

The Development of Research-Based Physics Instruction in the United States
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The earliest advocates of school science instruction envisioned students actively engaged in investigation and discovery, leading to deep conceptual understanding. As availability of, and access to, science instruction exploded in the 1890s, school physics instruction came to emphasize rote problem solving and execution of prescribed laboratory procedures; strenuous efforts to counter this trend were unsuccessful. Later, instructional emphasis shifted to descriptions of technological devices accompanied by superficial summaries of related physical principles. In the 1960s, powerful movements led by university scientists attempted to transform school science back towards its original instructional goals. Several parallel efforts began to focus on related transformations in college physics instruction. By the 1970s, university-based physicists had initiated systematic research efforts to support instructional reforms at the college level. In the 1980s, this movement expanded rapidly and led to a plethora of new, research-based instructional approaches. Although a vast array of research-based instructional materials in physics are now available, wide dissemination and application of these materials are constrained by social and cultural forces identical to those that derailed analogous efforts over one hundred years ago.