“Memorization or understanding: are we teaching the right thing?”

Education is more than just transfer of information, yet that is what is mostly done in large introductory courses -- instructors present material (even though this material might be readily available in printed form) and for students the main purpose of lectures is to take down as many notes as they can. Few students have the ability, motivation, and discipline to synthesize all the information delivered to them. Yet synthesis is perhaps the most important -- and most elusive -- aspect of education. I will show how shifting the focus in lectures from delivering information to synthesizing information greatly improves the learning that takes place in the classroom.

Eric Mazur is the Balkanski Professor of Physics and Applied Physics at Harvard University. An internationally recognized scientist and researcher, he leads a vigorous research program in optical physics and supervises one of the largest research groups in the Physics Department at Harvard University. In addition to his work in optical physics, Dr. Mazur is interested in education, science policy, outreach, and the public perception of science. He believes that better science education for all - not just science majors - is vital for continued scientific progress. To this end, Dr. Mazur devotes part of his research group's effort to education research and finding verifiable ways to improve science education. In 1990 he began developing Peer Instruction a method for teaching large lecture classes interactively. Dr. Mazur's teaching method has developed a large following, both nationally and internationally, and has been adopted across many science disciplines at the K-12 and university level. Mazur is Chairman of the Instructional Strategy Advisory Group for Turning Technologies, a company developing interactive response systems for the education market. Dr. Mazur is author or co-author of 219 scientific publications and 12 patents. He has also written on education and is the author of Peer Instruction: A User's Manual (Prentice Hall, 1997), a book that explains how to teach large lecture classes interactively. In 2006 he helped produce the award-winning DVD Interactive Teaching.