



Introduction

In recent years, much study and research have been carried out to discover ways in which students learn. This has led to student-centered classrooms where students are activity engaged in the learning process. Therefore, students must be presented with a classroom where both their intellectual engagement and physical engagement are of a high level. Teacher/student discourse and student activity should require high level thinking involving not just simple knowledge and understanding, but the more complex levels of thinking when students are required to analyze, synthesize, and justify mathematical ideas and relationships. This is sometimes referred to as *rigor*. *Rigor* can be thought of as the way in which students acquire knowledge.

A second dimension that must be considered in the classroom is *relevance*. *Relevance* refers to the application of knowledge. A mathematics classroom must include *pure mathematics* teaching and learning, but students should also have the opportunity to make application of the mathematics they learn. These applications may be in the discipline of mathematics itself, in other disciplines that the students study, and in real-life situations. However, real-life situations should be natural, not contrived. A school's curriculum, a teacher's instruction, and student assessment should all reflect high levels of both rigor and relevance.