Abstract

Guided by experimental tests of theory and practice, science has advanced rapidly in the past 500 years. Guided primarily by tradition and dogma, science and engineering education has remained largely medieval. Research on how people learn combined with classroom experiments is now revealing much more effective ways to teach and evaluate learning at the university level than what is in use in most science and engineering classes. This research is setting the stage for a new approach to teaching that can provide the relevant and effective science education for all students that is needed for the 21st century.