

# Education Research

## Past, Present, and Future

by Grover (Russ) Whitehurst

### History

In 1971, the President's Commission on School Finance commissioned the Rand Corporation to review research on what was known about what works in education, reasoning that, "The wise expenditure of public funds for education ... must be based on knowledge of which investments produce results, and which do not." Rand concluded that:

*The body of educational research now available leaves much to be desired, at least by comparison with the level of understanding that has been achieved in numerous other fields.... Research has found nothing that consistently and unambiguously makes a difference in student outcomes.*

Almost 30 years later, in 1999, the National Academies of Science came to essentially the same conclusion:

*One striking fact is that the complex world of education — unlike defense, health care, or industrial production — does not rest on a strong research base. In no other field are personal experience and ideology so frequently relied on to make policy choices, and in no other field is the research base so inadequate and little used.*

Was the National Academies wrong in 1999 about the condition of education research?

Otherwise, how could the No Child Left Behind Act of 2001 (NCLB) have required states and local education agencies to use the results of scientific research for virtually every activity under the Act? A partial list of NCLB provisions that require the use of scientific research includes:

- » Methods and instructional strategies for comprehensive school reform;
- » Technical assistance to schools;
- » Professional development in schools;
- » Implementing new curricula;
- » Strengthening the core academic program of schools;
- » Disseminating information about effective school library media programs;
- » Methods for student learning, teaching, and school management;
- » State reform activities;
- » Math and science partnerships;
- » Promoting teaching skills for mathematics and science teachers;
- » Reading instruction;
- » Distance learning programs for mathematics and science teachers;
- » Teaching limited English proficient children;
- » Preventing illegal drug use and violence;

GROVER (RUSS) WHITEHURST IS A SENIOR FELLOW AND DIRECTOR OF THE BROWN CENTER ON EDUCATION POLICY, BROOKINGS INSTITUTION. HE IS THE FORMER DIRECTOR OF THE INSTITUTE OF EDUCATION SCIENCES WITHIN THE U.S. DEPARTMENT OF EDUCATION.

- » Programs for effective parent and community involvement;
- » Award programs for nationally significant programs;
- » Character education programs;
- » Meeting the educational needs of gifted and talented students;
- » Disseminating information on student achievement and school performance to parents and the community; and
- » Improving educational opportunities for Indian children.

If we can put aside the possibility of a miraculous explosion of research findings in the brief period between the issuance of the National Academies' report in 1999 and the passage of NCLB in 2001, we have to conclude that the research base was woefully inadequate to support the demands placed on states and school districts by NCLB. It was as if the U.S. Congress had passed a law in 1931 requiring every hospital in the nation to use the results of scientific research to eliminate all cases of infectious disease, with a deadline of 1944 for a zero incidence of infection. It is also a bit like growing food by decree in the old Soviet Union.

The Institute of Education Sciences (IES) was established within the U.S. Department of Education shortly after the passage of NCLB and was expected to supply and disseminate the scientific research findings that were to be a pillar of NCLB. A consequence for IES of being on point to disseminate a knowledge base that largely didn't exist was to press very hard to fill the vacuum. The three primary strategies were to create a new pipeline of high-quality research to address what works in the domains emphasized by NCLB; identify and synthesize the best of existing research through the What Works Clearinghouse; and use consensus panels to generate recommendations on critical topics on which research was weak or incomplete, with explicit labeling of the quality or lack thereof of the evidence supporting the panels' recommendations.

In part because of the investments and focus of IES, a new community of researchers has arisen that is committed to conducting rigorous and relevant research on education. The new community includes people who had been doing rigorous and relevant research in

education for the whole of their careers, but often in isolation from others doing such work in education; people with established careers in cognate fields such as psychology and economics who shifted their attention to education; and significant and growing numbers of newly minted researchers trained in interdisciplinary doctoral programs in education science that are grounded in the normative canons of the social, behavioral, and cognitive sciences.

## Progress

Three examples follow of recent scientific research findings in education and how they replaced unknowns, uncertainties, or contrary assumptions of a decade ago.

### Curriculum

Curriculum refers to the content and sequence of the experiences that are intended to be delivered to students in coursework. Curriculum includes instructional materials such as those in textbooks and software as well as ancillary materials created by individual instructors. Education practitioners have identified research-based information on what works to raise student achievement in reading, math, and science as very important to them. However, research on the effectiveness of curricula had been on the decline until recently.<sup>1</sup>

When rigorous and relevant research existed on curriculum effects, it was scattered among weak research with no trustworthy basis on which practitioners could separate the wheat from the chaff. Federal attempts to vet research on curriculum interventions were deplorable when contrasted with the standards deployed in fields such as health care, criminology, welfare, and prevention.

We are in a much better position in 2009 in terms of identifying effective curricula than we were a decade ago. The What Works Clearinghouse, an activity of IES, has been in operation for six years with the goal of being the central and trusted source of scientific evidence for what works in education. The Clearinghouse has conducted

1 Hsieh, P., Hsieh, Y. P., Chung, W. H., Acee, T., Thomas, G. D., Kim, H. J., You, J., Levin, J. R., & Robinson, D. H. (2005). Is educational intervention research on the decline? *Journal of Educational Psychology, 97*, 523–529.

Despite trustworthy findings, curricula has not drawn the attention it should within federal policy circles.

systematic reviews and reported the evidence on approximately 500 separate branded education interventions and programs and identified about a fifth of them as having positive or potentially positive evidence of effectiveness. The standards of evidence of the Clearinghouse are clear and in keeping with those employed to examine program impact in other fields; the procedures and decisions are exhaustively documented; and the products are widely used by practitioners.

Despite the new availability of trustworthy findings, curricula has not drawn the attention it should within federal policy circles, where structural innovations such as charter schools, pay for performance, and internationally benchmarked standards are the rage.

That does not seem wise. Consider the results from a recent comparative effectiveness trial on four early elementary school mathematics curricula. Students were tested at the beginning and end of first grade on a nationally normed assessment of mathematics skills and knowledge. End-of-the-year math achievement scores for Math Expressions and Saxon students were substantially higher than for Investigations students and Scott Foresman-Addison Wesley Mathematics (SFAW) students.<sup>2</sup>

The difference in effect size (a standardized measure of program impact) between the most and least effective curriculum was .30. This curriculum effect is on the order of magnitude of the difference in student achievement between students who have a teacher in the top versus the bottom quartile of performance, and between the highest performing countries in the world on international exams versus the United States. It is about three times larger than for class size reduction or

2 <http://ies.ed.gov/ncee/pubs/20094052/pdf/20094053.pdf>.

the effects of attending a popular and oversubscribed charter school versus a traditional neighborhood school.

Not only are these curriculum effects large in practical and relative terms, choosing the more effective curriculum over a less effective curriculum costs nothing to a local school district. Contrast the cost of choosing an effective curriculum with the cost of creating new charter schools or instituting merit pay for teachers or establishing national standards. The effects of the latter policy interventions are speculative and the costs are huge. The effects of curricula are known and the costs of choosing are very low. This is low hanging fruit in a field in which progress is difficult to come by.

### Teacher Effectiveness

Do teachers matter? The answer may seem so obvious that the question isn't worth asking. However, thinking on this topic through the 1990s was heavily influenced by the landmark 1966 report, *Equality of Educational Opportunity*, by sociologist James Coleman. This was a huge study employing 60,000 teachers in grade 6 and beyond in over 3,000 schools. The principal finding was that nearly all of the variability in how students achieved was attributable to their socioeconomic background rather than to the schools they attended. On the subject of teacher attributes, Coleman wrote, "A list of variables concerning such matters as teachers' scores on a vocabulary test, their own level of education, their years of experience, showed little relation to achievement..."

Coleman's methodology is now understood to have been flawed. All of his analyses were conducted on data that had been aggregated to the school level and the dependent variable was static test scores rather than



While teachers matter a lot, we don't know much about what differentiates those more effective than others.

student gains. We now know that there is more variability between classrooms within schools than between schools, something that Coleman's analysis could not have picked up. And we now know that gains are more sensitive to the effects of schooling than absolute scores at any single point in time.

An analysis of data from the well-known Tennessee class size experiment, or STAR project, found that differences in teachers accounted for 12 percent to 14 percent of total variability in students' mathematics achievement gains in each of grades 1, 2, and 3.<sup>3</sup> Kane and his colleagues have found similarly strong effects of teachers in the Los Angeles Unified School District.<sup>4</sup>

These are large effects, and they have the potential to cumulate. Thus, students who get several good teachers in a row could move substantially ahead of students who get several bad teachers in a row.

Whereas we now know that teachers matter a lot, we know less about what differentiates more effective from less effective teachers, and much less about how to generate effective teaching through pre-professional or in-service training. Those who despair at our ability to predict good teaching often favor using on-the-job performance to reward and retain more effective teachers relative to their less effective peers. However, we have not developed and validated practical methods for using on-the-job performance to shape the teacher workforce.

Further, the end point of such a development process is unsatisfactory: We are long past the point

3 <http://www.jstor.org/pss/3699577>.

4 [http://www.brookings.edu/views/papers/200604hamilton\\_1.pdf](http://www.brookings.edu/views/papers/200604hamilton_1.pdf).

in other high-stakes professions of opening the door to all entrants and weeding out those who fail. We would not tolerate an aviation industry that allowed huge variation in performance of entry-level pilots and used plane crashes as a way of shaping its work force. There is a huge and important research agenda around moving from being able to tell after the fact who is a good teacher to being able to assure through training and selection and the provision of the appropriate tools that every teacher is good enough to enable students to achieve grade-level expectations. Curriculum is an important part of that equation, as we have seen. So is pedagogy.

## Pedagogy and Instruction

Education has yet to embrace what the cognitive and learning sciences have discovered over the last 50 years about how people learn, process, and remember information. To the extent that the preservice training of teachers includes an introduction to the psychology of learning, it leans heavily toward outdated and often incorrect developmental theories — Piaget is a favorite. Historically, at least some of the blame for the disconnect can be placed at the feet of the cognitive science community, which has had much more interest in testing theories in artificial settings of convenience than in extending theories to application in authentic education settings. That has changed in the last decade as IES, and also NSF, began to make substantial funding available for studies of learning in situ. A significant number of cognitive psychologists are extending their work to education and demonstrating findings of considerable relevance to the classroom practices of teachers. IES has summarized some of that work in

a practice guide, *Organizing Instruction and Study to Improve Student Learning*.<sup>5</sup>

One of the recommendations in that practice guide is to use quizzing to promote learning. Many teachers and administrators decry the emphasis on testing in the schools and some argue that classroom testing takes away class time that could be used for instruction or discussion. However, several studies have found that giving tests to students after they have read material produces a greater benefit on a final test than do many additional readings of that same material.

Few teachers have been exposed to this research, and even fewer have been taught how to apply it systematically to instruction in the classroom. If teaching is to be a skilled profession, we have to transmit to teachers the specific skills they need to be successful. Absent that, we will have what we have now: a system in which there are huge differences among teachers in performance that are best predicted by their general cognitive skills and the selectivity of their undergraduate institution.<sup>6</sup> Is Justice Scalia's approach to selecting clerks what we're willing to live with as best practice for recruiting teachers?

*By and large, I'm going to be picking from the law schools that basically are the hardest to get into. They admit the best and the brightest, and they may not teach very well, but you can't make a sow's ear out of a silk purse. If they come in the best and the brightest, they're probably going to leave the best and the brightest, O.K.? — Antonin Scalia*<sup>7</sup>

## A Look to the Future

*Never make predictions, especially about the future.*  
— Casey Stengel

Many education policymakers in the United States are drawn to emulating practices in countries whose students outperform the United States on international assessments. If we could only give teachers the respect and status they have in Finland; if we could only have the coherent curriculum they have in Singapore; if we

5 <http://ies.ed.gov/ncee/wwc/pdf/practiceguides/20072004.pdf>.

6 [http://www.caldercenter.org/PDF/1001257\\_measuring\\_effect\\_sizes.pdf](http://www.caldercenter.org/PDF/1001257_measuring_effect_sizes.pdf).

7 [http://www.nytimes.com/2009/05/12/us/12bar.html?\\_r=1](http://www.nytimes.com/2009/05/12/us/12bar.html?_r=1).

could only have the national inspection system for schools they have in Great Britain; and so forth. One of the unremarked ironies of the quest to be like our betters is that their secret sauce is not concocted from research findings. It is, instead, bootstrapped from practical experience and social-political philosophies, aided by political structures that allow a strong hand at the national level, and supported by societies that are more socioeconomically homogeneous than our own. Even if the ingredients in their secret sauce were known, we would have trouble cooking their dish here.

However fledgling the education sciences are in the United States we are at least a decade ahead of our closest international competitor. Why not use our dominance in this area, as we have historically in other domains of science, to leapfrog the competition? If we do, the practice of education in the United States will look very different 20 years from now than it does anywhere today, and it will be substantially more effective and efficient. That is a prediction grounded in extrapolation from the history of every other knowledge-intensive field that has committed its resources and vision to research-based practice.

## The Federal Role and the Regional Educational Laboratories

The issue that is too big for me to try to address here, even if I thought I had all the answers, is how to move the whole enterprise of evidence-based education forward toward that transformation. I will focus, instead, on an important piece of that agenda, which is the role of the Regional Educational Laboratories (RELs) in the future of research-based education.

### HISTORICAL CHALLENGES FOR THE RELS

The RELs were established in 1966 as part of the original Elementary and Secondary Education Act (ESEA). President Lyndon Johnson, whose administration oversaw the creation of the ESEA and the RELs, had expansive aspirations for a federal role in education. The ESEA was to provide federal funding for reform, focused on children from low-income families. The knowledge base for reform was to be created by new national research and development centers, and the RELs were to be the translators of scientific knowledge

for practitioners. That original vision was not realized as a result of several enduring impediments.

**No science to translate.** I have argued that there was a weak base of scientific research to support the reform agenda of NCLB in 2001. It follows that there was even less to translate in 1966 when the RELs began. Thus, the initial model for the RELs, under which they would perform a role similar to that of extension agents in agriculture, was conceptually inspired but practically impossible.

**Low funding levels.** Another problem with the original model for the RELs is that the level of funding fell hopelessly short of what would have been necessary to serve a customer base of individual school districts. There is an agricultural cooperative extension agent in every county in the United States. The extension service receives over \$700 million in annual direct federal support and large amounts from direct state appropriations and indirect support from the land grant universities responsible for the program. In contrast, 10 RELs for the entire United States have a combined budget of \$68 million. They have no field representatives in school districts.

**Need to lobby.** A third problem for the RELs emerged over time and was a predictable consequence of low levels of funding and an unrealistic definition of mission: Their business model shifted to maintaining congressional support for continued funding and away from satisfying either the federal administration that oversaw their work or the education practitioners to whom they were supposed to broker research knowledge. To this end, they formed a lobbying organization to thwart periodic efforts to terminate the REL program. For example, the George W. Bush administration proposed the elimination of the REL program in its budget requests to Congress in 2004, 2005, and 2006. A successful lobbying effort by the RELs resulted in continued funding for the program. A circumstance in which the worth of a program is in doubt, administration support is equivocal, and survival is a function of political lobbying is one that is not conducive to program improvement, either from the top down or the bottom up.

**Who is in charge?** Management of the RELs from the federal level has been challenging because of conflicting statutory provisions that simultaneously require federal oversight while requiring the RELs be responsive to their

own regional boards. Over time and through several administrations, the Department of Education and Congress have tried to assert more influence on the operation of the RELs to assure that they were serving federal priorities and doing justice to the research they were supposed to be translating into practice. However, there remains substantial tension between satisfying federal officials and trying to please regional constituencies, particular those who can help lobby Congress for continued funding.

**Large tails wag small dogs.** Many people who are otherwise knowledgeable about the education industry are surprised to learn that the larger of the REL contractors, who began exclusively as RELs and whose identities in the broader education community are still primarily as RELs, generate far more of their income from state, foundation, and other federal sources than they do from their REL contracts. This pattern has developed over time. It is healthy in the sense that these entities can project financial stability beyond the term of a five-year REL contract and, by sharing the time of individual staff across multiple contracts at a given time, build more staff capacity than would be the case if the REL contract were the sole source of funding.

There is, however, a significant downside for the federal managers of the RELs: quality control. The challenge for the federal government is that all products of the entities that have REL contracts tend to be viewed by consumers as REL work, whereas most of those products of the larger REL contractors are not funded under the REL contract. Under the current REL contracts, this has been addressed by requiring exclusive branding of REL products. Further, all REL products are distributed through a single website and under a common style guide that generates a common look and feel for all REL products.

These new requirements have produced greater differentiation between work done under the IES requirements for scientific rigor versus work done for others. Something similar should be retained in future REL contracts, even if the mission of the RELs is altered. At the same time, I believe those contractors who manage to infuse REL standards and commitments to strong science into the rest of their work will grow and prosper, whereas those who jump through a hoop for their IES REL contract but let the quality of the rest of their work sink to whatever level particular clients require, will

# An organization that hedges its bets on science will soil its reputation.

find, over time, that their services are in less demand. If my prediction that education practice is going to be transformed by research is accurate, an organization that tries to hedge its bets on science versus whatever else is tugging at education practitioners and policymakers is going to find its reputation soiled.

## OPPORTUNITIES

Some of the historical challenges to the RELs have ebbed substantially. First, and most importantly, there is now science to translate. This makes viable for the first time the original vision for the RELs as brokers and translators between the worlds of research and practice. Second, the Obama administration is strongly committed to education reform, and the present leadership of IES sees the RELs as critical to that effort. This opens the door for the first time in a long time to the RELs and a presidential administration cooperating and pulling in the same direction. Third, the quality control issues that have plagued the RELs over much of their existence have been lessened considerably by the independent review procedures instituted under their current contracts.

Finally, while the principal work carried out by the RELs under their current contracts, rigorous evaluations of interventions relevant to their regions, is not, in my view, their ideal function, it caused many RELs to hire new staff with solid science credentials. This has, in turn, reinvigorated a culture of science within the organizations that house the RELs, and provided a solid base for the next steps in their evolution.

What direction will that evolution take? I see three possibilities.

**1. Status quo.** The current five-year contracts for RELs, which run through 2010, require them to carry out two principal activities, fast response reports and rigorous impact evaluations. The fast response reports, which have been produced in quantity, are quick turnaround descriptive analyses of education trends and conditions within the region. Examples include a review of professional teaching standards in the western region, a description of how states in the Midwest use their data systems in attempts to improve educational achievement, and reports of the degree of alignment between state learning standards and NAEP assessment frameworks in the Southwest. In addition, each REL was to conduct at least one rigorous impact evaluation during the course of its contract using a randomized controlled methodology. Fifteen are underway. Examples include studies of the effects of a branded character education program on student achievement and behavior, the impact of a professional development program intended to improve teachers' use of formative assessment in the classroom, and the impact of the supplemental reading software program on student reading achievement. None of the 15 studies has been completed and reported.

Fast turnaround descriptive reports (e.g., how states are using their data systems or credentialing teachers) have potential value. However, I suspect that a generous portion of the fast turnaround reports generated to date were in response to the requirement from IES for productivity in this area of activity rather than in response to pressing needs expressed by customers in the regions.

Having the RELs conduct randomized controlled trials that take four or five years to report out, eat up a substantial portion of their budgets, and in most cases

have no unique relevance to their region, is neither politically sustainable nor the best use of this resource. The nation needs more rigorous impact evaluations of education programs and practices. However, Congress should provide a dedicated funding stream for such work, and contracts and grants to do it should be awarded competitively. Organizations housing RELs that have built capacity for this type of work can compete for these contracts along with contract research firms for which rigorous evaluations are bread and butter.

**2. Analysis of statewide administrative data.** The goal of having statewide longitudinal education databases in every state was pursued vigorously during the George W. Bush administration. The Obama administration has added substantially to funding for this effort through the American Recovery and Reinvestment Act of 2009, and has threatened to disqualify states from competition for \$4.3 billion in Race to the Top funds that do not link their student data to individual teachers. If all goes according to plan, in the near future all states will have data warehouses with longitudinal student achievement data linked to a variety of education input variables. These administrative databases can serve as a potent fuel for research, analogous to the role that increasingly powerful radio and optical telescopes have played in astronomy.


However, having data available and being able to use it are two different things. Only a few states have the staff capacity within their state education office to conduct analyses of longitudinal data to address policy questions. This means that most policy initiatives fly blind, both in original design and subsequent appraisal. This is an important gap that the RELs might fill.

One state may want, for example, a value-added analysis of differences in initial teacher effectiveness by teacher preparation institutions within the state. Another may be interested in how high school graduation rates change for different categories of high schools when calculated based on four, five, or six years after students enter 9th grade. Another may be interested in identifying charter schools that perform significantly below average given the demographics of the students they serve. Still another may want to know whether its policies to increase AP participation in schools serving disadvantaged students have been associated with higher graduation and college enrollment rates in those schools.

A principal challenge to the RELs in pursuing this line of work is that the previous paragraph of examples of worthwhile questions could have been several pages long. A budget of \$6 to \$7 million a year for an individual REL would cover the costs of addressing only a few questions that might be posed by state policymakers in each state in its region. Further, success in providing this service would generate substantially more demand for it. More funding for the RELs would help, but a free service of this type is likely to be oversubscribed even if more generously funded.

One solution to setting priorities would be to give state departments of education credits they could expend in contracting for analytic work by the RELs, and to provide inducements for them to match their credit expenditures with funding from their administrative set-asides for other federal programs such as Title I of ESEA. Creating a formula for credits and deciding which state executive branch agencies get them could be politically interesting. It might help to ask the National Governors Association, the Council of Chief State School Officers, the National Conference of State Legislatures, and perhaps other interest groups to collaboratively propose a formula for access.

Another challenge, perhaps more difficult than rationing access, would be to have both the RELs and their customers understand the limitations of analyses of administrative data. When applied to questions of what works, such analyses, at their best, have all the causal ambiguities that arise in the health epidemiology, a field that routinely produces the wrong answers to important questions. Recall, for example, that large epidemiological studies suggested that hormone replacement therapy reduced the rate of heart disease in postmenopausal women, whereas randomized trials have shown it to have exactly the opposite effect. When done poorly and interpreted loosely, which is the all too common practice in education, correlational studies of the effectiveness of educational practices set back substantially the progress of research-based reform. Quality control over the REL work in this area could be obtained through careful articulation of standards by IES and continuation of the current practice of requiring independent peer review of REL reports. The RELs would have to take a proactive role in educating their customers in the reasonable use of the results of correlational analyses of administrative data.



## Tools to improve education processes should be developed with government-funded R&D.

**3. Improving process systems within schools and districts.** IES has successfully pushed the academic research community to address applied questions. The previous descriptions of research findings on curriculum, teacher effectiveness, and pedagogy and instruction provide examples. The commercial marketplace is more or less successful in generating products for educators in areas in which school districts and states have budgets: textbooks, instructional and administrative software, and assessments of student achievement are the principal instances. Where there is a substantial unmet need is in the development of process innovations; that is, modifications of existing processes and procedures to achieve superior results or greater efficiencies.<sup>8</sup>

Few would argue that school districts are at the forefront of process improvements. The vast majority of individual K–12 school districts are monopolies in the sense that residents within district boundaries cannot shop for more effective or lower cost educations for their children. Except during severe recessions, school districts and states have had pricing power through tax rates that has allowed them to increase spending with relative impunity. Also, there has been an absence of comparative data and accountability for anything other than student achievement. Further, accountability for student achievement has been measured by the ability of students to demonstrate proficiency on basic skills assessments, rather than as value-added gains on assessments that tap a wide range of performance. This has allowed districts that serve relatively advantaged communities in which children are likely to do well on basic

8 [http://www.brookings.edu/papers/2009/~//media/Files/rc/papers/2009/0319\\_innovation\\_whitehurst/03\\_innovation\\_whitehurst.pdf](http://www.brookings.edu/papers/2009/~//media/Files/rc/papers/2009/0319_innovation_whitehurst/03_innovation_whitehurst.pdf).

skills tests regardless of the quality of their schools to escape real accountability, even for student achievement.

All of this is by way of saying that the pressures for process improvements in industries in which there is real competition on quality, price, efficiency, and customer satisfaction, where there are accepted comparative benchmarks for core business processes, or where productivity is required for survival are largely absent in public K–12 education.

Almost all areas of the education system need effective tools to improve processes, from school lunch programs to bus transportation to teacher selection to classroom instructional practices to truancy monitoring. This space is largely unoccupied by developers because there isn't an existing marketplace for process improvement products. This is a classic case for government-funded R&D.

Take the previously reviewed research from the cognitive sciences on pedagogy and instruction: IES has produced a useful practice guide that lays out general principles from that research, such as the value of frequent quizzing on course content. Who is producing a checklist for use by teachers to assure that their quizzing practices meet reasonable standards as extrapolated from the research summarized in the IES practice guide?

Take the recruitment of teachers: Human resource processes in most school districts are far from empirical, whereas there is substantial research on the measurable characteristics of prospective teachers that predict classroom performance. Who is developing a prediction equation for use by districts that enables the selection of teachers who have higher likelihoods of initial classroom effectiveness?

Take effective curriculum: The What Works Clearinghouse has summarized considerable data on which curricula have the best evidence of effectiveness, but many districts don't use it, or have difficulty translating it into actionable information. Who is developing a decision tool for districts that generates a favorability score for curriculum products based on quality and extent of evidence, size of effect, cost, and the similarity of the district's population to the students who were studied in research?

Take the provision of information to students on their readiness for college. Who is developing software and a web portal that can be deployed by high schools that allows 10th graders and their parents to determine, based on the student's course selection, grades, an online assessment, and family financial information, the student's likely success at gaining admission to a range of postsecondary institutions, the probability that the student will need to take remedial courses if admitted, the likely net cost of attendance, and the options the student has over the remaining years of high school to improve postsecondary prospects?

Take the efficiency of district operations: Who is generating a database that local taxpayers, school boards, legislatures, and policymakers can consult to identify school districts that are outliers on dimensions such as the cost of transportation services, central administration staffing, bonding indebtedness, and the like?

The RELs can do this type of work, and it is badly needed. Of course, it will not be without challenges. One challenge will be to determine priorities. The customers for process improvement tools would be school districts. REL funding falls considerably short of what would be necessary to parcel out credits to local education agencies to purchase process improvement tools. Thus, a market mechanism for determining priorities isn't presently practical, though it would be desirable and obtainable in the long-term. As an alternative for the short-term, bidders for the next round of REL contracts could compete on the practicality and importance of the process improvement tools they propose to develop, with a selection process that includes a panel of experts on school operations.

Another challenge will be to assure quality in the tools that are developed. The RELs have had a development function under earlier federal contracts that was

not carried out with distinction. One of the failures of earlier development agendas was the lack of a strong link to research findings. Another was the lack of evaluation of the products that resulted. Both an empirical basis for development plans and a design for product evaluation should be required and rigorously reviewed.

A final challenge will be creating a market for process improvement tools that may not seem important to some school superintendents or may in some cases be opposed by them. Many of the existing RELs are in a good position through relationships with state policymakers and some large district superintendents to sell the need for process improvement tools and incentives.

## Summary and Recommendations

Education practice and policy have begun a transformation to research-based practice that was anticipated with the passage of the first ESEA over 40 years ago but was thwarted until recently by underinvestment in and weak standards for education research. We now have a solid and rapidly expanding base of rigorous and relevant research findings on which more effective practice can be constructed.

The RELs were originally designed to be the brokers and translators of education research to practice and policy but could not fulfill that role absent a strong research base, effective mechanisms for quality control of their products, and an activist stance by the federal government in education reform. The next few years will be ones of unparalleled opportunity for the RELs to demonstrate the value of their original mission, and in so doing to be a critical component of the transformation of education to an evidence-based field. The upcoming recompetition of the REL five-year contracts, the reauthorization of the Education Sciences Reform Act, and the expression of the vision of the new leadership of IES and the Department of Education will be the federal fulcrums for the evolution of the RELs. The organizations that house the existing RELs and possible new entrants will have an important role to play as well by articulating their own views of how they can best serve their regions, in deciding whether they are in the business of simply growing their business versus advancing a mission of research-based reform, and in determining whether their best prospect for the future is in partnering with the

Obama administration and the IES leadership or continuing to lobby Congress for what has become a funding set aside under terms that provide as little control as possible from the Department of Education.

As described previously, there are three possibilities for the type of activity that the RELs can most usefully carry out within the practical limits of their funding and their broad missions of regional assistance. The first is to continue down the current path of generating fast turnaround descriptive reports on the state of education in their regions and conducting ambitious and time-consuming randomized trials of the impact of education programs and practices. The second is the analysis of statewide administrative data to provide decisional and implementation support to state policymakers and administrators. The third is to develop tools to improve the quality and efficiency of workaday school district processes.

The Obama administration and the regional advocates for the RELs will likely prefer some variant of the analytic function. After all, Secretary of Education Arne Duncan and President Obama have identified the expansion and use of statewide longitudinal databases as one of their top education priorities, and the prior professional experience of John Easton, the new director of IES, was exclusively carrying out such work for the Chicago Public Schools and the Chicago Consortium on School Research.

There are, however, other ways to beef up the analytic function at the state level. In particular, the IES grant program to establish statewide longitudinal databases, which should have achieved its goal in the near future, could be transformed into a grant program to support state analysis of data for policy and implementation purposes. Congressional support for this funding stream is

well-established, funding levels are substantial, and giving states the financial resources to carry out or purchase their own analytics is likely to generate work that can be conducted more quickly and more responsively than a process that requires prioritization by the RELs and IES.

The R&D enterprise in education needs to invest more deeply and systematically in process innovations that will serve the practical needs of school districts and schools. We are unlikely to get dramatically better in educating students until we have a cadre of researchers whose job is to engineer more efficient and effective processes for carrying out the work of schools. Education has an increasingly strong education research community, but outside of a few areas such as instructional materials, it lacks engineers. Should the RELs become the engineers for those multiple aspects of school improvement that currently do not have a commercial market, they could be a transformational force for public education.

The nation can no longer tolerate vast differences in the quality of its schools and classrooms. Residential geography and quirks of school choice and classroom assignment cannot continue to define the education destiny of individual students. We need for all of our schools to be good enough to do the job that is expected of them. This will require nothing less than a relentless effort to engineer processes that assure acceptable results. Much of this work will be down in the weeds and the results of any single effort will be incremental. Examined within a short time frame, it may not look like it is going very far. But it is the accumulation and progression of those incremental improvements that will ultimately be transformational for student achievement and the nation's future. If the RELs don't engage in this work, who will?

## About the Author



Grover (Russ) Whitehurst is a Senior Fellow and Director of the Brown Center on Education Policy, Brookings Institution. He is the former Director of the Institute of Education Sciences within the U.S. Department of Education. Whitehurst is an expert on program evaluation, teacher quality, preschools, national and international student assessments, reading instruction, education technology, and education data systems. He recently received the Peter H. Rossi Award of the Association for Public Policy Analysis and Management for contributions to program evaluation. Whitehurst can be reached at [gwhitehurst@brookings.edu](mailto:gwhitehurst@brookings.edu).



730 Harrison Street  
San Francisco  
California 94107-1242

*Address service requested*

NONPROFIT ORG.  
U.S. POSTAGE  
P A I D  
SAN FRANCISCO, CA  
PERMIT NO. 11882

---

## About WestEd

---

Policy Perspectives ([www.WestEd.org/policyperspectives](http://www.WestEd.org/policyperspectives)) presents visiting authors' own views and/or research on issues relevant to schools and communities nationwide. WestEd welcomes submission of papers on a topic not previously addressed in Policy Perspectives or presenting a different viewpoint to a Policy Perspectives paper already published. Address drafts and/or inquiries to Colleen Montoya, Policy Perspectives Executive Editor, 4665 Lampson Avenue, Los Alamitos, California, 90720; 562.799.5105; fax, 562.799.5138; or email, [cmontoy@WestEd.org](mailto:cmontoy@WestEd.org).

WestEd, a nonprofit research, development, and service agency, works with education and other communities to promote excellence, achieve equity, and improve learning for children, youth, and adults. While WestEd serves the states of Arizona, California, Nevada, and Utah as one of the nation's Regional Educational Laboratories, our agency's work extends throughout the United States and abroad. It has 17 offices nationwide, from Washington and Boston to Arizona, Southern California, and its headquarters in San Francisco.

For more information about WestEd, visit our website: [WestEd.org](http://WestEd.org); call 415.565.3000 or toll-free, (877) 4-WestEd; or write: WestEd / 730 Harrison Street / San Francisco, CA 94107-1242.

© 2010 WestEd. All rights reserved.

*The contents of this Policy Perspectives paper are the sole responsibility of its author and do not necessarily reflect the views or policies of WestEd; nor does the mention of trade names, commercial products, or organizations imply endorsement by WestEd. WestEd is providing this forum for visiting authors and is interested in presenting a wide range of views and/or research.*