

When the Research's Over, Don't Turn Out the Lights

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To speak of *doing research*, as this handbook does, suggests being caught up in the midst of researching. It invokes a sense of being out there in the field, lost in the archives, sitting on a classroom floor with children, or in a café recording an interview.¹ Doing research calls forth ideas of methods and processes, systematically executed, painstakingly recorded with flawless precision and rigorous attention to detail. But surely the field-work-in-rubber-boots is only part of what it means to *do research*. I can say that because it is obvious that the research is not *done*, if after all the data is collected and carefully analyzed, the work then sits in a file on one's computer and goes no farther. The responsibilities of the researcher extend beyond the immediate design, conduct, and supervision of the research. Those additional responsibilities have both epistemological and ethical implications for what it means to do work that goes by the name of *research*, and those implications have to do with how the research is circulated and shared.

My theme with this chapter, then, is that the research is not done or complete, until it has been made available to others, and how it is made available carries with it a new set of epistemological and ethical responsibilities that are the result of changes in how scholarly work is now being published. Research worthy of the name has always had to appear in some publicly accessible form. It may be filed in a university library as a dissertation, submitted to a client as a report, read at the annual meeting of a local society, or published in a journal or book. When it comes to talking about the contribution that research makes to the common stock of knowledge, the way in which the work has been circulated and the way in which it is open to review serve to warrant its claims to be *research*. Just how much of the research that is made public is critical to its claims. The research must identify the sources in great detail on which it has drawn; it must justify the design and method deployed; it must share some portion of the data; it must demonstrate how the conclusions were arrived at, while accounting for counter-examples; and finally, it must situate the findings within the larger picture, in ways that speak to immediate implications and future directions.

The critical elements of the well-formed research article have emerged out of a publishing tradition that goes back to the very public scrutiny of Isaac Newton's one and only published article, which was on optics, in the January 3, 1671 edition of the *Philosophical Transactions*, during the first decade of the new genre that has come to be known as the scientific journal (Willinsky, 2006, pp. 234-44). The critical questions raised by readers of this article in letters to the *Transactions* forced Newton to further clarify his research design and method, as well as the scope of his results. The back and forth between Newton and his critics in the pages of the *Transactions* until, after four years, Newton said, "No more," to the journal's earnest editor, Henry Oldenburg, amounted to the setting of a standard for making research public, a standard that placed the reader in a position not only to replicate the experiment, but to check the sources, scrutinize the analysis, and challenge the conclusions (Kuhn, 1978).

Which is only to say that the researcher's responsibilities for opening a work to the widest possible public scrutiny is no less important to its standing as research than all of the thought and care that she originally invested in the designing and carrying out of the research. In terms of epistemology, we would say that one requisite for believing that a study's conclusions are true, and not mistaken or misguided, is that the study has been subject to critical scrutiny. Sometimes we make that call ourselves, but more often we leave it up to the editorial and peer-

review process, which represents the great contribution of the journal system for scholarly publication. Here, the normally opposed reprobate postmodernist and recalcitrant positivist share a point of common understanding: If you will not allow us to see your work, your claims to having been *doing research* on a topic is just so much cant. This is otherwise known as, “put up or shut up.”

Yet if that is the epistemological side of the coin we would forge in the act of completing the research study, then there is also the ethical side of going public to consider. While most of the talk on research ethics is concerned with protecting the rights of research subjects to informed consent and the right to withdraw it at any point, the ethics involved in publishing the research are no less compelling. The researcher has an ethical responsibility to see work that has arrived at some warranted conclusions enter the public domain by some means. The work was undertaken, after all, in good faith that it had a contribution to make to our understanding.

A recent instance of the ethics at stake in publishing is found in the tendency of certain corporate sponsors of clinical trials research in the life sciences to leave unpublished or suppress the publication of studies that conclude a given treatment is not helpful, or worse. The situation had become so alarming that the International Committee of Medical Journal Editors recently declared that it would only publish studies that had been previously registered “at or before the onset of patient enrollment” with that registration taking place at a publicly accessible site, such as Clinicaltrials.gov run by the U.S. National Library of Medicine (De Angelis et al., 2004).² This meant that no study could escape scrutiny, unless its corporate sponsors wanted to risk not being able to publish the results at all.

The more general ethical principle at stake with the publishing of research has to do with conceptions of public trust and public good. The warrant for conducting research is that such work will contribute to knowledge, which is regarded as a matter of public good. The support of salaries, grants and facilities, especially as these involve public or non-profit institutions, only adds to the weight of public trust at issue in doing research. Thus, the ethical compulsion to do the research well, and to make the resulting knowledge publicly available, ideally through some form of publication that, through its review process, ensures that the work has some initial claim to being research, notwithstanding the further scrutiny it will undergo as a public document.

That is all well and good, you might interrupt at this point, but surely the importance of publishing research goes without saying. The reason for that, I would counter, is largely because publication is about other things besides epistemology and ethics. Publishing well is a necessary aspect to being recognized as a researcher and a scholar. The very right to continue conducting research depends on the publication of previous work, even as the blind review process ensures that attention is paid to the merits of the current piece of research, rather than judging it on the author’s established reputation. Yet the current and intense focus on publishing turns out to have little to do with the open circulation of the work. Getting research into a peer-reviewed journal or an edited book becomes an end in itself for the majority of scholars. There is a small group of academic stars whose work thrives on widespread readership and citation, but for most, publish and perish has become the mark of an academic life.

However, a historic moment may well be upon us, one that gives new meaning to the epistemological and ethical issues entailed in the circulation of research. In the course of little more than a decade, the Internet has proven itself a powerful, global publishing medium for research and scholarship, especially at the level of the article. The researcher has now to reconsider what it takes to do research in a responsible manner, when the public presence of that work has the potential to be – and in many cases has already been – radically expanded. It may

look like business as usual within the journal system that dominates scholarly publishing. The vast majority of journals simply moved online without changing how they look or publish (much as Gutenberg's printing of the Bible, with its cursive font and illuminated first letters, created a book that resembled the medieval manuscripts, which the printing press was about to put an end to as a publishing form). Yet the Internet has opened a new world of access to the forms of knowledge that are recorded in journals, if far less so with scholarly books at this point.³

You can now walk into a public library or a high school, sit down at a computer station, and tap into a small, but substantial portion of the scholarly work and scientific research that is being currently published; you can explore historical documents and archives, as well as vast sets of data, including the human genome.⁴ This work has not just been published within a limited community of subscribing institutions, but has also been made open to readers wherever there is Internet access. This access represents a great increase in the ability to tap into the storehouses of knowledge, but when it comes to the scholarly literature, a very small proportion, perhaps amounting to 15-20 percent of the annual output, is made freely available to readers. This public access has been afforded by a new breed of scholarly journal (some having grown out of long-standing print titles, such as the *New England Journal of Medicine*) which makes their contents freely available to readers online, whether immediately on publication or some months after the issue is released (to give subscribers an incentive to keep subscribing). Yet while journals that offer open access provide one important source of a new global access, a greater part of that 15-20 percent of scholarly work that is now open comes from those authors who, having published in a journal that is restricted to subscribers, have taken advantage of that journal's self-archiving policy to post their published work to an open access institutional repository run by their library or to their own website.⁵ This is not just a hypothetical increase in access, as there are now a good number of studies that make it clear that studies which are made available through open access journals or institutional repositories are read and cited by more people than those that are not.⁶

Suddenly, *doing research* raises a new set of responsibilities for how that research is allowed to circulate, given that there are a whole new range of options for opening it to critical scrutiny and having it enter the public sphere. When print was the only means of publication, the idea of printing a limited number of copies of a journal – determined by the number of subscribers who covered the costs and to whom it was then exclusively delivered – made perfect sense, with a little photocopying and off-print circulation on the side. This is the time, I am proposing, for reviewing the researcher's epistemological and ethical responsibilities in light of the *open access* option, an option which some journals are actively pursuing, and which the majority of journals, that are not going this way, have at least recognized as falling within the rights of their authors (as they permit authors to self-archive the work the journal has published).

In what follows, I want to make clear where this access principle fits in doing research by examining its (missing) place in one of the most important statements on education research to be published in some time, *Scientific Research in Education*, the National Research Council's report on how to foster a scientific culture within a federal education research agency (Shavelson & Towne, 2002). In the process, I am also *doing research* that will demonstrate a method of close reading or textual analysis that has grown out of my own training in literature and the history of ideas.⁷

The executive summary of *Scientific Research in Education* features six "scientific principles" said to "underlie all scientific inquiry, including education research" (Shavelson & Towne, 2002, p. 2). The first thing to note about this report, however, is that these are not so

much principles as prescriptions, written in the imperative, numbered in the order to be followed, and directed at researchers (“1. Pose significant questions that can be answered empirically; 2. Link research to relevant theory... 5. Replicate and Generalize Across Studies...”). The scientific principles are followed by six “design principles,” which take a similar approach to directing those responsible for setting up the U.S. Department of Education’s Institute of Education Sciences.⁸

To appreciate why the National Academy of Education committee behind the report took this prescriptive approach to promoting scientific research in education, it helps to consult the foreword to the report written by Bruce Alberts, president of the National Academy. Alberts points out that the National Academies more typically issue reports devoted to “bringing science to bear on pressing problems” that confront the United States, while *Scientific Research in Education* is something of an exception, as it tries “to comment on the nature of the scientific enterprise itself” (p. vii). Yet it does not appear to be the exception insofar as a National Academy might tend to pronounce on a pressing problem in this pointedly prescriptive and authoritative way. And as for the pressing problem, the report goes on to explain, the National Academies felt the need to weigh in on the scientific quality of education research, given what the authors describe as a widespread skepticism over the cumulative value of education research, a skepticism which has led, in their estimation, to explicit requirements for “scientifically based research” in the No Child Left Behind Act of 2001 (p. 1).

Without presenting any evidence one way or the other on the current quality of education research, the authors of the report appear to have bought into this skepticism. For they interpreted their original mandate – “review and synthesize recent literature on the science and practice of scientific educational research and consider how to support high quality science in a federal education research agency” (p. 1) – as best handled by providing education researchers with a six-step plan for properly setting their work back on a scientific track. Setting out the principles in this way is bound to suggest to some that a significant number of researchers are not posing significant questions, are not linking their work to the relevant theory, and on the implications run. These researchers would thus benefit from following such succinctly stated advice in bringing their work under the rubric of *scientific*.

In this way, the report’s six scientific principles also suggest a divide exists between *scientific* research and research that falls short of this scientific standard. Others have considered the shortcomings of the six scientific principles as a whole, while my focus here is on the sixth and final principle, the one that deals with the dissemination of research.⁹ The work – dare I call it scientific research – that I have been doing over the last few years on how research and scholarship can contribute more to what might be called, after John Dewey, the democratic quality of our lives, leads me to declare that the National Research Council report’s perspective on research dissemination is an important statement on scientific processes and yet unduly constrained in ways that neither serve science nor society.

Scientific Principle 6 reads, in full, “Disclose research to encourage professional scrutiny and critique” (p. 5). The principle is accompanied by an explanation which refers to the need for wide dissemination of education research, followed by “ongoing, collaborative public critique” (*ibid.*). I could not agree more with the importance of such an approach to ensuring the quality of knowledge and the healthy state of science. Reference is made in the explanation, as well, to adhering to “publicly enforced norms,” even as the report reasserts that the audience that matters is made up of “professional peers” and “the community of scientists” (Shavelson & Towne, 2002, p. 5). The National Research Council report is concerned that the professional scrutiny of

research is an open process within the education research community, and as such the review of research should not be entrusted to a single authority or body. The report allows for both peer review and continuing critical scrutiny that might, for example, entail a reanalysis of the data or further research of the problem at issue. This sixth principle of disclosure might, then, be thought of as simply a final step in ensuring that educational research falls within long established norms for the republic of science. Again, no evidence is presented on whether an adequate level of professional scrutiny and critique is being applied to education research, whether through the countless peer-reviewed journals and grant competitions, as well as, if to a lesser degree, with edited volumes and books in the field. And just as troubling, the principle of dissemination and distribution of research stops there, with professional scrutiny and critique.

This last scientific principle on the dissemination of research does not address this particular science's place within the larger republic. It does not consider the particular place of research in a democracy, especially as that research bears on an aspect of life as critical to democracy as education clearly is, and as it is directly related to a federal education research agency. Certainly, it falls within the mandate of the National Academies to, Alberts says, "comment on the nature of the scientific enterprise itself," but they are first and foremost "advisors to the nation," as the slogan on their website and elsewhere puts it. Thus it would seem worthwhile to give some thought to how this public responsibility can be more fully integrated into the scientific principles that are intended to guide researchers, rather than suggesting that scientific research – in an area of such pressing public concern as education – operates apart from the world that it observes and pronounces on. If the point is lost in the report's scientific principles, it turns up, to the credit of the National Research Council committee, later in the report with the insistence that "research results must be brought into the professional and public domain if they are to be understood, debated, and eventually become known to those who could fruitfully use them" (Shavelson & Towne, 2002, p. 73). How this public access and engagement will be achieved, when it does not figure in the basic principles of scientific research, becomes for me a call to assist the National Research Council in articulating both the means, as well as the scientific and public value, of making greater access to research a goal of the federal education research agencies.

The very sense that research is something that is *disclosed* gets things off on the wrong foot in the sixth scientific principle – "Disclose research to encourage professional scrutiny and critique" – and this sense of restricted disclosure is all the more inappropriate for education research. It is as if such research were indeed a professional secret, one which should only be disclosed to those who can be trusted with it. Against such a notion, I would argue that the final step in any research project should be about ensuring the circulation and exchange of knowledge in as wide a fashion as is feasible. I use the word *feasible* because I recognize that there is a whole range of limits to the circulation of knowledge, from economic to educational.

However, it also needs to be noted that the possible global and public scope for the circulation of research has recently and rather radically changed with the introduction of new information technologies in relation to the Internet. The overwhelming majority of scientific journals have moved to the Internet over the last ten years. This enables a level of global and public distribution of knowledge that far exceeds what was possible with print technologies. What researchers then need to consider, in the midst of this great migration, is how this new publishing medium can be used to improve both the scientific and public value and impact of research, not just as a source of scientific information, but as a source of public knowledge. The viability of this greater distribution and greater integration of research into public life has been

demonstrated by a small but important number of journals that are offering their contents free to the reader.

In education, for example, there are close to 200 journals that make all or some portion of their content free to read online, among them *Educational Researcher*, *Teachers College Record*, *Educational Policy Analysis Archives*, and *Current Issues in Education*.¹⁰ This manner of “open access” publishing is being implemented through a number of different economic models that include using entirely volunteer labor and publishing online only, relying on author fees (largely used in the well-funded sciences), providing open access after a period of subscription-only access, or offering open access to developing countries. In addition, a number of the major publishers of education journals, such as AERA, Sage, Blackwell, and Taylor and Francis, have policies in place that permit authors to post their work in their libraries’ institutional repositories.¹¹

The road that scholarly publishing had been heading down, prior to this open access movement, and continues to head down in the face of this new development, is one of increasing corporate concentration, with publisher mergers and acquisitions (as well as the corporate acquisition of scholarly society journals). The resulting price increases driven by opportunity as much as anything has been leading over the last two decades to a declining state of access to research, judging by the journal cancellations that have trimmed collections at the best university libraries, while decimating those of less privileged institutions (ARL 2002). The introduction of open access models through online publishing appears to offer the universities another direction in which to take the circulation of knowledge. Scholarly associations, journal editors and university libraries need to carefully weigh the dissemination of research in terms of this juncture, especially as it bears on the scientific principle of seeking the widest possible circulation, exchange, and scrutiny for knowledge.

Open access publishing serves scholar and public alike, by providing a much wider readership than is afforded by subscription-fee journals (online or on paper). The open access model not only opens the research work to more thorough “professional scrutiny and critique,” as per the National Research Council’s sixth scientific principle, it also provides greater *accountability* and *visibility* for educational research (to draw on the American Educational Research Association conference themes for 2003 and 2004). Up to this point, American Education Research Association, ERIC, and other organizations have approached this public side of science by providing a form of research digest and “translation” on selected topics.¹² While representing a commendable effort, this is obviously a costly process that can provide at best a limited coverage of the literature. It could be greatly extended, I am suggesting, by integrating much more open access to this literature into the very systems for circulating that knowledge.

Now, in invoking the role of research in a democratic culture, I realize that public access to *what is known* through scholarly inquiry, as well as to the debates and controversies that arise through that inquiry, is but one small aspect of what should contribute to the quality of contemporary democracies.¹³ It may be a small aspect, but it is precisely the aspect over which education researchers have control. It is the very point of their professional contribution, as scholars and educators. Now, I also realize that the very act of providing broad and open access to the full range of education research activities may strike some among us as likely to only further undermine public confidence and feed the skepticism that inspired, in part, the National Research Council report at issue here. The skepticism point has been elaborated by Michael J. Feuer, Lisa Towne, and Richard J. Shavelson elsewhere, as they speak of the National Research Council report arising out of a context in which educational research “is perceived to be of low

quality” and does not inspire “confidence” in lawmakers or others (2002, p. 5). For their part, they believe that “the conventional wisdom about weaknesses of scientific educational research relative to other sciences is exaggerated” – which is not to say that it is untrue (*ibid.*).¹⁴ In the face of this lack of confidence in educational research, however exaggerated, it would have made as much sense for the National Research Council report to call for improving the visibility of research, making it more readily a part of the public and professional discourse, by providing, in the first instance, much better access to it through the coordinated efforts of ERIC and journals in this field of study. Yet what would the public think of the differences in research findings, of variations in research methods, of theoretical and philosophical studies, of semiotic or hermeneutical inquiries?

At one level, this possibility that some of the public might think less of our work, in all of its diversity and differences, is no defense for keeping it from public view. At another level, greater access to the whole of the research enterprise is bound to be educational for researchers and public. But more than that, in the social sciences above all, maximizing access to research, access for policymakers, administrators, educators, the media, and the public, access for those who have been studied and those who would feel the impact of studies, access for those who have a stake in the funding of the research, is integral to what is scientific and scholarly about research in education. It has everything to do with sustaining a culture of “professional scrutiny and critique,” to quote Scientific Principle 6, once more, scrutiny and critique from those whose professional and public lives are both the object of and subject to this knowledge.

Now, the National Research Council report, *Scientific Research in Education*, does speak to how educational research can serve as a guide for policymakers who are working on issues related to schooling, just as the report refers to how researchers need to collaborate with educators in conducting their research (Shavelson & Towne, 2002, pp. 155-156). But guiding policymakers and collaborating with teachers is not necessarily the same thing as fostering a more democratic approach that might better inform public deliberations over educational matters. As I have pointed out in earlier work, there is nothing inherently democratic about policymakers following research evidence in arriving at the most effective strategies for implementing specific policy goals (2001a). And the capacity for self-governance among a people, as well as the capacity for educational leadership among the teaching profession, are not necessarily furthered when teachers partner with researchers to produce research designed, for example, to improve policy-mandated practices in schools.

What is needed, I have suggested before, is a considerable extension of the dissemination principle of scientific research and design, one that recognizes the role of science, especially the social sciences, in a democracy. This principle would constitute educational research as a vital part of a larger democratic process, one that situates the study of learning and teaching in classrooms, communities and states, one that recognizes research’s contribution to the educational and democratic qualities of this society. From this perspective, the National Research Council’s sixth scientific principle – “Disclose research to encourage professional scrutiny and critique” – seems contrary to our democratic responsibilities, as education researchers. Our responsibility is not concerned with *disclosure* (except in conflict of interest cases between our private and public interests), but about encouraging as open a flow and exchange of information as is possible. As this dissemination principle now stands, it may seem to bolster education research’s commitment to scientific research, but in fact does little to address concerns felt by various stakeholders about the cumulative value of this body of research which would seem to be

facilitated by enabling people to consult and connect the work that has been done, even when, as is most often the case, it does not add up to a neat and tidy research finding.

Without taking anything from the importance of discussing scientific standards, norms, and training, I am also asking that something more be done by this research community to address public concerns with education research. Within the American context, organizations such as the new federal Institute of Education Science, National Library of Education, the National Academy of Education, and scholarly associations like AERA, all have the opportunity to do much more in fostering the utilization of and support for research in education by placing this research within the scope of *public culture*. They need to recognize that new information technologies can greatly improve the linkages among this research, as well as provide far greater public access to this research. They need to see the value of building this research more fully into the fabric of public discourse. Exploring and testing feasible models for providing open access to the journal literature, as well as developing greater linkages among the databases, is what I am recommending as the first step in increasing the public value of education research. This greater public engagement is bound to have an influence on how the research is conducted and how it is written up.

While *Scientific Research in Education* expresses a concern with research ethics, it is focused on respecting the rights of individuals who participate in research. It does not, for example, acknowledge a corresponding right among the public to consult the resulting knowledge. Obtaining the *informed consent* of the research subject seems only half the story to me, given the assumption that the research being conducted will constitute a public good held to be of interest to the welfare of the larger society. What then of the researcher's responsibilities, or rather the research community's responsibilities, to establish public norms that support *informed participation* in this democracy not just among the immediate participants, but also among the larger community? That the research must be disclosed to professional scrutiny is a safeguard or check on its quality. To see that it is open to wide circulation and easy access is what ensures that the research falls within a democratically informed public sphere.

Now, many educational researchers are tired of sibling comparisons between education and medical research. Still, the National Research Council report jumps on the medical research analogy in its opening sentence.¹⁵ And from my perspective, medical research has succeeded in making itself part of public culture over the last decade, with its breakthroughs, controversies, reversals, indeterminate results, and all. The lessons that education research has to learn from the life sciences are not about the value of meta-analysis (for which they owe education's own Gene Glass a great debt) or their authoritative and definitive findings; the lessons education research need to learn from this work concerns how the scientific culture of medical research is unmistakably part of the public culture of daily talk and dinner tables, of politicians and media pundits.

The expanded coverage of health information in the media, under the rubric of news-you-can-use, is easy to track in newspapers, on television, and the Internet. During the week that I began to compose this review of the National Research Council report, the *New York Times Magazine* devoted its entire issue to the theme "Half of What Doctors Know is Wrong" (March 16, 2003). It featured articles with titles such as "Medicine's Progress, One Setback at a Time" and those articles thought nothing of describing the details of sample sizes, risk probabilities, and research design flaws of studies published in the *British Medical Journal* and elsewhere. The magazine makes the dynamics of research present: the tentative search for an answer, the challenges and revisions, the study released last week, the reversed position. True, it is the *Times*,

which is not everyone's daily newspaper, but this public exposure of medical research's reversals (hormone therapy) and design flaws (mammograms) has appeared, with less detail, on the television nightly news and the tabloid press. And it has not reduced public support for medical research; it has arguably fed support for it, creating a public appetite and expectation of a right to know as a function of the democratic state to support and make available.

The education research community would do well to consider how this knowledge is now working as part of a public culture, adding to that culture's democratic, and intellectual, quality. That is, this increase in access to health information has changed the relationship of medical research to the public body, changed it in a way that I am tempted to describe as reducing the tyranny of expertise. From the physicians' perspective, having patients and their families arriving at their office with medical research and other health information in hand has led to a "new method of care," a method which has been encouragingly labeled "shared decision making" (Brownlee, 2003, p. 54). I hardly need add that *shared decision making* sounds a lot like democracy in action, whether one thinks of a doctor's office, a community school, a nation. This particular form of sharing has only been made possible by increases in medical research's presence in public culture, and I would offer as one indication of that National Institute of Health estimate that six million Americans go online each day in search of information about health and disease (NIH, 2003) – although only a small percentage may be consulting research – as well as the NIH's commitment to seeing all of the research that it sponsors publicly available through institutional repositories or open access journals (Suber, 2005).

In an effort to feed this hunger for information, as well as address the right to know, doctors in the state of Georgia are experimenting with a "health information prescription" (Brownlee 2003, p. 54). The prescription will guide patients to reliable sources including the National Library of Medicine's MedlinePlus, which includes a layperson's guide to symptoms, diagnosis, and treatment. MedlinePlus, however, also provides patients with direct access to the latest medical research, through the NLM's PubMed database, although most of the 11 million articles in it are not available to the public beyond their abstracts, because of the small, but growing, proportion of the articles that have been made open access and thus publicly available.

As the conversation between physician and patient takes on this more informed quality, concerned as it is about both risk and quality of life factors, the educational quality of that exchange goes up for both parties. Clearly, physicians are also beneficiaries of this increased access to research. Doctors speak of having the "newest and best in medical research right at our own desks," if only to discover that "leeches, for example, are now used on some patients to treat the pain of arthritis" (Sanders, 2003, p. 29). Patients make informed decisions based on their own value systems: "For me, it's a trade-off," as one woman said in deciding to stay with menopause hormone therapy for the mental agility it provided her against the recently established increased health risks of such therapy (Kolata, 2003).

What has changed with medical research, and what needs greater recognition by both the Institute of Education Sciences, and by everyone doing education research, is how productive this new emphasis on public access to research is for professionals. To go a little farther with the medical research access analogy, the perfect example of this democratic and public engagement with research is ClinicalTrials.gov, a website sponsored by the National Institutes of Health, other Federal agencies, and the pharmaceutical industry. The site was launched in February 2000 and as of December 2005 lists 23,500 clinical studies, which are inviting participation from qualified subjects, as well as informing the public about ongoing investigations. The site is

global, involving studies in about 120 countries, although most are in the United States and Canada, and it receives approximately 20,000 visitors a day.

Think of what it would mean to have a comparable system for alerting people to what studies are underway, what ideas are currently being explored and tested, in educational research on a global basis. It would not need to be, and in fact should not be, restricted to clinical trials or large-scale studies. A research registry for education could offer a far more methodologically diverse invitation from researchers to educators and others to participate in proposed or ongoing research. An education research site devoted to recruiting participants in both large and small scale studies would support the desired expansion of clinical trials in schools, as well as provide opportunities to conduct more wide ranging qualitative studies. Educators would be in a far better position to participate in a dialogue over research agendas, by virtue of the studies they signed up for, while learning far more about the nature and scope of educational research by reviewing their options. It may well lead to parents and educators discussing what they want to achieve and what they want to learn more about, as they review the current field of studies underway. A research-opportunities and research-underway database could well fall within the National Research Council report's call for "infrastructure that promoted ongoing collaborations among researchers, practitioners, and policymakers," as part of its sixth design principle (Shavelson & Towne, 2002, pp. 155-156).

Medical research is increasing its public presence and is becoming an integral part of its scientific culture, in large part through the government's life sciences indexing services PubMed. We are left to wonder why education research has not had a greater boost from its own open access research indexing database, through the Nation Library of Education's ERIC (Education Resources Information Center).¹⁶ ERIC currently has 1.1 million citations with over 100,000 "full-text non-journal" documents that are freely available. Yet ERIC has only begun to take full advantage of the open access already available in the journal literature. At this point, ERIC's index entries for articles in the open access journal, *Australian Educational Researcher*, provides links to the full-text articles online, but this is not yet the case for other open access journals, such as *Education Policy Analysis Archives* and *Education Researcher*.

The issue in education is awareness and expectation, as professional and public interest in this *right to know* is not yet operating at the level it is in medicine. Clearly, the personal urgency of health issues for people leads to greater attention paid to medical research, but the growing public presence of medical research is also influenced by a combination of readily available technologies of access to this knowledge and an emerging culture of expectation that has grown up around the right to know what is known about our health. The schooling of the young, the state of the teaching profession, and the general state of education are only somewhat less of a concern to people, and it takes little to imagine this *right to know* contributing to education to what has happened with medical information, in what the Pew Charitable Trusts has called the "online health care revolution" (Fox & Rainie, 2000). The current state of open access within ERIC is only part of the story on education research's public role, a story that also involves, to reiterate, educational researchers depositing work that they publish in the institutional repositories managed by their libraries, if the work has not been published in an open access journal. My perhaps naïve hope is that those doing educational research will take the lead in establishing greater public access to this work, out of a growing awareness among them of the epistemological and ethical responsibilities posed by the possibilities of this new medium.

However, where this increased attention paid to health research has had an impact on other area of public interest has with the rise of "evidence-based" policy initiatives (Willinsky,

2001b). In education, the evidence-based approach to research shows up in the No Child Left Behind Act of 2001. As the National Research Council report observes, No Child Left Behind has legislated a new emphasis specifically on “scientifically based research,” with no less than 111 references to this term in the No Child Left Behind (as noted by Feurer, Towne, & Shavelson, 2002, p. 4). Suddenly, the federal government’s support for state education initiatives is dependent on the state’s ability to make use of the relevant research. The new legislative attention being paid to education research strikes me as offering its own call for greater accessibility to education research. No Child Left Behind makes it imperative for education authorities to consult the relevant research as part of the process of deciding matters of program and policy for the schools.¹⁷ I might even go so far as to suggest that greater access to educational research is a basic requirement for compliance with the law. Are we doing enough, then, to support people’s need to consult educational research, to support their right to know what has been learned at public expense? If we want to improve people’s appreciation of educational research, largely by fostering an appreciation of our scientific and scholarly culture, and if we want to aid people’s ability to not only comply with the law but more actively participate in the design of informed policies and programs, we need to pay more attention to how we circulate this knowledge, beginning with providing more open access to it.

Yet these legislative measures also raise issues around the politics of research that should provide education researchers with a further reason to become champions of open access to educational research. After all, what is meant by scientifically based research, in terms of the U.S. Department of Education, has everything to do with, according to the legislation that led to the formation of the Institute of Education Sciences, the Education Sciences Reform Act (2002), “employing systematic, empirical methods that draw on observation or experiment”; “relying on measurements or observational methods that provide reliable data”; and “making claims of causal relationships only in random assignment experiments or other designs.”¹⁸ The Institute is further supported by the U.S. Department of Education’s What Works Clearinghouse, another evidence-based policy initiative which “collects, screens, and identifies studies of the effectiveness of educational interventions (programs, products, practices, and policies),” based again on the findings of “scientifically based research.”¹⁹

The privileging of one form of research can only end up obscuring the contribution, as well as diminish the funding and support, for other kinds of research. What then, one wants to ask, of critical pedagogy (e.g., Kincheloe and Steinberg, 2006) to name one of so different many ways of doing education research, which help us to make sense of schooling through no less an application of rigorous and systematic methods, apart from the methods celebrated under the rubric of “scientifically based research.” Surely, the full spectrum of research needs to be made freely available to teachers, administrators, parents, the press, and the public through open access, so that it can demonstrate its value to education, so that it can easily play a part in decision-making and deliberation over the quality of the child’s educational experience, in the nature of the lessons learned, in the democratic contribution of schooling, in the shaping of the curriculum.

If access to this body of research is going to remain restricted to research libraries, because education researchers are focused entirely on getting their research published rather than read, then only this narrowly defined range of scientifically based research is going to play a public and legislated part in education. Again, I would say that researchers have a responsibility to see that their work receives the largest possible play in the public arena, insofar as they believe they have something valuable to contribute to the state of education and the well-being of those

involved in it. On the one hand, the very future of their research approach or method, at least in terms of official government recognition and support, might be said to depend on the increased public and professional presence of this research that open access can bring, while on the other hand, the increased access – so readily within reach through open access journals and institutional repositories – can have the fortunate side-effect of advancing researchers' careers, even as they increase their contribution.

The National Research Council report makes passing reference, under its section on infrastructure, to “the emergence of new technologies for data collection, management, and analysis,” and these same new technologies can be used to improve the collection, management and analysis of the research literature, enabling readers to gain a sense of the different lenses and methods research offers, as well as the values and perspectives it brings to bear on things educational (Shavelson & Towne, 2002, p. 151). More than that, the potential now exists to create interactive linking between data sets and published articles in ways that will encourage a level of re-analysis and replication studies that will increase the rigor and scientific quality of these studies. In one experimental project on fostering multiliteracies that I have been involved in, we have developed an online site where researchers work alongside of students and teachers, with the researchers assembling their case studies, even as the students use the site for an annotated, sometimes animated, gallery of their multiliterate work, while the teachers set up online demonstrations of how their approaches to teaching in this environment works. This Multiliteracy Project website serves to provide a public account of the learning going on among all three parties to this work, in real time, as the work develops.²⁰ Of course, there is a long-standing tradition of secrecy and retentiveness among researchers, that I referred to earlier using Newton as my example, and yet the counter-forces of an open science may yet prevail with growing evidence of how this openness augments the scholarship and strengthens the claims of research (Willinsky 2005).

Given that the educational research community is working on improving instructional programs in information literacy, subject domain learning, and hypertext reading, why wouldn't a federal agency devoted to the study of education draw on this expertise to support and build “the research capacity” of practitioners, policy makers and the public? Is there something amiss with educational researchers being so intent on finding ways to improve the literacy of citizens, on the one hand, while on the other, they are not interested in making what they learn about education part of the public discourse in the democratic determination of education? The NRC report does call for this federal agency to produce “regular syntheses of research findings” to inform “practitioners and policymakers” (p. 15). And while ERIC has provided excellent research digests in the past – with that service terminated in the recent contracting out of ERIC due to the costliness of the digests – what can now be provided, as demonstrated by open access journals and indexes, are systems that can increase and improve readers' direct access to research, in support of their democratic right to know.

Scholarly associations such as AERA could, for example, take the lead, in conjunction with the current reform of ERIC, to support the adoption of standards for automated journal indexing and linking that would greatly increase the number of articles in ERIC that provide links to the full text of the articles themselves, without adding significantly to the cost of this indexing. The ready ability to connect study to study, to compare results and see ideas challenged and discussed, can only add to the quality of scholarly and public discourse about education. But more than that, our work through the Public Knowledge, at the University of British Columbia, has demonstrated how the Internet can now support systems of “Reading

Tools” that can enable readers of a research article to connect the article they are reading not only to related studies, but just as easily to current newspaper articles and government reports on the same topic, to sites with instructional materials for teaching the topic and to online forums where the topic is informally debated.²¹ The promise here is of having greater public access to research, combined with greater connectivity among different orders of knowledge (from research to practice and policy), incorporated into the design of scholarly publishing environments in ways that improve the quality of the peer review process (with access to the original data sets) as well as support public accessibility, for example, by providing access to related materials in the media and other public documents.

It is fair enough to raise questions about what this new public presence of research may mean for the integrity of research. Certainly, discomfiting instances are to be found of the political and social corruption of scientific practices. Think of the role that anthropology often played in the service of colonial administrations, or the eugenics movement in the early decades of the twentieth century. Today, with the George W. Bush administration in the United States, issues of political interference in research abound.²² Yet such abuses, while a source of concern and caution for researchers, hardly argue for isolating or insulating scientific culture from public and democratic culture, especially for a science of education that holds to the importance, as a first principle, of posing *significant* questions. The open and public discussion of those questions seems a critical element in keeping science a principled enterprise in an ethically responsible sense.

Public education has long been about developing and extending the democratic right to know, and the right to act on that knowledge (within the rule of law). Public education has also been about increasing the intellectual quality of public life through its engagement with scientific knowledge. If the United States is entering an age of greater public and professional concern with education research – as attested to by the recent Education Act – then researchers would do well to consider that what is scientific about doing research is not simply the ability of this work to determine the best practices for improving achievement results. What is scientific is far more about the open and free inquiry into these educational phenomena. What is scientific is the systematic and imaginative ways in which education researchers seek to contribute to the very quality of public deliberation over education’s ends and means. Rather than think about disclosing educational research for the purpose of affording sufficient scrutiny from other researchers, researchers need to consider these new ways of expanding the circulation of this knowledge. Doing research today means testing the potential of new publishing technologies for opening research to greater scrutiny and impact, as well as to greater integration with other forms of knowing. At this moment, as the research literature moves into this new publishing medium, the researcher has indeed assumed a new responsibility, a new level of accountability, over how public access to the research literature can be improved, as both a scientific and design principle that will only serve to strengthen scientific culture within an informed and democratic public realm.

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Notes

¹ This article was originally published, in a somewhat altered form as “Scientific Research in a Democratic Culture: Or What’s a Social Science For?” *Teachers College Record*, 107(1), 2005, p. 38-51, and builds on arguments presented in Willinsky (2001a; 2002) with the specific context of the National Research Council report, *Scientific Research in Education* (Shavelson & Towne, 2002).

² From the statement of the medical journal editors: “Irrespective of their scientific interest, trial results that place financial interests at risk are particularly likely to remain unpublished and hidden from public view. The interests of the sponsor or authors notwithstanding, anyone should be able to learn of any trial’s existence and its important characteristics” (De Angelis et al., 2004).

³ In terms of the *open access* book, the editors of this handbook, Joe Kincheloe and Ken Tobin, are to be commended for selecting as their publisher, Sense Publishers, which makes it a practice to provide free online access to PDF files for all of its books through its website (<http://www.sensepublishers.com/>). As well, the National Research Council’s publications, including *Scientific Research in Education* which is discussed in detail in this chapter, are available in open access on its website, as well as for sale in other formats.

⁴ On open access to research data in the sciences, a recent *Nature* editorial refers to how researchers can retain credit and rights over the data sets they contribute to the “global academy” by making it freely available online through the use of a Creative Commons license (<http://creativecommons.org>).

⁵ See the Sherpa Project (<http://www.sherpa.ac.uk/>), in which a survey of 127 publishers reveals that 75% grant permission for authors to post some version of their published article in an institutional archive or on a personal Website.

⁶ See Steven Hitchcock’s (2005) running bibliography of studies on the citation impact of open access articles.

⁷ For examples of how this has been applied, in my own case, on a more extensive basis in educational research, see Willinsky (1991; 1998).

⁸ Institute of Education Sciences (<http://www.ed.gov/about/offices/list/ies/index.html>).

⁹ For critical reviews of other aspects of the *Scientific Research in Education* report (Shavelson & Towne, 2002), see Erickson (2005), Gee (2005), Moss (2005), and Walker (2005).

¹⁰ See the American Education Research Association list of open access journals in education maintained by Tirupalavanam Ganesh (<http://aera-cr.asu.edu/links.html>).

¹¹ See Willinsky (2006) on different types of open access journal publishing, and to check the current self-archiving policies of publishers and journals see the SHERPA project database (<http://www.sherpa.ac.uk/romeo.php>).

¹² See, for example, AERA’s *Research Points* (<http://www.aera.net/publications/?id=314>).

¹³ The more common philosophical formulation of the relation between science and democracy focuses on the democratic regulation of science, as when Helen Longino asks, “What kind of institutional changes are necessary to sustain the credibility, and hence value, of scientific inquiry while maintaining democratic decision making regarding the cognitive and practical choices the sciences make possible and necessary?” (2002, p. 213). Also see Philip Kitcher (2001) for a similar approach. My argument for improved access to research will, of course, bear on the democratic decision making affecting science.

¹⁴ As far back as the 1960s, when the social sciences were entering a time of considerable government influence, Fritz Marchlup noted the suspicion with which social science research was still regarded: “New knowledge in the natural sciences is always welcomed as ‘discovery’ and ‘progress’; new knowledge in technology is hailed as ‘invention’ and ‘advance’; but new knowledge in the social sciences is suspected, if not decried, as either ‘subversive’ or ‘reactionary’ or ‘trivial’” (1962, p. 205).

¹⁵ “No one would think of going to the Moon [sic] or of wiping out a disease without research” (Shavelson & Towne, 2002, p. 1).

¹⁶ As a point of comparison, in 2002 the U.S. government allotted \$274 million to the National Library of Medicine, which operates PubMed, compared to \$12 million to the National Library of Education.

¹⁷ “To provide funding to enable State educational agencies and local educational agencies to implement promising educational reform programs and school improvement programs based on scientifically based research.” SEC. 5101.(a) (2), *No Child Left Behind Act of 2001*.

¹⁸ The relevant passages from “Education Sciences Reform Act of 2002” which was used as a basis for establishing the Institute of Education Sciences: “The term ‘field-initiated research’ means basic research or applied research in which specific questions and methods of study are generated by investigators (including teachers and other practitioners) and that conforms to standards of scientifically valid research” and The term ‘scientifically based

research standards' means research standards ... (i) employing systematic, empirical methods that draw on observation or experiment; (ii) involving data analyses that are adequate to support the general findings; (iii) relying on measurements or observational methods that provide reliable data; (iv) making claims of causal relationships only in random assignment experiments or other designs (to the extent such designs substantially eliminate plausible competing explanations for the obtained results)..."

¹⁹ What Works Clearinghouse is "administered by the U.S. Department of Education through a contract to a joint venture of the American Institutes for Research and the Campbell Collaboration" (<http://www.whatworks.ed.gov/>).

²⁰ See the Multiliteracy Project website (<http://www.multiliteracies.ca>) and Early and Potts (2005).

²¹ See the Public Knowledge Project website for demonstrations of a Reading Tool that is included in the project's journal and conference publishing systems, and is designed to integrate research more fully into other forms of knowledge (<http://pkp.sfu.ca/ojs>).

²² See the Union of Concerned Scientists, who document the degree to which "an unprecedented level of political interference threatens the integrity of government science" (http://www.ucsusa.org/scientific_integrity/).