

Beyond Scientific versus Interpretive: Deweyan Inquiry and Educational Research

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Is there a science of education?¹

What constitutes scientifically based research in education? How should it be defined? Who should define it? Should it be privileged over other forms of educational research? Should it be defined at all? What role should qualitative or interpretive methods play in educational research? What are the consequences of different answers to these questions?²

Questions like these — investigating the relationship between education and science — have ebbed and flowed throughout this past century, in response to changing political pressures, evolving conceptions of science, and the emergence of education as a particular field of study. While these questions are not new, the debate over what forms of educational research are valid has been resurrected in new forms — and with arguably higher stakes — by recent U.S. federal priorities supporting “scientifically based research” in education. In light of this debate, my essay focuses on the distinction between scientific and interpretive research. After briefly examining the current context of this debate, I explore two central aspects of Dewey’s concept of inquiry: the experimental method and the social context of inquiry. I conclude by looking at some of the ways in which we might — working through Dewey’s pattern — complicate and reconstruct the terms of this emerging debate about educational research.

EMERGING DEBATES

Much of the recent debate about the nature of educational research revolves around the Education Sciences Reform Act of 2002 (ESRA), which created the Institute of Education Sciences (IES) and established funding priorities for federally supported educational research. This bill, following the language of the 2001 “No Child Left Behind” Act (NCLB), calls for the funding of “scientifically based research.” Recent conversations have been concerned with the interpretation of this phrase; in particular, with what constitutes the “scientific” in educational research. Federal policies soon interpreted “scientifically based research” to mean research into “educational interventions” through “research’s gold standard” — randomized controlled trials.³ These policies were quickly — and roundly — criticized by many in the educational research community who claimed that privileging large-scale, randomized, and quantitative methods misrepresents science, devalues qualitative inquiry, and marginalizes the role that the arts and humanities play in understanding educational aims and practices.⁴

In response to this initial debate, the National Research Council assembled a committee of scholars and researchers to address the question: “what is scientific research in education?” in order to aid federal agencies in assessing quality scientific research in education.⁵ This committee’s report, *Scientific Research in Education* (SRE), was published in the spring of 2002.⁶ This report argued for a broad

conception of scientifically based research, one that would support both quantitative and qualitative methodology, depending on the nature of the research question being investigated.⁷ This report has also been met with criticism from some within the educational research community. SRE's critics have charged the report with privileging causal questions and explanations, further minimizing the role of qualitative inquiry in scientifically based research, and accepting some of the problematic aspects of a post-positivist model of knowledge.⁸ These critics, in effect, have argued that the report's definition of science both minimizes qualitative approaches and privileges forms of research that might claim to be scientific — whether quantitative or qualitative — over more humanistic forms of scholarship in education.

These criticisms certainly have some merit, but they — as some of the report's contributors remind us — discount the specific and limited charge of the committee. As Margaret Eisenhart and Lisa Towne argue, *Scientific Research in Education* aims to address one question in the public debate (what is scientifically based research in education?), while bracketing a second part of the debate (is scientifically based research the only or the best approach to meaningful studies of education?). This distinction helps us understand the scope and limits of their report, while acknowledging — in their language — the “legitimacy and importance of ‘nonscientific’ ways of knowing.”⁹ In this sense, Michael J. Feuer, Lisa Towne, and Richard J. Shavelson argue that the report's concern with specifically “scientific educational research” should be distinguished from more general education scholarship. The intent of SRE's focus, the authors note, is not to minimize the significance of “humanistic, historic, philosophical, and other nonscientific forms of study in education,” but rather to clarify the application of scientific principles to educational research.¹⁰ Simply, important concerns about the nature and purposes of education — the kinds of concerns addressed by philosophy of education, for instance — remain outside the purview of the report, and outside the bounds of scientifically based research. Moreover, though, the authors suggest that their report rests on a historical and philosophical understanding of the complexity of applying scientific methods in the field of education. These two qualifications — in brief, that scientific research both *differs from*, and *rests upon*, other more humanistic forms of educational study — are clearly efforts to take “non-scientific” forms of inquiry seriously.

While well intentioned, the committee's charge to separate questions of scientific research from questions about the nature and aims of education is problematic. As recent critics have discussed, separating these questions confines powerful critiques about the very nature of scientific rationality outside the debate of the “scientific,” in addition to obscuring the powerful values, norms and political forces that shape our ideas of science and its applicability to issues of policy.¹¹ While advancing important criticisms, many of these counter-arguments accept — and in some cases, endorse — the same basic distinction between scientific and non-scientific forms of research.¹² In this essay, I argue that this basic distinction — broadly, between scientific and interpretive forms of research — has played an important, but under-theorized, role in the evolving debate on scientifically based

research in education. In particular, I argue that non-scientific research, when conceding the ground of the scientific in favor of the interpretive, accepts a contested distinction, and a problematic dichotomy, as the basic terms of the debate.

By reconstructing key aspects of Dewey's concept of inquiry, I hope to highlight some of the ways in which the ground between scientific and interpretive forms of research may be more complex and ultimately more connected than currently acknowledged by either the authors of *Scientific Research in Education* or its critics.

THE PATTERN OF DEWEYAN INQUIRY

While Dewey wrote about the term and concept of "science," his most developed concepts of scientific understanding were often framed in terms of inquiry.¹³ For Dewey, science is not a static category. More of a disposition than a discipline, the scientific method is a profoundly experimental orientation applicable across different forms of knowledge and generated through potentially incommensurable methods. Although Dewey understood the distinction between different forms or modes of experience (scientific, artistic, and religious), he stressed the common "pattern" of inquiry that could be uncovered in any reflective experience, thereby refocusing the debate from modes, fields, and methods of knowledge to knowledge — and more properly, knowing — itself. In Dewey's account, two central aspects of inquiry are its experimental method and its social context.

EXPERIMENTAL METHOD

First, Dewey's approach to knowledge is profoundly experimental. The term "experimental" evokes multiple levels of meaning for Dewey. Experimental knowledge is rooted in *experience*, and as it starts from one's experience, it is also *empirical*. Here, Dewey uses the term "empirical" in a more expanded sense than we usually use the term. Empirical, for Dewey, means nothing more (and nothing less) than inquiry into actual life experiences, pursued through rigorous reflection and an uncompromising awareness of our own prejudices. This rigorous reflection explains, in part, how thought could be "severe" in the best sense of the term; it is demanding, difficult, and self-critical.¹⁴

Rising up from within our experience, knowledge is constructed through our experiments in and with the broader world. This experience "of the world" cannot be separated from the world; in *Experience and Nature*, Dewey criticizes this distinction, arguing that experience is the only way of understanding nature, and that this same understanding of nature is what then extends and enriches our experience (*LWI*, 12–13). In this sense, science has so effectively subsumed experience into its methods and practices that the word is never mentioned (*LWI*, 20–21). For Dewey, experience, however latent, still remains the fundamental root of any method claiming to be "empirical."

Our experience is not something to be "gotten over" or "bracketed"; rather, it is the one true starting place, the base of any validity in inquiry. Dewey held that experience is what justifies scientific inquiry: it provides both a means of coming to know the world, and is also subject to the impact that the world, as subject matter,

makes upon one's understanding. In this sense, experience is "double-barreled": both doing and undergoing, both what we experience and how we experienced it.¹⁵ For Dewey, science treats this concept of experience as the starting point of empirical validity (*LW I*, 13). Importantly, this concept of experience is the root of any inquiry, whether artistic, religious, or scientific.

As crucial as experience is, Dewey argues that our *examination* of this experience is the difference between "mere" experience and understanding. Experience demands careful study and reflection, which together facilitate "understanding" rather than just "sense-contact" (*LW I*, 16). In this contrast, we see Dewey distinguish between "primary" and "secondary" experience: primary being the immediate, raw, crude objects of experience, and secondary being the refined, reflective, or derived objects of experience (*LW I*, 15–17). Secondary, or reflective, experience then is employed to make sense and meaning of our primary experience: we use these reflective understandings to analyze our constant stream of primary experience while having these same understandings refuted, corrected, and confirmed by that primary experience. This process *is* the empirical method.

While natural science serves as an exemplar of the empirical method, this method is not reducible to science. Method, in Dewey's sense here, is the "path" or a "road" by, from, and on which we examine our experience (*LW I*, 16). Nonetheless, different paths — and the degree of their transparency, visibility, and communicability — allow us to speak about *different* methods of inquiry. In fact, Dewey, in a phrase quoted by the authors of *Scientific Research in Education*, says that, "some methods of inquiry are better than others."¹⁶ This phrase was used to support the report's argument that science is not synonymous with any one method; rather, "questions drive the method, not the other way around."¹⁷ In this sense, a certain research question might call for a quantitative randomized design experiment, while another might demand a qualitative ethnography. However, rather than describing particular kinds or types of inquiry, Dewey's concept of method focuses our attention on the qualities and characteristics of inquiry, in whatever form it takes. Methods are better or worse to the extent that they render our experiences, in Dewey's powerful language, more significant, luminous and meaningful (*LW I*, 18). Methods, here, are certainly "paths" and "ways" of inquiry, but also become standards of judgment. While this sense of method provides us with evaluative standards, Dewey cautions — along with the authors of *SRE* — that this does not imply any perfect, regulative, or normative method of inquiry.¹⁸ Inquiry is neither relativistic, nor singular, but somewhere — importantly — in between.

SOCIAL INQUIRY

Dewey's experimental methodology helps us understand the world we are part of, but is never divorced or separate from that very world. We do not inquire *into* a world; we inquire *from* a world. This world, for Dewey, is not only physical, but encompasses different and overlapping aspects of belief, custom, and tradition. As Dewey states, inquiry occurs from and within these social contexts, and its "findings" reflect these contexts: "The ways in which we believe and expect have a tremendous affect on what we believe and expect" (*LW I*, 23). While this sense of

social context affects our inquiry, it — like experience — is not something to be “gotten over” or “bracketed.” As an inherent part of our experience, this “social context” of inquiry is also an important basis for validity. In this sense, Dewey understands these social contexts as prejudices: neither positive nor negative, but intrinsic to inquiry itself. While we remain, to some extent, within these prejudices, the empirical method — and an empirical philosophy, more particularly — can help us sort through them, “take some of them off,” to “inspect them critically to see what they are made of and what wearing them does to us” (*LW I*, 40).

On one level, then, the “social field” that we are born into shapes the subject matter we are aware of, the methods of inquiry available to us, and the very issues that we understand as problems for inquiry.¹⁹ Our experience of the world is embedded within a larger culture, which Dewey describes as the “context of institutions, customs, occupations and interests” that we inherit and inhabit (*LW I2*, 481). As Dewey warns against separating the world from our experience of it, he also highlights the opposite danger of total subjectivism against the world. For Dewey, a necessary amount of distance from the objects of the world is necessary to apprehend them. He critiques the subsequent translation of this critical distance into dualist categories of subjective and objective, mind and matter, psychology and sociology (*LW I*, 21–23). The answer, for Dewey, is both between — and somehow outside — these two extremes: a reliance on the empirical method, carefully balanced between both distanced reflection and actual experience of the world.

On another level, though, we are not just located *within* a social context; inquiry demands that we reposition and locate our knowledge *towards* that social context. As Dewey states, the validity of knowledge, “cannot be determined apart from connection with a widening circle of consequences. An inquirer in a given special field appeals to the community of his fellow workers for confirmation and correction of his results” (*LW I2*, 484). In other words, we do not create knowledge individually: we create knowledge *from* our social contexts, and with an appeal *back to* these social contexts. In this sense, Dewey’s experimental method is always operative. Inquiring from, and appealing to, our experience — with all of its context and prejudice — is what gives our inquiry validity. Most importantly, though, this inquiry — if methodological — is not an entirely individual activity. A commitment to empirical inquiry demands some awareness of that field of inquiry and its community of inquirers. In this sense, we state the results of our inquiry as hypotheses, grounded within broader efforts and fields of inquiry, not as solitary truisms we alone have discovered.

Dewey is careful to delineate that appealing to this broader community of inquirers does not stipulate that we must all intellectually accept the same conclusions, propositions, or ends. We do, however, accept certain dimensions or characteristics of inquiry as more legitimate than others. In this sense, we accept the means, the “how” of knowing, even though we may not accept the end or the “what” we eventually come to know. For Dewey, we should be more concerned about the state of our field of inquiry as a continuous experimental endeavor in knowing, than any particular belief that we may have at a given time. Here, again, the experimental

method converges with social commitments. While these two aspects are central parts a common pattern of inquiry, they are also central to one another: his concept of experiment cannot be divorced from grounding in social context; likewise, social context is continually shaped and formed through human experiments with the world.

CONCLUSIONS

First, our closer examination of these two aspects of inquiry may help us complicate many of the common distinctions that have crept into the language of educational research. On one level, Dewey advocates reliance on “experimental method.” However, rather than assuming that the experimental method is experimental because of *what* it is, Dewey draws our attention to *how*, through a variety of approaches, we are able to develop rigorous methodology and engage in experimental inquiry. Similarly, rather than asking “what kinds” of methods help us answer “what kinds” of research questions, his vision of method inquires into the nature of research questions, the depth of our inquiry (in any mode), and the consequences of our findings for the “intelligent direction” of human experience.

In addition, Dewey’s concept of inquiry highlights the centrality of experience at the heart of any method claiming to be experimental. Importantly, this concept of experience is not positioned as a subjective, internal perception of an external, objective world. Rather, experience is both *in* and *of* the world; in Dewey’s language, it is “no infinitesimally thin layer or foreground of nature,” (but) “penetrates into it, reaching down into its depths, and in such a way that its grasp is capable of expansion” (*LW I*, 11). Experience — in all its “subjectivity” — is necessary to any search for valid knowledge; or, in other words, knowledge has subjects for whom that knowledge is *for*. Here, Dewey offers support for critics who claim that *SRE* largely ignores traditions of interpretive social science, which focus on meaning, rather than behavior.²⁰ Lastly, Dewey helps to point out the social field that surrounds any form of inquiry. This social context is what shapes our initial questions and our subject matter. Perhaps even more importantly for educational research, Dewey highlights that the validity of inquiry also depends on appealing back towards our social contexts and situating our findings in a community of inquiry.

Second, drawing on our explorations of inquiry in this essay, our developing sense of Dewey’s methodology might help us not only complicate, but *reconstruct* some of the current distinctions in the debate. How, for instance, might a Deweyan sense of inquiry help us respond to the distinction between scientific and non-scientific forms of research in current debates? How should we — as philosophers of education — position ourselves in this debate? Should we fight for a place at the table of science or defend our space apart? Thinking alongside Dewey, we might argue that this distinction — between the scientific and interpretive — has created a false, imposed, and ultimately unproductive series of questions. Rather than asking “what is scientific research in education?” might we instead pursue other questions, ones like: “What is good science?” or even “what is science itself?” Better yet, why not ask “what is good inquiry?” While these are important beginnings, taking

Dewey's pattern of inquiry seriously pushes us beyond questions about *what* inquiry is towards considerations about *how* inquiry takes place. The important questions do not help us define inquiry, but help us understand the ways in which it works. Understanding inquiry, for Dewey, means asking two kinds of questions: what are the social conditions of inquiry and what are our hypotheses?²¹ We might ask, in the first sense: what are the conditions, situations and contexts that make inquiry possible? What are the conditions that preclude it? In the second sense, we might ask: to what extent do our hypotheses address the "important problems of teaching and learning" and consider our "present social needs and issues?"²² What are the consequences of choosing one inquiry over another? By what values, standards and norms do we make those choices? In these alternate questions, we find an eloquent caution against creating any fast or fixed distinctions between scientific and interpretive forms of inquiry. As Dewey once stated, "there is no fixed line at which it can be said that science ends and philosophy begins."²³ In a similar sense, we might find that the important distinctions between the scientific and interpretive are ones of degree, not kind. This does not mean, however, that interpretive forms of inquiry are reducible to scientific ones. In contrast, Dewey's understanding here may help us attend to the different kinds of questions that philosophy and science are poised to help us ask. Here, Dewey's socially rich and empirically rigorous vision of method might help us pose these better questions, and perhaps, in them, find our way to better answers. In fact, Dewey's vision of inquiry, which reclaims the language of the scientific, pushes it past narrow interpretations, and locates it in diverse modes of interaction with the world, might be just the sort of unifying ground that educational research needs.

1. Josiah Royce, "Is there a Science of Education?" *Education Review* 1 (1891), 23, cited in Ellen Condliffe Lagemann, *An Elusive Science: the Troubling History of Education Research* (Chicago: University of Chicago Press, 2000), 19.

2. Patti Lather and Pamela Moss, "Introduction: Implications of the Scientific Research in Education for Qualitative Inquiry," *Teachers College Record* 107, no. 1 (2005): 1–3.

3. Scientifically based research, or SBR, was written into law in NCLB. Federal funding for education programs depends, in part, on states and local education agencies demonstrating the scientific effectiveness of their educational programs and choices. For a description of these changes in federal policy, see Michael J. Feuer, Lisa Towne, and Richard J. Shavelson, "Scientific Culture and Educational Research," *Educational Researcher* 31, no. 8 (2002): 4–14.

4. These federal policy changes, and some initial responses from educational researchers, were chronicled in Lynn Olson and D. Viadero, "Law Mandates Scientific Base for Research," *Education Week*, January 30, 2002; as well as E. Jacob and C.S. White, eds., Theme Issue on Scientific Research in Education, *Educational Researcher* 31, no. 8 (2002).

5. The National Educational Research Policy and Priorities Board requested that the National Research Council assemble this committee. For a brief history of this committee, see Feuer, Towne, and Shavelson, "Scientific Culture and Educational Research," 4–5.

6. Richard J. Shavelson and Lisa Towne, eds., *Scientific Research in Education* (Washington, D.C.: National Academy Press, 2002).

7. See Margaret Eisenhart and Lisa Towne, "Contestation and Change in National Policy on 'Scientifically Based' Education Research," *Educational Researcher* (2003): 31.

8. See, for instance, Frederick Erikson, "Arts, Humanities and Sciences in Educational Research and Social Engineering in Federal Education Policy," *Teachers College Record* 107, no. 1 (2005): 4–9; and Joseph A. Maxwell, "Causal Explanation, Qualitative Research, and Scientific Inquiry in Education," *Educational Researcher* 33, no. 2 (2004): 3–11. Some of the recent discussion has occurred in the following articles and special journal issues: *Educational Researcher* 33, no. 2 (2004), *Qualitative Inquiry* 10, nos. 1–2 (2004), and a symposium organized by Ken Howe in *Educational Theory* 55, no. 4 (2005). In addition, the NRC just released a follow-up report to *SRE* entitled "Advancing Scientific Research in Education" (2004). Many of these sources were helpfully summarized in Lather and Moss, "Introduction."

9. Eisenhart and Towne, "Contestation and Change in National Policy," 31–32.

10. Feuer, Towne, and Shavelson, "Scientific Culture and Educational Research," 5. The authors follow this statement with a small, but — in my mind — significant, footnote: "We recognize that some forms of these fields are scientific (e.g., historical science) and that, more broadly, science does not neatly map onto disciplines or fields" (*Ibid.*, 12).

11. See Pamela A. Moss, "Understanding the Other/Understanding Ourselves: Toward a Constructive Dialogue About 'Principles' in Educational Research," and Thomas Schwandt, "A Diagnostic Reading of Scientifically Based Research for Education," both in *Educational Theory* 55, no. 4 (2005); as well as David Berliner, "Educational Research: The Hardest Science of All," *Educational Researcher* 31, no. 8 (2002): 18–20.

12. While several helpful articles have problematized the distinction, pointing out the interpretive, contextual nature of science (for example, Maxwell, "Causal Explanation, Qualitative Research, and Scientific Inquiry in Education"), and the dangers of considering science apart from the non-scientific (for example, Frederick Erickson and Kris Gutierrez, "Culture, Rigor, and Science in Educational Research," *Educational Researcher* 31, no. 8 [2002], 21–24), I argue here that the essential distinction between the "scientific" and the "non-scientific" remains present and operative in the debate.

13. Dewey draws a variety of connections between the scientific, the empirical, and the experimental; ones too numerous and varied to be explored in any sustained way in this essay. While by no means reducible to each other, these terms occupy shifting ground in Dewey's analysis. He continued to reconstruct and explore the connections between these terms until the end of his life: his 1948 re-introduction to *Experience and Nature* offers another reading of the historical development between the concepts of experience, empirical, and experimental. While these terms are not equivocal or reducible to science, it seems that Dewey argues that science — as a particular mode of experimental inquiry, at least — is an important source of insight into the nature of knowledge itself.

14. John Dewey, *Experience and Nature* (1925), in *John Dewey: The Later Works, 1925–1953*, vol. 1, ed. Jo Ann Boydston (Carbondale: Southern Illinois University Press, 1988), 40. This work will be cited as "*LW 1*" in the text for all subsequent references.

15. Dewey borrows the phrase "double-barreled" from William James, citing *Essays in Radical Empiricism*, 10.

16. John Dewey, "The Pattern of Inquiry," in *Logic: The Theory of Inquiry* (1938), in *John Dewey: The Later Works, 1925–1953*, vol. 12, ed. Boydston (Carbondale: Southern Illinois University Press, 1991), 108. This work will be cited as "*LW 12*" in the text for all subsequent references. The longer version of this passage was cited in Shavelson and Towne, eds., *Scientific Research in Education*, 123, as well as in Feuer, Towne, and Shavelson, "Scientific Culture and Educational Research," 8.

17. Feuer, Towne, and Shavelson, "Scientific Culture and Educational Research," 8. For another rendering of this argument, see Margaret Eisenhart, "Hammers and Saws for the Improvement of Educational Research," *Educational Theory* 55, no. 4 (2005), 145–162.

18. Dewey notes this clearly in the line immediately following his oft cited comment that "some methods are better than others" (*LW 12*: 108). He writes: "It does not follow in any of these cases that the 'better' methods are ideally perfect, or that they are regulative or 'normative' because of conformity to some absolute form. They are the methods which experience up to the present time shows to be the best methods available for achieving certain results, while abstraction of these methods does supply a (relative) norm or standard for further undertakings." In effect, the norms of inquiry grow out of the evolving process of inquiry itself.

19. John Dewey, "Social Inquiry," in *Logic*, 481.

20. See Maxwell, "Causal Explanation, Qualitative Research, and Scientific Inquiry" for an excellent rendering of this argument.

21. Dewey makes this distinction in "The Determination of Ultimate Values or Aims through Antecedent or A Priori Speculation or through Pragmatic or Empirical Inquiry," in *John Dewey: The Later Works, 1925–1953*, vol. 13, ed. Jo Ann Boydston (Carbondale: Southern Illinois University Press, 1988), 262.

22. This language is taken from Dewey, "The Determination of Ultimate Values," 262.

23. Ibid.

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