USING THE METHODS OF SCIENCE TO DETERMINE HOW TO TEACH SCIENCE

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ABSTRACT

Science distinguishes itself from other fields of knowledge by requiring, among other distinctions, that scientists match their ideas to their observations and data. Scientific reasoning needs not stop at the classroom door. Recent research in science education and particularly in physics education has applied this scientific method by connecting particular classroom approaches to the realities of learning outcomes. A clear picture has emerged of the effectiveness of various approaches to science teaching. Substantial evidence shows that certain inquiry-based approaches result in highly significant improvements in learning, particularly when compared to the traditional lecture format. The implication is that if we are to take a scientific approach to teaching, we need to adjust our thinking to match the data on learning. I will summarize research findings on what works, what doesn’t, and why.