

Abstract

In recent years there has been a call to reform mathematics education to produce what the NCTM calls "mathematical literacy" for all students. One of the NCTM's Standards involves the use of problem solving as a method of learning mathematics. In this thesis I put forward the hypothesis that proof is valuable in the school curriculum because it is instrumental in the cognitive processes required for successful problem solving. My view of proof does not supersede, but rather supplements, the traditional arguments for teaching proof. The evidence I present here draws on those traditional arguments as well as evidence from cognitive psychology concerning the role of metacognition in learning. The picture of proof that emerges emphasizes a role in mathematical discovery which mathematicians have noted but which is overlooked in educational literature.