

A Scientific Approach to Teaching Science - Fourth Touloukian Memorial Lecture

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Throughout history, the teaching of science has resembled religious doctrine. Dogma and ritual were passed down without question from one generation to the next, with objective data playing no part in the intense debates as to "right" and "wrong". I will discuss a new and different approach to the teaching of science; one that resembles science itself in its reliance on objective data, careful experimentation, and empirically established principles. Research on how people learn, and how they learn physics in particular is providing new insights on the shortcomings of many traditional approaches to teaching physics for most students. This research is also providing valuable guidance for how to achieve better results in terms of: what students learn; the usefulness of what they learn; and in their attitudes about physics. I will discuss this research and it can be combined with modern technology to greatly facilitate the learning of physics.