulating a second-level proof framework requires knowing how to use the relevant mathematical definitions, that is, being able to put them in an operable form. For example, the definition of the inverse image of a set D under a function $f : X \to Y$ is usually given as $f^{-1}(D) = \{x \in X | f(x) \in D\}$. However, in constructing a proof, one needs to be able to use this in an operable way: If a is an element of $f^{-1}(D)$, then one can say $f(a)$ is an element of D, and conversely, if $f(a)$ is an element of D, then a is an element of $f^{-1}(D)$. This may seem obvious for us, but it is not for some beginners. (Received September 10, 2016)