

1046-U1-1471 **Kevin C. Moore*** (kmzipsgolf@gmail.com), 1522 South River Dr., Tempe, AZ 85281. *An Investigation of Students' Problem Solving Abilities: Where's the quantity?*

This study investigated undergraduate students' ability to make meaning of and solve word problems. Specifically, it focused on how students conceived and reasoned about quantities of a contextual situation that covary and how these conceptions influenced their abilities to formalize relationships between quantities. The results revealed difficulties in the students' ability to conceive of and reason about quantities in a problem context. Many of these difficulties stemmed from the mental image they developed of the quantities and their relationships. The students' inattentiveness to the relationships between quantities often inhibited their progress toward a stated solution. In contrast, when the students were successful in obtaining a stated goal, they appeared to have a dynamic mental model of the problem situation; they formed images of the measurements of quantities to be related and were able to imagine how the values of these quantities changed in tandem. These results provide insights about the complexities that students encounter in attempting to solve word problems. It also highlights the importance of students' development of cognitive models of quantities and their relationships before attempting to reason about and algebraically formalize these relationships. (Received September 15, 2008)