What Is the Place of Science in Educational Research?

Richard E. Mayer

The Educational Researcher recently published a provocative piece by Elliot Eisner (1997) as well as a response (Knapp, 1999) and rejoinder (Eisner, 1999). The core assertion in Eisner’s article is that educational research need not be scientific: “Over time, the concept of research was broadened, and science was recognized as one among several of its species” (Eisner, 1997, p. 5). Put in its most naked form, Eisner’s (1997, p. 5) claim is that educational research does “not belong to science alone.” Professor Eisner is to be applauded for having the intellectual honesty to help our field pose a fundamental question so clearly: What is the place of science in educational research?

In this comment, I offer two reasons for keeping educational research firmly within the domain of science—namely, to do otherwise (a) would slow progress in educational theory and (b) would diminish the reputation of our field. I close with a proposed reconciliation in which educational researchers agree on the value of using quantitative and qualitative data in scientific ways.

Reason 1: To maintain self-correcting progress for educational theory. The basic principles underlying scientific research are as simple as they are old-fashioned: Theories about the way the universe works must be tested against empirical data. In this way, science incorporates a self-correcting mechanism in which theories that cannot be reconciled with empirical data are not accepted. The scientific approach is so fundamental to many disciplines—including my home discipline of psychology—that it is taken for granted. Scientific researchers may disagree about which questions to ask, whether studies are methodologically sound, or how to interpret results, but they all share an underlying faith in the scientific method. According to this view, disciplines as diverse as physics and history are joined by their shared faith in using objective data to make an argument.

Reason 2: To maintain the reputation of educational research as a scientific enterprise. To my colleagues in science-oriented departments outside of education, the question of whether or not educational research should be scientific appears to be some sort of puzzling joke. Whatever lingering respect educational researchers may currently enjoy would not be increased by declaring that non-scientific methods have an equal status with scientific ones in our field. Although we may agree that artists and writers have much to contribute to human understanding, this does not mean that educational researchers should abandon science’s exclusive role in our discipline.

To my colleagues who are science-oriented educational researchers, debates about the role of science in educational research are no joke. A review of the pages of the Educational Researcher or the program of the AERA annual convention confirms that our field is actually considering whether or not science is a good idea for educational research—a debate that Eisner (1997, p. 5) places under the heading of “what should count as research.” As astonishing as it may be for our science-oriented colleagues, Professor Eisner correctly testifies that discussions about reducing the role of science in educational research are raging in our field today.

Questioning the exclusive role of science in educational research represents the logical outcome of a relativistic philosophy that holds that all approaches to a research question are equally valid and all conceptions are equally valuable. According to this view, science can be supplemented with a plethora of non-scientific approaches including quantitative ones such as those used in astrology, numerology, and phrenology, as well as qualitative ones such as those in the arts. Yet, declaring that non-scientific approaches to educational research are just as valid as scientific ones would not enhance the reputation of our field in academia nor in society in general.

A possible reconciliation: Use quantitative and qualitative data in scientific ways. Let me suggest two ways to frame the issue. One interpretation of Professor Eisner’s argument—which, by the way, I hope is not what he intended—is based on the representation shown in the top of Figure 1. According to this interpretation, quantitative research methods belong within the domain of scientific research, whereas qualitative research methods are portrayed as belonging to non-scientific research. It follows that we can broaden educational research by using qualitative methods, and thereby also broaden educational research by using non-scientific...
approaches. I disagree with this characterization which equates science with using quantitative data, and non-science with using qualitative data. Scientific research can involve either quantitative or qualitative data; what characterizes research as scientific is the way that data are used to support arguments. In essence, the conception summarized in the top of Figure 1 represents a sort of “bait-and-switch” tactic in which we are hooked by the bait of agreeing to end the monopoly of quantitative methods in educational research (i.e., a reasonable view in my opinion), and then switched to enlisting in the campaign to end the monopoly of science in educational research (i.e., an unreasonable view in my opinion).

In contrast to the conceptualization summarized in the top of Figure 1, I suggest framing the discussion along the lines represented in the bottom of Figure 1. In this view, the domain of science includes both some quantitative and qualitative methodologies, and non-scientific domains also include some quantitative and qualitative methodologies. When data—either quantitative or qualitative—are used scientifically to test theories, they fall within the domain of science. When data—either quantitative or qualitative—are used for other purposes such as artistic ones, they then fall outside the domain of science. In short, science involves arguing from methodologically sound data, but science is agnostic on the issue of whether the data need to be quantitative or qualitative.

Based on this analysis, the issue facing our field is not whether educational research can be based on qualitative data—because there is overwhelming consensus that it can. Instead the issue is whether or not educational researchers should use data—either qualitative or quantitative—in scientific ways. Should we base our discussions of education on methodologically sound data—quantitative and qualitative—or simply on who can shout his or her opinion the loudest?

In my opinion—spoken in a soft, still voice—it would be a grave mistake for educational researchers to turn their backs on science. It is both misleading and unwise to link the call for qualitative research methods to the movement to diminish the role of science in educational research. While the former reflects a potentially valuable contribution to our field, the latter reflects a fatal leap into the abyss of relativism. If forces within our discipline succeed in freeing educational researchers from the pesky need to base their arguments on scientific data, all that remains is a chorus of equally valid opinions.

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References


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