

Let's Measure What No One Teaches:
PISA, NCLB, and the Shrinking Aims of Education

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Abstract: PISA has come up with an ingenious solution to the problem of how to measure student achievement across national school systems with different curricula. Instead of measuring how well students learn what they are taught in each system, it measures a set of economically useful skills that no one teaches. This paper explores PISA as one type of educational accountability system, based on how well students demonstrate mastery of particular cognitive skills, and compares it with the current state-level accountability systems in the U.S. (NCLB), which are based on how well students demonstrate mastery of the formal curriculum. Both, I argue, are cases of how we are shrinking the aims of education. One approach focuses on mastery of skills that are relevant but not taught and the other on mastery of content that is taught but not relevant. Neither seems a sensible basis for understanding the quality of schooling or for making educational policy.

Accountability is all the rage in the world of educational policy. Increasingly, we want to hold students accountable for learning; and we want to hold teachers, schools, school districts, states, and nations accountable for ensuring that learning in each of their domains of responsibility occurs at the highest possible level. Not to do so, we hear repeatedly, is to consign ourselves to a chronic condition of economic stagnation, national decline, and social inequality (Friedman, 2012; McKinsey, 2009). It seems that everything depends on ramping up the quantity and quality of learning in our schools.

Of course, you can't hold schools accountable without a valid and reliable method of educational accounting, and this means you need to develop robust measures of how well or how badly schools are doing their job. The result has been a mad dash to produce a better test, one that will allow us to measure the educational performance of actors at all levels – from individual students to whole countries – and to rank these actors in relation to each other. We need such a ranking both to honor the high performers and to shame the laggards, motivating the latter to rise up in the rankings by emulating their betters.

As usual in matters of measurement, the devil is in the details. The key problems are how to define a positive educational outcome, how to measure this outcome, and in particular how to measure it in a way that will allow comparison across all of the actors at a particular level: students in a class, teachers in a school, schools in a district, districts in a state, states in a country, and countries in the world. All three problems make things difficult for test designers, and the difficulties escalate the farther away you get from the classroom, because of the need to maintain comparability for performance measures across educational settings that are increasingly heterogeneous. Once you reach the level where you are trying to compare educational quality across states or across countries, you need measures that are highly abstract in relation to particular classroom practices, reducing the complexity of education to the elements that are found anywhere.

In this paper, I examine two current and prominent systems of comparative measurement that are at far remove from individual classrooms. One is the Program for International Student Assessment (PISA), which compares performance across more than 60 countries. The other is the array of state-level systems of educational accountability in the U.S. that are assembled under the umbrella of the federal law *No Child Left Behind* (NCLB). My aim is to explore how each of these ambitious initiatives deals with the problems of measuring educational quality at the broadest level. The PISA approach is to measure a set of cognitive skills that graduates will need in order to be productive workers anywhere in the advanced world. The NCLB approach is to measure how well students perform in meeting the school curriculum standards of individual states. So one examines mastery of particular skills; the other examines mastery of a particular curriculum. The second strategy was not

feasible for the PISA designers, since the school curriculum varies so much between countries.

Despite the striking differences between the two assessment systems, I argue that they have a lot in common. They both reduce the salient outcomes of schooling to learning, and they both reduce learning to the acquisition of economically useful skills (human capital). Both claim that their measures provide useful data for policymakers who want to increase the effectiveness of schools in producing human capital. But neither can make this case persuasively. PISA measures what it considers economically relevant skills but can't show that schools are actually teaching these skills. NCLB measures mastery of the school curriculum but can't show that learning these school subjects is economically useful. One measures what is relevant but not taught; the other measures what is taught but not relevant. So even if we assume that the core of education is learning and the core of learning is human capital – which I do not – it makes little sense to use either system of assessment to assess the effectiveness of schools. I close by examining how much the accountability effort has narrowed the meaning of education.

The PISA Case

PISA emerged from a series of other international efforts to assess school achievement that arose after the Second World War. The main precursor organization was the International Association for the Evaluation of Educational Achievement (IEA), an offshoot of UNESCO, which conducted a twelve-country pilot study in 1959, followed by the First International Mathematics Study in 1964, the First International Science Study in 1971, the second version of each of these studies in 1982 and 1984, and the Third International Mathematics and Science Study (TIMSS) in 1995 (IEA, n.d.). The latter test has been given at four-year intervals ever since under the generic name Trends in International Mathematics and Science Study. TIMSS was the first rock star of international educational assessment. It became headline news in countries around the world, as policymakers, pundits, and press expressed triumph or (more commonly) chagrin about the state of their school system compared with others in the world community. The original TIMSS was such a hit that IEA felt compelled to keep the initials to preserve a successful brand; there would be no FIMSS. The organizers of TIMSS invented the framework for the international measurement of school quality that we are stuck with today: the focus on cross-national comparison; the periodic repetition of the assessment to provide a slow-motion picture of educational change; and the all-important league tables that show where each country ranks in comparison with the others. Building on the huge success of TIMSS, the IEA broadened its scope by launching Progress in International Reading Literacy Study (PIRLS) in 2006 and repeated it in 2011.

But by the time PIRLS came out, IEA's testing initiatives had already been eclipsed by PISA, which had the powerful backing of the Organization of Economic Cooperation and Development (OECD). It is hard to compete as a stand-alone educational testing outfit when confronted with OECD, which – as the economic policy arm of the 34 wealthiest countries in the world – was emerging as the central player in the domain of international educational policy. In 1997 the Directorate for Education of OECD pulled together the plan for an international assessment of education achievement across literacy, math, and science (in effect incorporating both TIMSS and PIRLS) for its member countries and any others that wanted to take part. The idea was to establish a cycle of international tests that would measure one of these subject areas every three years and then, after a full nine-year cycle, start over again. PISA tested literacy in 2000, math in 2003, and science in 2006, and then started the second cycle with literacy in 2009 and math in 2012. In the first year 32 countries

took part, and by 2012 this had increased to 64 (OECD, 2013). OECD proudly pronounces that the participating countries account for “90% of the world’s economy” (PISA, n.d., p. 4).

So how did the test makers construct PISA? As with any international comparison, of course, their core problem was the incompatibility of curricula across countries. So one thing was clear from the outset: They could not measure how well students around the world were learning the subjects that these students were actually being taught in school. Instead they had to come up with another approach. They also had to deal with the incompatibility of school structures across countries, where the length of compulsory schooling varies and so does the meaning of being in a particular grade level in the system. They came up with ingenious responses to these two comparison problems. Instead of looking at, say, high school seniors – which would mean different things in different systems – they chose “to measure how well young adults, at age 15 and therefore approaching the end of compulsory schooling, are prepared to meet the challenges of today’s knowledge societies” (PISA, 2001, p. 14).

Identifying the target population was the easy part; the hard part was figuring out what skills these students are supposed to have acquired by the time they are 15. Since they could not examine mastery of the school curriculum, they decided to approach the issue from another direction. Instead of asking what skills schools require students to learn in each country, they decided to ask what skills “today’s knowledge societies” (that is, the advanced economies of the world that constitute the OECD membership) require of young people who enter into the 21st century workforce. Here is the way they put it in the first PISA report:

The assessment is forward-looking, focusing on young people’s ability to use their knowledge and skills to meet real-life challenges, rather than on the extent to which they have mastered a specific school curriculum....

PISA is based on a dynamic model of lifelong learning in which new knowledge and skills necessary for successful adaptation to a changing world are continuously acquired throughout life. PISA focuses on things that 15-year-olds will need in their future lives and seeks to assess what they can do with what they have learned. The assessment is informed – but not constrained – by the common denominator of national curricula. PISA does assess students’ knowledge, but it also examines their ability to reflect on the knowledge and experience, and to apply that knowledge and experience to real world issues. (PISA, 2001a, p. 14)

There are two obvious problems with PISA’s approach to measuring student skills. First, in order to maintain comparability across school systems with incompatible curricula, they have chosen to measure skills that are not necessarily found in the curriculum of any school system. Comparative measures require a common denominator; and when no such common element exists across the subjects taught in various national school systems – when there are no subjects that everyone teaches – then you need to measure skills that no one teaches. This is leveling the playing field with a bulldozer. For PISA, comparability trumps content.

Of course, PISA claims that it is measuring something more important than what schools teach, namely what they should be teaching if they are doing their job. Any school system worth its salt, it implies, should be providing students with the skills required for work in the knowledge economy of the new world order. By measuring how well students have mastered these skills, PISA is demonstrating how effective schools are in meeting their aims as human capital producers. But even if we are willing to accept PISA’s position that schools should be held accountable for how effectively students learn what schools don’t necessarily teach them – a very big “if” indeed – that still leaves a second problem: The skills PISA measures have an uncertain provenance. As the 2000 report puts it, these

measures are “informed – but not constrained – by the common denominator of national curricula.” The executive summary of the report explains the approach this way: “PISA assessed young people’s capacities to use their knowledge and skills to meet real-life challenges, rather than merely looking at how well they had mastered a specific school curriculum” (PISA, 2001b, p. 2).

The psychometricians posit that the skill set they test for is essential for the modern workplace in advanced economies, but they provide little basis for justifying that this toolkit is indeed just what the economy needs – other than by repeated statements about the relevance of what they are testing to “real world issues” and “real-life challenges.” Stefan Hopmann (2008) summarizes the findings of a five other researchers with this devastating assessment of

[t]he assumption that what PISA measures is somehow important knowledge for the future. There is no research available that proves this assertion beyond the point that knowing something is always good and knowing more is better. There is not even research showing that PISA covers enough to be representative of the school subjects involved or the general knowledge-base. PISA items are based on the practical reasoning of its researchers and on pre-tests of what works in most or all settings – and not on systematic research on current or future knowledge structures and needs. (p. 438)

In other words, they just made it up. “We assert that these are the skills people need to have,” they seem to be saying, “and we assert that schools should be held accountable for how well students learn these skills.” Since they can’t compare schools systems based on what they teach, they invent a skill set that no one teaches and then uses mastery of it as the measure of effective schools.

The NCLB Case

The roots of the No Child Left Behind law in the United States can be found in the educational standards movement that began to emerge in the 1960s at the state level across the country. The core aim of the movement was to tighten the focus of the school curriculum to core academic subjects and to increase student achievement in these subjects. In part the movement was a curricular reaction to the emphasis on inclusive access and social equality (rather than academic learning) that emerged during mid-century efforts to desegregate schools; and in part it was a response to the diffusion of the school curriculum that arose from the administrative progressive movement early in the century, which tended to emphasize breadth of preparation for life more than academic learning. These two concerns merged into a comprehensive effort to narrow the curriculum to the four traditional academic subjects (math, science, English, and social studies); to set standards for performance in each of these areas for students at different levels of the system; and to hold students and schools accountable for attaining these standards through high-stakes tests.

In 1983, the standards movement gained national focus when the federal Department of Education issued an enormously influential report – *A Nation at Risk* – asserting that setting and attaining high academic standards was now an essential goal of national educational policy. The report presented a frightening vision of what was at stake in this reform effort: “We report to the American people that ... the educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a Nation and a people” (NCEE, 1983, p. 7). Long before TIMSS and PISA, the standards movement was framing education as a force that would determine the competitive position of nations in the world economy.

We live among determined, well-educated, and strongly motivated competitors. We compete with them for international standing and markets, not only with products but also with the ideas of our laboratories and neighborhood workshops. America's position in the world may once have been reasonably secure with only a few exceptionally well-trained men and women. It is no longer. (p. 8)

Back then the threat was seen as Japan, now it is China, but the story is still the same: There is a league table of nations, and we are plummeting down in the rankings. National power is at stake; this power depends in the economy; and the economy depends on educational excellence. The rationale for PISA was already in place.

The standards movement continued in the U.S. over the next two decades, making progress at the state level but never quite being able to bring about a strong national mandate. Presidents George H. W. Bush and Bill Clinton tried to establish national educational goals, but these died in the face of resistance from states that feared loss of control over education, traditionally lodged at the state level. The problem was that the movement's goal was unexciting: to make schools more efficient at promoting academic learning in service of economic growth. An admirable goal perhaps, but not one that could draw passionate support from the average citizen. This changed when the movement shifted strategy. In the late 1990s leaders augmented the movement's social efficiency appeal (increased educational quality as the source of economic growth) with a social equality appeal (increased educational quality as way to reduce the differences between rich and poor). The result was a broad constituency for reform that, at the start of the presidency of George W. Bush, brought about No Child Left Behind, which became law in 2002. The law spelled out its broad equity appeal in the bill's title and its opening sentence: "The purpose of this title is to ensure that all children have a fair, equal, and significant opportunity to obtain a high-quality education and reach, at a minimum, proficiency on challenging State academic achievement standards and state academic assessments" (NCLB, 2002, Title 1, Section 1001).

The core mechanism for raising educational standards through NCLB was the addition of federal rewards and punishments to reinforce educational standards that already existed at the state level. Every state needed to set appropriate curriculum standards and to establish achievement tests that would measure how well students, schools, and school systems were meeting these standards. The law set guidelines for standards and tests and set criteria for defining success and failure, but it left the details up to each state. There was no national curriculum against which to measure student achievement, so the federal government really had no choice. Over the history of American schooling, curriculum has been largely determined by each local school district. States set broad guidelines, but it was not until the emergence of the standards movement in the 1960s that states began to define specific standards for what subjects schools should teach and what level of achievement students should attain in these subjects.

The contrast with PISA is striking. PISA was faced with enormous variation in curriculum across the countries studied and had no authority to impose a standard curriculum, so it opted to define a set of what it considered necessary skills for modern economic life and then test to see how well students around the world acquired these skills. But under NCLB, individual states were able to establish curriculum standards for all the schools within their boundaries and then create tests that were closely aligned with these standards. So PISA was testing how well students acquired skills that may or may not have been part of the program of study in school, whereas NCLB was testing how well students learned the core academic subjects required in a particular state. The alignment between state standards and state tests allowed NCLB to dodge the problem facing the PISA psychometricians about how to measure school learning in the absence of a common curriculum. This made it possible for

each state to rate and rank individual school districts according to a common achievement criterion. But the NCLB approach did not allow for comparison across states, each of which had its own curriculum standards and its own tests. In PISA the emphasis is on comparison over content; in NCLB it is on content over comparison.

The inability to compare how each state is performing against the others is a problem in the view of the current global accountability regime, which places league tables at the center of its mission. Pitting districts against each other within a state is not sufficient; we also need to pit the states against each other. There are ways the latter can be accomplished in the U.S., but not through NCLB. TIMSS and PISA provide data on the performance of individual states, which allow interested parties to rank the states in order of performance from one to 50. But these tests are not aligned with state curricula, so they are little help in gauging how well students are learning what they are being taught.

There is another American test, administered by the federal government, which seeks to measure achievement across states, the National Assessment of Educational Progress (NAEP). It likes to call itself “the nation’s report card.” These assessments are carried out periodically and provide a satisfying set of tables showing where every state ranks in each of the subject areas tested, with Massachusetts usually at the top and Mississippi at the bottom. The problem with NAEP is that it rates subject-matter learning across states that have different curricula; the advantage is that at least it is operating in a single country, where the degree of curricular convergence is greater than can be found across countries. In this way it operates in a liminal space between the U.S. state tests, which are closely aligned with subjects taught, and PISA, which has no such alignment at all. Given the pressure to develop comparative measures and construct rankings, this is seen as an unacceptable state of affairs.

As a result, there is now a movement in the U.S. to develop a shared set of curriculum standards for the country as a whole; it is known as the Common Core. As of this writing, 45 of the 50 states have adopted some version of these standards, and the next step is to construct tests that will align with them. So the effort in the U.S. to rationalize schooling into a form that is easily measured and easily compared is moving ahead rapidly. The standards movement in the individual states paved the way for a national mandate for curriculum standards, the NCLB law, which then – by demonstrating the impossibility of establishing national educational standards without a national curriculum – paved the way for the Common Core. Note how the American trajectory from standards to NCLB to Common Core paralleled the European trajectory from IEA to TIMSS-PIRLS to PISA. In both cases, we see how the rise of local measures of educational achievement quickly created pressure for a common standard that would allow the broadest level of comparison.

Through the Common Core initiative, NCLB is trying to solve its comparability problem, but that still leaves it with a relevance problem. The question is: How socially relevant is the knowledge that it is testing? PISA dealt with this issue in a bold manner. Barred from measuring how well students learn the curriculum, it chose to measure a set of skills that it asserted were socially relevant. Of course, it failed to establish that these tested skills were in fact what students would need in order to be productive members of the new knowledge economy, and it never even tried to show that these skills were taught in school. But at least it tried to show that the test scores matter because they show how well students are prepared for work.

NCLB, however, in both its current and its future (Common Core) phases, is content to focus entirely on measuring how well students learn key elements of the content that schools teach in English, math, English, and social studies. It assumes that this academic subject matter constitutes human capital – providing the knowledge and skills that students will need in order to increase economic productivity, the gross domestic product, and national power. This is a common assumption that runs through the discourse in educational policy

around the world right now, but constant repetition does not make it true. There is no room here to provide a detailed critique of human capital theory, but the elements of such a critique are evident in the literature: The relationship between schooling and economic development may be more the result of credentialing and signaling than academic learning (Collins, 1979; Thurow, 1972; Spence, 1973); the useful learning that occurs in school may have more to do with the informal curriculum (school process) than with the formal curriculum (school content) (Dreeben, 1968; Jackson, 1968); and the correlation between expanding enrollments and expanding economies may be better explained by the fact that wealthy economies can afford more schooling than that more schooling creates wealthier economies (Ramirez & Boli, 1987; Labaree, 2010). As a result, although NCLB, unlike PISA, measures at least some of what students learn in school, it cannot demonstrate that this learning has the social utility it claims.

Comparing the Two Cases

The differences between PISA and NCLB are dramatic. One ignores the school curriculum and measures skills that it claims are economically useful. The other hews closely to the school curriculum, measuring how well students learn it but without establishing that such learning has economic value. So in these ways, they seem to be adopting exactly opposite approaches to educational assessment, differences forced on them by the constraints of the systems they are testing.

But in most other ways they are two peas in a pod. Both PISA and NCLB represent radically reductionist visions of education. They both reduce education to learning; and they both reduce learning to the small subset of knowledge and skill that is seen to be economically relevant. In the end, they both conceive of education simply as the efficient production of economically useful skills.

First let us consider the reduction of education to learning. Gert Biesta (2009, p. 37) argues that

the past two decades have witnessed a remarkable rise of the concept of “learning” with a subsequent decline in the concept of “education”.... This rise of what I have called “the new language of learning” is manifest, for example, in the redefinition of teaching as the facilitation of learning and of education as the provision of learning opportunities or learning experiences; it can be seen in the use of the term “learner” instead of “student” or “pupil”....

He goes on to define this change as a central point in the evolution of educational policy discourse:

The rise of the new language of learning can be seen as the expression of a more general trend to which I now wish to refer – with a deliberately ugly term – as the “learnification” of education: the translation of everything there is to say about education in terms of learning and learners (p. 38)

The idea of education as learning is new. It was certainly absent at the birth of national systems of universal education. The strong consensus view in the history of education is that national systems of schooling arose in the long nineteenth century as part of effort to establish the nation state (Tyack, 1966; Ramirez & Boli, 1987; Tröhler et al., 2011). The idea was to use schools to turn subjects into citizens, creating a political community by drawing all citizens into a school to provide them with a shared experience and create a level playing field. Learning the formal curriculum was secondary.

But if education is not primarily about academic learning, then what is it about? In addition to the goal of building a nation, consider some of the other outcomes of education that people over the years have found valuable. Most important is that education is the

mechanism by which modern societies allocate social positions, making a person's future status in large part the result of that person's performance in school. As a result educational systems have become the primary means for both pursuing social opportunity and preserving social advantage. In addition, education can promote a wide array of other ends: personal enlightenment, esthetic pleasure, religious belief, critical thinking, open mindedness, tolerance for others, immersion in a culture, understanding nature, understanding society, figuring out how things work, cultural play, social engagement, personal fulfillment, spiritual growth, and so on. It can open up the world to young people, show them the possibilities for their future lives, and prepare them to construct social roles for themselves. Some of these goals involve learning; some even involve learning the formal curriculum. But most of them arise from the experience of education; from social and cultural exchange with students, teachers, and authors; from a variety of educationally structured activities in and around schools.

Even within the conceptualization of education as learning, the PISA-NCLB approach is remarkably narrow. First, it eliminates from consideration all forms of school-based learning except what is contained in the formal curriculum. Gone is all the learning that students gain from the process of schooling: learning from classroom interactions about power and position, leading and following (Jackson, 1968); learning central norms of modern life (such as achievement, individualism, universalism, specificity) from the process of negotiating school routines and age-graded instruction (Dreeben, 1968); and learning from social interaction in groups such as athletic teams, school plays, and debate societies (Brooks, 2011). Even the literature of human capital theory is increasingly attentive to the economic value of such extracurricular learning (Heckman, 2000; Heckman & Rubinstein, 2001), but that element is missing from the accountability vision of education.

Second, within the narrow bounds of the formal school curriculum, PISA and NCLB insist on tightening the focus further to a subset of this curriculum that they consider of most importance. Look at the three areas that PISA tests: literacy, science, and math. These three school subjects are also the focus of NCLB, with the addition of a small piece of social studies in some states. Largely missing are history and social studies. Completely missing are art, music, health, and physical education; interdisciplinary programs, project-based learning, and student-initiated studies. Missing too is the rich diversity that is found in the big three. English is reduced to literacy skills; forget about literature. Science becomes a generic composite entity, denied its various disciplinary dimensions and conceptual richness. Math becomes a narrow skill set rather than an immersion in a wide array of quantitative cognitive pursuits.

Third, within the few core subjects that they examine, PISA and NCLB insist on approaching this kind of learning from the most narrowly utilitarian perspective. The only learning that is seen as worthwhile is the kind that is immediately useful, and what is considered useful learning is defined by what carries economic value. Recall that NCLB is rooted in the fear of economic decline and national weakness put forward by the authors of *A Nation at Risk*. And recall as well that PISA emerged from the Directorate for Education of the Organization of *Economic* Cooperation and Development. The driving force in both assessment regimes is the vision of education as an engine of human capital production. Everything else in the domains of school literacy, science, and math is secondary.

Consider some of what is lost by this vision of education by looking at it against broader frameworks for understanding educational goals. In an earlier historical analysis of the politics of American education, I identified three broad goals for schooling that have contended for primacy over the years in debates about policy directions (Labaree, 1997). Democratic equality, which is about preparing competent citizens, guided the founding of universal schooling in the U.S. and remained prominent in later reforms. Social efficiency,

which is about preparing productive workers, emerged in the progressive movement at the start of the twentieth century and has grown steadily stronger. Social mobility, which is about attaining or preserving social position, was guiding behavior of educational consumers from the very beginning and emerged as a major goal in the mid twentieth century. PISA and NCLB put all their money on the last two goals. Schooling, they say, should be focused on developing the economically useful skills that will expand GDP and thus benefit society as a whole (social efficiency); and when individual educational consumers acquire these skills, they will gain greater opportunity (social mobility).

Gert Biesta (2009) takes another approach, talking three broad functions that education serves when viewed from a philosophical perspective. One function is qualification, in which education provides students with skills, knowledge, and dispositions that allow them to do things in a modern society, particularly related to economic roles. Another function is socialization, in which education provides students with the orientations and capacities required to “become members of particular social, cultural, and political ‘orders’” (p. 40). A third is subjectification, in which education provides students with the capacity to resist simple incorporation into society by developing independence from the larger orders. He argues that schools in general tend to focus explicitly on the first, implicitly (through process rather than curriculum) on the second, and more problematically on the third. Unlike my typology, which is drawn from the history of policy debates about education, his is focused on the array of possibilities inherent within education that may or may not be realized in particular schools or school systems. This is useful in thinking about what is emphasized and what is missing in a particular conception of what constitutes a good school. From this perspective, the PISA-NCLB vision of education focuses heavily on qualification and largely ignores the other two functions. The skew is extreme.

This brings us back to where we started. If we are going to understand the meaning of the new accountability regime in education, as represented by PISA and NCLB, we need to understand the particulars of how it defines and measures educational quality. Everything depends on how you define a good school and on what evidence would be needed to persuade you that a particular school or school system is good or bad. As we have seen, for all their differences, PISA and NCLB employ an extraordinarily narrow definition of education, and they deploy an extraordinarily impoverished metric for assessing educational quality. To hold schools accountable in these terms is to do them great harm. Both programs talk about setting a high standard so schools will race to the top; but in both cases the mechanics of the assessment regime set a diminished standard for schools, which drives them to race to the educational cellar.

References

- Biesta, G. (2009). Good education in an age of measurement: On the need to reconnect with the question of purpose in education. *Educational Assessment, Evaluation and Accountability*, 21:1, 33-36.
- Brooks, D. (2011). Amy Chua is a wimp. *New York Times*, January 17. <http://www.nytimes.com/> (accessed 1/17/2012).
- Collins, R. (1979). *The credential society: An historical sociology of education and stratification*. New York: Academic Press.
- Dreeben, R. (1968). *On what is learned in school*. Reading, MA: Addison-Wesley.
- Friedman, T. (2012). Average is over, part II. *New York Times*. <http://www.nytimes.com/> (accessed 8/7/2012).
- Heckman, J. J. (2000). Policies to foster human capital. *Research in Economics*, 54, 3-56.
- Heckman, J. J., & Rubinstein, Y. (2001). *American Economic Review*, 91: 2, 145-149.

- Hopmann, S. T. (2008). No child, no school, no state left behind: Schooling in the age of accountability. *Journal of Curriculum Studies*, 40:4, 417-156.
- International Association for the Evaluation of Educational Achievement (IEA). (No date). Brief history of IEA. http://www.iea.nl/brief_history.html (accessed 2/15/13).
- Jackson, P. (1968). *Life in classrooms*. New York: Holt, Rinehart and Winston.
- Labaree, David F. (2010). *Someone has to fail: The zero-sum game of public schooling*. Cambridge: Harvard University Press.
- Labaree, David F. (1997). Public good, private goods: The American struggle over educational goals. *American Educational Research Journal* 34: 1 (Spring), 39-81.
- McKinsey & Company. (2009). *The economic impact of the achievement gap in American schools*.
http://www.mckinsey.com/App_Media/Images/Page_Images/Offices/SocialSector/PDF/achievement_gap_report.pdf (accessed 3/1/2010).
- National Commission on Excellence in Education. (1983). *A nation at risk: The imperative for educational reform*. Washington, DC: U.S. Department of Education.
- No Child Left Behind Act*. (2002). Public Law 107-110.
- Program for International Student Assessment (PISA). (No date). PISA Brochure.
<http://www.oecd.org/pisa/pisaproducts/37474503.pdf> (accessed 2-12-13).
- Program for International Student Assessment (PISA). (2001a). *Knowledge and skills for life: First results from PISA 2000*. Paris: OECD Publishing.
- Program for International Student Assessment (PISA). (2001b). *Knowledge and skills for life: First results from PISA 2000; Executive Summary*. Paris: OECD Publishing.
- Ramirez, F. O. & Boli, J. (1987). The political construction of mass schooling: European origins and worldwide institutionalization. *Sociology of Education* 60:1, 2-18.
- Spence, M. A. (1973). Job market signaling. *Quarterly Journal of Economics*, 87, 355-374.
- Thurow, L. (1972). Education and economic equality. *Public Interest*, 28 (summer), 66-81.
- Tröhler, D., Popkewitz, T., & Labaree, D.F. (2011). *Schooling and the making of citizens in the long nineteenth century: Comparative visions*. New York: Routledge.
- Tyack, D. (1966). Forming the national character. *Harvard Education Review*, 36:1, 29-41.