

"TAKING A SCIENTIFIC APPROACH TO SCIENCE AND ENGINEERING EDUCATION"

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Guided by experimental tests of theory and practice, science and engineering has advanced rapidly in the past 500 years. Guided primarily by tradition and dogma, science education has remained largely medieval. Recent research on how people learn, combined with rigorous experiments in university science classrooms, is now revealing much more effective ways to teach and evaluate learning than is currently used in most science and engineering classes. I will discuss these results and what they tell us about principles of learning and their effective implementation in university classrooms. 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.