

Introduction:

What Do We Know about School Size and Class Size?

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The world of education is never hurting for new reforms. For decades, one new proposal after another—in areas ranging from pedagogy to governance to school finance—has been championed by enthusiastic backers. The most successful of these have been embraced by researchers, policymakers, or influential philanthropists and become part of the fabric of schooling. Unfortunately, the track record of most reforms has been disappointing. Many highly touted proposals—site-based governance, whole language, alternative schools, and mastery learning, just to name a few—had their brief moment in the sun, then receded into the background with little evidence that they had improved education.

Today, two of the more prominent reforms on the agenda address the question of size. For more than a decade, an influential camp of education experts has argued that smaller classes are a promising way to boost student achievement. Ambitious, costly class-size reduction policies have been adopted in trendsetting states like California and Florida. Influential organizations, including the National Education Association, have made class-size reduction a favored policy proposal.

More recently, the criticism has arisen that contemporary high schools are too big and too impersonal to educate today's students effectively. One reform strategy, supported aggressively in the early 2000s by the influential Bill and Melinda Gates Foundation, has been to break up these large institutions and replace them with smaller, more intimate schools. The “small schools” strategy—which has been an organizing principle of high school improvement

efforts in closely watched urban districts like New York City and San Diego and in heralded charter schools in cities like Providence and Boston—has attracted much notice and some criticism. While the Gates Foundation has gradually backed away from the small schools focus in the past year or two, it remains a popular tack for high school reformers across the land.

What are we to make of these reforms? What do we know about their benefits and costs or about how they actually affect the lives of students, teachers, and parents?

Both small classes and small schools would seem to be an easy sell. Smaller classes offer teachers more time to address the individual needs of each student. Smaller schools foster a more personal, tightly knit environment in which adults know individual students well. Most people believe that smaller, intimate educational settings provide structure, safety, and discipline that larger, bureaucratized settings cannot provide.

Of course, smallness is not cost free, whether it means reducing the size of schools or the size of classes. Both forms of downsizing incur direct costs—it costs money to shrink classes by hiring more teachers or to shrink schools by adding new campuses or subdividing existing schools—and indirect costs can develop downstream from the additional organizational changes precipitated by going small. However, researchers, politicians, philanthropists, and school reformers often tout the potential benefits of small schools and classes while giving scant attention to either the cost or difficulty of downsizing. A political environment in which costs are downplayed or ignored presents a real challenge for policymakers.

Class-size reductions are wildly popular. Doug Harris notes in this volume that 88 percent of parents reportedly support class-size reduction. Teachers also strongly endorse it; both major national teacher unions have made class-size reduction central to their school reform agendas. The American Educational Research Association (AERA), the professional association of the nation's educational researchers, issued a policy brief in 2003 that advised public officials and educators that “in the stockpile of educational policy initiatives that are worth finding resources for, small classes rank near the top of the list.” The AERA brief declared, “There is no doubt that small classes can deliver lasting benefits, especially for minority and low-income students,” but also admitted that “unintended consequences are possible” and that reducing class size “may not always be the best use of scarce resources.”¹

Buffeted by such research and advice, policymakers face difficult decisions. In this volume, we offer guidance on how to think through the popular calls for smaller classes and smaller schools. In the spring of 2006, we invited some of the

nation's most esteemed education researchers to examine ten different facets of the school- and class-size debate at a two-day conference at the Brookings Institution in Washington. Participants heard papers presented by each of the authors and vigorously discussed the findings of the ten chapters constituting this volume.

Two issues loom largest when discussing the “smallness” strategies—or, really, any proposed school reform. One is the quality of the research documenting the benefits and the costs of the strategy in question. The second is the “trade-offs” posed by the reform: the resources that policymakers and practitioners must sacrifice, whether money or time or opportunities, in order to adopt a given course of action. Both of these themes run repeatedly through the contributions to this volume.

To introduce the essential questions and highlight both the value and the limitations of scholarly inquiry, we begin by quickly reviewing the most influential study ever conducted on either class size or school size: the Tennessee STAR class-size experiment. After discussing STAR, we proceed to sketch out some of the potential trade-offs that frame the discussion in this volume. Economists like to remind us that there is no such thing as a free lunch, and that is as true when it comes to school reform as anywhere else. What are the potential downsides of these two strategies and how might a thoughtful policymaker or educator weigh them when deciding whether to launch class- or school-size reduction program?

STAR's Costs and Benefits

The Tennessee STAR class-size experiment may be the most famous educational experiment conducted to date. As Diane Whitmore Schanzenbach discusses at length and Jimmy Kim and Doug Harris touch upon as well, the results have proved enormously influential in the class-size debate, fueling two decades of discussion about the virtues and limitations of “randomized field trials” in education. Between 1985 and 1989, the Tennessee STAR experiment examined the impact of class size on student learning by randomly assigning thousands of Tennessee students to either “regular” or “small” classes. The study involved students in kindergarten through third grade at more than seventy schools scattered across the state. The experiment compared “small” classes consisting of thirteen to seventeen students to “regular” classes of twenty-two to twenty-five students.

Researchers found significant achievement gains for students in small classes in kindergarten relative to students in larger classes; they also found

additional gains in first grade, especially for black students. While there was no evidence of additional gains in second or third grade, the benefits of attending small classes during K-3 persisted through middle school, with a long-term effect on achievement of about 4.4 percentile points. The black-white test score gap also contracted. Those results were crucial in convincing California legislators to enact a dramatic statewide K-3 class-size reduction program.

It is important to acknowledge what the STAR findings do not say. They do not say anything about the value of reducing average class size by two or three students, nor do they say anything about whether the benefits are replicable on a broad scale, when hiring an enormous number of new teachers may be necessary, as was the case in California. The STAR results show that a reduction in class size from 23.5 to 15 students was associated with significant gains in kindergarten and first grade but do not provide evidence that reductions in later grades yield gains.

Implementing the small-scale STAR experiment cost \$12 million during 1985–89. Diane Schanzenbach calculates an internal rate of return on that investment of 5 to 10 percent, with the caveat that several assumptions must be made to produce the return. The numbers may also change when class-size reduction is attempted on a large scale. An example of how this plays out in practice is provided by Peter Schrag, who examines California's multibillion-dollar statewide class-size reduction program of the 1990s and reports that it had mixed effects, at best. The pool of high-quality teachers in California was not large enough to accommodate the sudden demand for teachers, so the state hired thousands of inexperienced and quickly trained teachers to staff the new classrooms created by the program. The limitations of STAR's findings and the question of whether STAR's gains can be reproduced in larger settings should be weighed by policymakers deliberating the class-size issue.

Policy Trade-Offs

Trade-offs are made because resources are limited. Schools never have all the money, all the facilities, or all the high-quality teachers that they might desire. For that reason, the question is not whether a given proposal has promise but *whether it constitutes a better investment of resources than the alternatives*. For instance, a superintendent might think that it would be better to increase the pay of a district's existing workforce or provide more professional development opportunities than hire more teachers to reduce class or school size.

Class-size reduction involves at least three important trade-offs. First, resources devoted to smaller classes cannot be used elsewhere. Reducing class size directs resources into hiring rather than into raising skill levels, rewarding teacher quality, or investing in research, curricula, assessment, or other tools that might help teachers become more effective. The United States has more than doubled after-inflation school spending since 1970. Why? Much of the increase stems from class sizes having shrunk by 40 percent, meaning that new teachers have been hired at a rate that outstrips the rate at which enrollment has grown. Hanushek and Rivkin calculated that 85 percent of the increase in instructional costs between 1970 and 1990 was the result of shrinking class size.² The calculation is straightforward. If a district has a current average class size of twenty-four students per teacher, reducing that to an average of sixteen per teacher would require the district to increase its classroom teaching force by 50 percent and the number of classrooms by the same amount. In a district of 5,000 students, where teacher salary and benefits carry an average cost of \$47,500 a year, the cost in added salary and benefits would be an additional \$9.9 million a year. Some of those costs could be offset by reassigning supplemental teachers or reducing the number of teacher aides. Of course, such a calculation does not take into account the cost of modifying facilities or acquiring additional space.

Second, hiring additional teachers makes it harder to find good ones and so is likely to dilute the quality of the teaching force. The problem will be particularly pressing in less appealing schools, since high-quality teachers may leave those schools for new openings in more attractive schools and districts. In other words, class-size reduction may worsen the teacher-quality problem at low-performing or low-income schools.

Third, class-size reduction necessarily entails a school improvement strategy premised on training, hiring, and managing additional numbers of people. In most knowledge-based sectors (including medicine, law, engineering, and so on), improvements in productivity and performance have been achieved by using technology to reduce the size of the workforce, allowing employers to be more selective in hiring; investing more resources in each employee; and helping employees specialize and enhance their skills. A class-size reduction strategy adopts the opposite approach, making it more difficult to be selective in hiring or to invest in personnel.

Class-size reduction is most likely to work with teachers who find their performance significantly enhanced when teaching small classes. For that to be the case, either teachers must have mastered teaching strategies that take advantage of smaller classes or they must benefit significantly from the reduced man-

agement and disciplinary burden of working with fewer students. That calculus suggests that class-size reduction may well prove sensible for some students, subjects, schools, and grade levels but not as an across-the-board policy. For instance, Ludger Wößmann notes in his chapter that international evidence suggests that smaller class size seems to boost student achievement in nations that have a low-quality teaching force—presumably because their teachers are less able to manage large classes—but has no effect in nations where teachers are better paid and more educated.

Ultimately, class-size reduction may pose something of a “prisoner’s dilemma”: it may make sense for a given school or a small district, but the benefits may vanish if others also embrace the strategy. For particular schools, especially those with minority or low-achieving populations, there is some evidence that reducing class size may help and, aside from consuming educational dollars, little reason to imagine it will have an adverse impact. However, when the *widespread* adoption of class-size reduction creates a voracious appetite for new teachers, it is likely to reduce teacher quality in some schools by siphoning teachers off to more attractive schools and communities. This is a thorny puzzle that admits no obvious answers other than to design policies carefully.

When considering reductions in school size, policymakers should consider at least four potential trade-offs. First, again, is the simple question of cost. Smaller schools mean that expenditures on facilities and school administration are going to be spread over fewer students, yielding a higher per-pupil cost. For example, it is much less costly for a district to have one principal lead a school of 2,000 than to have five principals each lead a school of 400. The same calculation applies with regard to school nurses, gym teachers, guidance counselors, and so on. Proponents of smaller schools counter such concerns by arguing that small schools can be designed in ways that minimize additional costs or allow schools to operate with a smaller administrative staff—and that they may be so effective that the costs are worth paying. Such claims deserve consideration but should be regarded with appropriate scrutiny.

Second, the case made for comprehensive high schools by former Harvard University president James Bryant Conant in the 1960s was that they could provide complete facilities and specialized teachers. Smaller schools do not find it cost effective to construct full athletic or musical facilities, to offer a full array of extracurricular activities or language courses, to offer advanced courses that may attract only a small percentage of students in a given school (like calculus or physics) or less popular subjects (like art history or economics), to assemble a faculty that is large enough to allow teachers to specialize in the areas that they teach, or to have full-time school nurses or guidance counselors on staff. Obvi-

ously, schools might jointly offer athletic teams or courses of instruction and they can find ways to share faculty, but such arrangements—even when feasible—come at the cost of additional expense and logistical challenges.

Third, teachers may have to wear multiple hats in such schools. In order for the schools to avoid becoming more expensive on a per-pupil basis, teachers typically need to pick up responsibilities for administrative tasks and guidance counseling, among others. That increases their workload and may lead to their being asked to perform roles for which they are ill-equipped. It may also serve to increase teacher fatigue or reduce the quality of services provided. Of course, small-school proponents reply that administration and guidance counseling in comprehensive high schools leave much to be desired and that the personal touch produced by involving faculty more than offsets any negatives. Such claims have merit; the challenge for policymakers and educators is to sensibly weigh the downsides.

Fourth, there is the question of facilities. Whether school-size reduction is achieved by constructing additional school buildings or by modifying existing schools to facilitate “small school” arrangements, it requires both dollars and disruption. Adding new schools requires finding new sites, ensuring compliance with codes, building or altering facilities, and finding temporary quarters during construction. Converting existing schools to “schools within a school” requires leaving the school vacant during construction and then restarting the school—with no guarantee that such an approach will replicate whatever benefits are observed in conventional small schools.

Ultimately, as the analyses in this volume make clear, it is difficult to determine whether reducing class size or school size is the best way to spend limited educational resources. There is good reason to think that such strategies hold promise in certain times and places; there is also cause to think that pursuing either strategy in a blanket fashion is likely to prove shortsighted and wasteful. Deciding when and where reduction may be useful is the rub—and where passion and political appeals tend to crowd out careful analysis. Our hope is that the analyses offered here provide guidance to policymakers and educators seeking firmer ground.

Chapter Summaries

Barbara Schneider, Adam E. Wyse, and Venessa Keesler address a pivotal question in the school-size debate by asking whether small is really better. Schneider and her colleagues acknowledge the widespread support for smaller

high schools among the public and such prominent foundations as that of Bill and Melinda Gates, but they also are concerned about the paucity of evidence that recent downsizing efforts have paid off in any tangible benefits. And they note that many important questions—such as whether student expectations for postsecondary education are affected by school size—have largely gone unexamined by researchers.

Schneider and colleagues employ hierarchical linear modeling (HLM) to model the multilevel nature of education effects and use HLM with propensity scoring to address the potential for selection bias as students are sorted non-randomly into schools of different sizes. The models are used to analyze math achievement and postsecondary aspirations. No effect was found for math achievement—students in large and small schools achieved at comparable levels—and small schools actually seemed to depress college expectations. Attending a small school decreased the likelihood that students would say that they intended to go to college; at the same time, however, students in small high schools were more likely to apply to college and to a four-year rather than a two-year college. Thus, the evidence is mixed, and school size did not appear to make a marked difference in the postsecondary plans of high school students.

Christopher Berry examines whether the increasing school size brought about by school consolidation in mid-twentieth-century America affected the earnings of those who attended those schools. Berry notes that there was a massive and often unremarked effort to reduce the number of schools between 1930 and 1970, resulting in a large increase in average school size. Two-thirds of all schools that existed in 1930 were gone by 1970, while average daily attendance per school grew from 87 to 440 students. In 1927, 60 percent of all schools had only one teacher; by 1970, such schools were almost gone. Using a sample from the 1980 census, Berry was able to examine 994,000 white men born in the lower forty-eight states during 1920–49 and how the average school size of their native state related to their lifetime earnings.

Berry tests the thesis that larger schools might affect the degree of future variation in earnings among graduates, either by making it easier to overlook some students or by providing services that make for a uniformly stronger educational experience. Berry finds little evidence that school size affected the variation in future earnings. He notes that larger schools seem to be associated with a reduction in inequality among those who drop out and an increase in inequality among college graduates, but he concludes that the results generally do not reveal a significant relationship between school consolidation and adults' wage inequality. However, Berry notes the limits of the analysis, including its focus on white men only and the limitations imposed by the data.

He wonders whether more precise data or research that examined inequality among minorities might yield a different result. One argument for increasing school size is that it will ensure the wide availability of resources needed to equalize opportunity, while a key argument for shrinking schools claims that it will equalize opportunity by ensuring more personal attention to students. Berry's historical look finds that school size in mid-century America did not seem to have much impact, one way or the other.

Tom Dee, Wei Ha, and Brian Jacob examine the impact of school size on parental involvement. Though parental involvement is widely seen as an important determinant of school quality, they note that it is rarely discussed in research on school size. They note that it is important not only as a means to improve school quality but also because the "social capital" generated by school and community interaction is beneficial for both parents and students. They use the Education Longitudinal Study of 2002, sponsored by the National Center for Education Statistics, to examine how school size affected four measures of parental school involvement and seven measures of parental social capital. The authors were able to analyze parental data for more than 8,000 students.

They note that smaller schools might affect parental involvement and social capital either through their promotion of stronger bonds and tighter communities or through their lack of the expansive, organized social networks found in larger schools. They find that parents in smaller schools were significantly more likely to participate in parent-teacher activities or to volunteer at school and were more likely to know the parents of their children's friends, interact with those parents, and feel connected to their community. The authors conclude that the findings "provide some tentative evidence that small schools are more effective in promoting parental involvement in schools as well as engagement with the broader community." However, the authors note that the observed effects were concentrated in rural communities. They did not find those effects in suburban schools, and they note that their urban sample was too small to permit them to reach any conclusions. It appears that small schools can boost parental involvement and social capital, but it is not clear whether that effect is more than a rural phenomenon. While other chapters suggest that the academic benefits from small schools are uncertain, Dee and his colleagues find evidence that small schools can deliver civic benefits in certain contexts.

What are the best sizes for classes and schools? One methodological challenge to answering that question is that small classes tend to be clustered in small schools. Surprisingly, most researchers have not addressed the possibility that the effects of school and class size are confounded in their analyses. Douglas D. Ready and Valerie E. Lee tackle this problem in attempting to esti-

mate the optimal school and class size at the elementary level. Although other methodological difficulties in evaluating small-class and school-size policies have been debated, a statistical untangling of the effects of small schools and small classes remains curiously absent from the discussion.

As Ready and Lee note, the research on class size has tended to be limited to elementary grades, while school-size research has been confined mostly to high schools. Ready and Lee focus on elementary schools. They examine a large database of elementary schools and classes, estimate the effects of both small schools and classes net of other size characteristics, evaluate the distribution of effects over different socioeconomic status (SES) levels, and assess whether the effects differ between kindergarten and first grade or between reading and mathematics.

Ready and Lee find that both smaller classes and smaller schools were associated with more learning. The effects for class size were stronger than the effects for school size and fell equally across SES levels. An important consideration for policymakers is that medium-size and small classes produced similar benefits for students. The disadvantage related to large classes and schools was what really mattered. A student who had been enrolled in a large class in a large school completed first grade about 1.5 months behind the typical student. Given those findings, class-size initiatives should concentrate on creating classes with fewer than twenty-six students. Reducing them further, a costly proposition, would yield only a minimal additional benefit, in first grade reading achievement.

Douglas Harris assesses the trade-offs presented by class-size and school-size policies but points out that with respect to policymaking, the costs and benefits of the two reforms appear to be less relevant than political considerations. Harris points out that class size has shrunk 40 percent since 1970, while school size has increased 9 percent since 1980. He explains three approaches that can help in weighing the merits of these developments: cost-benefit, cost effectiveness, and optimization. Each approach offers an alternative for determining whether resources devoted to class size or school size are being invested wisely. He notes that class-size reduction absorbs resources that might otherwise be used to boost teacher salaries or improve school quality and may increase expenditures on facilities and bureaucracy—which is why most cost-function studies find increasing returns to scale.

Turning to an examination of the existing research, Harris concludes that “broad-based class-size reduction would be inefficient, even in the elementary grades, where the evidence of benefits is strongest.” He adds that the evidence regarding the ratio of benefits to costs “does not provide much support for

small schools” but that “there is good evidence that it would be optimal to make [schools of more than 2,000 students] smaller.” However, Harris notes that such determinations are overly broad and that actual results may vary immensely depending on the local context. Finally, he turns to the question of political appeal, observing that parents like class-size reduction because it is tangible, immediate, and attractive and that teachers like it because it improves working conditions. Meanwhile, small schools hold less appeal for both parents and teachers and pose headaches related to school construction or modification. Ultimately, though Harris thinks the evidence supports some targeted efforts to reduce class size and school size, political considerations favor adoption of poorly designed class-size reduction proposals while making school-size reduction unlikely.

Linda Darling-Hammond, Peter Ross, and Michael Milliken review the literature on small high schools. They note that a large number of quantitative and qualitative studies have attempted to discern whether school size matters in educational outcomes and under what conditions small schools can be expected to produce particular results. The qualitative literature fleshes out the story of schools trying to downsize and offers context for understanding how schools experience organizational change. Since no randomized trials have been conducted, the quantitative studies are confined to uncovering correlational relationships. Like all correlational research, such studies cannot nail down causality; they are merely suggestive and can neither control for the effects of unobserved variables nor mitigate the potential for selectivity bias. On balance, the studies indicate that smaller schools are associated with more positive student attitudes and a more wholesome school climate. The relationship between smallness and enhanced academic achievement, however, is only modest.

Overall, the literature does not allow conclusions about effects, but it does generate hypotheses concerning the characteristics of small schools that might prove to be the most important. Darling-Hammond and her colleagues join Ready and Lee in believing that smallness by itself does not have a direct impact on outcomes. Both chapters distinguish between schools that are small by design and schools that are small by default. Most small schools are small by default, with size determined by enrollment patterns beyond their control. Darling-Hammond and her colleagues argue that schools that are small by design are crafted to take advantage of organizational smallness. Often they feature small classes in which personalized teacher-student relationships are encouraged, a school culture emphasizing academic success, a strong core curriculum, instruction that is responsive to student learning, and opportuni-

ties for teachers to work together collegially and to improve their practice of teaching.

Diane Whitmore Schanzenbach asks what we have learned from Project STAR. Schanzenbach carefully examines several shortcomings of the STAR data (for example, baseline achievement tests were not administered) and finds that they do not seriously undermine the validity of findings. Researchers employing various analytical strategies with the STAR data consistently find a small-class benefit of about 0.15 standard deviations. When the results are disaggregated by race, blacks appear to benefit about twice as much as whites (0.24 versus 0.12 standard deviations). Follow-up studies have shown the benefits to persist into eighth grade. A positive effect also has been seen on the SAT scores and SAT test-taking rates of students in high school. Although the impact of small classes on noncognitive outcomes (for example, crime, teen pregnancy) remains inconclusive, it is a promising area for further research.

Are the gains worth the cost of reducing class size? Schanzenbach calculates a return on investment and concludes that the benefits are sizable and long lasting, especially for black students, and that the overall benefits outweigh the costs. One caveat: Schanzenbach notes that the positive effects on test scores are more pronounced in classes staffed by experienced teachers and in fact fall to statistically insignificant levels in classes instructed by inexperienced teachers. If the positive effects of small classes are contingent upon experienced teachers, that may explain the disappointing results from the massive California Class-Size Reduction program (CSR).

Peter Schrag tells that story. In the spring of 1996, Governor Pete Wilson pushed a plan through the legislature to limit all classes in grades K–3 to twenty students. At the time, California was surpassed only by Utah in having the largest classes in the country. Wilson had earlier opposed efforts to reduce class sizes. Why the change of heart? Voters had passed a constitutional requirement mandating that a set percentage of state revenue be spent on education, and, not wanting the new money to go unrestricted to local school districts, where Wilson feared it would be allocated to salary increases for teachers, he reversed his position and pushed for smaller classes.

CSR went into effect practically overnight, initially in first and second grade, then in kindergarten and third grade. The sudden demand for more classrooms meant that thousands of underqualified teachers were hired; classrooms were squeezed into utility closets, lunchrooms, and other makeshift spaces; and costs escalated to \$1.7 billion a year (estimate for 2005). Did CSR boost academic achievement? As Schrag explains, the answer to that question is far from certain. The only major evaluation of the program, conducted by a

research consortium headed by RAND, concluded that it was impossible to attribute changes in the state's test scores to any one cause. At the same time that class sizes were being reduced, California overhauled its curricula in both reading and math and implemented a new testing and accountability program. Despite its hefty price tag and uncertain effects, the class-size program enjoys the support of parents and teachers. Schrag ends asking whether education policies that have dubious effectiveness but widespread political support can ever be amended or repealed.

Ludger Wößmann examines the international evidence on class size. While he notes that international research comparable to that conducted in the United States is largely lacking, he was able to use data from the 1995 TIMSS test to explore the relationship of class size and student performance in western Europe. Wößmann notes that school policies, community characteristics, and parent decisions can bias results, so it is vital to carefully model and analyze causal relationships when studying class size. For instance, a simple regression finds that larger classes are correlated with higher test scores in twelve of seventeen west European nations before proper statistical controls are introduced. However, Wößmann finds that to be a by-product of bias.

In order to properly control for the tendency of schools to put high-achieving students in larger classes, Wößmann employs two quasi-experimental approaches: natural cohort fluctuation (random variation in the size of a grade level from one year to the next) and rule-induced discontinuities (produced by laws that cap class sizes at certain levels). The analysis finds that class size had a modest effect in one country (Iceland) and may have had an effect in a second (Norway) but had no statistically significant effect in the other nations. Wößmann concludes "that class size does not seem to be a major force in shaping performance in lower secondary school in the countries considered." He notes that research suggests that class size has an impact only in nations where teacher pay and education are low. He speculates that relatively capable teachers may do as well teaching large classes as small ones and that class size may matter only when the quality of the teaching force is relatively low. In that event, the trade-off between class size and teacher pay may be exceedingly stark; it may make sense to invest in only one or the other.

James Kim examines the politics of class-size policy, observing that the significance of social science research always depends on its interaction with the political process. He begins with a brief look at the Tennessee STAR experiment. Kim notes that the findings were used by proponents of class-size reduction in creating Tennessee's targeted and relatively effective Project Challenge in 1989. He compares that with the relatively unfocused class-size

reduction efforts launched by Indiana and California in the 1980s and 1990s and Wisconsin's SAGE program—which was narrowly targeted initially but after showing promising results was rapidly expanded.

Kim takes several lessons from the four case studies. He finds that when policies enjoy a broad base of political support there is little incentive for public officials to carefully consider evaluation of the program's effectiveness. He observes that untargeted class-size policies generally lack provisions for careful evaluation, making it likely that evaluations will produce ambiguous findings; he also notes that political decisions can directly influence the quality of social science research. Finally, he observes that scholars are rarely in a position to provide definitive answers to pressing policy questions.

Kim's work reminds us, as do several other chapters in this book, that social science research does not operate in a vacuum. Its impact may depend as much on political considerations as on technical merit—and that technical merit itself may be a product of political decisions. This creates a thicket of challenges for anyone interested in carefully weighing the evidence on class size and school size—whether a policymaker deciding how to allocate public resources, a voter choosing between two candidates' positions on education reform, or parents selecting a school for their child to attend among several schools with different organizational characteristics. We hope that this book provides some practical tools for making such difficult decisions.

Notes

1. "Counting Students Can Count," *Research Points* 1, no. 2 (American Educational Research Association, 2003).

2. Eric A. Hanushek and Steven G. Rivkin, "Understanding the Twentieth Century Growth in U.S. School Spending," *Journal of Human Resources* 32, no. 1 (1997): 35–68.