

6-21-1994

## Connecting Productive Schools and Workplaces for a Knowledge Society

Byrd L. Jones

*University of Massachusetts - Amherst*

Robert W. Maloy

*University of Massachusetts - Amherst*

Follow this and additional works at: <https://scholarworks.umb.edu/nejpp>



Part of the [Curriculum and Instruction Commons](#), and the [Education Policy Commons](#)

---

### Recommended Citation

Jones, Byrd L. and Maloy, Robert W. (1994) "Connecting Productive Schools and Workplaces for a Knowledge Society," *New England Journal of Public Policy*. Vol. 10: Iss. 1, Article 7.

Available at: <https://scholarworks.umb.edu/nejpp/vol10/iss1/7>

This Article is brought to you for free and open access by ScholarWorks at UMass Boston. It has been accepted for inclusion in New England Journal of Public Policy by an authorized editor of ScholarWorks at UMass Boston. For more information, please contact [scholarworks@umb.edu](mailto:scholarworks@umb.edu).

# Connecting Productive Schools and Workplaces for a Knowledge Society

Byrd L. Jones  
Robert W. Maloy

---

*As American education struggles to achieve new competencies for an emerging information age, popular reforms remain locked in industrial-era metaphors. Testing for basic skills, teacher professionalism, and school-business collaboration assumes that schooling prepares workers with skills for predictable roles. Meanwhile, computers and related technologies make possible low-cost information that is transforming learning and jobs. Hierarchical organizational structures that subordinated most employees have given way to flatter, flexible teams. Quasi-autonomous decision making by knowledgeable professionals extends to more and more workers. When businesses simply offer schools a few extra resources, they stunt interactive partnerships that enable youth and business cultures to learn from one another. Old metaphors embedded scarcity and competition; new ones highlight choices made possible by automated production and cooperative coordination using new information technologies. New meanings of learning and earning through cooperation, choice, and shared social purposes reconnect effective schools to productive workplaces.*

---

**A**t the outset of the industrial era, observers described workplaces as schools, metaphorically suggesting that learning productive competencies took place in those sites. Southern historian U. B. Phillips depicted antebellum plantations as schools for slaves, who presumably benefited from European agricultural skills and “civilization.” Early in the nineteenth century, capitalists argued that “a cotton factory is a school for the improvement of ingenuity and industry.” Owners cared for workers so that they were “reclaimed, civilized, Christianized.” Regular work and organized discipline enforced “punctuality, temperance, ‘industriousness,’ ‘steadiness,’ and obedience to mill authorities.” Naturally enough, public schools undertook to inculcate those lessons in students as preparation for work — and for citizenship in the case of most white males.<sup>1</sup>

*Byrd L. Jones is professor of education, University of Massachusetts Amherst. Robert W. Maloy is adjunct associate professor of education, University of Massachusetts Amherst.*

By the twentieth century, educators consciously imitated business organization and efficiency. Students were "batch processed" through standardized classrooms under the supervision of a principal. Educational reformer Ellwood Cubberley enthusiastically endorsed an analogy to industry:

Our schools are, in a sense, factories in which the raw materials are to be shaped and fashioned into products to meet the various demands of life. The specifications for manufacturing come from the demands of the twentieth century civilization, and it is the business of the school to build its pupils to the specifications laid down.<sup>2</sup>

Teachers improved young minds, which were then tested to assure quality. Administrators adopted organizational structures of bureaucracy and staff command.

Formal and informal curricula aimed to train workers for docility in hierarchical organizations. According to David Tyack, urban schools stressed "(1) punctuality, (2) regularity, (3) attention, and (4) silence, as habits necessary through life for successful combination with one's fellow-men in an industrial and commercial civilization." Social studies promoted "Americanization" for children of immigrants; health and physical training assured strong backs; and vocational courses prepared technicians. While practicing social control, public schools sorted students into distinct vocational, technical, commercial, or college preparatory programs. A few completed higher education, which legitimated professionals, scientists and engineers, or managers as a meritocratic elite in a hierarchical industrial society.<sup>3</sup>

Today, an emerging information age generates fresh metaphors to link schools and productive workplaces in the twenty-first century. Given low-cost information based on electronic technologies, futurists urge businesses and agencies to imitate schools by facilitating continuing education. Examining the potential impact of computers on production, Shoshana Zuboff described a new "informed" organization as a "learning community." According to Larry Hirschhorn, postindustrial workers "must learn and learn to learn" in order to exercise discretionary judgment in a high-technology economy. Their model, however, appears to be elite colleges rather than run-of-the-mill elementary and secondary schools that offer most students dull and purposeless training for docility.<sup>4</sup>

Usually educational reformers start from a belief that today's schools should prepare students for work and citizenship. For two centuries, Americans adapted productive behaviors, cognitive approaches, and socially constructed meaning systems to suit industrial and technological structures. Segmented, bureaucratic schools and firms efficiently organized knowledge that promoted economic growth. Beliefs about efficiency in hierarchical industrial organizations are embedded in school structures and practices that emphasize individual competition for norm-referenced grades. Presumably, learning is substantively meaningful and normatively good based on a century-long association of economic growth with expanding schooling. Teachers arrange curricula, respond to students, and depict fairness or inequities in households, work, and society on the basis of assumptions that the future will resemble current possibilities.

Now information technologies are transforming possibilities in schools and workplaces, but mutual adjustments are frustrated by differences in purposes and governance. Corporations and schools, institutionalized in large structures with separate



dynamics, are loosely coupled, yet functionally they must change together. Sometimes schools focus on independent problem solving and creative writing among their students only to find that employers and colleges demand basic skills and docility. Sometimes businesses seek innovative and collaborative workers when schools have trained for subordination. If students learn to distrust teachers and other authorities while appearing to cooperate, teamwork may be faked in workers' quality circles.

In this article, we explore the passing of industrialism as access to low-cost information reshapes productive competencies and work roles. Next, we consider three popular educational reforms — enforcing basic academic competencies, professionalism among teachers, and partnerships with business — noting elements of industrial-era thinking and promising trends. We argue that effective schools, teacher professionalism, and business approaches to quality and efficiency through teamwork and shared cultural values have much in common. But partnerships that might reconnect schools and workplaces typically revert to competitive images and linear thinking. As a result, negotiations are stymied by mistrust and short-term, limited interactions. Low-cost information may transform cultural metaphors relating to learning, working, cooperating, and choosing futures.

---

### **From Industrialism to Information**

Over two centuries, industrialization increased productivity and lowered costs so that more workers were employed. To support larger populations, society applied knowledge about efficient techniques to produce and distribute ever more goods and services. Specialized labor divided workers and bosses in hierarchical organizations that mass-produced for mass markets. Schools and industrial organizations developed loosely coupled, but reinforcing patterns. Teachers prepared students for available jobs and owners structured their firms around technologically determined skills and competencies. Urbanization separated classes and races by neighborhoods with unequal schools. Growing economic abundance validated that educational system.

Today, industrialism is a much reduced driving force in the United States. Note the following evidence:

- Since 1973, productivity has stagnated in this country while developing nations have gained on or surpassed our standard of living.
- Industry now contributes about 35 percent to America's output. Services add 62 percent. Technicians, professionals, and managers outnumber blue-collar workers.
- Mass production based on assembling standardized parts responds slowly and inflexibly to diverse consumer demands.
- Specialization of labor segments jobs and blocks communication, the stock-in-trade of service workers in a knowledge society.
- Workers resist bureaucratic controls based on hierarchical access to information. Citizens resent impersonal procedures and regulations.
- Investment in human capital through formal schooling, on-the-job learning, and informal education at home and in communities exceeds investment in physical plant and equipment.

For the first time since the industrial revolution, young workers in the 1990s expect a lower standard of living than their parents enjoyed. Examining economic growth from 1929–1982, Edward F. Denison has highlighted knowledge and schooling as sources for rising productivity per person employed in nonresidential businesses. Potential output grew by 1.7 percent annually owing to the following sources (weights indicated by percentage): advances in knowledge (64%), education per worker (30%), economies of scale (20%), improved resource allocation (19%), and additions to capital (10%). That total of 143 percent was diminished by fewer hours per week (–23%) as well as other factors such as decreased land per worker and changes in the legal and human environment (–21%). Since 1973, growth in national production and per capita income has depended mainly on increases in the workforce as immigrants and women took paid jobs.<sup>5</sup>

After considering the available evidence about lagging productivity, Denison discarded all the usual suspects: laziness did not become pandemic in 1973; regulations and lawsuits did not suddenly misallocate resources or slow the rate of innovation; taxes did not rise or public services fall at times that might account for the break. Other commonly cited explanations such as inflation, unemployment, dissolution of families, government regulations, and revenues had no noticeable impact on employment, labor force participation, capital spending, or utilization rates. Perhaps, Denison speculated, the underlying beliefs, activities, and structures of the industrial system — individual aspirations, education, scientific advances, and corporate organizations — no longer meshed. Networking capital and segmentation of labor “creates a new historical situation that is clearly undermining the social fabric inherited from earlier stages of industrialization.”<sup>6</sup>

Just as American productivity entered two decades of relative stagnation, a national report had documented widespread worker dissatisfaction:

Because work is central to the lives of so many Americans, either the absence of work or employment in meaningless work is creating an increasingly intolerable situation. The human costs of this state of affairs are manifested in worker alienation, alcoholism, drug addiction, and other symptoms of poor mental health. Moreover, much of our tax money is expended in an effort to compensate for problems with at least a part of their genesis in the world of work. A great part of the staggering national bill in the areas of crime and delinquency, mental and physical health, manpower and welfare are generated in our national policies and attitudes toward work.<sup>7</sup>

Had this study been repeated in 1992, its authors might have added comments about growing violence, job insecurity owing to corporate takeovers or spin-offs, and a penchant for blaming stagnation on outsiders.

Whatever else characterizes a postindustrial economy, it depends on the productivity made possible by previous investments in physical and human capital. For thousands of years, the crucial economic problem lay in production — making and maintaining goods to satisfy basic requirements for a growing population. Since 1900, real per capita income in the United States has increased over sixfold through sustained investment in education and on-the-job training as well as in plant and equipment. Markets expanded with new transportation and communication technologies, lower costs from economies of scale in production, higher personal incomes,



and exports. A growing population, technological advances, and faith in progress encouraged public and private investments in the young. Future affluence depends on scientific, technical, and managerial advances, organizational structures for coordination and planning, and instilling useful knowledge about these largely artificial constructs in each new generation.

Industrial structures used information with enormous efficiency by standardizing specialized roles. Factories coordinated repetitive routines so that workers quickly learned their functional roles. If floors were swept twice a day, then only rarely would accumulated debris require a directive from management. By agreement on a standard household electrical current of 110 volts with common outlets, lamps and appliances could be made, sold, and installed without overt coordination. Time clocks and standardized parts replaced individualized adjustments. Knowledge was expressed in measurable scales, technically defined categories, or policies and procedures. Functional relationships for coordinating work sequences or accessing bureaucratic services generated formal protocols specifying timely provision of data.

As roles became segmented, owners drew on an elite of knowledgeable technicians, professionals, and managers to make crucial decisions. Applying general knowledge to specific situations, they could not be subordinated directly to owners' commands. Academic degrees legitimated their income and control over others. As science and technology advanced, managers no longer knew what frontline workers did. Businesses developed accounting and other information systems to enhance management controls from the top down.<sup>8</sup> Invention and innovation requiring laboratories and teams of scientists focused on expensive military and health technologies. Yet economies of scale depended on mass production for mass markets. Despite greater use of information technologies, bureaucracies and hierarchical command are increasingly inefficient for customizing goods and services to diverse consumers.

Meanwhile, corporate power and growing interdependence led to government actions to control monopolies, regulate trade, set standards for food and drugs, and offer income security. Today, environmental concerns set clear limits on scientific and technological developments. State-supported schools aided industrial development but also generated a meritocratic vision of equal opportunities. Gradually teachers and other public knowledge workers developed an ethos of service and fairness somewhat at odds with business interests. National data bases and university research fostered a view of long-range community interests. Today, low-cost information opens opportunities for coordination and customization to meet individual needs, but industrial era schools and businesses must restructure to allow more choice within a context of social justice.

### ***Productive Competencies***

Throughout most of history, humans sought to survive in a physically brutal and periodically desperate struggle for food, warmth, and personal safety. Work was not a separate sphere of activity with specialized roles — thought and action occurred together, or in close time and spatial proximity, in harmony with village or tribal customs. With industrialization, factories structured roles so that most workers adapted to the pace and demands of power driven tools.

Modern work is less physically tiring although many jobs require limited, repetitive motions or entail high stress levels. It is cleaner although unseen chemicals and

radiation are as threatening to health as filth. It depends less on local weather conditions, personalities, uncontrollable events, and "religious" beliefs; but secular knowledge about technology, organizational strategies and structures, the tastes of others, and global interactions often prove equally intractable.

To control machinery, workers combine physical and mental awareness in response to anomalous events. For a familiar illustration, consider a driver's thought processes while moving in city traffic. She might check speed by sound as well as a speedometer, congested conditions by radio as well as visually, her direction by traffic signs that contradict the compass, yet remain focused on the truck ahead. Workers on assembly lines often cope with speed and monotony by letting their thoughts drift, while alert to danger signs.

Fringe awareness and selective attention are integrated when the operator can integrate the three modes of knowing: dense perception of physical processes, heuristic knowledge of production relationships, and theoretical understanding of the production process. Heuristic knowledge helps the operator make normal production decisions while paying conscious and selective attention to long-term goals, such as quality and timeliness. Density of perception supplies fringe awareness with anomalous data — data that might otherwise go unnoticed because it is unexpected. Finally, theoretical knowledge helps the operator understand the anomalous data so that he can overcome previously established rules of action and create new ones appropriate to the novel situation.<sup>9</sup>

Informational technologies have reduced costs for access to a wide range of data and placed unprecedented power in the hands of many workers. Shoshana Zuboff described a fully computerized factory as requiring new skills and attitudes: "Immediate physical responses must be replaced by an abstract thought process in which options are considered, and choices are made and then translated into the terms of the information system." Rather than closing a valve in response to a vat overflow, operators watch a screen and punch commands into a keyboard. "As one operator put it, 'Your past physical mobility must be translated into a mental thought process.'" That poses new challenges for managers to "convince the operator to leave behind a world in which things were immediately known, comprehensively sensed, and able to be acted upon directly, in order to embrace a world that is dominated by objective data, is removed from the action context, and requires a qualitatively different kind of response."<sup>10</sup>

With modern computers, communication can be individualized yet open to large groups. Desktop publishing allows low-cost printing of words, tables, and images. Hypermedia include sound and invite learners to devise their own path through stacks of information. Large data bases, accessed through modems, allow users to process and arrange useful facts rather than passively accepting their arrangement in print or other media. Images from photographs, camcorders, or television, once transferred to computers, can be manipulated to heighten a message or to mislead.

Yet electronically processed information also depersonalizes all communication because there is no palpable author. Standardized identification numbers key to national data bases revealing one's purchases and credit history. Scores on norm-referenced achievement tests determine one's readiness for college or work. Adults are granted credit, paid for vacations, or licensed to drive a car according to marks on paper or a



video display terminal. Publicly available records often seem more important than one's direct observations.

Zuboff distinguished between work done in close physical association with the production process — “action-centered” — and information work that “combines abstraction, explicit inference, and procedural reasoning.” She labeled “intellective skills” marked by “a shift away from physical cues, toward sense-making based more exclusively upon abstract cues; explicit inferential reasoning used both inductively and deductively; and procedural, systemic thinking.”<sup>11</sup> Although knowledge workers deal with information that essentially extends the range of possible states of the world beyond what is immediately sensed in one's work and living situation, no one can know enough to avert uncertainty. Indeed, knowledge workers may experience heightened psychological insecurities because ways to arrange facts increase exponentially and science is revolutionary.

While schools prepared most workers for subordinate roles, technical advances, professional judgments, and managerial decisions required greater autonomy. Although colleges legitimated powerful knowledge workers, academic courses even in professional and technical areas seldom applied directly to their jobs. Unable to collect or codify all the complex factors affecting their performance, knowledge workers rely on rules of thumb and customs. Imagine a self-employed person who defines three goals: (1) satisfied customers, (2) efficiency, and (3) best scientific practice. Nothing makes these goals coincide automatically. Satisfaction is an ambiguous criterion: An easy A on a quiz or an engineer's assurance about a cheaper bolt may bring immediate satisfaction but long-run disaster. One might lower costs by doing things quickly — by covering up shoddy or unsafe work. Characteristically, new knowledge and studies of alternative approaches in any broad discipline leave considerable discretion about best practices. Specialized training increases the likelihood that real problems lie outside one's expertise.

This sketch suggests that knowledge workers depend less on physical senses of sight, touch, smell, sound, or taste. They operate with verbal and mathematical symbols on paper or video display terminals. They set their own pace and continually seek new information. Communication among knowledge workers is segmented among insiders, and each discipline constructs a view of the world that is clearly “artificial” from a perspective of outsiders trying to act purposefully based on sensory inputs and local knowledge. Scientific disciplines define themselves around sets of answerable questions. By structuring problems around methods for testing those hypotheses, scientists have explained multiple phenomena with a few central principles. But abstract reasoning may never link back to people, places, and materials arranged in productive sequences.

As Herbert Simon argued, people understand complex systems by decomposing them into a hierarchical array of subparts governed by its own dynamics. Artificial systems enable insiders to describe more complicated relationships than a mind can comprehend at one instant. Thus, physics or economics reduce multiple observations to laws of gravity or supply and demand. In a complex environment filled with artificial as well as natural objects, human behavior may respond myopically to a simple rule based on multiple realities that are incomprehensible to outsiders. By codifying knowledge, we make it easier to transmit to students while separating concepts from practice.<sup>12</sup>



Today's productive workers need familiarity with applying at least one competency that requires linear thinking, making choices based on symbolic information, communicating with others, and expressing social values that foster trust and cooperation. Knowledge, its transmission, and replacement become increasingly critical social functions. The economic return from human capital acquired at home, in school, and from adult activities accounts for more than half the total growth in productive efficiency. Knowledge work can be healthy, collegial, stimulating, and personally fulfilling. It costs little to disseminate, nothing to dispose of, and can be accessible to everyone without diminishing anyone's holdings. If information contributes to self-esteem and community spirit, satisfactions may increase without producing ever more goods and services.

### ***Jobs Today and Tomorrow***

An impending information age has two hallmark features — workers provide services to others, and their productivity depends on impersonal information. In 1820, seven in ten workers engaged in farming, with household production of food, fuel, and fiber more important than production for sale. By 1900, fewer than four in ten farmed and commercial agriculture dominated. Today, only three in one hundred work the land using machines, fertilizer, and pesticides to raise hybrid plants and animals. Industrial jobs peaked in 1920 with 10.7 million laborers out of 27.4 million employed — or 39 percent. Today, fewer than 20 million workers are employed in manufacturing — about 18 percent of the workforce. Every worker who grows, makes, or moves things supports three workers who provide a variety of services to them and to one another. Technicians, professionals, and managers outnumber those directly engaged in production, while retail and wholesale sales top all other occupations. For four decades, most new jobs have opened in human services — teachers, health care providers, and public security.

Educators who plan curricula with an eye to future jobs must consider two key facts. First, large occupations will hire more people in a given year within a specific geographic area. A part of new hires will replace a normal turnover because of retirement, relocation, or advancement. Jobs with low wages and irregular hours, such as waiting on tables, some sales, or temporary staff, seem always to advertise for help. Well-paid or secure positions have low turnover rates. New openings depend on a fairly predictable number of retirements plus or minus changes in overall employment. Autoworkers and teachers in New England have found that contraction exceeded retirements. Specialized fields are inherently volatile in their labor demands within a particular year and location. Second, occupations in high demand owing to technological innovation often peak quickly. Advances displace old skills and require new ones. Over the past decade, computer programming and data input by key punch operators showed high percentage shifts.

Despite the attraction of moving rationally from job projections to curricula as the Bureau of Labor Statistics suggests, few schools, and perhaps even fewer individuals, can plan that way.<sup>13</sup> With 120 million Americans employed in 12,000 occupations, schools can scarcely prepare students for each "slot." Americans believe each person should choose her or his own future; with 20,000 high schools and 3,500 institutions of higher education, no one can coordinate training programs. Moreover, discrimination against women and people of color distorts labor markets and the aspirations of

all students. Many economists depict a dual labor market, one with relatively high wages and job security, offering a career, the other offering low-wage, part-time, unskilled hourly work. The United States has experienced a rolling recession that affects different regions at different times. Even workers with considerable seniority and competence have faced layoff and early retirement as firms have moved abroad or tightened their budgets.

Broader categories suggest a variety of basic competencies. Thirty million make things, another 20 million transport, distribute, and sell those things. Another 30-plus million provide managerial, technical, or professional services. Physical stamina, sociability, or delivery can be performed by someone with a primary school education. Handling data, crafts workers, and some technical and sales positions scarcely require a high school diploma with some vocational training. "Less than one-third require a four-year college degree." These 35 million workers "include managers, financial analysts, accountants, salespeople, doctors, lawyers, teachers, and engineers." Although three out of four new entrants into these areas have at least a bachelor's degree and these fields in general are growing, current enrollment in higher education will meet projected demands.<sup>14</sup>

Some researchers argue that Bureau of Labor Statistics predictions historically underestimate future educational requirements. Indeed, without a significant change in labor demand, most workers will face declining incomes.<sup>15</sup> Other studies indicate that a college degree will be required for 70 percent of new openings by the twenty-first century. With most new workers projected to be women, minorities, and immigrants, either schools will dramatically alter their curricula or workplaces will aggravate an existing dual labor market with middle-class white males in positions of power while other groups remain in ill-paid, insecure, and marginal positions. They will lack income to consume privately made goods and predictably place intolerable burdens on public services. Their children will sense declining prospects and see little reason to learn in schools.

If low-cost information is to transform schools and businesses rather than reinforce their top-down management and bureaucratic controls, they will have to allow discretion based on immediate knowledge to each student and worker. If work entails judgment, schools will have to foster a greater equality of prospects for children. Self-interested individuals see little reason to cooperate in such a finite zero-sum game as a competitive economy without growth. For two centuries, industrial hierarchies coordinated functional knowledge so efficiently that output per worker grew at astonishing rates. Workers tolerated subordinate roles and alienating tasks because it gave them a high wage and leisure time to spend as they wished. Today, the inefficiencies of hierarchy often outweigh the gains from centralized management, and demands for information grow exponentially to customize services and technological products.

---

### **Popular Educational Reforms**

Currently, three proposals for improving schools dominate public discussions: basic skills to improve competitiveness, empowering teachers to act professionally, and partnerships with businesses and other institutions. Most business and political leaders stress required competencies to prepare students for a typical industrial



organization where workers follow orders with accuracy, despite tedium. This theme gained prominence from the opening paragraph of the report by the National Commission on Excellence in Education:

Our Nation is at risk. Our once unchallenged preeminence in commerce, industry, science, and technological innovation is being overtaken by competitors throughout the world. This report is concerned with only one of the many causes and dimensions of the problem, but it is one that undergirds American prosperity, security, and civility. We report to the American people that while we can take justifiable pride in what our schools and colleges have historically accomplished and contributed to the United States and the well-being of its people, 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.<sup>16</sup>

Subsequent reports echoed those concerns and called for longer days, shorter vacations, more required courses, tougher tests for students and teachers, greater accountability, and diminished concern for those with special needs or limited English proficiency. They recited a litany of charges against American schools for violence, low test scores, and ignorance of Eurocentric cultural traditions and values. In 1990, George Bush met with educators and governors to set national education goals for the year 2000: school readiness for all children; 90 percent graduation rate; demonstrated competencies in basic subjects; first in the world in math and science; literacy for all adults; and safe, drug-free schools.<sup>17</sup> A need to produce more with less is taken as a given because of scarcity; and the subordination of schools and learning to that imperative is unquestioned. These lofty standards ignored the daily work of teachers to make traditional academic subjects accessible to students who see little hope for their own future.

Many educators, resentful of outside criticisms, seek self-empowerment and status in less bureaucratic classrooms — imitating the professional role staked out by lawyers and doctors in the nineteenth century. Teachers serve others by determining what knowledge applies in a particular situation. Professionals claim a right to exercise discretionary judgment based on their credentials — usually academic training — and their collective enforcement of normative standards. Arguing that lay persons can scarcely assess their qualifications or the quality of their work, they pursue state sanction for credentials to practice law, to teach, to cut hair, or to design highways. They seek approval for autonomous economic roles by requiring training and rules of conduct for important work whose quality is seldom knowable in advance.

According to Andrew Abbott, professionals based careers around “somewhat exclusive groups of individuals applying somewhat abstract knowledge to particular cases.” Expertise is embodied in individuals and signaled by academic credentials. Ill patients or ordinary drivers want trained doctors and competent highway engineers, not someone learning on the job. Abbott asked “why they place expertise in people rather than in things or rules.” He concluded that professionalism flourished in the United States because a “market-based occupational structure favors employment based on personally held resources, whether of knowledge or of wealth.” Workers liked autonomous careers that facilitated “a coherent individual life within a shifting marketplace.” Professional status is threatened by embodying expertise in commodities or organizational structures. Low-paid workers with computers and software keep



financial records, design blueprints, write wills, or check symptoms in expert diagnostic systems.<sup>18</sup>

Although teachers desire professional status, they are blocked on a number of fronts. Success depends on familiarity with particular students in a given locality, not a body of knowledge readily transferable to other settings. They never created a noticeable boundary around their field or limited access through special examinations. Many certified teachers are not employed in schools. When shortages develop in a certification area, states lower standards or grant temporary licenses. Teachers want to earn a high salary and community respect for their crucial role in preparing youth for work and citizenship but find themselves struggling to cope with endemic tensions of student demands for time and help. Their salaries scarcely sustain pretensions to high status and few gain prestige from associating with children. Most important, teachers are submerged in organizations that constrain their activities.

A third reform initiative calls for partnerships among the major delivery systems for training — schools and businesses. Businesses seek better public schools in order to transfer some costs for preparing workers to taxpayers — especially for general skills and a readiness to accept responsibility. Also, firms want schools to develop productive citizens who can “contribute to business as workers, consumers, and supporters of a democratic free enterprise system.” Between 1983–1984 and 1987–1988, the number of partnerships in public elementary and secondary schools rose from 42,200 to 140,800. Two in five schools engage in formal arrangements with outside groups, and most urban secondary schools have multiple partners.<sup>19</sup>

In New England, schools are linked with businesses through many arrangements, though few involve more than guest speakers, special demonstrations, awards, scholarships, or incentives for students.

- Locally negotiated agreements between firms and schools, as in Springfield, Massachusetts, where 3,000 employees from 447 area businesses engaged in collaborative projects during 1990–1991.
- Compact projects in Boston and Providence; public education funds in Worcester, Bridgeport, Cambridge, Lowell, Lynn, and New Haven.
- Statewide efforts to develop broad educational missions and policies led by the Maine Coalition for Excellence, Massachusetts Business Alliance for Education, New Hampshire Business Roundtable, Connecticut Business Coalition, Vermont Business Roundtable, and the Rhode Island Skills Commission.
- America 2000 initiatives in Warwick, Rhode Island, Derry, New Hampshire, and in 86 of Maine’s 184 cities and towns.

A fall 1989 survey revealed that public- and private-sector leaders in New England believed in the “great potential of the partnership concept.” Nine out of ten business and political leaders reported that their organizations were involved in education-business activity — mostly serving on education committees or task forces, providing work-study or summer jobs for students, or sponsoring awards and scholarships. A director remarked that “not one job in [his] company can be done by an illiterate worker,” and he sought job-ready employees who could “think independently and make good judgments.” There was widespread concern about adolescents leaving school prior to graduation. Public leaders identified different priorities: instructional improvements, tutoring assistance, professional development for school staff, better

relationships among businesses and schools, and improved communication between partners. Educators sought business resources for training and placements for graduates. Generally they agreed that collaborations improved career awareness, provided tutors and other volunteers, and fostered political support for education.<sup>20</sup>

Partnerships between schools and businesses involve different interests, dynamics, and organizational cultures. At the outset of joint activities, partners routinely see benefits both in cooperating and in merely pretending to work together. Each seeks to protect his or her own interests and to avoid identifying weaknesses, vulnerabilities, and uncertainties. Mistrust leads to limited interactions. For example, firms volunteer time and some surplus materials or space in return for positive publicity. Although many business leaders cite job readiness, discussions with personnel managers indicate that "specific occupational skills are less crucial for entry-level employment than a generally high level of literacy, responsible attitudes toward work, the ability to communicate well, and the ability to continue to learn."<sup>21</sup>

Habitual thinking about individualism, competition, and short-term payoffs encourages negotiators to view one party's benefits as necessarily the other's loss. Preemptive challenges and hidden agendas regularly confuse collaborative bargaining, as when a firm offers full support to schools that guarantee a 90 percent graduation rate. These problems are generalized as "prisoner's dilemma"-type dynamics and "free riders" or spillovers of external benefits. Negotiators pursue immediate self-interest even when a cooperative strategy would bring mutual benefits. With many small units, people and organizations hesitate to help others voluntarily lest those benefits accrue to others or are not returned. Thus, an industrial-era focus on short-term profits or standardized test scores inhibits working together to reconnect jobs and curricula. Interactive partners must adopt long-range views about common interests in productive communities.

Each of these reform initiatives draws on past experiences connecting schools with industrial workplaces, and each emphasizes a partial vision of positive developments. Global competition is real, but it might be viewed as a desirable gain in human productivity rather than a challenge forcing American workers to study harder, work longer, and accept less pay. Professional autonomy and discretion to innovate are crucial for all workers in an information age, not just educators accustomed to controlling students. Partnerships can link schools with workplaces, but they will fall short of their promise as long as competitive assumptions govern their interactions. Without restructuring, bureaucratic and hierarchical controls inhibit technical, professional, and managerial competencies; schools must equalize educational outcomes to motivate youngsters who aspire to new roles in an economy undistorted by class, race, and gender hierarchies.

---

### Reconnecting Learning with Work

Paradoxically, schools promote common social understandings and traditional public values while preparing youths for a productive life in a predictably different world. Ethnographic and historical studies have linked outcomes for students to teacher behaviors, to school climates, to community developments, and to broad societal trends. Scholars have described multiple pieces of a larger social system including *human*



*development,*<sup>22</sup> *work lives of teachers,*<sup>23</sup> *classroom interactions,*<sup>24</sup> *administrative leadership,*<sup>25</sup> *educational systems,*<sup>26</sup> and *organizational change.*<sup>27</sup>

Extensive studies of innovations have demonstrated that implementation processes are exceedingly important for institutionalizing reforms.<sup>28</sup> Improved school outcomes are mediated through group processes and organizational ethos in ways seldom implied by behaviorist research using treatment-effect paradigms. An image of organization as machine — as a bureaucratic structure in which strategic levers adjust the system — gives way to a view of diverse schools with their distinct climate. School improvements emerge through fragmented, often unplanned, and incomplete behaviors by individuals linked through holographic images of common purposes and meanings. New behaviors among students, staffs, and communities shape cultural beliefs as individuals and organizations interact in response to changing conditions.<sup>29</sup>

An awareness of a transformation to a knowledge age opens fresh discourse about how schools connect to society. Puzzling anomalies in the picture of schools as preparation for work become key building blocks for constructing a different vision of learning in a world of readily available, low-cost information. Lauren Resnick contrasted school assignments with work experiences.

Briefly, schooling focuses on the individual's performance, whereas out-of-school mental work is often socially shared. Schooling aims to foster unaided thought, whereas mental work outside of school usually involves cognitive tools. School cultivates symbolic thinking, whereas mental activity outside school engages directly with objects and situations. Finally, schooling aims to teach general skills and knowledge, whereas situation-specific competencies dominate outside.<sup>30</sup>

Through collaborative activities, each site may recognize the validity of other approaches and learn from one another.

Multidisciplinary curricula offer a way for schools to counter their own and society's predilection for segmentation of knowledge. Teams of students might explore technical and social answers for an interdependent and wasteful world by testing renewable sources of energy, demonstrating how organic farming can compete with today's agribusinesses, or involving communities and firms in recycling "wastes." Realistic projects allow school budgets to utilize sophisticated aids such as a television studio, a microcomputer, field trips, or expertise from outside organizations rather than providing low-cost, low-tech materials for everyone in common courses. In teams, students share leadership and other roles, thereby breaking down class status expectations that often determine whether students expect to follow or to give orders. Cooperative learning builds skills in group dynamics and breaks down prejudices, thereby fostering teamwork on the job.

Cultural diversity, seen as a problem for schools and businesses, is a resource for promoting global trade and cooperation. In Springfield, the number of Hispanic residents nearly doubled between 1980 and 1990. Blacks and Asians also increased by 15.3 percent and 56.5 percent during the same period. In 1990, school enrollments were 38.1 percent white, 27.1 percent black, 32.6 percent Hispanic, and 2.2 percent Asian students. Many of these students are bilingual and offer cultural perspectives on family values and community life that seem in decline among European-descent Americans.<sup>31</sup> Multicultural understandings are extended when students from different racial and ethnic backgrounds work together to achieve a group goal. Intensive study



of other countries builds a basis for thinking about international trade among multinational firms.

Many other current curricular reforms gain significance when viewed as interrelated developments in schools and workplaces. Efficient producers of goods and services in a knowledge economy will rely on new skills from all their employees: scanning quantities of public information, thinking holistically about ill-structured problems, communicating ideas and facts across disciplinary and organizational boundaries, cooperating in groups, and expressing personal and social values. When computer programs and automated machines handle the routine, people should explore the new, the ambiguous, and the exceptional. Bureaucratic controls that earlier enforced impersonal standards and allowed coordination of many specialized functions for an uneducated workforce now seem unfairly to maintain subordinate ranks of knowledge and control.

### *Effective Schools and Basic Skills*

There are important lessons to be gained from those exceptional effective schools that adjust their curricula and maintain high expectations for all students. Most schools regarded as successful serve upper-middle-income communities and send their graduates to higher education. Thus, as James Coleman reported in 1966, academic achievement correlated with family income and status more than with variations among school resources. Ineffective public schools reflect political tensions from demands to reproduce social hierarchies, credential merit, and promote equality for oppressed groups. Low-income students, children for whom English is not a primary language, those from single-parent homes, or children with special needs often require extensive school-based resources and support.

Puzzled by an association of academic failure with low-income and minority families, Ronald Edmonds examined those schools where student achievement contradicted the generalizations from the Coleman Report. After identifying many cases in all kinds of communities, Edmonds and his colleagues looked at what made them different. Money, programs, and advanced degrees for teachers did not necessarily build a positive school climate and staff ethos. The importance of staff working together was implicit in five characteristics found in all effective schools: positive leadership, agreement on goals and objectives, high expectations for students, an orderly environment, and continual monitoring of students' learning. In an effective school, staff and students know its goals and they cooperate toward those ends.<sup>32</sup> Educators discuss their professional and bureaucratic dilemmas: their isolation, fears of failure, and coping strategies that often conflict with educational ideals. Broad-based participation of professionals sustains "a style of work that is open, task oriented, and nonaccusatory."<sup>33</sup>

Other large enduring institutions can learn from effective schools how to lead a staff of knowledge workers under conditions of multiple purposes and future benefits. Loose couplings to other economic and social institutions enable schools to do different things and thereby protect themselves from shifting political winds. Uncertain about public support, educators implement egalitarian principles by fostering options in comprehensive high schools.<sup>34</sup> Efficiency and accountability, however, depend on what outcomes are desired. To foster lifelong education, for instance, students should come to love learning — not to hate writing, tests, and algebra.

Educators need autonomy to incorporate new curricula; but few organizations can agree on purposes and strategies without interactive dialogue about equity and excellence.

Flatter and flexible businesses will likewise need to foster culture-building dialogue to coordinate activities and to innovate in response to evolving conditions. Leadership through shared values and decentralized decision making resonate with lessons from effective schools. Teachers today are excited about cooperative learning, team teaching, whole language approaches, multiculturalism, school-based management, and technology for all students. Workers are pursuing quality circles, affirmative hiring for women and minorities, total quality management, continuous improvement teams, and computerized production processes. Both are intrigued by possibilities for access to information, personal autonomy, long-term planning, investments in human capital, adoption of innovations, and organizational mission and goals. These internal discussions and developments contradict industrial metaphors of competition and rationalized processes.

A sense of justice or social fairness may be critical for fostering trust and cooperation. Unless we can work together toward common goals that give meaning to people's lives — not the pro-business, competition-oriented goals cited for America 2000 — no effort or money will significantly improve schools. For every model school identified and funded, a hundred others are thereby labeled substandard. "Lighthouse" schools and districts had a positive influence when there were expectations for growth and all schools strove to improve their curricula to keep pace with a growing population in an expanding economy. They do little good in a period of stagnation, widespread negativism toward government, and disagreements over future directions.

### ***Lifelong Education and Professionalism***

Given the current pace of technological changes and the investment in human capital required to function in an information age, future productivity gains depend on opportunities for new or updated education for adults. Typical workers will predictably hold five to eight jobs in a lifetime, and many workers who stay with the same firm will undertake quite different responsibilities at least as often. Technical, professional, and managerial positions have mandated or subsidized continuing education in order to keep up to date with new techniques, procedures, practices, and research. Businesses are spending over \$100 billion annually on employee training programs, and corporations seek cost-effective ways to train productive workers, primarily skilled technicians, professionals, and managers.

Restoring productivity growth that will ensure future generations a higher standard of living and allow the United States to compete internationally without further reducing wages depends on recurring education. Many unemployed adults are trapped with low-skill levels and little opportunity to gain on-the-job training. Expenditures for formal training in conjunction with normal on-the-job learning has three notable weaknesses.

- Unemployed and low-skill workers are denied learning experiences.
- Companies want workers to learn site-specific skills that cannot generate demand for higher wages based on offers from other firms.



- Sunset industries struggle to exist and do not support retraining that might enable workers to prepare for other jobs, so that opportunities tend to exaggerate wage inequalities.

A comprehensive program of recurring education for adults, supported by a 1.5 percent tax on wages, would generate over \$40 billion, spread the risks, and create a convenient mechanism for shifting costs and savings over time.

Overall, formal training in the United States is an enormous enterprise, with kindergarten through Ph.D. expenditures over \$390 billion in 1990–1991. Public and private costs of job training bring the total to over \$500 billion, 10 percent of the net national product. Estimates suggest that opportunity costs — or forgone wages of time spent in learning — would double that figure. Yet learning is best achieved through activities and interactions that are meaningful to the learner. There would seem to be real economies from students learning in workplaces, workers drawing on the resources of schools and colleges, and everyone having access to educational media and software. When students and workers are purposefully engaged in creating a better future, they willingly acquire competencies that enhance productivity.

Knowledge workers need a sense of community to make judgments amid unavoidable uncertainties. Yet antagonisms related to occupationally segmented experiences as well as class, race, and gender discrimination limit how well people work together. Production is not the problem — deciding what to consume and how to cooperate are the critical choices. As hours at work decline, more time will be devoted to learning. With job security, senior workers willingly share their skills or ideas for efficiency with novices or managers. Low-cost storing, processing, and communicating of information enables widespread access to knowledge in flexible and flatter organizational hierarchies. People who want to learn new productive competencies over their lifetime must communicate across segmented occupations and divided communities.

### *Partnerships for an Information Age*

In 1988, we focused on the dynamics of interactive collaboratives as “scouting parties” to explore new connections between schools and workplaces. We urged that partners consider how their proposed projects might “juxtapose different organizational purposes and cultures in a way that reformats perspectives, while allowing potential conflicts to be discussed and managed.” Drawing on experiences in several school improvement collaborations, including one between the Worcester public schools and the University of Massachusetts Amherst, we recommended the following: First, present key ideas without professional jargon or complex tables of organization. Second, avoid overpromising results. Third, incorporate new resources and redefine problems as resources. Fourth, address instructional services and thus the issues of who gets educated. Fifth, encourage many small changes without directly challenging the “system.” When teachers and outsiders view themselves as empowered partners with decision-making responsibilities, they reconsider organizational strategies and structures.<sup>35</sup>

Collaborative reforms are threatened by business and school leaders who want quick and visible payoffs. Hard data are to provide an equivalent to a firm’s bottom line of profit and loss so that more effective and efficient programs will displace others. Assessments of short-term results discourage projects with long-term and multiple goals. Education is a lifelong endeavor and many outcomes — positive and negative — will not show up for decades. Still, many partners seek evaluations to



demonstrate that everyone “got their money’s worth.” An emphasis on clear results measured by standardized tests often discourages significant innovations and other, perhaps more appropriate goals such as processes for communicating across a segmented society. Pressures for accountability contradict the strength of school partnerships, namely, their exploratory interactions among individuals from different organizations.

Most demands for school improvement involve a classic fallacy of composition. Some students, a handful of schools, a few nations, can gain by sharpening their competitive position under current social hierarchies — just as a few fans can get a better view by standing up in a stadium. Yet we clearly would all be better off sitting down and working together to envision a society in which reading, writing, computing, understanding how things work, thinking critically, appreciating aesthetics, and creating new art and science bring personal satisfactions. Under those conditions, students will naturally learn competencies to enhance their control over their own and society’s future. They will seek out teachers and jobs that make relevant knowledge accessible to them.

Whether partners view school reform as a win-win or a competitive win-lose situation depends on finding mutual payoffs, trusting one another’s good motives, and reducing discussions of weaknesses and problems to a manageable level. If modest payoffs and minimal risks are established at the outset of cooperation, partners are more likely to work together toward agreed-on goals. Gradually, as trust and vocabularies are shared, planning succeeding rounds of activities becomes easier. As Robert Axelrod demonstrated, cooperating leads to cooperation and defecting to defection. After many negotiations — or an infinite time horizon — cooperation becomes the preferred strategy.<sup>36</sup>

Partnerships, like reforms aimed at teacher professionalism or basic competencies, will fall far short of their potential if they retain industrial-era assumptions about a zero-sum relationship between schools and workplaces. Both must break down rigid organizational patterns to encourage open-ended, multiple interactions. Partnerships soon fail or become perfunctory when defined narrowly as businesses supporting schools. By starting small with volunteers, interactive collaborations minimize formal procedures and commitments. Veteran employees whose careers seem stymied or dull can explore alternatives in other organizations. As they collaborate, partners discover mutual lessons about adolescents, schools, other cultures, and productive organizations in an emerging information age.

A salient characteristic of a knowledge-based society will be choices. Its economy will rely on schools for scientific and technological innovations that enhance productivity and well-being; but more important, educators should clarify the features, functions, and future effects of potential decisions. Hence, students will need to learn (1) how to access and comprehend relevant information from vast public sources and (2) how to enact their preferences and values through their choices as individuals and as members of society. If schools do their part, workplaces must allow access to information, discretionary judgments, and cultural understandings that respect how people perceive their jobs and organizations. In short, students and workers will need a professional’s autonomy, though without a protected status that inhibits cooperation.

If inferior schools in low-income and minority neighborhoods are perpetuated, one result will be a substantial, perhaps devastating loss of organizational efficiency and social welfare. If the goal is to increase human well-being, jobs have to foster

continuing education and bring personal satisfactions rather than offer alienating, routine labor. In practice and in conversations, few adults remain satisfied with their job over a lifetime. Given an opportunity, people discover new interests, grow curious about other possibilities, and learn new skills. As machines take on routine tasks and shape information collection, storage, processing, accessibility, and application, people are free to innovate and create. Because information can be disseminated at exceedingly low marginal costs — except for the learners' time — any rationing of available knowledge reflects a judgment about desirable distributions of power.

Today, democracy, nearly universal literacy, mass media, and worldwide experiences with industrialism result in interdependence. Decision making thus requires honest communication and self-responsibility based on a belief that people share common conditions. As David Obey has asserted, "Inequality undermines the social consensus which is an essential prerequisite to growth." Efficient output in an information age requires open communication and cooperation, which in turn depend on mutual respect and trust based on a sense of fairness and purposeful involvements in society. Within firms, teamwork efficiently coordinates interactions. Today, external effects such as acid rain or the destructive potential of alienated and angry people require regional and international cooperation.<sup>37</sup>

In an educational climate marked by pessimism and budget crises, turf issues and conflicting organizational cultures raise mistrust about free riders, hidden agendas, and other barriers to negotiations. Multiple partners in compacts or regional associations can generate bandwagon effects that encourage commitments. These consortia act as honest brokers to identify common interests, generate positive publicity, and create support for organizational procedures that enhance access by outside groups. They minimize feelings of overcommitment or "we have to do it all." While specific firms may want workers trained to their specifications, regional compacts may emphasize flexible competencies in communication and critical thinking. When several firms are involved, the benefits of collaboration spill over to all concerned, fostering a sense of community across organizational and governmental units.

In a postindustrial society, efficient mass production is easy; making what people want requires combining low-cost communication with automation. But a society becomes dysfunctional when many are denied access to goods and services that are visibly available to others. The America 2000 goals for schools, if imposed from above, cannot succeed. Those standards handicap districts with the fewest resources and students with the greatest needs. By the same token, professional autonomy for everyone cannot be achieved in a segmented and hierarchical society. The standards are based on industrial-era metaphors that sequentially linked schools to workplaces. An information age calls for fast, flexible two-way interchanges that foster new productive competencies in education and employment. When all Americans foresee reasonable and fair opportunities to learn and earn over their lifetime, students will seek out knowledge that expands their future options. ■

---

## Notes

1. Ulrich B. Phillips, *Life and Labor in the Old South* (Boston: Little, Brown, 1963), 198, and Jonathan Prude, *The Coming of Industrial Order: Town and Factory Life in Rural Massachusetts, 1810–1860* (New York: Cambridge University Press, 1983), 113, 112.



2. Quoted in Samuel Bowles and Herbert Gintis, *Schooling in Capitalist America: Educational Reform and the Contradictions of Economic Life* (New York: Basic Books, 1976), 199.
3. David B. Tyack, *The One Best System: A History of American Urban Education* (Cambridge: Harvard University Press, 1974), 50, and David Tyack and Elizabeth Hansot, *Managers of Virtue: Public School Leadership in America, 1820–1980* (New York: Basic Books, 1982), 153.
4. Shoshana Zuboff, *In the Age of the Smart Machine: The Future of Work and Power* (New York: Basic Books, 1988), and Larry Hirschhorn, *Beyond Mechanization: Work and Technology in a Postindustrial Age* (Cambridge: MIT Press, 1984), 150.
5. Edward Denison, *Trends in American Economic Growth, 1929–1982* (Washington, D.C.: Brookings Institution, 1985), 30.
6. Manuel Castells, *The Informational City: Information Technology, Economic Restructuring, and the Urban-Regional Process* (Oxford: Basil Blackwell, 1989), 190.
7. U.S. Department of Health, Education, and Welfare, *Work in America* (Cambridge: MIT Press, 1973), 186.
8. James R. Beniger, *The Control Revolution: Technological and Economic Origins of the Information Society* (Cambridge: Harvard University Press, 1986).
9. Hirschhorn, *Beyond Mechanization*, 93.
10. Zuboff, *In the Age of the Smart Machine*, 71, 72.
11. Ibid., 72, 75, 76, 95.
12. Herbert A. Simon, *The Sciences of the Artificial*, 2d ed. (Cambridge: MIT Press, 1981).
13. Ronald E. Kutscher, "An Overview of the Year 2000," *Occupational Outlook Quarterly* 32, no. 1 (1988): 2–9.
14. Commission on the Skills of the American Workforce, *America's Choice: High Skills or Low Wages!* (Rochester, N.Y.: National Center on Education and the Economy, 1990), 27.
15. Lawrence Mishel and Ruy A. Teixeira, "The Myth of the Coming Labor Shortage: Jobs, Skills, and Incomes of America's Workforce 2000" (Washington, D.C.: Economic Policy Institute, 1990), 1–2.
16. National Commission on Excellence in Education, *A Nation at Risk: The Imperative of Educational Reform* (Washington, D.C.: U.S. Government Printing Office, 1983), 5.
17. U.S. Department of Education, *America 2000: An Education Strategy* (Washington, D.C.: U.S. Department of Education, 1991).
18. Andrew Abbott, *The System of Professions: An Essay on the Division of Expert Labor* (Chicago: University of Chicago Press, 1988), 318, 323, 324.
19. P. E. Barton, "Partnerships Between Corporations and Schools," (Washington, D.C.: National Commission for Employment Policy, 1983), 60.
20. Byrd L. Jones, Robert W. Maloy, and Frank Fletcher, "School Improvement Partnerships: Despite Turf Issues and Hidden Agendas, They're Working," *Connection: New England's Journal of Higher Education and Economic Development* 5, no. 1 (1990): 34–37.
21. Committee for Economic Development, *Investing in Our Children: Business and the Public Schools* (New York: Committee for Economic Development, 1985), 17.
22. Urie Bronfenbrenner, *The Ecology of Human Development: Experiments by Nature and Design* (Cambridge: Harvard University Press, 1979), and Robert Kegan, *The Evolving Self: Problem and Process in Human Development* (Cambridge: Harvard University Press, 1982).
23. Ann Lieberman and Lynne Miller, *Teachers, Their World, and Their Work: Implications for School Improvement* (Alexandria, Va.: Association for Supervision and Curriculum



- Development, 1984); Dan C. Lortie, *Schoolteacher: A Sociological Study* (Chicago: University of Chicago Press, 1975); and Ray Raphael, *The Teacher's Voice: A Sense of Who We Are* (Portsmouth, N.H.: Heinemann, 1985).
24. Eleanor Burke Leacock, *Teaching and Learning in City Schools* (New York: Basic Books, 1969), and Sara Lawrence Lightfoot, *The Good High School: Portraits of Character and Culture* (New York: Basic Books, 1983).
25. Arthur Blumberg and William Greenfield, *The Effective Principal: Perspectives on School Leadership*, 2d ed. (Boston: Allyn and Bacon, 1986), and Jerry L. Patterson, Stewart C. Purkey, and Jackson V. Parker, *Productive School Systems for a Nonrational World* (Alexandria, Va.: Association for Supervision and Curriculum Development, 1986).
26. Michael Fullan, *The Meaning of Educational Change* (New York: Teachers College Press, 1982), and Marvin Lazerson et al., *An Education of Value: The Purposes and Practices of Schools* (New York: Cambridge University Press, 1986).
27. Rolf Lehming and Michael Kane, eds., *Improving Schools: Using What We Know* (Beverly Hills, Calif.: Sage Publications, 1981); Seymour B. Sarason, *The Creation of Settings and the Future Societies* (San Francisco: Jossey-Bass, 1972); and Seymour B. Sarason, *The Culture of the School and the Problem of Change*, 2d ed. (Boston: Allyn and Bacon, 1982).
28. Milbrey W. McLaughlin and David D. Marsh, "Staff Development and School Change," *Teachers College Record* 80 (1978): 69-94.
29. Gareth Morgan, *Images of Organization* (Beverly Hills, Calif.: Sage Publications, 1986).
30. Lauren B. Resnick, "Learning In School and Out," *Educational Researcher* 16, no. 9 (1987): 16.
31. Robert Bellah et al., *Habits of the Heart: Individualism and Commitment* (New York: Harper and Row, 1985).
32. Ronald Edmonds, "Programs of School Improvement: An Overview," *Educational Leadership* (December 1982): 4-11.
33. Charles M. Payne, *Getting What We Ask For: The Ambiguity of Success Education and Failure in Urban Education* (Westport, Conn.: Greenwood Press, 1984), 171.
34. Philip A. Cusick, *The Egalitarian Ideal and the American High School* (White Plains, N.Y.: Longmans, 1983).
35. Byrd L. Jones and Robert W. Maloy, *Partnerships for Improving Schools* (Westport, Conn.: Greenwood Press, 1988), 120-121.
36. Robert Axelrod, *The Evolution of Cooperation* (New York: Basic Books, 1984).
37. David R. Obey, "A Public Economics of Growth, Equity, and Opportunity," *The Changing American Economy*, edited by David Obey and Paul Sarbanes (New York: Basil Blackwell, 1986), 13.