Background and Context

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Education Research Traditions

- Humanities Approach
  - rooted in philosophy
  - critical commentary
- Science Approach
  - rooted in psychology
  - empirical evidence
- Engineering Approach
  - rooted in engineering
  - practical impact

Humanities Tradition
(Late 19th Century/Turn of the Century)

The sources of educational science are any portions of ascertained knowledge that enter into the heart, head, and hands of educators, and which, by entering in, render the performance of the educational function more enlightened, more humane, more truly educational than it was before.

- John Dewey

Science Approach
(post-WWI/early 20th Century)

- Improved Knowledge and Understanding
- Analysis of Phenomena
- Building of Models that Explain
- Assertions Based on Empirical Testing

Engineering Approach (late 20th Century)

. . . the use of existing knowledge in experimental development to produce new or substantially improved materials, devices, products, and processes, including design and construction . . .

- Higher Education Research Funding Council (1999)

Three Quadrants

		Relevance: Considerations of Use	
		Low	**High**
Rigor: Quest for Fundamental Understanding	**Yes**	Pure Basic Research (Bohr's Quadrant)	Use-Inspired Basic Research (Pasteur's Quadrant)
	No		Pure Applied Research (Edison's Quadrant)

Source: *Adapted from Stokes, D.E. (1997), Pasteur's Quadrant: Basic Science and Technological Innovation, Washington, DC: Brookings Institution Press.*

Principles of Inquiry

- Pose significant questions that can be investigated
- Link research to relevant theory
- Use methods that permit direct investigation of the question
- Provide a coherent and explicit chain of reasoning
- Replicate and generalize across studies
- Research to encourage professional scrutiny and critique

Source: *Shavelson, R.J. and Towne, L. (Eds.) (2002). Scientific research in education. Washington DC: National Academies Press.*

Our predilection for premature acceptance and assertion, our aversion to suspended judgment, are sings that we tend naturally to cut short the process of testing. We are satisfied with superficial and immediate short-visioned applications. If these work out with moderate satisfactoriness, we are content to suppose that our assumptions have been confirmed. Eve in the case of failure, we are inclined to put the balance not on the inadequacy and incorrectness of our data and thoughts, but upon our hard luck and the hostility of circumstances . . . Science represents the safeguard of the [human] race against these natural propensities and the evils which flow from them. It consists of the special appliances and methods… slowly worked out in order to conduct reflection un conditions whereby the procedures and results are tested.

- John Dewey

Source: Schavelson and Towne (2002)

Sources

Burkhardt, H. and Schoenfeld, A.H. (2003). Improving educational research: Toward a more useful, more influential, and better-funded enterprise. *Educational Researcher*, Vol. 32, No. 9, pp. 3-14.

Lagemann, E.C. (2000). *An elusive science: The troubling history of education research.* Chicago, IL: The University of Chicago Press.

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