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ABSTRACT

This report analyzes the current educational reform movement by drawing heavily on the parallels between it and contemporary efforts to reform work. It argues that current initiatives which are often solely associated with vocational education can form the basis of an education reform strategy that applies to all students. Based on information from current reform initiatives, research on changing needs in the economy, and knowledge of experience with the contemporary reform movement in the organization and nature of work, the report develops an integration strategy for educational reform. The report then evaluates the extent to which that strategy has been implemented in three large cities: New York, Philadelphia, and Chicago. The case studies of the cities have been written to stand on their own--that is, they are useful for readers interested in each of the cities--and to suggest the complexities and uniqueness of educational reform efforts at the local level. These sections focus primarily on vocational and occupationally oriented education at the secondary and community college levels--the points of closest contact between the educational systems and local workplaces. This analysis also addresses the issue of whether a strategy that complements current changes in work can also affect the persistent problems found in minority education. Appendixes include a list of 150 references and a 48-item bibliography. (YLB)

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EXECUTIVE SUMMARY

This report analyzes the current educational reform movement, arguing that current initiatives which are often solely associated with vocational education can form the basis of an education reform strategy that applies to all students and schools. Based on information from current reform initiatives, research on changing needs in the economy, and knowledge of experience with the contemporary reform movement in the organization and nature of work, the report develops an *integration* strategy for educational reform. The project then evaluates the extent to which that strategy has been implemented in three large cities: New York, Philadelphia, and Chicago. Also addressed in this analysis is the issue of whether a strategy that complements current changes in work can also affect the persistent problems found in minority education.

Employers have had to confront profound economic and technological developments during the last fifteen years. Many organizations have failed to adjust, but many of those that have been most successful have shifted to innovative types of work organization. These changes not only require workers with stronger basic skills, but create a stronger demand for higher-level cognitive, problem-solving, and social skills. In general, work has become more uncertain and faster changing, requiring greater adaptability. Furthermore, work reform that decentralizes authority has given greater responsibility and discretion to lower-level employees.

A particularly important innovation in work organization involves a shift from *sequential* forms of work to more *integrated* processes. In the sequential mode, goods and services are produced in discrete steps, each of which is completed before the next begins. Moreover, these steps are carried out by different groups of people with little interaction among the groups. New approaches to production emphasize an integrated process which allows much more interaction among product design, engineering, planning, marketing, production, and distribution. This integrated approach permits more flexible response to today's rapidly changing markets and technology and facilitates more rapid innovation in both product and process.

The education reform movement is related to this trend in the organization of work in two ways. First, innovative work organization requires workers with new and different skills. Second, there are many parallels in the two movements. For both reform

movements, there is great similarity in the substantive content, the recent historical developments, the pace of diffusion of innovative practices, and even the types of information that are available to assess success or failure of innovations.

Furthermore, a fundamental conclusion can be drawn from the experience so far with contemporary work and educational reform efforts. Both involve a cluster of activities and components that must interact and build on each other. In both cases, reform efforts have much less chance for success if they are implemented using individual or isolated initiatives.

The dominant reform strategy of the early and mid-1980s focused on increasing academic requirements and standards, especially for secondary school graduation. (This was perceived to be a direct threat to high school vocational education since more time for academic courses would apparently reduce the time available for practical vocational courses.) Secondary schools were to provide a basic academic foundation while postsecondary institutions would provide the more specific technical and occupational training. Community colleges, which experienced dramatic growth in the 1970s, played an important role in this reform strategy. Because of its emphasis on increasing the number of academic courses, we refer to this strategy as the *quantitative* reform strategy.

We argue that the quantitative strategy, with its well-defined roles for secondary and postsecondary institutions and its maintenance of a sharp distinction between school and work (or more generally, nonschool) was more consistent with a traditional, sequential production strategy rather than the emerging integrated approach to work and production. Moreover, the quantitative strategy had, at best, ambiguous implications for racial equity in education and for the growing minority populations in large urban school districts.

Towards the end of the decade, the consensus over the quantitative reform strategy gave way to several reform trends that often seemed contradictory. These trends can be categorized into three broad groups. One group focused on the *content* of education. It encompasses a variety of proposals calling for, particularly in the 1990 amendments to the Carl D. Perkins Vocational Education Act, the integration of vocational and academic education, proposals to reduce the distinctions between learning in school and nonschool settings, interest in "contextual" and applied learning, and cognitive apprenticeship. The second broad group involved *organizational or procedural issues* such as more choice and

greater decentralization or school-based management. The third group of reforms included programs to increase the *institutional relationships between schools and outside organizations* including Tech Prep links to postsecondary schools, school business partnerships, various types of "compacts," and customized training programs. This combination of changing content, organization, and institutional relationship comprises the integration strategy. Fundamentally, this strategy challenges the sharp distinction between school and work or between learning in the classroom and learning the job. Rather than conceptualizing learning as something that takes place before work, we suggest that school and work need to be further integrated.

This framework also defines the basis of current organizational reform in the workplace. In shifting from a sequential to an integrated approach, firms have had to change along three dimensions: (1) the content of work, (2) the way in which work is organized, and (3) the relationships between the firm and other institutions. Similarly, schools need to address three similar areas: (1) the content of education—how and what is taught (we refer to this as content integration); (2) the organization of schools (organizational integration); and (3) the relationship between schools and other institutions in society, especially employing institutions (institutional integration). Thus, these three correspond to the three broad trends in educational reform—changing content, organization, and institutional relationships.

The integrative strategy demonstrates the underlying relationships and potential coherence among the apparently diverse strands of educational reform that have emerged since the middle of the 1980s. It also suggests that the integration of vocational and academic education emphasized in the 1990 amendments to the Perkins Act is only part of a much broader strategy. Moreover, the experience with work reform suggests that partial or piecemeal implementation of the shift towards a more integrated approach is not effective. For example, asking workers to merely take more initiative without accompanied changes in the traditional, hierarchical work organization can lead to frustration and cynicism. Similarly, curriculum reform in the absence of organizational and institutional changes will probably have little effect and may simply lead to discouragement.

After developing this framework in more detail in the following two sections, the report examines educational reform movements in New York, Philadelphia, and Chicago in order to assess the extent to which they have moved towards a more integrated strategy, the

problems that thwart that movement, and the implications for minority students in those cities. The analysis of the experience in these cities suggests the following conclusions:

1. All three of the cities experienced similar basic economic and demographic trends. There was a sharp shift from manufacturing to services and from blue-collar to white-collar employment in each city, although the growth of white-collar and service employment was slowed or reversed after about 1988. Although the populations of all three cities has generally fallen since the 1960s, the minority share of that population grew sharply during the same period; all three cities experienced growing poverty as well as the expansion of conspicuous wealth—booms during the 1980s left very large segments of the populations in poverty with profound social and educational problems.

2. At the same time, there were some sharp differences between the economic and demographic trends in the cities. The growth of financial and business services was exaggerated in New York and the decline of heavy manufacturing was much more precipitous in Chicago. The industrial shift in Philadelphia was an intermediate case. In terms of demographic changes, the growth of the Hispanic population was stronger in New York and Chicago than in Philadelphia. And the minority population in New York was even more diverse than in Chicago, with an especially strong growth of the Asian population.

3. But despite the contrasts among the cities, the commonalities seem to have been most influential in shaping educational reform. The minority share of each school system grew faster than the minority share of the corresponding city's populations. And there was a general sense of failure in all three school systems. Although each had some excellent schools, all three cities had large numbers of schools that were considered to be in serious trouble. The subtleties of the differences in the economies of the three cities does not seem to have been reflected in trends in educational reform. On the other hand, the ebb and flow of industries have had different effects on the political elites in the different cities and the changing fortunes of these groups do seem to have had some impact on educational reform.

4. Perhaps the most simplistic form of response to the changing economic structure simply involves changes in the occupations for which students are trained either in high school vocational education programs or community colleges. Indeed, a

frequent criticism of vocational education is that it tends to prepare students for declining occupations. This did not appear to be a problem in these cities. The changes in the occupational distribution of training more or less matched the changes in the city's occupational structure. In some cases, educators were able to place students in apparently declining industries because they had good contacts with employers who were in pockets of strength in otherwise declining industries.

5. During the 1980s, in all three cities, academic requirements for graduation increased—the quantitative reform strategy—although the strength of this effect differed sharply. It was strongest in Philadelphia where it apparently led to a sharp decline in vocational enrollments. In Chicago, there were only minimal changes in graduation requirements so the reform had little effect. In New York, the effects were complicated by the interaction between changing graduation requirements and a simultaneous reform of vocational education.

6. Many of the elements of the integration strategy have significant support in all three cities.

   - *Content integration*: Educators in all three cities, especially those involved with the vocational education system, voice enthusiasm for the integration of vocational and academic education, although many of the actual initiatives are in pilot stages. Perhaps the most significant movement towards content integration involves the spread of occupationally or vocational oriented magnet schools. There are more of these schools in New York, although Philadelphia pioneered the concept with its high school academies. The trend has not gone as far in Chicago.

   - *Organizational integration*: Chicago and New York have both implemented versions of school-based management. Chicago's is by far the most radical, devolving to parent dominated local school counsels the authority to hire and fire principals and to set budgets (within an allocation set by the central board). Chancellor Fernandez in New York has taken steps to implement the school-based management strategy that he used in Florida. The Philadelphia school system remains centralized. All three cities have increased the choice available to students through interschool transfers.

- *Institutional integration*: Interest in linking high schools more closely to community colleges has grown. The private sector has a history of involvement in the schools in New York, Philadelphia, and Chicago. That involvement seems to have weakened slightly in Chicago but increased in Philadelphia. Private sector organizations have weighed in with opinions about recent educational reforms through such organizations as the New York City Partnership and Chicago United, but with the possible exception of Philadelphia, they have not been decisive factors in recent school reform. The significance and implications of the direct contacts between the schools and businesses/employers varies from school to school in all of the cities, with some relationships being very fruitful, but once again this has not been a fundamental cause of sharp change.

7. Despite support for several elements of the integration strategy, movement towards a comprehensive reform is limited. Most of the initiatives mentioned above remain individual and uncoordinated, and some of the positive achievements are open to alternative interpretations:

   - Some, although probably not all, of the benefits of the occupationally oriented schools result from the selectivity of the schools. Whether the models can be spread to all students is an open question.

   - Traditional vocationalism focused on rather narrow occupational skills with little more than theoretical interest in integrating academic skills. This philosophy remains strong in many vocational programs, especially in the stand alone vocational schools.

   - Some progress has been made with the vocational programs in the comprehensive schools, but in many cases, they remain programs of last resort, or leftovers from the "dumping ground" role of vocational education.

   - Most of the attempts to integrate work and school remain reforms of vocational education rather than a basis for overall reform, although there are some exceptions in all three cities.

8. Decentralizing reform of school organization is a complex and confusing issue, as is the issue of decentralizing reform of work organization. One of the problems is

that there are many models of work reform and educators have been too quick to suggest that the particular models that they propose have support from experience on the job. Certainly more conceptual work is needed to understand the parallels between organizational reform at work and in educational systems. One of the lessons from the efforts to innovate work organization is that the initiatives need both substantive goals as well as a change in form. In education, this suggests the need for an overall educational vision and strategy as well as innovation in governance. At least in Chicago, where the most radical experiment has taken place, it is not clear where that vision or strategy will come from.

9. Community colleges had a well-defined role in the quantitative strategy. Moreover, throughout the 1970s and part of the 1980s (in some cities throughout the 1980s), community college enrollments continued to grow, and the more flexible structure and the willingness to work directly with employers to provide customized training seemed to suggest that these were institutions that were well-placed to serve the emerging needs of the economy. In some cases, this perception has been borne out. Nevertheless, perhaps because they seemed so well-suited for current needs, less effort has been devoted to thinking about the emerging roles of community colleges than high schools. Furthermore, in New York and overwhelmingly in Chicago, these institutions are concentrating more and more on teaching basic skills to adults. This function, although it may be necessary and useful, distorts the role of community colleges as postsecondary institutions. Extremely low completion rates are also serious problems in some cities; this is particularly grave in Chicago. Thus, while the community colleges have not been the focus of so much reformer concern, in some ways, they have farther to go in defining and implementing a role that is consistent with the emerging economy than the high schools.

10. Concerns about equity and minority access to education dominated educational reform in the 1960s and 1970s. These concerns gave way to a preoccupation with the economy in the 1980s. Strategies based on desegregation were thwarted as whites became a shrinking minority of school populations in many major urban areas. Reform based on the integration strategy has the potential to strengthen minority education. If it improves urban school systems, minorities will benefit. Indeed, many African-American and Hispanic students have been able to take advantage of occupationally oriented magnet schools. To the extent that the these particular reforms upgrade vocational programs in general, African Americans

especially stand to gain since they tend to be overrepresented in those programs. But the truncated reforms we have seen so far maintain sharp stratification. More local control has the potential to increase the involvement of minority communities in education, but it is too early to evaluate the effects of recent reforms such as those in Chicago. Improving minority education will require continued struggle, but working toward a comprehensive reform based on the integration principle including changes in educational content and organizational and institutional relationships can be an important part of this struggle.

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INTRODUCTION

Anxieties about national productivity growth and international competitiveness have sustained interest in educational reform for over a decade. One purpose of this report is to strengthen the reform movement by developing an educational model that draws on knowledge and analyses from three broad areas—current thinking about teaching and schools, research on the educational implications of the changing economy, and analyses of the contemporary efforts to restructure the organization of work. Once that model is established, the report analyzes the reform movement as it has developed in three major metropolitan areas, with a particular emphasis on the effects of reform on urban and minority students.

I refer to the approach developed in this report as the *integration strategy*. A central component of the strategy involves strengthened links, along several dimensions, between education and work. Vocational education plays a central role in this story for two related reasons. First, when compared to academic education, vocational education has had closer relationships to the workplace than more academic education. Second, many of the pedagogical and organizational techniques that form the basis of the integration strategy have been developed in vocational education or in schools and educational programs with strong ties to the workplace.

The current educational reform movement can be dated from the early 1980s. Over the same period, there has also been an active movement to reform work. Managers, academicians, consultants, and various reformers have called for significant changes in the way in which work is organized in the country's offices and factories, arguing that organizational performance will rise and that our economy will be more competitive if work is more decentralized, if lower-level workers have more responsibility, if jobs are more broadly defined, and if organizations break down traditional boundaries and functions.

This report draws heavily on the parallels between the current educational reform movement and contemporary efforts to reform work. Indeed, as I shall show, there are many parallels as well as points of contact between the two reform movements. First, many analysts argue that the "transformed" or "high performance" workplace requires higher levels of education and different types of skills—ends that will only be achieved through significant educational reform. Second, schools are also organizations and their

performance may also be improved through the types of reforms being developed in the workplace. Third, there are close parallels in the historical development of the two movements over the last fifteen years. Fourth, the boundaries between working and learning are increasingly blurred.

Thus, if the barriers and distinctions between work and learning are being challenged, it does not make sense for their respective reform movements to continue to be discussed, planned, and evaluated separately. At the most simplistic level, educators have much to learn from the reform experience of other employers. But just as important, schools and educators may have a significant influence on the workplace. There is a consensus that increased productivity and a rising standard of living requires both changes and reform in schools and educational programs as well as in the organization of work. If employers adhere to a traditional approach to production, then improved education may have little effect. Indeed, reforming work may itself be a key to improved skills since a great deal of learning does and potentially can take place on the job. Some of the current educational reform proposals such as apprenticeship call for an expansion of the use of the workplace as a learning cite even for adolescents.

The second section of this report, drawing on the contemporary experience with both work restructuring and educational improvement, develops the integration model of educational reform. Many of the current educational reform proposals and strategies, especially those emerging from vocational education, form the basis of that model. The framework serves the purpose of drawing together many seemingly disparate policies and initiatives, and it facilitates a direct comparison to work reform.

Thus, the model developed in the second section is an educational target, a reform strategy that is consistent with what we know about the changing nature of work and education, the successes and failures of work and educational reform, and the results of contemporary reform programs and proposals. The second section presents a normative argument. Sections Three through Five recount the recent history of educational reform in three major metropolitan areas—New York, Philadelphia, and Chicago.[1] This material is

[1]Educational analysts in New York, Philadelphia, and Chicago were asked to write reports on educational reform and the response of the education system to economic change in each city. The empirical basis of each case study included interviews with teachers and administrators in high schools and community colleges, and representatives of local businesses as well as a variety of data population surveys such as the Census and Civilian Population Survey and administrative data from local schools and colleges. Each report addresses the following issues: the changes in the city's economy and demography over the last twenty years, problems

used to evaluate the extent to which large public educational systems are moving towards an integration strategy and to explore the major barriers to achieving that goal.

Many educational systems could have been chosen for the purpose of an empirical exploration of the integration model. These metropolitan areas were chosen because they provided an opportunity to study the relationship between educational reform and the experience of minority students. In earlier decades, equity and access for minority students was the central goal of educational reform, but as the reform thrust has shifted to concerns about productivity and competitiveness, preoccupation with minority issues has faded. Thus, the focus on education in these cities is an attempt to place the problems of equity and access squarely within the domain of work-related educational reform. Reform strategies can be considered failures if they succeed in strengthening skills and productivity of some workers while leaving millions of urban minority youth without sufficient skills and education to earn an adequate living.

The case studies of the cities have also been written to stand on their own—that is, they will be useful for readers, interested in each of those cities—and to suggest the complexities and uniqueness of educational reform efforts at the local level. However, it was not possible to present the full story of educational reform in each city. As a result, these sections have focused primarily although not exclusively on vocational and occupationally oriented education at the secondary and community college levels. These are the points of closest contact between the educational systems and local workplaces.

In the rest of this introduction, I briefly review the recent history of educational reform, the parallel discussions of the changing economy, and the related work reform movement. The introduction also considers the potential problems of a "too-close" relationship between education and work, and ends with a discussion of reform and the problems of minority education. The final segment of this report presents conclusions and recommendations.

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that these changes have created in the educational system, how educators have perceived those problems, and how schools and businesses have responded to those problems.

Educational Reform in the 1980s and 1990s

Since the early 1980s, educational reform has become closely tied to perceived problems in the relationship between education and the country's competitiveness.[2] Earlier, through the mid-1980s, educators had been primarily concerned with problems of equity and access to education. By the middle of the 1980s, the focus on equity and access had been weakened so much that the drive for equal access was often seen as part of the problem rather than the primary objective of reform. A strong undercurrent and perhaps even the consensus in the discussion of educational reform partly blamed perceived educational problems on the efforts of schools to accommodate the demands of minorities for equal access (Grant, 1988; Ravitch, 1983).

Since the early 1980s, reforms to promote competitiveness were the order of the day. The publication of *A Nation at Risk* (National Commission on Excellence in Education, 1983) clearly reflected this growing preoccupation. This report, and a cascade of similar pieces, implied that much of the blame for the decline of U.S. international economic dominance can be attributed to the failure of the schools. In their most widely quoted phrase, the authors asserted that "the educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very nature as a Nation and as a people" (p. 5). Their reform agenda called for a renewed emphasis on basic academic courses in high school, an increase in the time spent in school, and a strengthening of the quality and professionalization of the teaching workforce. Vocational education, at least in high school, was viewed with skepticism both as a diversion from basic academic courses (the availability of large numbers of elective courses was also condemned for this reason) and as a thinly disguised tracking system. The thrust of the reform was to recapture a presumed past educational glory, *To Reclaim a Legacy* as William Bennet (1984) stated in his report on higher education. In effect, the reformers of the 1980s called for the expansion to broader segments of society of the liberal arts education (at least through high school) that had traditionally been reserved for the elite.

Because this approach calls for more education for all, I refer to it as the *quantitative* strategy. This strategy is based on the notion that what is learned in school is later applied

[2] It may seem surprising in the early 1990s, but books and articles on educational reform published in the 1970s and 1980s rarely if ever mentioned the problems of competitiveness. Business leaders had little interest in education and to the extent that they did concern themselves with schooling issues, they did so as part of a program of community relations or based on a sense of social responsibility rather than for reasons of self-interest.

in the workplace and that greater skill demands in the workplace require a greater quantity of education—more years of schooling. This is based ultimately on a human capital perspective in which education is conceptualized as an investment that pays off in increased productivity and earnings in subsequent employment. The reform strategy that emerged from this perspective dovetailed with the conclusions of the U.S. Department of Labor's influential *Workforce 2000* report (Johnston & Packer, 1987) which concluded that a growing share of the jobs expected to be created during the 1990s would require at least some college education. Thus, the quantitative principle was used to call for more college graduates and therefore an expansion of the traditional college preparatory academic education.

By the early 1990s, this reform strategy was almost a decade old, and although a large majority of states had increased high school graduation requirements, few believed that schools had improved much as a result. Nevertheless, the strategy based on strengthening academic education remained influential. The foundation of President Bush's 1991 educational reform strategy outlined in *America 2000: An Education Strategy* (U.S. Department of Education, 1991), was also an increased stress on basic academic subjects.

This quantitative strategy was only one contender among many by the early 1990s. Reformers called for stronger involvement of the private sector; for radical changes in governance including various types of administrative decentralization and parental control and choice; and a variety of reforms of curriculum, assessment, and certification. There was serious discussion, research, and even several bills in the U.S. Congress aimed at reviving and expanding apprenticeship, an educational modality that had seemed hopelessly anachronistic just a few years before.

I shall argue that one of the weaknesses of the quantitative strategy is that it is based on a sequential model of the relationship between education and work—work takes place after education is complete. Whatever the appropriateness or effectiveness of this sequential model in the past, it has been increasingly called into question by changes in the economy as well as influential ideas about how work can be most effectively organized.

Economic Change and the Organization of Work

During the last fifteen years, economic and technological changes have begun to reshape the nature and structure of work. The development of micro-electronic technology, the intensification of international and domestic competition, and the broad developments in markets for goods and services have led to changes in the skills needed in the workplace, in the role of individual workers within firms, and in the structure of industries (Bailey, 1990). Scientific and market developments have accelerated the pace of change both in products and services as well as in processes and technologies for producing these products and services. As Grubb (1984) has pointed out, throughout the twentieth century the educational system has had to respond to technological change, which in any case, is a constant feature of modern capitalism. Yet current developments appear to have raised the pace of change and the resulting uncertainty to a new level. This represents a qualitative change in the overall strategy of production with significant implications for skills and education.

Many analysts have argued that these changes require a thorough restructuring of the organization of work. Traditional production systems were designed to move through a succession of separate departments and steps. There was very little interaction among those departments. That is, like the educational strategy that prepared the workforce, production was organized sequentially. During the 1980s, some progressive firms not only increased interaction and two-way communication among departments, but they destroyed or redesigned the traditional roles and divisions between functions within their firms and among their firms, other firms, and related institutions. To some extent, this also challenged the traditional patterns of hierarchy and authority in the workplace. In effect, production processes were moving from a sequential to a more integrated approach.

What does this mean for education? I shall argue that while the thinking behind the quantitative strategy captures important elements of reality, its adherence to a sequential perspective on the relationship between education and work made it more appropriate for the traditional sequentially organized workplace. The postsecondary education system and especially the four-year colleges and universities are acknowledged to comprise the strongest sectors of the educational system in the United States. By emphasizing the importance of preparation for a liberal arts postsecondary education, reformers were attempting to strengthen the system's traditional areas of strength.

This attempt to rescue the traditional educational strategy foundered. Just as progressive firms are moving from a sequential to an integrated approach to production, I shall argue that schools and colleges need to move from a sequential to a more integrated relationship between education and work. Thus, the approach will be referred to as the *integration strategy*. We shall see that this strategy has particular implications for the content and organization of the educational system and for its relationships to firms and labor market institutions.

Many of the individual reform proposals that have been widely discussed during the late 1980s and early 1990s are consistent with the integration strategy. These include school-based management; the integration of vocational and academic education; the evaluation of students on the basis of projects or portfolios rather than paper and pencil tests; the questioning of divisions between traditional academic disciplines; and the renewed interest in apprenticeship, customized training, and cooperative education among others.

While each of these reforms may make sense individually, how do they fit together? What can move them from being simply a plethora of tactics and proposals to being part of a coherent strategy? In this report we develop the integration strategy as an attempt to provide a framework for understanding the evolving relationship between educational reform and work. The analysis draws on lessons and insights from the work reform movements of the 1980s and early 1990s.

Conflicting Roles of Schools and Workplaces

Close ties between schools and workplaces raise the issue of the conflicting roles of the education system and the private sector. For example, Bowles and Gintis (1976) suggested that the correspondence between school and work is a perversion of the democratic and communitarian ideals of the American education system. Certainly, the skills, aptitudes, and aspirations most appropriate for participation in a democratic society are not the same as those that make for a successful worker in hierarchical, routinized factory jobs or white collar bureaucracies. However, the changing economy and related calls for changes in the organization of work may establish a new environment in which this crucial discussion can go forward. While it is possible that an educational reform movement obsessed with international competitiveness may strengthen existing inequities,

struggles around school reform in the context of the changing economy may offer an opportunity to strengthen the underlying democratic institutions and open opportunities. This will ultimately be a political question.

Race, Educational Reform, and the Changing Economy

In the United States, equity in access to schooling and philosophical issues raised by close relationships between schools and workplaces are inextricably associated with racial equity. Moreover, as we pointed out earlier, as the education reform movement became more preoccupied with economic competitiveness, earlier focus on racial equity dissolved. There is no question that African Americans made tremendous gains in breaking down the *de jure* segregated school systems in the South and in challenging the *de facto* segregation in northern cities, but changing social geography of the cities limited the success of integration. Busing achieved little if whites enrolled their children in private schools or moved to the suburbs. Efforts to keep middle-class whites in urban schools were sometimes successful, but more often resulted in establishing special schools that were predominantly white. Thus, minority education remained an unresolved problem as educators and employers became increasingly preoccupied by the apparent deficiencies of the education system from the point of view of skill needs and international competitiveness.

Indeed, the quantitative agenda that dominated the reform movement in the mid-1980s has been attacked for overlooking the problems of many students who are not academically oriented. As educational historian Lawrence Cremin (1989) suggests, it is possible that the increased academic stringency has increased the dropout rate as well as pushing some students to higher levels of achievement. In many cities, the dropout rate has increased although the relationship between this increase and educational reform has not been definitively established (p. 36).

Business analysts who have studied the changing nature of work often have little to say about education other than a superficial call for a better educated workforce. When education is discussed, the problems associated with minority education are virtually ignored. For example, a 1989 report by the MIT Commission on Industrial Productivity called for major changes in education and training in this country. Its discussion of

minorities or disadvantaged groups was limited to statements such as the following: "Three-fourths of the new entrants to the labor force will be drawn from groups that have historically been disadvantaged. White males will constitute only fifteen percent of the new entrants to the labor force over the next decade" (Dertouzos, Lester, & Solow, 1989, p. 93). Indeed this concern about the falling labor force share of white men has been a staple of the educational reform discussion since it was first emphasized in *Workforce 2000* (Johnston & Packer, 1987). Although this concern does not necessarily reflect a fear that these groups, if given access to adequate education, cannot fill roles previously played by white men, it does indicate that the growing ethnic heterogeneity of this country is perceived to pose a threat to increased competitiveness.

As the position of the United States in international markets deteriorated, comparisons between the domestic and foreign educational systems have become an important part of the reform discussion. Some analysts have suggested that the United States adopt some aspects of the Japanese or West German systems, for example, yet these proposals are difficult to evaluate unless the particular problems of race and equity are brought into the center of the analysis. Japan is an ethnically homogeneous society. West Germany does have growing minority populations, but we know little about the fortunes of Turks, for instance, in the West German educational system. Although research on this is just beginning, what we know does suggest that ethnic minorities in West Germany face serious barriers in the West German apprenticeship system. For example, only about one-third of all fifteen- to eighteen-year-old foreign youth compared to two-thirds of West German youth in the age group are in the dual training system (Faist, 1992).

While the discussion of education to promote competitiveness neglects the issue of race, research oriented towards the educational problems of urban minorities generally treats economic changes simply and deceptively. The basic hypothesis is that the decline of manufacturing in urban areas has robbed minorities of their traditional employment launching pads. Higher-level service jobs that account for most employment growth are out of reach of urban minorities with low levels of educational attainment (Kasarda, 1989; Wilson, 1989). Katznelson and Weir (1985) emphasize the problem of geographic racial segregation but say little about changes in work or educational reform that might address changing job demands. Thus, the discussion about minority education is translated into a call for more education for urban minorities. That is, it follows the quantitative reform

agenda. While more sophisticated analyses of the needs of the emerging economy have been developed, these have not generally applied to analyze minority education problems.

The quantitative reform movement associated with the publication of *A Nation at Risk* was more consistent with past economic context than emerging approaches to work and production organization. Several strands of the reform movement that emerged towards the end of the 1980s were indeed more in tune with thinking about effective organizational design, but these strands often remain separate, isolated initiatives or programs. These issues are raised in more detail in the following section.

THE INTEGRATION PRINCIPLE IN EDUCATION: WORK, RACE, AND SCHOOLING IN THE 1990s

This section develops a conceptual framework for analyzing school reform and its relationship to the changing economy and contemporaneous work reform efforts. I first describe in more detail the contemporary changes in the economy and in related innovations in the organization of work. The subsequent section centers around past conceptualizations of the relationship between school and work and their relevance to previous educational reform movements. Next, I propose a model of the relationship between school and work based on the integration principle. The final portion of the section applies that model to a discussion of educational equity, access, and the education of minorities.

Changes in the Nature and Organization of Work

During the 1980s and 1990s, employers in the United States have been confronted with profound economic and labor market changes. These developments have far-reaching effects on skills needed in the workplace and on the educational processes of schools, colleges, universities, and firms themselves. A variety of factors are driving the contemporary transformation of work, including the increase in international trade, a continuing growth in services, the diffusion of sophisticated communications equipment and computers, changes in the nature of markets and consumer demand, and a general increase in the level of change and uncertainty.

These developments have created conditions that represent a break with the earlier post-World War II era. Many industries see profound changes in technology, markets, and industry structure which in turn are reshaping human resource strategies and educational and training requirements (Bailey, 1990).

On the technology side, the spread of micro-electronics is a major influence. Other nontechnological factors are equally important: intensified competition, particularly from abroad; increased importance of variety, style, quality, and service; quickening of change in technology, products, and services; and an accompanying rise in the general level of uncertainty.

These changes have led firms both to increase the variety of their output and to try to be more responsive to the market. In pursuit of the latter goal, firms are increasing the extent and depth of their interactions with customers and suppliers and reducing the time that it takes to conceive, design, produce, market, and distribute their products. Modern computer technology has greatly increased the ability of firms to carry out these objectives, but new technology alone is not sufficient. Technological innovation and modernization has been accompanied by efforts to reshape both the organization of firms and the structure of industries.

Some progressive firms are shifting from an emphasis on rationalizing individual steps of the production process, primarily through cost cutting and especially labor cost cutting, to a strategy that seeks to improve the production process as a whole and make it more in tune with the market. This change in strategy can be conceptualized as a shift from a sequential to an integrated process. The sequential approach was most obvious in the assembly line, but the sequential and departmentalized system permeated the entire organization. Production, research and development, finance, training, quality control (if it existed), equipment maintenance or repair, and other functions had separate places in the overall process. One process or function ran its course before others began, or, in the case of repair, one process stopped while the others were carried out. Moreover, there was little ongoing interaction among firms and their suppliers and customers.

This sequential approach was efficient for producing large quantities of standardized goods and services that changed little from year to year. Although producers achieved low unit costs and minimized the skills needed by production and lower-level

clerical workers, the system had potentially serious problems. The sequential approach relied on the accumulation of in-process inventory (in the case of manufacturing) and semi-processed paperwork (in the case of services) between each step. This tied up capital and lengthened the time required to design, produce, and deliver the goods or services. Quality was difficult to maintain not only because quality control was the responsibility of only some individuals in the sequence of steps, but because defective parts or errors in processing accumulated between steps before they had a chance to become apparent in the next stage of the process. The communication among individuals carrying out the various tasks that comprised the overall process and among the firms and their suppliers and customers was also weak. This slowed the development of ideas for new products and services or for improvements in productive techniques that might have emerged from more holistic views of the collective activities. Engineers, designers, marketers, retailers, production workers, supervisors, repair personnel, quality assurance specialists, and others could have benefited from each other's insights and ideas, but the sequential strategy minimized the opportunities for interaction among them.

Greater international competition and changing market demand created new conditions that weakened the sequential approach. These conditions favored faster innovation, shorter production cycles, improved quality, closer contact with customers, and the ability to produce efficiently smaller quantities of a larger variety of products and services. In other words, the opportunities to prosper by producing large quantities of low-cost standardized goods, which was the forte of the sequential approach, diminished. A better fit with the new environment could be achieved by more responsive and flexible organizations. In progressive firms, the relationships among individuals within firms, among the departments and divisions of firms, and among firms in the overall supply chain are more integrated, interactive, immediate, and complex.

This new model of work and production organization places increased intellectual and skill demands on lower- and middle-level workers. Workers without basic literacy and numeracy skills find fewer opportunities, and firms increasingly demand technical skills to operate, maintain, and repair the new technology. The new environment also calls for a greater ability to work in a more uncertain and nonroutine environment. Workers need a stronger basic education, knowledge of a wider range of tasks, and a better conceptual understanding of the overall production process in which they are involved, of the products and services that their firms produce, and of the markets that they serve. In more flexible

organizations, workers, as well as middle management, must be better able to act on their own rather than awaiting instruction or permission from superiors.

I have emphasized that the drive for more flexibility and a greater emphasis on continuous innovation and fast response to market shifts have led to a variety of strategies on the part of firms. Investments in new technology are crucial, but firms have also learned that the flexibility and productivity potential of new technology cannot be attained without other changes. These changes involve a more market- and product-oriented organization of the firm and closer interactions among firms in the supply chain. These trends create a much denser and more integrated production system. Lead times, buffer inventories, and other types of slack and margins for error and relaxation are all, at least in principle, being squeezed out of the production system. Firms and workers are now involved in more integrated and interdependent networks. These patterns yield greater autonomy at lower levels and decentralization of decision making. This juxtaposition of interdependence and autonomy and its attendant technological and organizational developments can have a strong influence on skill needs, human resources, and educational strategies.

Many analysts argue that achieving this vision of a reformed organization is increasingly the key to economic success in the globalized economy (Dertouzos, et al., 1989; Hayes, Wheelwright, & Clark, 1988; Zuboff, 1988). Others are even more alarmist. The Commission on the Skills of the American Workforce (1990) asserted that without a significant shift to this form of "high performance work organization," the U.S. was doomed to a future of low productivity, low wages, and increasing inequality, but the effects and diffusion of innovative work reorganization remain complex issues. Considerable empirical evidence does suggest that work reform increases organizational performance; nevertheless, according to the little available survey information, the spread of these innovations has been slow and still only a minority of firms have adopted them (Bailey, 1992). One of the most popular hypotheses about the failure of work reform to spread faster is that the U.S. education system does a poor job in teaching the types of skills and competencies needed in restructured workplaces (Dertouzos et al., 1989; Commission on the Skills of the American Workforce, 1990). There is some support for this conclusion; nevertheless, better skills alone cannot, over the next few years, dramatically accelerate the adoption of innovative work organization. Firms must also take independent actions and other public policy measures are also crucial (Bailey, 1992).

Thus, the changing economy has created incentives for firms to change their work organization, and reformed education would facilitate the adoption of those innovations. Moreover, the experience with work reform, besides creating a demand for educational reform, contains direct lessons for that reform which will be discussed in more detail below.

Education and the Workplace

Over the last century, changes in the educational system have often been closely associated with changes in the economy. Historians have argued that the basic structure of schooling today emerged as the basis of work moved away from craft and rural, agricultural skills to a more hierarchical, bureaucratized production process (Kantor & Tyack, 1982). Prior to industrialization, education, of which skills instruction was but one part, was integrated into the process of production and, indeed, into the overall maturation process. This process was most obvious on the farm where children learned from their parents on the job. Traditional craft training was similar. There was no sense that work started only after education and training ended.

The development of an industrial division of labor broke down craft skills and moved work out of the home or the farm and workshop closely integrated with the home and into mills and offices. The home and common school were no longer adequate to train and socialize a workforce for the factory and bureaucracy.

Bowles and Gintis (1976) in particular have argued that the organization of schools and the power relations within them correspond to the organization and relations of the industrial workplace. They state that

> Specifically, the relationship of authority and control between administrators and teachers, teachers and students, students and students, and students and their work replicate the hierarchical division of labor which dominates the work place. Power is organized along vertical lines of authority from administration to faculty to student body; students have a degree of control over their curriculum comparable to that of the worker over the content of his job. (p. 12)

According to this point of view, schools played the role of socializing students to their future subordinate, routine, and undemanding jobs. The actual content that schools taught was less important.

To be sure, this image of an education system serving the needs of a hierarchical capitalist workplace has been widely attacked. Reformers, economists, and structural sociologists have argued that the form and organization taken on by schools during the Progressive Era arose as a result of the skill and technological needs of the emerging industrial economy (Grubb & Lazerson, 1974). Indeed, the whole "revisionist" school of education history that linked schooling explicitly to power, stratification, and inequality has been controversial (Ravitch, 1978).

Nevertheless, most participants in the debate agree that school reform was closely related to the decline of an economy based on agriculture and on craft production carried out primarily in small firms and the rise of industrial mass-production-based economy.[3] Indeed, there is much in the twentieth century educational system that reminds us of the sequential, mass-production model. Schools were organized like factories and often had similar architecture. The curriculum was segmented and students destined for different levels of the employment hierarchy received contrasting types of education. Vocational education in particular was often very narrowly conceived. As Joseph Kett (1989) argues, education at the correspondence schools that proliferated during the early decades of the century "was conducted like a factory, specifically a factory organized along Taylorite lines. Like a Taylorite factory, with its systematic subdivision of job tasks, ICS [a prominent correspondence school] displayed a near mania for subdividing its courses" (p. 26).

Much may have changed since the turn of the century, but analysts continue to conclude that the form of education prepares students for the types of jobs that would characterize a hierarchical, Taylorite workplace. This position is hardly limited to radical analysts or revisionist historians. In the 1988 book, *Winning the Brain Race*, David Kearns, the CEO of Xerox Corporation and Dennis Doyle, a prominent educational analyst

[3]Historians such as those published in the volume edited by Kantor and Tyack (1982) argue that the roots of vocationalism and the general relationship between education and work are much more complex than these two polar positions suggest (see the essay by Rogers & Tyack for an overview). Nevertheless, the essays in the collection place a great deal of importance on the relationship between the changes in the structure of firms and in the nature of skills. See the essay by Grubb and Lazerson for the most explicit statement.

from the conservative Hudson Institute, made the following statement which would hardly seem out of place in Bowles and Gintis's *Schooling in Capitalist America*:

> The contemporary school is an outgrowth of the scientific management movement of the early 20th century. The most important part of that movement was the belief that regimentation fostered efficient productivity. Whether making steel or teaching school, raw materials would be processed in a central place by a mass of unskilled workers in a repetitive fashion that was supervised by a few skilled workers. (pp. 35-36)

In a 1988 article, Hermine Marshall (pp. 9-16) argued that the assembly-line workplace metaphor continued to be influential in teaching and curriculum design.[4] After their massive study of American high schools in the early 1980s, Powell, Farrar, and Cohen (1985) concluded that "Perhaps high schools teach students what they most need to know: how to endure boredom without protest" (p. 303).

The debate about whether and why the schools prepare students for their proper places in the hierarchical world of work will undoubtedly continue. Much less noticed, however, is the extent to which the educational system corresponds to the sequential strategy that has characterized the twentieth-century production system. Child labor laws kept young workers out of the labor market and the Depression in particular drove them into schools for want of anything else to do. This was part of a trend in which schooling began to precede work. The vocational education movement was an explicit movement towards education that was presumably directly related to work but that took place off the worksite and before the working life started.

The incorporation of work-related education into the basic public secondary education system did not come about immediately. Vocational education first became widely available through night and correspondence schools that attracted young adults who were already on the job and wanted to upgrade their skills (Kett, 1989). It was not until the 1930s that public secondary schools came to dominate vocational education.

This sharp distinction between school and society was challenged during the reform movements of the 1960s and 1970s. Lawrence Cremin (1989) has argued that educational

[4]Marshall pointed out that metaphors of more open and less bureaucratic workplace management styles had also been applied to schools but that the assembly-line approach had been the most influential.

reform in the post-World War II era has been motivated by three "grand stories."[5] The first was articulated most clearly by James Conant during the 1950s. According to Cremin, Conant

> enunciated a Jeffersonian philosophy that embraced universal elementary education, comprehensive secondary education, and highly selective meritocratic higher education—the combination, he believed would be America's best guarantee of a free and "classless" society. (p. 22)

It was the second grand story that superseded Conant's views in which the distinction between school and society was challenged. Cremin dates this movement from the 1960 publication of *Summerhill*, but the story was set out in more detail in a series of reports on high school reform published in the early 1970s. These reports

> portrayed the American high school as an institution victimized by its own success: the closer it came to achieving universality, the larger, the less responsive, and the more isolated an institution it became, walling adolescents off from other segments of society, organizing them into rigidly defined age groups, and locking them into tight and inflexible academic programs. As a result, the ordinary processes by which young people became adults had become weak, confused and disjointed. (p. 27)

Adherents to this perspective advocated smaller, more flexible schools with broader curricular options, more active involvement of students and teachers, and much greater contacts to other institutions in the society such as museums, libraries, employers, and government agencies. The popularization of education was admirable and "crucial to the American polity and economy" (p. 27), but the system needed to be reconnected to the life of society.

Ironically, while the type of connection to society advocated by adherents of the second grand story seems more consistent with the increasingly integrated (rather than sequential) nature of the emerging economy, it was concern about the economy that precipitated the era of the third grand story that championed the sequential and separate nature of education. This era was signaled by the publication of *A Nation at Risk*. The corresponding reform agenda can be characterized by a focus on the "new basics" (four years of English, three of mathematics, and three of social studies); an increase in the time spent in school; a strengthening of the quality and professionalization of the teaching corps; an increased emphasis on standards and accountability; a suspicion of vocational education

[5]Cremin's (1989) grand story is a "large loose set of ideas about how society works, why it goes wrong and how it can be set right" (p. 21). Cremin attributes this concept to David Cohen and Michael Garet (1975).

in secondary school; and a focus on dropout prevention and universal high school completion. According to this perspective, education was a special endeavor emphasizing academic subjects. The best preparation for work did not require bringing education closer to the workplace or the community but, rather, enhancing its separate character.

There is evidence to support the argument that the emerging economy calls for more education of the traditional type. Research on the effects of education has shown that education promotes a student's ability to deal with change or disequilibrium (Schultz, 1975). More recent research shows that industries and firms experiencing faster technological change employ more highly educated workers (Bartel & Lichtenberg, 1987). If change and uncertainty are increasing, so should the demand for more highly educated workers. In fact, an emerging body of evidence shows that the economic rewards associated with a college degree are rising relative to the returns for high school education, suggesting that the demand for more educated workers is indeed growing (Levy & Murnane, 1992). These studies, therefore, suggest that changes in the economy call for more education and a larger educational system; they are consistent with data from occupational projections that suggest that the majority of job growth over the next decade will take place among occupations that are currently filled by workers with some postsecondary education (Bailey, 1991). Yet all of this research simply uses years of education as a measure of skills and of course the education measured in those studies was education of the traditional type—as it was organized in the past.

What we know about the changing nature of work suggests that "more of the same" is an inadequate theme for contemporary educational reform. Indeed, there are indications that the sequential model in which the student learns in school and works on the job is increasingly out of step with current trends. One of the most obvious implications of the increasing pace of change is the growing need for retraining throughout an individual's career. As John Dewey argued almost seventy-five years ago, "Above all it [education] would train power of readaptation to changing conditions so that future workers would not become blindly subject to a fate imposed upon them" (Dewey, 1916, pp. 318-319). Change also implies a need for continued formal learning, so it is hardly surprising that education is increasingly an adult endeavor. Firm-based education is already an immense institution. Estimates suggest that more money is spent by firms in training their workforce

than is spent on all of postsecondary education.[6] Indeed, there are increases in firm-based training even for basic skills. Moreover, much of the formal firm-based training is actually carried out by the formal educational system. Increasingly, adults are returning to school. The average age of students in postsecondary institutions is rising. In 1985, forty-one percent of all students enrolled in community, technical, and junior colleges were twenty-five years of age and older (El-Khawas, Carter, & Ottinger, 1988, p. 13). Part-time and nondegree enrollments also grew in community colleges. The share of part-time enrollments grew from fifty percent in 1970 to sixty-five percent in 1984 (Zwerling, 1986). Students in customized programs comprise an important part of nondegree enrollments (Pincus, 1986; Teitel, 1988). In general, community colleges are extensively involved in employer-sponsored training (Carnevale & Goldstein, 1989).

As I shall argue in more detail below, the boundaries between employing and educating institutions are increasingly difficult to distinguish. Nevertheless, the "sequential and separate" model continues to be influential in thinking about education. Much of the current discussion of educational reform is focused on one-dimensional quantitative outcome measures—test scores, high school completion or dropout rates, annual hours of schooling. Despite the growing realization that work is a collective process in which each participant's effectiveness is inextricably linked to his or her ability to work in a group, schools maintain their overwhelming emphasis on individual learning and isolated achievement. Customized training in community colleges has attracted a good deal of attention, yet it frequently grows up outside the central community college programs, often with different faculty and a separate funding structure. Relationships between the private sector and schools are referred to as "links," suggesting rather tenuous interactions, and many of the relationships are superficial or even primarily associated with public relations. We still refer to the "transition of youth from school to work" as if it is a one time event.

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[6]Various experts estimate the outlays on firm-based education could approach $200 billion annually. *Training Magazine* estimated that firms with one-hundred or more employees spent about $40 billion annually on formal training programs (Feuer. 1988). This is a gross underestimate. The largest part of these expenditures was accounted for by the salaries of trainers, thus little account was taken of the opportunity costs of the time spent by the trainees. Moreover, the numbers included neither an amount for small firms nor for informal training, which some experts believe may be as high as $180 billion (Carnevale, Gainer, & Villet, 1989, p. 15). Mincer (1989) estimates that the level of investment in on-the-job education and skills is between $66 and $210 billion including employee contributions in foregone earnings. Although the precision of these estimates is open to question, there is little doubt that expenditures on education by employing institutions in 1988 exceeded the $125 billion spent that year on public and private postsecondary education and may be close to the $185 billion spent on primary and secondary schooling (U.S. Department of Education, 1988, Table 24).

Economists studying the relationship between education and earnings still separate initial "years of schooling" from "experience," or postschool learning on the job.[7]

Although many reformers are skeptical about the reform agenda that emerged from the reports of the early and mid-1980s, the perspective continues to dominate the discussion of educational reform—increased required academic courses and suspicion of a wide selection of courses (the shopping mall high school) remain central components of educational reform in most states. President Bush's 1991 educational reform strategy outlined in *America 2000: An Education Strategy* also included a list of basic academic courses—English, mathematics, science, history, and geography. Indeed, one could characterize *America 2000* as another *A Nation at Risk* with a greater emphasis on school choice.

Other developments suggest a shift away from the emphasis on the sequential approach. For example, the U.S. Department of Labor has increased its emphasis on learning on the job through a reorganization that created an Office of Workbased Learning. Policymakers have viewed the development of the High School Academies model with great enthusiasm and that model encourages greater interaction between school and workplaces (Stern, Raby, & Dayton, 1992). Perhaps most notable has been the growing interest in youth apprenticeship which involves a much greater use of the workplace as a site of learning for late adolescents (Bailey & Merritt, 1992).

Nevertheless, while these developments are significant, they remain changes around the edges of the core educational institutions and systems which continue to be dominated by the sequential approach. Thus, our understanding of the opportunities and pitfalls of the current educational reform movement is limited by habits of thought that continue to emphasize the sequential educational model, that downplay the significance of learning in the workplace, and that conceptualize the institutional interactions between schools and workplaces in very narrow terms. Although the intellectual elements of a fourth grand educational story that might move away from the sequential and quantitative approach are present, they remain scattered. This report represents an attempt to develop a

[7] They would, to be sure, make more sophisticated disaggregations if they had the data, but the universal willingness to accept this schooling-experience convention testifies to the hegemony of the sequential model.

conceptual framework based on the integration strategy that can help form the basis of a fourth grand story.

The Integration Principle in Education

The analysis of this report is based on a unified conceptual paradigm. It draws from our understanding of the transformation of the work process, especially the shift from a sequential to an integrated approach. The first step is to recognize the weakening of the distinction between schools and work.

Progressive firms have tried to change in three ways—what they do, how they are organized internally to do it, and how they relate to outside constituencies and institutions—especially suppliers and customers. Similarly, new conditions call for similar changes in the educational system. These three factors will be referred to as curricular, organizational, and institutional integration. *Curricular integration* (what they do) refers to increasing similarity between the content of education and learning in school and on the job. *Organizational integration* (how they are organized to do it) refers to the similarity between the organization of schools and of workplaces. *Institutional integration* (how they relate to outside constituencies and institutions) involves institutional relationships between the educational system and employing organizations. Each of these three areas has received a good deal of attention. Furthermore, each of these corresponds to a major strand of the educational reform movement as it existed at the end of the 1980s. These strands were usually viewed as separate reforms or good pedagogical techniques applicable in all circumstances and have not been brough' together and integrated into a broad conception of education and its relationship to changes in the economy. Employers are learning that attempts to integrate the processes through which they produce goods and services often fail if they take a partial approach. Likewise, efforts to integrate school and work may have only limited success if the focus is too narrow.

Curricular Integration

In the last few years, many analysts have called for the integration of vocational and academic education. This issue goes beyond the narrow problem of what to do with traditional high school vocational education programs. In its immediate sense, the underlying idea is that the distinction between traditional academic work and particular

skills needed on the job is fading. But this is backed by further pedagogic and cognitive psychological theory that argues that even abstract issues can possibly be learned more effectively through concrete applications (Resnick, 1987). A growing body of research suggests the effectiveness of "functional context learning" that teaches basic skills using job-related material.[8] The strategy of integrating vocational and academic education has gained wide support and is indeed one of the cornerstones of the 1990 amendments to the Perkins Act. The "cognitive apprenticeship" strategy suggests that traditional academic subjects like reading and mathematics can be learned through techniques similar to those used by traditional apprenticeship that involve close interaction between experts and novices in concrete situations (Berryman & Bailey, 1992; Collins, Brown, & Newman, 1989). Several innovative high schools are organized around job-related themes and appear to do an effective job of providing a broad college preparatory education. This strengthens both job-specific skills as well as more general basic skills. Thus, students who will end up at all levels of the occupational hierarchy can benefit from this type of integration. Moreover, educators have long believed that work-related instruction serves to motivate many students who would otherwise have little interest in education.

At the same time, education that takes place on the job is now becoming much broader. Perhaps one can say that firms are beginning to see a need for workers with much broader skills. Indeed analysts of work argue that the workplace should be turned into a "learning environment." The business press is beginning to pay more attention to learning organizations or learning companies (Kiechel, 1990). One definition of a learning company is "an organization which facilitates the learning of all of its members and continuously transforms itself in order to meet its strategic goals" (Pedler, Boydell, & Burgoyne, 1989, p. 92). Shoshana Zuboff (1988) argued that "The behaviors that define learning and the behaviors that define being productive are one and the same. Learning is not something that requires time out from being engaged in productive activity; learning is the heart of productive activity. To put it simply, learning is the new form of labor" (p. 395). Zuboff's may be an extreme statement of the position, but employer-provided training is moving away from a narrow focus on immediately useful skills.

Finally, recent research in cognitive psychology provides further reasons to be skeptical about a sequential approach to education. Resnick (1987), in her review of

[8]Research in the military shows that retention of basic skills education is much higher if job-related material is used in the instruction (Sticht, 1982).

studies on the nature of human thinking and of the acquisition of thinking and learning skills, concluded that "the kind of activities traditionally associated with thinking are not limited to advanced levels of development. Instead these activities are an intimate part of even elementary levels of reading, mathematics, and other branches of learning—when learning is preceding well" (p. 8). According to Resnick, this research challenges educational theories that posit a sequence from lower-level activities not requiring independent thinking or judgment to higher-level thinking.

Organizational Integration

A central component of the shift from sequential to integrated production systems involves changes in the organization of firms. In sequential systems, work was subdivided and the coordination of the process was left to higher-level management, while firms moving towards more integrated systems often develop more decentralized systems that emphasize teamwork. This not only allows more flexibility and promotes more continuous innovation, but it also broadens jobs and makes them more interesting. Similarly, many school officials have now become convinced of the need for organizational change in the educational system. Perhaps the most obvious trend in this direction involves so-called school-based management programs in which principals and especially teachers are given more responsibility. If decentralization in firms can make firms more flexible and responsive to constituents and can enrich the jobs of employees, proponents of school-based management argue that this reform will have the same effects in schools.

The decentralization movement is extremely complex and there are many competing models. One model which is used in very large urban systems involves the delegation of more authority to teachers and principals, while the central bureaucracy maintains overall control. This is the type of plan advocated by Joseph Fernandez, the Chancellor of the New York City Schools; this is perhaps most analogous to the type of decentralization used in some progressive businesses. A second model, gives much stronger political power over the operation of neighborhood schools to local groups which include parents, teachers, and principals. This is the model that is being implemented in Chicago which is designed to bring about change by giving power to those with the greatest interest in the operation of each school. A third model involves giving more autonomy to individual schools and allowing parents and students to choose which school they want to attend (the Chicago plan maintains many neighborhood schools, especially in the elementary years). The extreme case of this is the voucher system, which has had advocates among

economists for many years, and has gained popularity due to the 1990 book, *Politics, Markets, and Schools*, by John Chubb and Terry Moe. In this case, parents are given the opportunity to leave poor schools and enroll in better schools, leading to the natural, market-like elimination of low-quality institutions. If the Chicago case tries to increase the "voice"—in Albert Hirschman's (1971) terms—of parents, the voucher or choice model increases their power to "exit."

It is important to note that a similar variety of decentralization and worker empowerment programs are also flourishing at the workplace. For example, while firms in Japan and in some parts of Northern Italy both place greater responsibility on lower-level workers than do typical firms in the United States, the Japanese system is based on decentralization within very strong central control while the Italian system relies more on cooperation among small entrepreneurial firms (Best, 1990). Both of these models seem to be successful. This might also suggest that there might be a variety of school-based management or decentralization plans that could be successful under different circumstances.

Other organizational changes besides decentralization might also promote flexibility and responsiveness in the education system. Some community colleges have increased their flexibility through the use of noncredit courses and training programs and movement away from rigid adherence to standard academic hours and calendars. Proprietary schools, despite their many problems, have been particularly active in experimentation with alternative schedules and calendars. In effect, we are arguing that, as the correspondence principle would suggest, a major change in the organization of work would lead to a corresponding change in the organization of schools.

Institutional Integration

Institutional integration involves actual relationships between schools and employers. In the sequential model of production, the role of each step in a process was to prepare the inputs for the following step. To be sure, the requirements for the subsequent steps needed to be communicated to those responsible for preparing the inputs, but constant and interactive communication among the steps was often minimized. As I have argued, this works well when production is standardized and predictable. Greater volatility, change, and the need for innovation requires more interactive relationships among the steps

in the overall process. Similarly, in an era of much faster change, schools must alter their relationships to other institutions.

As an example, consider the ways in which schools decide what skills they need to teach. There are basically two approaches to educational planning. One, which can be referred to as the occupational/job content approach, relies on occupational forecasting and task analysis. The second perspective emphasizes increasing the adaptability of students and of educational institutions. This approach is based on the idea that, while improved forecasting is important, it has serious limitations. In effect, the faster students and schools can adapt, the shorter the required forecasting horizon. Moreover, institutional adaptability does not just involve fast response to information, but, rather, the ability of local-level institutions to collect and use both local information and broader types of information not available from forecasts about technology and developments in relevant industries.

While improved forecasting would certainly be helpful, for the purposes of educational planning it has several serious problems. First, while forecasting might give some sense of trends at an aggregate level, it is less useful for the limited local areas that most educational institutions serve. Second, the task and skill analysis of occupations has always been difficult, but more rapid change has now increased the frequency with which those forecasts must be updated. Third, there is no well-defined relationship between occupations and given technologies on the one hand and skill requirements on the other hand. Many other factors intervene including the industrial relations system, the organization of the firm, and the characteristics of the markets that the firm serves. These intervening factors may be particularly important at the local level. Finally, all of these factors are exacerbated by the increasing pace of change in markets, technology, and production processes.

In contrast, the adaptability perspective emphasizes the ability of the schools, through ongoing relationships to employing and other institutions, to gather and interpret information themselves. Thus, schools need a knowledge of conditions, technologies, and organization of the local industries and economy. This information can come from experts, outside research institutions, as well as formal and informal contacts with employers. Educators also need to keep up with broader technological and organizational developments in the appropriate fields. In this case, they can serve an information diffusion role in their geographical areas—they may have better access to information than many local employers.

This type of educational input to firms also extends to programs in which schools or community colleges actually carry out firm-based training. Additionally, initiatives such as Tech Prep have illustrated the increasing need for interinstitutional linkages within the educational structure itself. Students who desire to attain more or a different type of education need to have the proper channels available to them within the educational structure to foster transitions with minimal administrative difficulty and coursework redundancy (Dornsife, 1991). An important point here is that this requires an active participation of the local-level personnel. Indeed, rather than seeing a centralized data center as the primary source of information on new technologies and skill requirements, local-level personnel might actually serve as sources of some types of information for the centralized data collection agencies. Thus, organizational integration interacts with institutional integration to create an educational system more in tune with current conditions in the labor and educational market.

There is now an increasing number of these types of relationships including various types of partnerships between specific employers and schools, placement services, employer advisory boards, cooperative education programs, customized training programs at community colleges, and employer tuition remission programs. The U.S. Department of Education (1989) counted about forty-two thousand partnerships between corporations and public school in the 1983-1984 school year, but found over one-hundred forty thousand in 1987-1988. Customized programs have also increased and according to a 1987 survey by the U.S. Bureau of the Census, thirty-one percent of all formal training carried out by employers was conducted by outside providers and over sixty percent of that by schools or the government. Indeed, most major companies with large education programs do much of the training through local community colleges. At the secondary level, employers are primarily seen as providing various types of services, advice, or job placements for schools. There is very much a sense that schools have gone to the private sector for help, but the reverse is also true: in many cases the growth of workplace literacy programs has sent employers to secondary schools. At the postsecondary level, it is often the employers who use the programs directly to train their employed workforce, or they see the local community college or technical school as a direct source of potential recruits.

International comparisons also suggest an increasing importance of institutional integration. As many commentators have noted, there is much more integration between schools and employing institutions in West Germany and Japan, and their economic

success has led to calls to try to implement similar systems here. In West Germany, about seventy percent of a cohort graduates from three-year apprenticeship programs that they enter at age fifteen. During the program, the students work four days a week and spend the fifth day in formal public school instruction. Graduates must pass tests based on a national syllabus of vocational training produced by a tripartite institution consisting of representatives of the public sector, employers, and labor (Hamilton, 1990, Chapters 3, 4, & 5). Apprenticeship is much less important in Japan, but in other ways, the integration between schools and workplaces is just as strong. Many employers have long-term relationships with particular schools. Employers submit job openings to the school staff who then nominate students for the openings. Students can only apply for one job at a time. In about eighty percent of the cases, the student applicants are selected for the first job for which they are nominated and most of the others are accepted into the second job for which they are nominated (Rosenbaum, 1989).[9] There have already been arguments in favor of applying these or similar models in the United States. The U.S. Department of Labor has launched a large reassessment of its apprenticeship system and in the last decade, there have been many local-level efforts to improve the job placement counseling in high schools. While these more integrated educational models from West Germany and Japan have received favorable comment, it remains to be seen the extent to which they are appropriate models for this country.

The Effects of School/Work Integration

I have argued that the logic of economic developments implies a greater integration between education and work. To some extent, this is already happening, as we shall see in much more detail later. To what extent will it improve the economic performance of the United States? There is little empirical evidence tying educational reform to overall economic performance. Much of the strength of the argument comes from international comparisons in which it is perceived that other countries, especially West Germany and Japan, have stronger economic performance than the United States and, as I have argued, in some ways have stronger work/school integration—especially institutional integration. Yet these are highly dubious conclusions, not only because the comparative economic

[9]Some advocates of this type of system argue that it creates very strong incentives for students to work hard in school. That is, their school record very directly determines their job. While this is true for U.S. students bound for elite colleges, school performance appears to have little effect on job finding for the noncollege-bound. The recent Commission on Workforce Quality and Labor Market Efficiency (1989) organized jointly by the U.S. Department of Labor and Education made the issue of incentives a cornerstone of their proposals.

performance is not as simple as a direct comparison of trade deficits might suggest, but also because there are obviously many other differences among these countries that account for difference in economic performance.

Analysis of the effectiveness of educational reforms usually relates changes in educational programs to measurable educational outcomes such as test scores. Much of this research is reviewed by Lorraine McDonnell (1989) who concludes that there is suggestive evidence that the types of curricular and organizational innovations discussed here can be effective, but there is very little evidence about the effects of institutional linkages between schools and employing institutions.[10] On the other hand, the institutional integration emphasized here is perhaps more concentrated in postsecondary institutions, while McDonnell focuses primarily on public elementary and secondary schools. Moreover, the school/work integration discussed in this report is much more than a strategy to improve schools. Rather, it refers to a movement away from the sequential education-then-work model and to a blurring of the distinctions between learning in school and on the job. If nothing else, the greater need for education throughout life and the accelerating need for firms to retrain their employees will push this trend forward.

Furthermore, another factor also emphasized by McDonnell is that while many of these strategies may have potential, they probably will have little effect if they are implemented in isolation. Firms have learned that isolated attempts at this or that innovation rarely work, even if they might be crucial components of a necessary overall strategy. Similarly, curriculum reform without organizational or institutional integration, or a school-business partnership that provides a few services to a school that is otherwise unchanged, will probably mean little.[11]

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[10] McDonnell also emphasizes that there are serious implementation problems that are often ignored in the discussions of educational restructuring.

[11] The much-touted Boston Compact is a telling example of the drawbacks of partial reform. The Compact was originally designed as a program that would involve both internal organizational reform within the school system and stronger links with the private sector, primarily through job guarantees to all who succeed in graduating. The program was able to find jobs for all of the graduates of the city's high schools. As the Boston economy cools down, it remains to be seen how important the very low unemployment rate was for the success of the placement efforts. But it was never able to make much progress in school-level reform. Indeed, the dropout rate actually rose since the inception of the Compact. Now, the private sector supporters apparently are beginning to lose interest faced with the absence of progress within the schools themselves (Farrar, 1988; Rothman, 1988).

School/Work Integration, Equity, Opportunity, and Race

Both the logic of the nature of changes in work, as we understand them, and some empirical evidence do suggest that a comprehensive strategy including curricular, organizational, and institutional integration could contribute to strengthening this country's economic performance and competitiveness. Nevertheless, the goal of the school system is not only to prepare the workforce. Schools are expected to provide the basic knowledge for participation in a democratic society and to widen economic opportunity for all of the country's citizens. Certainly, in addition to the needs of the workplace, the national commitment to popular education extending back to the nineteenth century (at least for whites) and the perceived importance of education for social mobility have shaped the education system during the first two-thirds of the twentieth century.

There is a tradition in education research that argues that the stronger links between schools and the private sector tend to weaken the communitarian and democratic roles that the schools are expected to play. Indeed, in the past, schools have been accused of reproducing inequalities inherent in advanced capitalist economies. Vocational education, according to this argument, was part of a broader trend during the Progressive Era that allowed secondary schooling to be open to all, but that also reproduced the stratification within the schools (Labaree, 1987). One purpose served by community colleges, argue Steven Brint and Jerome Karabel (1989, Chapter 1), is to "manage the ambition" of students not destined for higher-level jobs. Given that more students will aspire to the more prestigious jobs than can possibly be accommodated, some mechanism is necessary to "cool out" the ambitions and aspirations of many. Many of the measures that characterize what I have called institutional integration—customized training, closer links between community colleges and businesses, increased "lifetime" education, and a greater emphasis on firm-based education—have all been attacked as promoting inequality.[12] Moreover, in this country, perpetuating disparities in economic opportunities usually means perpetuating disparities in opportunities among different races. Thus, African Americans tend to be overrepresented in those types of schools, tracks, and colleges that are associated with lower levels of the employment hierarchy. For example, in postsecondary institutions in 1986, African Americans accounted for eight percent of the students in four-year

[12]Brint and Karabel (1989) argue that customized training might lead to greater stratification. Zwerling (1986) argues that to the extent to which education is associated with a job, then access to better jobs will be the key to acquiring advanced education. Thus, initial disadvantages will compound. Data on firm-based education also suggests that those with higher levels of outside education also received more firm-based education (Lilliard & Tan, 1986)—that is, the educationally rich get richer.

schools, nine percent of those in two-year public institutions, fourteen percent of those in public vocational schools, and twenty-one percent in proprietary schools (Goodwin, 1989, p. 22). Wilson (1986) argues that African Americans are overrepresented in vocational tracks in community colleges and that whites predominate in the elite community college programs such as nursing, electronics, and pre-engineering.

International comparisons, in this case, should provide cautionary examples. Greater integration between work and school in West Germany and Japan are suggested as characteristics to emulate in this country, but these countries track students in early adolescence.[13] Most advocates of educational reform in this country are increasingly opposed to secondary-school tracking.

Nevertheless, in anticipating the implications for stratification and inequality, we should not forget that the current system already is highly stratified and that many popular reforms could strengthen that inequality. For example, the quantitative agenda that dominated the reform movement throughout the 1980s has been attacked for overlooking the problems of many students who are not academically oriented. As Cremin (1989) has suggested, it is possible that a greater emphasis on traditional academic curricula has increased the dropout rate as well as pushing some students to higher levels of achievement. In many cities, the dropout rate has increased although the relationship between this increase and educational reform has not been definitively established (p. 36).

Normative conclusions about the trend towards school/work integration also depend on the judgments about the nature of the workplace with which education is to be integrated. From this perspective, in the past, the schools prepared a majority of students for routine, boring, and subordinate positions in a hierarchical structure. Today, these traditional organizational and hierarchical characteristics of the economy are being challenged and in some cases transformed. If competitiveness calls for an upgrading of lower-level positions, and investing them with greater responsibility and scope of action, then an appropriate response by the education system would be consistent with the goals of most educational reformers. Indeed, what I have referred to as curricular and organizational integration have strong supporters among reformers who might be most

[13] Hamilton (1990, Chapters 3 & 4) argues that the German system is more open than commonly perceived in the United States. Apprentice graduates can go on to postsecondary training that allows them to rise to supervisory and some managerial positions. It is possible, but rare, for skilled craftsmen to enter the university which opens higher-level professional positions.

skeptical about the wisdom of greater correspondence between schools and work. While vocational programs in many schools continue to constitute lower tracks, some of the most successful programs for minority students in secondary schools involve occupationally oriented programs (Mitchell, Russell, & Benson, 1989). As we shall see in both the New York and Philadelphia cases, in some community colleges, occupational tracks which were originally conceived of as terminal programs actually send higher proportions of their participants to further education than liberal arts programs designed explicitly to prepare students for continued schooling.

The social implications of school/work integration also depend on the influence that schools and education in general might have on work. As Carnoy and Levin (1985) argue, while schools may in many ways reproduce the stratification in the workplace, educational services and educational outcomes are much more equally distributed than income, status, or power associated with employment. They emphasize that as public institutions, schools are much more subject to the political influence of working class and other groups than are private businesses. Thus, to the extent that education can affect work, it represents a window of public influence over private institutions.

Of course the implication of much historical writing on education is that the influence goes the other way. It is plausible that, as Lindblom (1977) argues, business has vastly disproportionate power in this public arena both through its ability to influence the political process directly (because of its greater resources), and perhaps more important, because employers eventually hire the graduates of the school system. John Dewey (1916) argued that schools could have a strong influence on society, stating that

> A right educational use of [science] would react upon intelligence and interest so as to modify, in connection with legislation and administration, the socially obnoxious features of the present industrial and commercial order. . . . It would give those who engage in industrial callings desire and ability to share in social control, and ability to become masters of their industrial fate. (p. 320)

Viewed from the perspective of the 1990s, when the schools have been subject to scathing criticism for being boring, ineffective, hierarchical, rigid, and anti-intellectual, Dewey's views seem naive. That is, rather than the schools' instilling a spirit of inquiry, learning, and democracy in the workplace, it seems that the needs of the economy drove that spirit out of the schools.

However, the nature of current trends towards school/work integration may be creating a different context for the interactive influence of school and work. For Dewey, the influence would come through the schools' effects on the lives, beliefs, and behavior of students. But now there is much more institutional interaction between schools and work. Once we move away from the sequential role of schooling, the influence of schools need not be exercised simply through the schools' effects on their students. Employers are looking to educators and schools to help them impart skills such as literacy and technical know-how, but this gives schools the opportunity to have broader influence. The more the firm can turn towards community colleges or universities for their training, the stronger will be the potential influence.[14]

Thus, changes in technology and markets provide an opportunity for a major restructuring of work. While it is by no means certain that employers will move willingly towards significant change, and certainly incompetent and conservative management may thwart such trends, reforms in the educational system can help enable workforce reforms (by preparing a workforce that can be used in a restructured workplace) and have some direct influence on promoting them.

The Integration Principle and Education for Minorities

Despite the myriad shortcomings of this country's school system, that system did open education to most residents. To be sure, it was highly stratified, and in many educational sectors the quality of the instruction was questionable, at least its cognitive aspects. Nevertheless, schools did supply the growing need for technical skills and from the point of view of the overall economy, the schools did well enough to propel the country to international economic leadership during and after World War II.

If this system worked more or less for the white working class during the earlier post-war decades, the same could not be said for most African Americans who were either excluded from education or confined to patently inferior schools. Until the 1950s and the onset of the Civil Rights Movement, there was little political pressure to extend decent

[14] Certainly to the extent that firms go to schools for training, those schools have the opportunity to influence those firms. On the other hand, if the schools simply see themselves as providing a more or less technical service according to the firm's specifications (perhaps with the conviction that the firms know what they want and have a well-developed idea of the best course to pursue), then the schools will forfeit that opportunity to have a broader effect.

education to African Americans, and the jobs to which most African Americans were confined by discrimination had little need for the cognitive offerings of secondary schools and in many cases even primary schools. African Americans made important progress during the 1960s and 1970s, but their progress was stalled by their concentration in major metropolitan centers where busing and other policies to promote integration weakened the political support for the public schools among whites (Katznelson & Weir, 1985). Thus, urban school systems were confronted with the need to respond to fundamental changes even before they could create schools appropriate for the old economic conditions.

Consequently, there were many unresolved problems for minority education as the country moved away from a reform movement with a strong emphasis on equality and access (Cremin's second grand story) to one focused on education for economic competitiveness (the third grand story). How will the trend away from a sequential system towards more work/school integration affect the lingering educational problems for African Americans and other minorities?

Changes in technology and the economy have generally increased the skill requirements in the workplace. Low-skilled jobs remain, but their numbers are falling. In the past, employers have been able to ignore the educational problems of some percentage of the minority population, but this will become increasingly difficult. Broad forces to improve urban schools may be even stronger if labor markets continue to be tight over the next decade as many analysts predict. The growing relative minority populations in urban areas and their increasing political influence may also create an improved environment in which to work on these problems.

Community colleges may also represent significant opportunities to strengthen urban minority education. Although there have been community and junior colleges for many decades, the last twenty years has witnessed dramatic growth in their enrollments. Many African Americans and other minorities are already enrolled in community colleges, many of which have strong links to local employers, and the structure of these colleges is flexible enough to respond to changing circumstances. To be sure, these institutions have many problems, but potentially, they seem well positioned to serve important educational needs of urban minority groups in the context of the emerging economy.

Curricular Integration

Curricular integration implies a reduction in the differentiation between what is learned in school and on the job and between learning for work and learning for broader educational goals. First, if this turns out to be good pedagogy, and if it is used in schools with large numbers of African-American or minority students, then those students will benefit. However, the movement towards a more integrated curriculum may also create a better environment for reducing inequalities in education. For example, curricular integration implies a reduction in the differentiation between what is learned in school and on the job and between learning for work and learning for broader educational goals and this may create a better environment for reducing inequalities in education. Curricular integration at least provides the basis for reducing tracking and other types of differentiated curriculum in which work-related education is considered a lower and separate track. One advantage of this is that occupationally oriented programs, in which African Americans have traditionally been overrepresented, will no longer be identified as inferior tracks for inferior students. Thus, students who can benefit from and are better motivated by a more concrete or occupationally oriented curriculum need not be stuck in lower tracks and labeled as inferior students. And a more integrated curriculum may also reduce the differentiation between community colleges and the lower divisions of four-year colleges—graduates of occupationally oriented courses will be prepared both to go on immediately with their education or to start work. Finally, increased and broader education on the job and for adults reduces the long-term penalties for earlier labor market entry which students from lower income families disproportionately must undergo for economic reasons.

Organizational Integration

If changes in the organization of schools such as decentralization, more parent and teacher involvement in school management, and increased flexibility lead to stronger and more effective schools and if these innovations are implemented in major cities, they will strengthen African-American and minority education. Moreover, increased community and parental participation is particularly important to school reform efforts in inner cities. This perspective is certainly one of the motivations behind the recent decentralization reform in Chicago. At the same time, these reforms may need more resources than more traditional forms of organization. Once again, the central city schools with weaker financial bases will be at a disadvantage.

Institutional Integration

Like most of the reforms discussed here, institutional integration represents opportunities and problems for improving minority education in major urban centers. Strong relationships between employers, schools, and community colleges certainly have potential to create opportunities for minority students in large cities. Furthermore, the increase in education and training at the workplace creates possibilities for African Americans who are working to strengthen their skills. On the other hand, to the extent that education is more linked to work, job discrimination will exacerbate educational inequality among races. Education linked to work favors those individuals who have access to education-rich employment. Discrimination and racial stereotypes can also make it difficult to transform occupationally oriented programs and schools from lower-level tracks into high-quality educational opportunities. Tracking through vocational programs is still widespread. Given typical attitudes among employers, it may be more difficult to move vocational programs with predominantly minority participants beyond the traditional lower-track role.

Thus the integration strategy appears to create a potential to improve education for minorities, but large questions and uncertainties remain. One reason why hard conclusions are difficult to come by is that much of the discussion of the integration-related reforms has not focused on problems of minorities. Equity and access have never regained the place in educational reform that they held during the 1960s and 1970s.

Conclusion

In this section, I have emphasized several parallels between educational and work reform. Innovative approaches in both realms emphasize moving from a sequential to a more integrated strategy. In both cases, the integrated strategy is based on changes in the content of work or learning, in the organization of firms and schools, and in the relationships to outside institutions—content, organizational, and institutional integration. Moreover, in workplaces and in schools, reforms appear to be more effective if they are combined into a broad strategy rather than implemented as separate initiatives or programs.

Other parallels are also salient. Faced by anxieties about international competition and overall productivity growth in the late 1970s and early 1980s, both schools and

employers at first returned to past successful strategies. Educators tried to recapture an image of past success by arguing that educational problems could be solved if traditional academic education was strengthened and spread to all students. Employers turned to automation and straightforward technological solutions as they had in the heyday of mass production. Both sets of institutions at first tried a strategy based on more, but better, of the same, and they found these solutions inadequate. The institutions have now turned in a similar direction, away from a sequential or quantitative approach to a more integrated strategy.

Furthermore, much of the current discussions of reform in both sets of institutions do not focus on the particular problems of minorities and the poor. This is perhaps not surprising given that both movements have been spurred by anxieties about productivity and international competitiveness. Most of the discussion of work reform has emphasized efforts in large firms where workers with significant economic and social problems are not to be found. Little specifically has been said about work reform as a solution to very low incomes or inequality (Bailey, 1992). The considerations of minority issues in many of the reform proposals associated with the integration strategy is perhaps more common. Nevertheless, many current innovative programs have selection criteria or processes that tend to exclude students with serious problems. (These issues will be addressed in more detail in the following sections.)

Also, in both cases, there is suggestive, but by no means definitive, evidence that the integrated strategy will enhance the performance of the organization. The evidence is strong enough to push for wider implementation and experimentation, but many questions remain.

Finally, despite the positive effect of innovative human resource strategies, their spread among workplaces has been surprisingly slow. Is there an analogous experience with diffusion of school reform as well? In the next sections, we take up this question by looking at school reform in New York, Philadelphia, and Chicago.

NEW YORK CITY

Introduction

During the 1980s, New York City emerged as the paradigm of the post-industrial city. Losing over thirty percent of its manufacturing jobs during the city's financial crisis of the 1970s, New York City seems to have made its final transition from the nation's primary goods producing center to a leader in services. Manufacturing employment continued to decline during the 1980s, albeit at a slower pace, only to be met by employment booms of more than thirteen percent between 1980 and 1987 in professional, business, and financial services.

Although many feel New York is unique, its demographic, labor force, and general economic trends tend to reflect, and often foreshadow, national developments. Since 1970, tens of thousands of immigrants from Asia, Latin America, the Caribbean, and many other areas have arrived and settled in the city as well as in the country at large. Due to these drastic changes in the workforce composition, native-born white males now account for a decreasing share of the labor force and indeed make up only a small proportion of the new labor market entrants.

Broad economic and demographic changes such as those mentioned above also force changes on the city's educational system. The late 1960s and early 1970s saw politically driven experiments with decentralization and community control in public schools and open admissions in postsecondary institutions. Although community control persists in New York City elementary and middle schools, school reform during the 1980s was motivated by arguments surrounding the new economic demands for increased education and skills. While concerns regarding equity and equal access for minorities continued in the 1980s, these issues are more frequently blamed for the presumed demise of the educational system than they are held up as a fundamental goal. Attacks on open admissions to the postsecondary system were particularly acrimonious. In the early 1990s, decentralization has once again risen on the policy agenda, but not primarily as an attempt to return power to the community, although calls for parental involvement are common. Rather 1990s' decentralization seeks to empower educational professionals at the school level presupposing strong central leadership from the Chancellor. It seems fair to say that the contemporary decentralization movement in New York is an efficiency-driven reform rather than a response to grassroots political pressure as in the past.

In terms of the educational reform models outlined in the first two sections of the report, the quantitative adjustment model dominates. In New York, as elsewhere, the "mismatch" argument is the dominant conceptualization of the tension between the changing needs of the labor market and the output of the educational system. According to this argument, there is a gap between the educational needs of the city's economy and the educational achievement of a large part of the city's population—there are fewer jobs for high school dropouts while the positions in the growing advanced service sectors require at least some college. This diagnosis seems to call for the quantitative model which emphasizes reducing the high school dropout rate and increasing traditional academic requirements at both the high school and community colleges. Thus, educational policy reform has focused on lowering the city's thirty percent dropout rate while preparing high school graduates for college. As the state's Regents Action Plan, passed in 1984, proposes to prepare all high school graduates for college, the primary tool to achieve this goal can be seen as an increase in required academic courses.

This quantitative model seemed to doom high school vocational education. Increasing academic course requirements make time consuming vocational offerings more difficult to fit into student schedules and escalating skill demands called into question the usefulness of the vocational skills learned in high school programs. This perspective was given added support by the ubiquitous statements by corporate representatives that all they want are recruits with good basic skills, and that their companies would teach the specific skills. Outdated equipment in the city's vocational schools appeared to confirm that vocational education was a thinly veiled tracking system for minority youth or a dumping ground for students who had trouble in the presumably more desirable comprehensive/academic schools.

Although the quantitative strategy still dominates, during the 1980s, elements of a more integrated approach to the adjustment of the education system to the changing economy have grown. Possible signs of this change become apparent when one witnesses the growth of occupational enrollments and changes in occupational and vocational programs at the secondary level. Many of the most encouraging developments in the city's school system involve occupational programs. This is not to say that there do not continue to be many vocational programs in the dumping ground category. This duality in occupationally oriented programs reflects, on the one hand, the legacy of the quantitative adjustment model, which calls into question the role of secondary school vocational

education, and, on the other hand, the broader school, work integration model in which occupationally oriented programs can play a key role. Although the causes of the trends in vocational schooling in New York are complex, our argument is that the apparent resurgence of occupational education represents a complex reaction to the interaction of developments in the economy and continued problems of poverty and stratification in the educational system.

On the one hand, the content of sophisticated vocational education and the institutional relationships to employers and the labor market that they promote are very much in tune with developments in the workplace. In terms of the concepts developed in the introductory sections, this represents movements towards both content and institutional integration. The decentralization policy initiated by Joseph Fernandez in the 1989-1990 school year suggests a trend towards organizational integration as well. On the other hand, conflicting reform strategies, past traditions, and overwhelming social problems that the school system must confront have contained and distorted the reform movement towards the school/work integration model.

Community colleges have had a much more obvious role to play in the new economy than high school vocational education. Indeed, the community colleges fit well into the quantitative adjustment model. If the high schools could provide a basic liberal education, then the community colleges could provide the more occupationally oriented skills needed for a wide range of jobs. Moreover, at least in New York, developments in the community colleges also appear to be consistent with some aspects of the integration model. Many of the programs have close ties to local businesses, and there are examples of pedagogy that combine theoretical work with practical applications (content integration). The growing trend towards customized training and nonmatriculated programs also represents an important flexibility in these schools, but research on community colleges is still so limited that it is difficult to judge the extent of these trends. Ironically, the more obvious role that the community colleges play in the new economy through the quantitative model may thwart a stronger and more thoroughgoing trend towards the integrated model. While the community colleges appear to have been more in tune with developments in the economy, there has at least been more serious thought given to the role of secondary schools. Furthermore, community colleges have also to some extent been overwhelmed by educational problems inherited from the secondary schools or associated with the nature of the city's changing demographics. Many of the most dynamic developments in the

community colleges involve adult basic education (ABE) or English as a Second Language (ESL) programs, or other programs to serve educationally disadvantaged groups. While these efforts are often useful, as in the high schools, they tend to distort educational reforms designed to respond to the changing economy.

The implications of these trends for minorities in New York remain ambiguous. As long as the school/work integration model remains marginal in the secondary schools, then the . will be a tendency towards stratification. Minority students who get into the programs will benefit, but judging from the past, it is likely that minorities will be underrepresented in the successful efforts. Indeed there is some evidence of that now. The community colleges seem to offer many opportunities for the city's minorities, but developments in the economy combined with an ambiguous strategic vision may strengthen the stratifying role of these schools, once again, channeling minorities into subordinate positions.

In this section of the report, we first review recent developments in the economy of New York City. We then provide a brief descriptive overview of the city's secondary and postsecondary educational systems. The final discussions center around the response of these two systems to the changing demands of the workplace.

The New York City Economy and Education System

Outside observers are often overwhelmed by the sheer size of New York City and its institutions. Embedded in the most populous metropolitan area in the country, New York City has an estimated population of about seven million and a civilian labor force of 3.2 million, drawn from the city's five boroughs (counties) as well as the seventeen feeder counties that send commuters into the city to work (Drennan, 1989). New York City's public education system is also the largest in the country. Nearly a million students are enrolled in the public schools, and the public college system encompasses eleven senior colleges and seven two-year community colleges. An analysis of the interaction between the city's labor market and the education system must begin with a general overview of the economy and a description of the various providers of work-related education in the city.

The City's Population

The New York City population peaked in 1970 at 7,894,851 residents. From the 1800s to 1940 the city experienced steady growth. After 1940 and until 1970, the population level crept up with growth rates in the low teens except for one small decline in the 1950s. From 1970 to 1980 the city lost almost twelve percent of its population and, although the population has again been creeping upwards through the 1980s, the city has yet to regain its 1940 level. Some of the drastic drops through the 1970s may be attributed to the general trend of urban populations to move to the suburbs. However, many of the out-migrants moved beyond the suburbs of the metropolitan region during the seventies, perhaps propelled by the change in the region's economy. Although the New York Primary Metropolitan Statistical Area (PMSA) also peaked in population in 1970, the suburban population experienced only a small decline in the period 1970 to 1980 and, like the city, began to grow again after 1980 (Tobier, 1984, pp. 27-29).

Whatever the forces behind the recent fluctuations in the population, the New York PMSA remains the most densely populated region in the United States. Eighty-six percent of all residents in the New York PMSA lived in central cities in 1986; a density well above that of any of the largest fifty metropolitan regions in the United States (U.S. Bureau of the Census, 1989).

New York retains a diverse ethnic mix with immigrants arriving from Europe, Asia, the Caribbean, and Central and South America during the 1980s (Waldinger, 1989b, p. 55). Along with Los Angeles, the city welcomes more immigrants every year than any other city in the United States (Waldinger, 1989c). Unlike other urban centers which receive large numbers of immigrants, no one immigrant group in New York makes up more than ten percent of the total. During the 1980s, New York became a majority/ minority city—between 1980 and 1987, the share of the population accounted for by white non-Hispanics dropped from fifty-two to forty-six percent. Relative gains were registered by all of the major nonwhite groups except African American (and the stable African-American share hid a relative decline of native-born African Americans and an increase of Caribbean blacks) (see Table 1). This dense and diverse population creates complicated educational problems for the city.

Table 1

Ethnic Distribution of New York City Population (1980 and 1987)

	1980	1987
White	51.9%	46.1%
African American	24.0%	24.0%
Hispanic	19.9%	23.3%
Asian	3.2%	4.4%
Other	1.1%	2.2%
Total	100.0%	100.0%

Source: Waldinger, 1989b, Table 2.2

The City's Economy

New York was ideally situated to achieve a leading position in importing and exporting during the 1800s and into the early 1900s. The manufacturing sector also grew during the early 1900s to peak during World War II at forty-one percent of all employment. New York City has traditionally had more jobs in manufacturing in absolute numbers than any other city; however, the percentage of total employment represented by manufacturing jobs is lower than most other major urban areas (Drennan, 1981). In 1986, manufacturing employment represented less than fourteen percent of all employment. Following the manufacturing sector and the international trading centers came the expansion of the financial institutions to serve them. New York suffered comparatively little decline during the 1982 recession, which devastated so many other urban centers in the country partly because of its early shift away from manufacturing and its high concentration of jobs in the international trade and financial markets.

Total employment in New York City peaked along with population in 1969 at about 3.2 million. After declining to below 2.5 million in 1976, employment grew again to over three million by 1987. Growth industries in the 1970 to 1980 decade were professional services and business and repair services. Construction; durable and nondurable manufacturing; and transportation, communication, and utilities (TCU) all declined in this period by over twenty-five percent. During the next seven years, 1980 to 1987, manufacturing continued to decline albeit at a much reduced rate, while wholesale trade, a great growth industry several decades previous, declined by over twenty-five percent. Business and repair services became the major growth industry in this seven-year period,

with all service groups; financial, insurance, and real estate (FIRE); construction; and TCU gaining (see Table 2).

Table 2

Industry of Employed New York City Residents 1970, 1980, 1987

Industry	Percent Distribution (%)			Percent Change (%)	
	1970	1980	1987	1970-1980	1980-1987
Construction	3.4	2.7	3.6	-27.4	38.9
Durable Manufacturing	7.6	5.4	4.5	-35.0	-13.2
Nondurable Manufacturing	15.9	11.7	9.0	-32.7	-19.9
Transportation, Communications, and Utilities	7.7	6.2	7.0	-26.4	17.6
Wholesale Trade	4.4	4.9	3.5	1.8	-25.6
Retail Trade	12.8	13.6	12.0	-2.8	-8.1
Finance, Insurance, and Real Estate	10.6	11.6	12.6	0.1	13.2
Business and Repair Services	5.0	6.2	8.8	13.4	47.9
Personal Services	4.6	3.7	4.3	-26.4	21.1
Professional Services	11.5	15.8	17.2	25.6	13.4
Public Administration	14.9	16.2	15.6	-0.6	0.3
Other	1.6	2.0	2.1	14.3	9.4
Total	100.0	100.0	100.0	-8.6	-4.4

Sources: U.S. Bureau of the Census, 1970, 1980; U.S. Department of Labor, 1969, 1971, 1979, 1981, 1986, 1987, 1988

In the decade of 1970 to 1980, the occupational shares represented by professional and technical workers, managers and administrators, and service workers increased in the city. Operators and sales jobs (especially those associated with retail sales) declined the most, with clerical jobs also losing share (Drennan, 1981). During the 1980s all occupational groups have increased along with employment and population increases. Managers, professionals, technicians, brokers, and sales occupations represented an increase of 19.8% between 1980 and 1988 in the city and an increase of 43.6% in the rest of the PMSA. Overall, in New York during the past two decades, employment has consistently grown in all occupations and industries associated with exporting goods and services outside the New York PMSA. Employment in the city has become more white-collared and higher skilled at a faster pace than the rest of the region. In 1988, almost forty percent of all city employment was in white-collared, higher-skilled jobs and thirty-seven percent of suburban employment fell into this category (Drennan, 1989, pp. 35-37).

Although the boom of the 1980s brought New York City unemployment rates below the national average—in September 1988, the city's unemployment rate was 4.2%, more than a percentage point lower than the national rate of 5.4%—by the end of 1989, the city's unemployment rate was back up to seven percent while the national rate had hardly changed (U.S. Department of Labor, 1990, Tables D1 & D9). Even during the height of the boom, the economic revival was marred by the persistently low employment-population ratio of fifty-five percent (the ratio of the total employed to the noninstitutional population of the city), which was lower than the national rate (65.9%). Employment statistics for certain groups in the city are especially troubling. Although the unemployment rate for African-American teenagers fell from 52.4% in 1981 to 23.1% in 1987, the figures count only job-seekers; four out of five African-American youths still did not have jobs in that year, with dropouts faring much worse than high school graduates. The overall youth employment-population ratio in New York is about twenty percent or half the national rate.

The boom did little to dislodge a large segment of the city population from poverty status. In 1975, fifteen percent of the city's population were in families with incomes below the poverty level, while 12.3% of the country's population was poor by this standard. By 1987, the poverty rate for the nation had risen slightly to 13.6% while almost one quarter (23.6%) of the New York City population was poor (New York City Human Resources Administration, 1988, Table 3).

Educators, then, are encountering a population in the public schools that includes increasing diversity among minorities and increasing proportions of minorities, the poor, and children from troubled families. At the same time, the city's economy has been characterized by a typical but somewhat exaggerated trend from services to manufacturing with job growth towards the upper end of the occupational hierarchy.

The New York City School System

To educate this increasingly diverse population, New York City has an immense and complex educational system. According to many measures, the performance of the city's educational system is abysmal. For example, on New York State math and reading tests given in the third and sixth grades, the city has consistently trailed the rest of the state by a wide margin. The best that can be said is that over the past two decades the

differential has not grown. The dropout rate in later grades has also remained consistently high; although the official rate has fallen from 45.0% to 29.2% in the last decade, the improvement reflects mainly changes in the way the rate is calculated (Berne & Tobier, 1987, Tables 5.12 & 5.16).

Although whites now account for just under fifty percent of the city's population, African American, Hispanics, and Asians make up the large majority of the students in the city's public education system. In 1988, twenty-one percent of all public secondary students were white, while only five years earlier, whites accounted for twenty-six percent of all high school students (see Table 3).[15]

Table 3

Ethnic Composition of Students in New York City Public Secondary Schools, Grades 9-12

Year	White		African American		Hispanic		Asian		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%
1983	70,795	25.9	112,118	41.1	75,620	27.7	14,318	5.2	273,083	100
1988	54,604	20.9	104,930	40.2	79,084	30.3	22,140	8.5	261,147	100
Change	(16,191)	-22.9	(7,188)	-6.4	3,464	4.6	7,822	54.6	(11,936)	-4.4

Source: Unpublished data from the New York City Board of Education.

Not surprisingly, the city's postsecondary education system has relatively more white students. Thirty-six percent of the Fall 1988 enrollment in the public City University of New York (CUNY) was white non-Hispanic, but they accounted for only about thirty percent of the community college enrollments that Fall (see Table 4). Historical comparisons are difficult because the available data is not consistent, but there does not appear to have been much change between 1984 and 1988 in the ethnic distribution in the community colleges. Even in this short period, the white share of the senior colleges does appear to have dropped substantially while African Americans, Hispanics, and Asians have all gained.[16]

[15] In 1986, about forty-six percent of all white students in grades kindergarten through twelve in New York City were in private schools, while less than fifteen percent of all nonwhite students in these grades were in private schools. Since the mid-1970s, there have been only minor changes in the share of all students in private schools or the share of each ethnic group—whites have risen from forty-one percent in 1976 to forty-six percent in 1986 and African Americans from eight percent in 1976 to thirteen percent (Berne & Tobier, 1987, Table 5.4).

[16] Data for Queens College was not available for 1984; therefore, the historical comparisons were done using 1988 data from which the numbers for Queens have been removed.

Table 4

The City University of New York
Percent Enrollment by Racial/Ethnic Status
Fall 1984 and Fall 1988

	African American (%)	Asian or Pacific Islander (%)	Hispanic (%)	White (%)	Nonresident Alien (%)	Other (%)
Community Colleges						
1984	37.9	5.1	27.1	28.3	#N/A	1.6
1988	35.0	6.6	27.9	29.2	1.0	0.3
(without Queens College)						
1984	26.8	7.2	17.6	47.3	#N/A	1.1
1988	30.4	9.1	19.5	36.3	4.2	0.3
Senior Colleges (with Queens College)						
1988	27.7	9.2	18.4	39.9	4.3	0.4
Total (without Queens College)						
1984	30.6	6.5	20.8	40.8	#N/A	1.3
1988	32.2	8.1	22.8	33.5	3.0	0.4
Total (with Queens College)						
1988	30.3	8.3	21.8	36.1	3.1	0.3

Source: City University of New York, Summary of Report prepared for Higher Education Data System, 1985 and 1987.

As elsewhere in the country, formal occupational training is provided in the public, private, and independent, nonprofit sectors. Public sector providers include the public high schools, adult education programs run by the Board of Education, and the publicly funded community colleges and four-year colleges of the CUNY system. These programs are together by far the largest providers of occupational training in the city. The nonprofit sector by comparison is small, with scattered training programs attached to a variety of service agencies throughout the city, and occupational programs in the city's private colleges. The for-profit sector includes both the rapidly growing postsecondary proprietary schools and on-the-job training programs, with some growth in the latter reflecting employers' concerns about the quality and appropriateness of other types of training.

Young New Yorkers are likely to encounter some form of work-related training at the secondary level. Of the roughly 261,000 high school students, 127,000 were enrolled in occupational programs in 1987-1988 (see Table 5). The latter were distributed among the city's one-hundred seventeen high schools, including comprehensive zoned high schools and an array of selective or partially selective schools. New York is unique among large American cities in having nineteen vocational high schools (in addition to eleven specialized high schools) which aim to offer work-related training as well as preparation for further education. Yet most occupational instruction is concentrated in the academic/comprehensive high schools; only 23,434 (19%) of the 127,000 students in occupational sequences attend vocational high schools (see Table 6).

Table 5

New York City Public Secondary Schools Enrollment
Ethnic Composition

	1983-1984		1988-1989		
	Number	Percent (%)	Number	Percent (%)	Percent Change (%)
Occupational					
African American	50,850	43.3	53,116	42.0	4.5
Asian	6,0425.1	10,899	8.6	80.4	
Hispanic	30,928	26.3	35,442	28.0	14.6
White	29,592	25.2	27,156	21.4	-8.2
Total	117,412	100.0	126,613	100.0	7.8
All Programs					
African American	112,118	41.1	104,930	40.2	-6.4
Asian	14,318	5.2	22,140	8.5	54.6
Hispanic	75,620	27.7	79,084	30.3	4.6
White	70,795	25.9	54,604	20.9	-22.9
Total	272,851	100.0	260,758	100.0	-4.4
Occupational ("Academic" Schools)*					
African American	29,914	40.0	33,932	39.8	13.4
Asian	3,870	5.2	6,748	7.9	74.4
Hispanic	18,170	24.3	23,134	27.1	27.3
White	22,808	30.5	21,498	25.2	-5.7
Total	74,762	100.0	85,312	100.0	14.1
Occupational (Vocational Schools)*					
African American	12,185	44.7	11,252	48.0	-7.7
Asian	912	3.3	1,074	4.6	17.8
Hispanic	9,277	34.0	8,693	37.1	-6.3
White	4,891	17.9	2,413	10.3	-50.7
Total	27,265	100.0	23,432	100.0	-14.1

* Breakdowns do not include figures for Educational Option and Special Education Programs which were included in the total Occupational Calculations

Source: New York City Board of Education, Office of Planning and Development in Occupational Education and Office of Student Information Services, 1989. Internal documentation supplied to authors.

Table 6

New York City Secondary Public Schools
Occupational Enrollment in Grades 9-12 by Cluster

1983–1984 and 1988–1989

	Agriculture	Business	Health	Home Economics	Marketing	Technical	Trade	TOTAL	Difference
Academic/ Comprehensive									
1983/1984	1,645	61,609	4,777	254	2,179	1,326	3,003	74,793	10,572
1988/1989	1,071	55,262	3,302	3,590	3,592	5,453	13,095	85,365	
Vocational									
1983/1984	0	4,176	1,957	339	638	3,274	16,888	27,272	(3,838)
1988/1989	0	4,509	847	142	895	2,566	14,475	23,434	
Educational Option									
1983/1984	63	8,997	1,789	25	1,008	207	757	12,846	(653)
1988/1989	197	7,929	1,037	128	1,008	882	1,012	12,193	
Special									
1983/1984	0	0	0	0	0	2,452	98	2,550	3,127
1988/1989	0	0	0	0	0	4,552	1,125	5,677	
Total									
1983/1984	1,708	74,782	8,523	618	3,825	7,259	20,746	117,461	9,208
1988/1989	1,268	67,700	5,186	3,860	5,495	13,453	29,707	126,669	
1988/1989-1983/1984		(440)	(7,082)	(3,337)	3,242	1,670	6,194	8,961	9,208

Source: New York City Board of Education, Office of Planning and Development in Occupational Education, 1989. Internal documentation supplied to authors.

Beyond the secondary level, an array of programs, many with occupational components, are available to those adults who either never completed high school or who have high school degrees but are unemployed. These second chance programs are both locally and federally funded. The Board of Education of the City of New York has an expanding Adult Division which offers literacy training, basic education, occupational programs, and apprenticeship training to about fifty-five thousand adults at locations across the city and at three comprehensive adult-education centers. Although still a small part of the program, the occupational component of public adult education is increasing steadily, and the current trend is towards integrating basic education and prevocational or occupational training for all students. Work-related education is the focus of an array of other state and federally funded programs, including those under the Job Training Partnership Act (JTPA) and the local Private Industry Council, but this type of second chance program for disadvantaged workers only accounts for a small percentage of the overall educational system. For example, in 1986, expenditures on these programs amounted to about $170 million while the budget for the city's Board of Education was over $5 billion (Bailey, 1987).

The city's public college system is the most important source of postsecondary occupational education in the city. This system is emerging as institutions responsive to short-term shifts in demand have been more receptive than the senior colleges to creating customized programs for businesses and providing occupational training in conjunction with remedial or second chance programs of the type described above. In 1988, the eleven CUNY senior colleges had an enrollment of 104,465 and the seven community colleges enrolled 58,258 students (see Table 7).

There is sharp variation in the ethnic distributions within the colleges—for example, almost all of the white students in the community colleges are enrolled in Queensborough and Kingsborough (Brooklyn) Community Colleges. Only about one quarter of the students enrolled in two-year programs in the city university system are in liberal arts and sciences. The rest are in occupational programs (City University of New York, 1987, Table XIV-A).[17]

Until recently, there has been little coordinated planning among occupational programs offered at these various levels, even among the public providers. Cooperation

[17] This data is for enrollments in the Spring of 1987.

may be improved under a new plan to form a citywide body to include representatives from the High Schools division in the Board of Education, the public community colleges, and the public adult education division, among others. Similarly, there is some evidence of increased participation of business in planning occupational programs, in part through the mechanisms that have traditionally existed for such cooperation—mainly the advisory councils set up to assist with occupational training—and in part through new types of partnerships, many of them too young to be evaluated. Although the trend may be towards a coordinated continuum of occupational training at various levels, most providers still operate quite independently, making the evolution of the occupational education sector dynamic, complex, and sometimes surprising in its direction.

In the following sections we will focus mainly on *public* occupational education, particularly in the city's high schools and community colleges. In outlining the profile and problems of each type of occupational training, we will pay particular attention to the uneven access to, and benefits from, work-related education that accrue to the city's poor and minority populations.

Table 7

The City University of New York
Percent Enrollment by Racial/Ethnic Status for Fall 1988
Undergraduate Students

	Non-Resident Alien (%)	African American (%)	Native American or Alaskan Native (%)	Asian or Pacific Islander (%)	Hispanic (%)	White (%)	TOTAL
Bronx	1.7	49.0	0.2	3.9	41.6	3.6	5,728
Medgar Evers	4.2	91.0	0.3	0.6	3.7	0.3	2,433
Hostos	1.8	12.1	0.1	1.0	83.4	1.6	4,024
Kingsborough	0.7	22.3	0.3	4.6	10.6	61.5	12,817
LaGuardia	0.0	30.6	0.4	10.2	40.9	17.9	8,965
Manhattan	1.9	54.2	0.1	6.9	28.6	8.2	12,647
Queensborough	0.0	20.8	0.6	10.1	15.2	53.2	11,644
Community Colleges	1.0	35.0	0.3	6.6	27.9	29.2	58,258
Baruch	6.2	27.1	0.2	20.2	19.0	27.3	13,604
Brooklyn	3.2	21.0	0.1	7.0	10.9	57.9	11,602
City	8.3	36.8	0.4	14.1	26.4	14.1	10,177
Hunter	3.4	20.8	0.5	8.9	18.8	47.5	16,090
John Jay	0.6	36.0	0.3	2.4	28.8	31.9	6,763
Lehman	1.2	29.8	1.1	2.1	35.1	30.6	7,835
NYC Technical	2.1	56.6	0.2	8.2	20.5	12.5	10,327
Queens	4.8	9.7	0.1	10.0	11.1	64.3	13,559
Staten Island	3.9	9.5	0.7	4.1	6.0	75.8	9,673
York	10.6	60.1	0.3	6.2	15.7	7.1	4,835
Senior Colleges	4.3	27.7	0.4	9.2	18.4	39.9	104,465
TOTAL UNIVERSITY	3.1	30.3	0.3	8.3	21.8	36.1	162,723

Source: City University of New York, 1989.

Occupational Education in the New York City High Schools

Occupational programs have never enrolled more than a minority of public secondary school students in New York City. Nevertheless, an understanding of the political, economic, and social trends that have influenced occupational education offers a way to understand the changing relationship between the city's economy and its overall educational system.

First established in the early decades of this century, trades instruction originally met with an unenthusiastic response among parents, who wanted schools to provide their children with occupational mobility, not preparation for manufacturing jobs (Ravitch, 1974). Until the 1930s, most public vocational training took place in the continuation programs for out-of-school youth, while enrollment in day trades schools remained relatively small. With the onset of the Depression and pressures to remove more youths from the job market, more vocational schools were established. In the following decades, practical courses proliferated in all the high schools, while at the same time the reputation of vocational education became clearly one of serving slow students who could not do well—or who were discouraged from doing well—in academic pursuits. Throughout its early history, then, vocational schooling served mainly as a mechanism for accommodating and/or widening access to secondary education—first for immigrant children, then for unemployed youths during the Depression, and finally for students who were not interested in school but could no longer join the world of work easily as high school dropouts as the demand for young unskilled laborers remained lower than in pre-War decades.

As political and economic trends blended to make secondary rather than elementary education the minimum standard requirement for most youths to enter the workforce, the dropout rate of New York City high schools, always high, became increasingly a sign of potential economic weakness. Vocational education gathered some new-found prestige in this context as a method for motivating children to stay in school. Yet the vocational programs were faced, simultaneously, with rapid changes in the mix of occupations for which youths could be trained. The older programs geared toward employment in manufacturing, in particular, began to appear obsolete, while instruction in areas where demand stayed buoyant faced accelerating technological changes in the workplace that called for expensive upgrading in training programs.

At the same time, a new type of student was becoming interested in vocational schooling. Obtaining job skills in high school became attractive not just to the terminal students but also to those who want to go to college but needed work in order to do so. With the relative deterioration of zoned high schools, occupational programs also became more attractive to students and parents seeking safe havens within the system. Both pressures have helped to turn a portion of occupational education in the New York high schools into a college/employment track, while traditional, nonselective vocational programs have deteriorated and no longer lead reliably to either additional schooling or jobs.

This section examines the history of occupational education in New York in more detail, outlines current trends and policy initiatives, and highlights the major problems that remain to be solved if reform measures are to succeed.

The History of Vocational High Schools and Programs

In New York City as in other large American cities, a movement after the Civil War to incorporate manual training in the general curriculum gave way in the 1880s to support for teaching specific practical skills as preparation for work. Initially, New York City schools rejected the option of introducing a separate vocational track within elementary and junior high schools, as was done elsewhere. School leaders instead set up evening trade schools for apprentices and journeymen who were already employed, and day trades schools for children fourteen-years-old or older, most of whom had not finished elementary education. By 1913, there were three evening trades schools and three day trades schools in the City.

The passage of the Smith-Hughes Act in 1917 reinforced this pattern of concentrating vocational subjects in separate schools. A 1919 state law provided for the establishment of general industrial schools, single-trade and technical schools, practical arts or homemaking schools, and schools of agricultural and mechanical arts. These vocational schools were not required to incorporate academic subjects into the curriculum until 1928.

Despite increased funding and encouragement from progressive educators for industrial education, vocational programs inside the high schools remained relatively

small—contained in five vocational day schools—while the bulk of vocational-type training was being carried out in the fourteen continuation schools. It was the onset of the Depression that changed this balance dramatically. New York City found that it had no place to accommodate the burgeoning population of adolescents who now swelled the ranks of the unemployed and sought to stay in school. The solution was to turn the continuation schools from institutions exclusively for young workers into regular high schools. Within only three years, fifteen continuation schools were converted, and the Board of Education officially recognized these "vocational high schools" in 1934.

In the 1929-1930 school year, enrollment in vocational schools was only three percent of all high school enrollments; by 1944-1945, this figure had grown to nearly twenty percent. Although there were doubts about the efficacy of vocational training and criticism of the sometimes artificial separation of vocational from commercial and technical education, the schools drew more applicants than they could accommodate. It was not until the 1950s that the reputation of the schools as a dumping ground for slow students emerged clearly. A study of the schools published in 1951 found that vocational students had poorer attendance rates, lower average IQ scores, lower reading and math ability, and even poorer health than students in academic schools. About sixty-five percent of students who started vocational programs dropped out, and the rate was as high as seventy-five percent in some schools. High-quality technical programs accounted for a very small percentage of enrollment, while roughly thirty percent of all students admitted to vocational high schools were classified either as slow learners or as children with retarded mental development (New York State Education Department, 1951).

The postwar decades also saw a gradual expansion of vocational-type courses in the general high schools. Most of these subjects were not intended to prepare students for employment. Homemaking classes for girls and industrial arts classes for boys were widely available to students in academic high schools. Other subjects were more closely linked to occupations. Commercial education courses for clerical and business-oriented occupations in the academic high schools consistently enrolled more students than all the vocational high schools combined. Practical applications of technical knowledge were emphasized in many courses at the technical high schools. Still, commercial and technical subjects were not considered vocational because they were assumed to require a broader academic education or to lead to higher education.

The Break of the 1960s

In the 1960s, the New York City schools were engulfed in turmoil over how to redress the blatant inequalities of the system. A fight for desegregation turned into a struggle for local empowerment that culminated at the end of the decade in decentralization and the establishment of district community boards to control elementary and intermediate schools. Throughout this period, the Board of Education was searching for ways to satisfy the demands of integrationists without implementing forced busing. Connected with this goal was the plan announced in 1961 to found "educational option" high schools to draw on a borough- or citywide population. Existing schools which relied on nonzoned selection, including the vocational high schools, were found to be more racially balanced than the zoned high schools.

This was the first step in a broader change in the role of occupational education. Although not narrowly vocational, the eight educational option schools eventually started were structured around occupationally related themes. Their creation marked an official recognition of the potential drawing power of occupational programs—a first move towards the linking of occupational themes with "magnet" programs. Occupational programs were also now becoming acceptable for a wider population in the schools; in the 1960s, the Board of Education declared that all high schools subsequently founded would be "comprehensive" schools offering both vocational and academic subjects.

The continued deterioration of the city's zoned high schools contributed to the rising status of occupational programs. By the 1970s, the small size of vocational schools, their ability to screen applicants, and their more focused programs were considered strengths by many parents, and admissions became more competitive. The renewed popularity of the schools could not be attributed to major reforms in their methods or content. In fact, the schools were already known for the deteriorated condition of their buildings, which were older on average than those of other schools, and for antiquated equipment. The situation became worse after the city's fiscal crisis, when all capital improvements were halted. Yet the popularity of this selective, "safer" option did not wane.

The zoned high schools responded to these trends by increasing their offerings of specialized programs, many of them occupationally related, as a way of attracting some

good students away from the citywide schools. The rapid proliferation of such programs was largely uncontrolled. Schools announced their offerings in the high school directories distributed to the city's eighth graders, and the temptation to engage in "false advertising" was strong. This was an era in which, as one school official we interviewed put it, "if you had a mimeograph machine, you said you had a printing program." Many schools won the right to offer some specialized programs on a borough- or citywide basis, so that they could compete more effectively with the specialized high schools, educational options programs, and vocational high schools.

Selectivity and Occupational Education in the 1980s

By the mid-1980s, between one-third and one-half of all students in high school were enrolled in occupational programs. These are now spread through the heterogeneous group of one-hundred seventeen schools that make up the complex New York system. Nineteen vocational high schools include those that concentrate on training in a single trades area (e.g., automotive) and a majority of multitrade schools. There are eight educational option schools which, while not strictly vocational, are structured around occupational themes such as business, health sciences, and communications. A wide array of occupational courses and programs also exist in the city's seventy-seven academic/comprehensive high schools; many of these programs operate like magnet programs and, through a complicated admissions process that involves some parent-student choice, some screening by the schools, and some random selection by the Board of Education, draw on borough- or citywide student populations. Most occupational instruction is concentrated in the academic/comprehensive high schools; in 1987, these schools accounted for 81.2% of all students enrolled in occupational sequences.[18]

The distribution of occupational courses by subject area in the 1987-1988 school year shows that business and office programs account for the majority (55.8%) of enrollment in these programs (see Table 8). Trade and industry programs make up 21.8% of the total, with the largest concentrations in traditional vocational subject areas such as auto repair, construction, and printing. Certain nontraditional areas that are growing

[18] There were 103,681 occupational students in academic/comprehensive high schools and 24,719 in vocational schools, for a total of 127,719, or over a third of the total high school student population. Students are defined as occupational enrollees if they are in occupational courses for a minimum of ten periods per week. Taking a single typing or computer elective would not meet this requirement.

quickly still make up a relatively small proportion of the total; technical education programs, for example, account for 9.6% of total enrollment and health career programs are 4.6%.

Table 8

New York City Public Schools
Enrollment in Secondary Occupational Programs
Grades 9-12

1983-1984

Cluster	Native American	African American	Asian	Hispanic	White	Total	% Distribution
Agriculture/ Agribusiness	3	442	55	233	975	1,708	1.5
Business and Office Programs	34	30,838	3,930	19,203	20,777	74,782	63.7
Health Careers	2	4,945	220	2,489	858	8,523	7.3
Home Economics	0	309	39	205	65	618	0.5
Marketing and Distribution	4	1,678	126	1,035	982	3,825	3.3
Technical Education	2	3,418	821	1,563	1,455	7,259	6.2
Trade and Industrial Programs	2	9,221	684	6,357	4,482	20,746	17.7
TOTAL	47	50,851	5,875	31,094	29,594	117,461	100.0

1987-1988

Cluster	Native American	African American	Asian	Hispanic	White	Total	% Distribution
Agriculture/ Agribusiness	0	446	49	372	462	1,329	1.0
Business and Office Programs	5	28,904	5,397	21,677	15,298	71,281	55.8
Health Careers	3	3,255	234	1,656	718	5,866	4.6
Home Economics	0	1,789	138	876	966	3,769	3.0
Marketing and Distribution	1	2,604	311	1,494	995	5,405	4.2
Technical Education	2	4,752	1,932	2,428	3,109	12,223	9.6
Trade and Industrial Programs	8	12,167	1,777	8,074	5,820	27,846	21.8
TOTAL	19	53,917	9,838	36,577	27,368	127,719	100.0

Source: New York City Board of Education, Office of Occupational Education, Data Collection Unit, 1989.

Contradictory trends are apparent within this large, heterogeneous, and complex system. Against the background of continued problems in the general programs of the zoned comprehensive high schools, occupational programs that are at all selective emerge with better records and become virtually indistinguishable from other types of magnet programs. In 1985, a study reported by the Occupational Education Division showed that dropout rates were lower by several points among occupational students (New York City Board of Education, 1985). There is wide consensus among educators that such programs also tend to send larger proportions of their graduates to college. To be sure, there are still differences among the selective schools and programs in the types of training they offer and the expectations of graduates. While the better educational option high schools send most graduates to college, including some to elite universities, most vocational high schools encourage graduates to attend community colleges, to join the military, or, for a minority, to find work directly. This diversity, though, only serves to highlight the influence on these schools' reputation of conditions beyond their own control.

An extreme example of how the role of occupational programs is affected by other issues is found in the city of Yonkers, just outside New York City. Yonkers, a racially mixed city with a high degree of residential segregation, was forced by court order in May 1985 to take measures to desegregate. The school system made a districtwide choice to encourage voluntary integration using the magnet concept to achieve this goal. Yonkers has four high schools, one of which, Saunders Trade and Technical High School, has always operated on a districtwide basis and was, in 1985, more racially balanced than the other three high schools. Not surprisingly, one response to the court order was to step-up planning to introduce occupational programs in the other high schools to serve as magnets. The other schools adopted broad career themes within which some more specific occupational programs were developed. Saunders, meanwhile, was restructured to incorporate a specialization in business. As the Director for Occupational Education in Yonkers noted in an interview, one problem with the efforts was that they focused attention on magnet programs, while very little was being done to upgrade occupational programs for students who chose to attend their locally zoned schools.

Indeed, nonmagnet occupational programs inside most zoned comprehensive high schools seem to be languishing. As graduation requirements become tougher under a recent state plan, students have little extra time for electives. They will often turn to occupational courses only if they have failed other classes and need easy sequences to

graduate. Many miss out altogether on the opportunity to take occupational courses since these are mainly available to eleventh- and twelfth-graders and dropout rates are highest in earlier high school grades.

At Newtown High School in Queens, the head of technical education contrasts the quality of two programs in the school, one a selective pre-engineering program that draws students from the whole borough, the other a technical program for students assigned to the high school. Although the quality of students in the first program has declined in recent years, graduates still do very well in the rigorous program. Most go on to college, and those who choose to work are easily placed in entry-level jobs as drafters or technical assistants. In the second program, which offers sequences in drafting, machine shop, electricity, and automotive, students tend to be referred to shop courses because they need credits to graduate but cannot handle more academic work. The students are poorly motivated. Most are referred to the programs late, so they never get its full benefit; others are pulled from the programs partway through because they have to do remedial work in other subjects. Further, because the school has only rudimentary, outdated equipment, it cannot give such students useful, short introductions to machine-operating skills that would improve their chances in the job market.

The same contrast between magnet and nonselective programs is found at another comprehensive high school we visited, George Washington High School in the Washington Heights section of Manhattan. Students recruited from throughout the borough attend a highly successful "business institute" within the school, where they receive business skills training as a supplement to regular academic courses from the ninth grade on. The director of the business programs notes that other students in the school, "if they make it to the eleventh grade," can also enroll in business subjects. They do not have the extra room in their schedules provided in the "enriched" program, and they cannot build on skills learned in the ninth and tenth grades.

The vocational high schools provide something of a middle case. New York is exceptional among the three cities studied because it has so many separate vocational high schools (in 1989), descendants of the continuation schools converted in the early 1930s. These schools are selective, and they do not have to follow the guidelines for reading levels established for the educational option schools. They have drawn considerable criticism as tradition-bound, even obsolete, institutions that are excessively protective of programs that

either are substandard or are successful only because they serve an unrepresentative student body. Board of Education officials note that many vocational schools have had to be pushed hard to accept more special education or limited-English proficiency (LEP) students. Despite stepped-up recent efforts to change, vocational programs that were sex-stereotyped in the past continue to be highly imbalanced; indeed, between 1983-1984 and 1987-1988, the percentage of males in vocational schools remained about constant (it, in fact, increased slightly from 62% to 63%). As with the educational option schools, the vocational schools can attract and select a student body with a higher percentage of middle-class and high-performing students than the zoned comprehensive high schools in poorer areas of the city.

Other potentially discriminatory tracking takes place during the weeding out period for students in the ninth and tenth grades. Critics point out that the vocational schools boast of a low dropout rate but, in fact, preserve this record by having a higher-than-average transfer rate in the early years. New admissions are restricted to incoming freshmen, and students who leave are simply bounced back to their zoned schools. The schools thus benefit from promoting a lock-step structure that limits student choices and encourages misfits to leave. As one educator critical of the schools noted, the vocational schools "have this tough-guy philosophy; you have to be cast in a certain mold to make it through their programs."

Yet precisely because of their selectivity and relatively small size, the vocational schools have a reputation for graduating most students and sending many of these on to college, especially to two-year technical colleges. The reputation persists despite the observation by some Board of Education officials and members of the Advisory Council that some schools are falling further behind technological trends and occupational shifts. The schools suffered greatly during the 1970s fiscal crisis, when all capital improvements, including much-needed repairs to the older-than-average vocational school buildings, were halted. Recently, a few of the schools have been restructured and upgraded. For example, the East New York Vocational High School, an older school that was supposedly geared towards aviation training but in fact operated with obsolete equipment and placed few students, was converted into the High School for Transit and has emerged with an improved record. Restructuring plans themselves, though, may be motivated by something other than the desire to upgrade. Residents of a mostly white, working class neighborhood of Brooklyn lobbied to have the Eli Whitney Vocational High School restructured so that it

would attract "a better class of student" to the neighborhood.[19] Still other schools show some resistance to restructuring, since such plans will involve active participation by the Board of Education and the Advisory Council and thus threaten the autonomy of the vocational schools.

Content Integration: The Benefits of Vocational/Occupational Education

In light of the fact that some programs of doubtful quality thrive while nonselective programs languish, we must wonder whether support for the integration principle or the "new vocationalism" is a true endorsement of this type of education or merely disguised support for differentiated and unequal school structures. It is perhaps impossible to answer this question on the basis of existing studies, including our own. Yet it is worth noting that educators in vocational high schools, education option schools, and selective magnet programs in comprehensive schools often complain that those who criticize their programs for being selective, in fact, overlook the substantive characteristics of these schools and programs that make them successful. Many even advocate expanding occupational education throughout the curriculum and in all schools.

For some, the virtue of vocational training in the high school is that it gives students some concrete skills that will at least give them an edge in the job market. They continue to contrast useful hands-on training to useless (or less useful) academic instruction. One assistant principal told us,

> The Board of Education is really an academic institution. They don't see the importance of what we're doing, and that's all wrong. They're training kids for McDonalds in academic schools in this city. What we're doing is so much more important.

For others, the value of vocational training lies mainly in its ability to convey basic academic skills in a form that is more comprehensible and attractive to students. Hands-on training is thus especially valuable for students who do not perform well in a traditional academic environment. Most of the vocational/occupational schools and programs participate in some form of informal or formal tracking, whereby slow students are guided

[19] The school has been renamed the Harry Van Arsdale Jr. High School and now focuses on "building trades management." School officials we interviewed noted that the emphasis on management is more a marketing strategy to attract better students than an important aspect of the curriculum. The school is divided into largely separate building trades and business programs, each fairly traditional in format and curriculum.

towards less demanding skills training (e.g., upholstery, some building trades, building maintenance, and dental assistant programs) and away from others that are more difficult (e.g., computer-aided design, stenography, and nursing). Such tracking is usually done within schools and does not respond to fixed guidelines. Yet educators say it is hard to distinguish this process from the simple practice of guiding students towards their areas of interest in order to motivate them to stay in school.

Motivation is indeed the most important benefit from vocational/occupational training, according to most educators. The capacity for such programs to motivate students is closely tied, they say, to the more regimented structure of many of the programs and the "sense of belonging" that they promote. At Clara Barton High School, a school devoted to training for the health professions, school officials cite the importance of group solidarity in the various career-track programs offered in the school. At this educational option school, all students are enrolled in special programs, and they develop strong bonds through taking courses together, negotiating the hurdles of their particular programs as a group, and often working side-by-side in summer internships. If a similar scheme could be reproduced in all schools, some of the educators interviewed suggest, the success of the better occupational programs could be easily reproduced.

Finally, students themselves seem to perceive new benefits to occupational training that were less apparent only a decade or so ago. Because a greater proportion of college-bound students will have to work while studying, many choose occupational programs not simply because they are selective but also because they teach some job-relevant skills. This consideration seems to be key in maintaining the popularity of occupational tracks such as business education; not only is demand strong for office jobs, but demand for part-time jobs is also buoyant, and students can prepare for this option by picking up discrete skills in just a few occupational courses. The work-and-study option, though, is also influential in areas where training follows a more rigid, cumulative pattern; in the health field, educators note, many students will work at whatever level they have obtained certification while studying for a higher level in college.

Armed with these arguments in favor of occupational/vocational schooling, many educators in the field display a certain missionary zeal in promoting their particular program's formula as a solution to the school system's problems. At the same time, however, they work in the opposite direction to protect their turf and the special status of

the programs they administer. The contradiction has led some to oppose policy reforms that might indeed have the effect of making access to occupational/vocational training more democratic.

Policy Responses

The coexistence of highly effective and extremely poor occupational programs—and some legitimate confusion about the reasons for this difference—have created problems for Board of Education administrators. While one set of experiences seems to lend support to efforts to expand occupational education throughout the curriculum, the record of another set of programs prompts calls for stricter control of the proliferation of occupational programs and a smaller place for them in the curriculum. The choice of either option cannot be made independently of other policy considerations, particularly the alleviation of racial and other types of discrimination in entry into selective programs.

The most general policy effort to affect occupational programs is the Regents Action Plan, a state initiative aimed at standardizing curriculums for all subject areas and raising the level of graduates by making requirements more stringent. The plan has drawn loud complaints from educators in occupational areas who say that the new requirements make it much more difficult for students to complete the hours of specialized and hands-on instruction needed in many of the programs. Indeed, school officials we interviewed said that the plan has already had a negative impact on graduation rates, particularly affecting occupational students who have to do remedial work in an academic subject. Schools with occupational programs have now been granted the right to apply for waivers for some requirements, and it is likely that they will be successful in eliminating altogether the foreign-language requirement. Resistance to the plan has been especially keen among staff in the vocational high schools, where shop instruction has always played a central, not subordinate, role in the curriculum.

A parallel plan in New York City also aims at standardizing the curriculum and at upgrading or eliminating some of the less successful programs. Introduced in 1987, the plan designates fourteen "clusters" of subjects that are taught throughout the high school

division.[20] One hoped-for effect of the plan is to force schools—particularly comprehensive high schools—to restrict the number of different types of programs they offer and to concentrate on making the remaining programs better. The cluster program also responded to the criticism that schools have had little input in curriculum design. The clusters are designed to serve as vehicles for sharing experiences and expertise among schools. Principals of schools considered innovative or highly successful were appointed to head clusters and serve as leaders for the rest of the group.

The cluster scheme is less controversial than another reform instituted during Frank Smith's brief tenure as High School Division head. Smith criticized the selection process of the elite schools and introduced a procedure for assigning fifty percent of the enrollees in educational option schools and programs, and requiring schools to obtain a standard distribution of students by reading scores to avoid their skimming the best students in the system.[21] The change drew harsh criticism from the parents of students in the selective schools and from some administrators. The controversy surrounding this reform (which contributed to Smith's removal as High School Division head) undoubtedly makes current Board of Education officials wary of introducing further changes in the selection process for magnet programs, except where they might be forced to do so under court order.

It was the pressure from litigation brought by community groups that in fact led to the removal of racial ceilings for some unzoned programs. The ceilings were ostensibly designed to prevent "white flight" and to reduce discrimination that, it was suggested, would result from high admissions criteria for some programs. Their effect, though, was to insure whites unequal access to some elite programs. The ceilings were introduced without public discussion and were just as quietly retired in the 1988-1989 school year (Price & Stern, 1987) (see Table 9 for ethnic representation in the educational programs).

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[20] A cluster is defined as a group of programs in a related career area. There are thirteen cluster groups to which admissions may be secured on a screened, unscreened, or "educational option" basis (see Price & Stern, 1987). The clusters are architecture, building, and construction; communications; ecology; electronics and technology; fashion industry and design and cosmetology; health and human services; law; management and finance programs; performing arts, fine and commercial art; transportation, culinary arts, hotel/restaurant management; mathematics and science research; and business.

[21] The selection process now works as follows. Educational option programs accept any student who scores within the top two percent on the reading test if the program is listed as first choice on the application. Overall, the student population must consist of sixteen percent reading above average, sixteen percent reading below average, and sixty-eight percent reading within the average range, with half of all students selected by the school and half selected at random.

Table 9

New York City Public Schools
Enrollment in Secondary Educational Programs
Grades 9-12

1983-1984

Cluster	Native American	African American	Asian	Hispanic	White	Total	Percent Distribution (%)
Comprehensive/ Academic	31	30,972	4,243	18,471	23,162	76,879	65.5
Specialized	1	232	3	168	61	465	0.4
ED-OP	8	7,462	717	3,178	1,480	12,845	10.9
Vocational	7	12,185	912	9,277	4,891	27,272	23.2
TOTAL	47	50,851	5,875	31,094	29,594	117,461	100.0

1987-1988

Cluster	Native American	African American	Asian	Hispanic	White	Total	Percent Distribution (%)
Comprehensive/ Academic	11	35,698	6,991	24,243	22,090	89,033	69.7
Specialized	0	1,025	871	640	1,190	3,726	2.9
ED-OP	0	5,553	996	2,834	1,539	10,922	8.6
Vocational	8	1,641	980	8,860	2,549	24,038	18.8
TOTAL	19	53,917	9,838	36,577	27,368	127,719	100.0

1983-1984

Cluster	Native American (%)	African American (%)	Asian (%)	Hispanic (%)	White (%)	Total (%)
Comprehensive/ Academic	0.0	40.3	5.5	24.0	30.1	100.0
Specialized	0.2	49.9	0.6	36.1	13.1	100.0
ED-OP	0.1	58.1	5.6	24.7	11.5	100.0
Vocational	0.0	44.7	3.3	34.0	17.9	100.0

1987-1988

Cluster	Native American (%)	African American (%)	Asian (%)	Hispanic (%)	White (%)	Total (%)
Comprehensive/ Academic	0.0	40.1	7.9	27.2	24.8	100.0
Specialized	0.0	27.5	23.4	17.2	31.9	100.0
ED-OP	0.0	50.8	9.1	25.9	14.1	100.0
Vocational	0.0	48.4	4.1	6.9	10.6	100.0

In addition to these systemwide changes, one separate, but overlapping, initiative is aimed directly at revising vocational instruction. Unlike the rest of the state systems outside the five large city districts, New York City does not receive funding from the state

under the Board of Cooperative Education Services (BOCES), the main provider of occupational training in the districts it serves. BOCES centers outside New York City are similar to the vocational centers found in California and Philadelphia; students attend their home schools for academic work and then commute to BOCES schools for part-time vocational training. One BOCES-style school was opened in Manhattan in 1984. The School of Cooperative Technical Education serves students from thirty-five to forty high schools across the city. Students attend in morning and afternoon shifts and are provided with transportation to or from their home schools, many of which are more than an hour away by school bus or public transportation.

The BOCES-style school is designed to provide students with training on state-of-the-art equipment which would be too costly to introduce into high schools throughout the city. The purpose of the school is also to give students who do not seek or obtain entry into the vocational schools in the ninth grade a chance to opt for this training later on. (The minimum age for students to attend the center is seventeen.) Plans have already been approved for another BOCES-style school to be created in Brooklyn in 1990, and a third in Queens by 1991. The most serious problem at the Manhattan school currently is coordinating transportation for students from distant schools, and this difficulty should be eased by placing similar schools in other boroughs. Partnerships are also being encouraged between vocational and academic schools near each other; two such arrangements are already in place whereby comprehensive schools send some students to nearby vocational schools for part of the day.

The four administrative innovations described here all respond to the recognized difficulty of reconciling sufficient and broad-based academic training with job-relevant specialized training. Beneath this problem lies the even more difficult issue of reconciling the selectivity of occupational/vocational programs with evidence of their potential benefits. The various initiatives respond differently to this problem.

The state, although willing to negotiate on some matters, has weighed in with a plan that does not explicitly attack occupational education but effectively reduces its importance in the curriculum for all students. While critics claim that the underlying message of the Regents Action Plan is that occupational education is less important than training in other subjects, the policy is also potentially threatening because it implicitly favors different selection criteria for occupational programs: in particular, ability and commitment to handle

additional coursework. This is indeed a different principle of selectivity than the one in place in most occupational programs, which have traditionally offered *alternative* curricula, replacing some academic courses with hands-on instruction and altering the content of some other academic courses, then recruiting and selecting students who are appropriate for, or especially interested in, the new mix of subjects.[22]

The Board of Education has taken some steps towards reducing the inequality among programs by promoting the cluster plan. One effect of the plan is to spread occupational themes to the whole curriculum and, indeed, use them as a unifying principle for school planning. The cluster plan is also intended to make admissions criteria for similar programs uniform, but the distinctions between screened, unscreened, and educational option admissions procedures remain intact. Indeed, each cluster is designated as screened, educational option, or unscreened. In addition to complicating rather than simplifying admissions instructions for parents, the plan preserves the differentiation of schools that existed before; one look at the list of screened programs confirms that, in addition to the selective science and performing arts schools, the vocational high schools are the most likely to be screened.[23] Although comprehensive schools may belong to up to three clusters and participate in curriculum planning, the selection criteria for the relevant clusters apply only to particular programs within the school. The plan, then, has so far managed to disguise a continued commitment to potentially biased selectivity in some schools and to encourage the use of occupational programs to compete for motivated students on the part of undifferentiated schools. The initiative is, of course, very new and might turn out to be somewhat effective in diminishing the differences between good and bad vocational programs.

The plan to implement BOCES-style schools falls somewhere between these two in its effect. BOCES-type schools place a greater emphasis on self-selection by students when they are at a later stage in their school careers. Yet the system is not designed to compete with the full range of occupational programs found in comprehensive high schools. In fact, as one school official pointed out, the BOCES-type programs are not a

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[22] In practice, the two types of selectivity may be linked. This is the case at George Washington High School, a comprehensive school in the Washington Heights area in Manhattan, where the successful business "educational option" program incorporates practical skills training with academic instruction by offering specially chosen students an extra period of class each day. This "enriched" program, school officials say, can only be offered to students who choose the special course of study and consent to the extra class time. Yet school officials would favor making some business subjects part of the basic curriculum for all students.

[23] Screened clusters are architecture, building, and construction; electronics and technology; fashion industry and design; performing arts; transportation; culinary arts and hotel/restaurant; and math and science research.

good option for many students who elect vocational classes in comprehensive schools since these "kids don't like school in the first place" and cannot be expected to make the extra effort to travel across the city to attend classes. Nor is there any proposal on the table to have the BOCES-type schools replace vocational high schools. Indeed, so long as selectivity works in their favor, the case for preserving vocational schools will be strong.

Although the various policy measures seem to be compatible, and are, in fact, often being administered by the same individuals in the Board of Education, they answer quite differently the question of how to resolve the goal of multiplying good occupational programs with the objective of redeeming lost schools and students. Until this issue is resolved and a coherent policy put in place, the logic of maintaining selective schools and programs will overpower countervailing incentives. Neither the objective of introducing occupational training across the curriculum, nor the goal of increasing the number of programs dramatically so that all students who would want such training at the high school level could choose it, has been adopted whole-heartedly.

Future Policy Trends

As in most other cities, public school educators in New York, especially in occupational programs, look to the involvement of businesses as well as other agencies and groups as a potentially important catalyst for change. While there has been much emphasis in the press on the greater interest of business in the fate of public school students, evidence for active business involvement in occupational training in the schools is uneven. There has, of course, always been a formal mechanism for business participation in planning. In New York City, the Advisory Council for Occupational Education oversees twenty-seven separate commissions, most set up to advise programs in particular occupational areas. There is some evidence of increased activity on the part of the council; in 1987, the Advisory Council set up review committees to evaluate twelve schools and assist with restructuring, as it has already done in the two recently restructured vocational high schools. The Advisory Council drew praise in a recent state audit of occupational education in New York City, yet the quality of interaction between schools and the council groups remains highly uneven. In one vocational school where a council subcommittee has been unusually active, an assistant principal showed little enthusiasm: "We haven't gotten much from them and we don't have much hope. But we'll continue to play along by their

rules." The coordinator of technical education at one comprehensive high school had never heard of the Advisory Council.

Other types of interaction with business also show signs of increasing slightly, with uneven effect. In 1982, the Board of Education started the Join-A-School project which pairs schools and businesses and invites the latter to sponsor a variety of school activities from faculty dinners to student summer jobs. Reactions of administrators range from indifference to great enthusiasm. Other, newer programs bring business representatives into schools to introduce the world of work to eighth and ninth graders. Meanwhile, the sixty-year-old cooperative work program continues to flourish, placing around twenty-six thousand students in part-time, alternate-week, or summer jobs in 1987-1988.

Rather than becoming more closely tied to occupational training, however, such programs are designed, according to Board of Education officials, to orient students broadly towards the world of work. Further, many educators express doubts about the genuineness of business's interest; although clearly not simply looking for a way to recruit new workers, the companies involved in programs such as Join-A-School, detractors say, are mainly interested in the public relations benefits from their involvemen It seems likely that partnerships will continue to multiply in the future but that they will not have a major impact on shaping occupational education trends. Cooperative programs are also likely to continue in much the same way, with perhaps a slight reduction in numbers brought on by the tightening of academic requirements under the Regents Action Plan.

Union ties to occupational training in the schools have been far weaker than in some other cities. A principal in a vocational school with unusually strong union support remarked, "We know we can't expect too much from [the unions]. If there are two-hundred positions open and one-hundred eighty of their relatives want jobs, then there will really be twenty openings. We want to be on the inside track for getting some of our kids into those openings. We're not naive." Edwin Espaillat, the United Federation of Teachers' Vice-President for the Vocational Schools, acknowledges that trades support for many of the high school programs has been weak in the past but suggests that the relationship is improving; proposals are being discussed for allowing graduates of certain vocational schools to receive some credit in union apprenticeship programs. Also, because the shortage of teachers is especially acute in the trades, the unions helped set up a teacher-

apprentice system whereby high school graduates are placed simultaneously as teacher-assistants and in the trades to gain the requisite experience for full certification.

Perhaps more significant for guiding future trends will be increased efforts to coordinate occupational planning both within the Board of Education and with other providers in the city. There has traditionally been no unified body in charge of occupational programs and no single voice to promote planning. As recently as 1987, vocational schools were in a separate administrative division; there are still two separate divisions responsible for occupational education. One, the Office of Occupational Education, oversees planning and compliance with state regulations, while a second office within the separate High School Division distributes federal and state vocational funds. The two offices report to different Deputy Chancellors and, with the recent changes in leadership, they have undergone frequent reorganization and personnel changes in the last several years.

Coordination of planning and implementation may be improved under a new plan to form a citywide body to include representatives from the High School Division in the Board of Education, community colleges in the CUNY system, and Board of Adult Education, among others. A major goal is to coordinate a continuum of training and services for youths from the elementary grades through adult levels. This effort, while still too new to evaluate, promises to be one focus of debates about whether certain types of occupational training might be more effective if shifted out of the high schools and offered only to adults.

Of course, the changing relationship between school and work cannot be understood by looking at secondary school reform in isolation. The next section examines the changing role of the community college in the education system of New York City.

The Response of Community Colleges

The decline at the secondary level of traditional vocational education designed to lead directly to employment, the general upward trend in educational levels, and strategies to promote enrollment and secure state funding have all combined to make the community colleges the fastest growing educational sector during the last twenty years in New York

City. The role of community college education in students' careers at school has meanwhile become more varied. While transfer to four-year colleges continues to be pursued by some, other students attend community colleges specifically to earn terminal degrees in occupational fields, while still others may have only fleeting contact with the colleges in customized training courses, continuing education classes, or degree programs they enter but never finish. The average student is older, most are minority, and an increasing proportion attend while they work or raise children. Programs and enrollment levels at the schools are in flux, and even the largest and fastest growing still struggle to establish secure reputations as leaders in particular occupational fields.

This picture is consistent with what we know about general trends in American education since the 1970s. Widespread perceptions of an employment crisis for overeducated liberal arts graduates reinforced increasing demand for practical degree offerings at community colleges in the 1970s. At the same time, these institutions were searching for a market niche where their enrollment would be protected from the competition of the four-year colleges: occupational offerings were a logical choice (Brint & Karabel, 1989). These factors, together with increased federal support for adult career education, brought about both a dramatic growth in enrollments and a transformation of community colleges from mainly feeder schools for the four-year colleges, to largely terminal-degree-granting schools that were heavily oriented towards occupational training (Shor, 1986, Chapter 2). As we have argued, the community colleges fit well with an educational adjustment strategy based on a universal liberal arts education through high school with more occupationally specific skills taught in postsecondary institutions—what we have referred to as the quantitative strategy. These institutions seemed ideally placed to provide the skills for a large number of middle-level technical and skilled jobs.

Yet, this transformation generated some new problems for these institutions. An emphasis on occupational training has meant a need for constant revision of the curriculum and a new sensitivity to fluctuations in the demand in particular occupations. The decline in transfer rates has called into question the role of community colleges as stepping stones to educational advancement at a time when these institutions are becoming the main providers of higher-level training for poor and minority youths in the city.

The outcome of this unsettling phase of community college development is still uncertain, as the New York case makes clear. The seven community colleges in CUNY are

young institutions—all postwar creations, some very recent—and they now account for nearly a third of enrollment in the public postsecondary system. The picture that emerges from a study of the community colleges in New York City is one of active ferment. Every college that we visited is involved in major restructuring efforts for some of their programs. Several of the schools are putting a major emphasis on their nondegree programs which can be easily started, altered, or closed down. Rather than being characterized by considerable growth and evolution following a coherent plan, the current period is marked by a frantic scramble for students and for funds, not only from state enrollment reimbursements and tuition, but also from a bewildering array of special municipal, state, and federal sources and in some cases from unions and private firms.

This uncertainty and change reflects the youth of the institutions, the very direct impact that changes in jobs and skills have on the demand for their students, and the absence of a well-established and recognized set of roles. In the current period of economic change, the malleability of these schools appears to be a strength, and indeed many factors suggest that these are dynamic and flexible institutions moving into an increasingly important role in preparing the nation's workforce. Moreover, while they seem to be well-positioned to serve the emerging needs of employers, they also have recruited members of ethnic and minority groups that have previously had little contact with postsecondary education. They are increasingly called on to serve as a second chance entry point for students who have done poorly in, or never completed, secondary schools, and to provide remedial education to these and other students who are not prepared for higher education. Supporters of the community colleges claim that their main strength lies precisely in this dual role of serving the needs of employers while incorporating newcomer groups.

There is much to be said for this point of view; nevertheless, this dual role, as it interacts with the changing economy, also bears the seeds of new problems and conflict. As these schools increasingly teach both basic and occupational education, and if they continue to be the main providers of postsecondary training for minorities in major urban areas, they will begin to encounter many of the controversies that have beset urban secondary schools.

This section of the report first presents an overview of the occupational training in community colleges in New York and then discusses the many reasons why at first they appear to be institutions at the right place at the right time. We then suggest why that view may already be out-of-date and conclude with some directions for policy.

Occupational Education in the Community Colleges

Unlike the junior colleges of California and some other states, the community colleges of New York are quite recent creations, and their very institutional identity has thus been bound more closely to their role as occupational training centers.[24] This is perhaps less the case for three of the schools—Queensborough, Kingsborough, and Bronx—which were founded to serve primarily white, middle-class students who had failed to qualify for the senior colleges. Yet, over the last decade, these schools too have had to adjust rapidly to growing minority, immigrant, and adult populations, and they have actively promoted occupational programs to buoy enrollment. The four other schools, all founded in the 1960s or 1970s, already began with closer ties to businesses and quickly developed emphases on particular occupational areas.

Various schools are now clearly associated with particular niches in the employment/education nexus. Hostos, which serves a largely Hispanic population in the Bronx, specializes in health occupations; the Borough of Manhattan Community College, located close to the financial district, concentrates on training for employment in financial services; New York City Technical (in its two-year program) has a well-respected program to train executive, medical, or legal secretaries; LaGuardia Community College in Queens has an emphasis on cooperative education in all its programs as its hallmark; and other schools identify themselves with other career specialties.

As we have seen, minorities are overrepresented in the community colleges in New York. In 1988, whites, who made up about forty-six percent of the population, accounted for only twenty-nine percent of the community college enrollment (see Table 10).

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[24] The seven CUNY community colleges were all founded after 1960. New York City Technical was founded in the 1940s as a postsecondary technical institute and, although now mainly a four-year college, it retains some two-year programs.

Table 10

The City University of New York
Enrollment by Racial/Ethnic Status for Fall 1988 Undergraduate Students

	Non-Resident Alien	African American	Native American or Alaskan Native	Asian or Pacific Islander	Hispanic	White	TOTAL
Bronx	95	2,806	12	226	2,383	206	5,728
Medgar Evers	102	2,213	7	14	90	7	2,433
Hostos	71	487	5	41	3,356	64	4,024
Kingsborough	89	2,859	37	589	1,362	7,881	12,817
LaGuardia	1	2,746	39	910	3,665	1,604	8,965
Manhattan	240	6,852	17	874	3,623	1,041	12,647
Queensborough	2	2,419	74	1,181	1,773	6,195	11,644
Community Colleges	600	20,382	191	3,835	16,252	16,998	58,258
Baruch	846	3,693	21	2,750	2,582	3,712	13,604
Brooklyn	372	2,439	7	810	1,259	6,715	11,602
City	848	3,743	37	1,433	2,686	1,430	10,177
Hunter	553	3,352	77	1,436	3,028	7,644	16,090
John Jay	39	2,437	23	159	1,950	2,155	6,763
Lehman	94	2,334	88	165	2,753	2,401	7,835
NYC Technical	214	5,845	19	842	2,118	1,289	10,327
Queens	649	1,315	20	1,358	1,505	8,712	13,559
Staten Island	380	917	63	400	581	7,332	9,673
York	513	2,905	14	300	760	343	4,835
Senior Colleges	4,508	28,980	369	9,653	19,222	41,733	104,465
TOTAL UNIVERSITY	5,108	49,362	560	13,488	35,474	58,731	162,723

Source: The City University of New York, 1989.

Not surprisingly in a city dominated by financial and business services, in 1987, "business and commerce technologies" accounted for by far the largest share (35%) of associate degree enrollments in the public postsecondary system in New York of any major occupational group, and this share has grown over the last several years (see Table 11). These same industries generated a demand for graduates of data processing programs which contributed an additional eleven percent of the enrollments. Corresponding to the city's large health sector, health-related services was the only other program with a large share (14%) of enrollment, although enrollments in both of these areas fell slightly during the middle years of the decade. At least for data processing, this may reflect a shift from two-year to four-year degrees that are not available in community colleges. Thus, the distribution of enrollments among programs roughly matched the needs of the local economy.

Table 11

Occupational Curriculum of the City University of New York, 1984 and 1987
Percent Enrollment in 1984 and 1987

	1984 % Enrolled in Associate Degree	1987 % Enrolled in Associate Degree
Business and Commerce Technologies	32.6	34.5
Data Processing Technologies	15.4	11.7
Health Services and Paramedical Technologies	15.1	14.1
Mechanical and Engineering Technologies	6.9	7.3
Natural Science Technologies	0.3	0.5
Public Service Related Technologies	5.6	7.3
Liberal Arts and Sciences	23.2	2.9

*Note: These degrees had enrollment only in 1987. Also note that about 0.7% of enrollment each year is in Unclassified Curriculum.

Sources: City University of New York (1987), and the State Educational Department, Information Center on Education in Albany. Printout supplied to authors.

If the aggregate data reveals a correspondence between the economy and the community college programs, interviews with community college administrators and professors suggest a virtual obsession with serving the needs of local employers. Almost two decades ago, Arthur Cohen, a national expert on community colleges wrote that "when corporate managers . . . announce a need for skilled workers . . . college administrators trip over each other in their haste to organize a new curriculum" (Brint & Karabel, 1989, Chapter 1). At least in New York, their eagerness is unabated. The institutional response of community colleges to the shifting needs of the local economy range from curriculum shifts corresponding to general trends in occupations to the development of customized programs for individual firms with particular needs.

New York City Technical College provides an example of more institutionalized ties to local employers. Industry advisory councils play an integral role in shaping the curriculum, in getting equipment, and in securing job offers. In the college's legal assistant program, judges from nearby courts act as faculty and the school's health program has affiliations with twenty-five medical centers and has three clinics on campus. The human services program has relationships with two-hundred agencies throughout the city. The school has recently completely revised its secretarial program which now includes instruction in word processing, financial spreadsheets, and database systems. In conjunction with local law firms, the school has designed a program for legal secretaries that includes courses in business math, elementary accounting, and legal principals.

Instruction is also given in dealing with different types of interpersonal office situations. During the second year, all of the students must work one day a week in a local law firm and, according to the program administrators, employer demand for these interns is so great that they could place many more than they have. Every graduate who wants a job is placed.

The Bronx Community College has a long history of providing training for health care workers in conjunction with local hospitals. In the late 1960s, the college started a two-year nursing program that was so large that a mini-nursing facility was established at the Bronx Municipal Hospital. Local hospitals asked the college to institute a one-year LPN program and hospital unions (Local 1199 and District Council 37) have worked with the college to develop a short-term upgrading program. With close ties to employers in all of these programs, the colleges quickly learn about changes in the skill and knowledge requirements for these jobs.

Customized training represents yet a closer tie between employers and colleges—a direct contractual relationship. Bronx Community College has training contracts with the Hunts Point Produce Market, Paragon Cable, and Pan American Airlines. New York City Technical College is currently mounting programs to train telecommunications workers for MCI Corporation; General Motors to train dealers and to train mechanics to use computerized equipment; New York Telephone to train workers in office automation; and a printing industry association for a bindery program.

There is no systemwide data on customized programs. The closest statistical category is "contract and grant supported programs." Even for this category, data is only available for 1984 through 1986 (see Table 12). During these two years, the total enrollment in these courses in community colleges grew from about twenty-six hundred to just over three thousand (14%). If New York City Technical and Staten Island College are included (these institutions grant both two-year associate and four-year degrees), over eight-thousand students were in contract or grant supported courses in 1986. While these numbers may seem large, they overstate the number of students in customized programs paid for by the companies. For example, while LaGuardia College reported over twenty-five hundred students in these programs, they only had three-hundred students in

Table 12

The City University of New York
Noncredit Enrollment by College

Fall 1984	Remedial Vocational Community Service and Continuing Education Courses	Avocational or Social Group Courses	Contract or Grant Supported Courses	TOTAL NONCREDIT
Bronx	401			401
Medgar Evers		314		314
Hostos	101			101
Kingsborough	3,776	693	4,469	
LaGuardia	1,962	119	2,136	4,217
Manhattan	963	387	512	1,862
Queensborough	2,658	353		3,011
Total Community	10,175	1,552	2,648	14,375
Graduate School	43			43
Baruch	1,390	401	1,791	2,095
Brooklyn	1,589	581		2,170
City	504	278		782
Hunter	618			618
John Jay				
Lehman	676	137		813
NYC Technical	721		4,347	5,068
Queens	2,400			2,400
Staten Island	332	107	680	1,119
York	825		479	1,304
Total Senior	9,098	1,504	5,506	16,108
TOTAL	19,273	3,056	8,154	30,483

Fall 1986	Remedial Vocational Community Service and Continuing Education Courses	Avocational or Social Group Courses	Contract or Grant Supported Courses	TOTAL NONCREDIT
Bronx	420		91	511
Medgar Evers	268			268
Hostos	95			95
Kingsborough	5,765	935	2,741	9,441
LaGuardia	2,485	237	195	2,917
Manhattan	986	151	1,137	
Queensborough	2,658	353		3,011
Total Community	14,161	2,249	3,027	19,437
Graduate School	78			78
Baruch	2,095	319		2,414
Brooklyn	1,462	567		2,029
City	521	267		788
Hunter	773			773
John Jay				
Lehman	1,118	257		1,375
NYC Technical	676		4,731	5,407
Queens	2,044			2,044
Staten Island	324	123	492	939
York	895		1,006	1,901
Total Senior	9,986	1,533	6,229	17,748
TOTAL	24,147	3,782	9,256	37,185

Source: The City University of New York, 1984, 1987.

customized programs paid for by the client companies (the rest were financed by public sector grants). Nevertheless, there has clearly been growth in this category since 1986 when the latest systemwide data was available. In 1989, Kingsborough administrators reported that they had only begun to explore the customized option seriously, in part in response to the current state fiscal crisis and the need for resources that are generated outside the regular budget process. Most of the programs at Bronx Community College reported above were started since 1986. Moreover, while the number of students in company-financed customized programs may not be as large as might be expected, the close, but less formal, ties with employers that do exist (or ties mediated by public funds) play much the same role.

The growth of noncredit courses in general is another indication of the responses of these institutions to economic and demographic changes. Sharp changes in the economy and the growth of the immigrant population creates a growing need for adult education; and adults need greater flexibility than is provided by a traditional school calendar for full-time, degree-earning students. Customized programs are one type of flexible arrangement, but as can be seen from Table 12, the contract and grant programs account for less than one-fifth of the noncredit courses in the community colleges and less than one-quarter in both the community and senior colleges combined. Indeed, it is in the category titled "remedial, vocational, community service, and continuing education courses" in the community colleges where the most impressive growth has occurred. Between the Fall semesters of 1984 and 1986, enrollments in this category in the community colleges grew by almost forty percent (see Table 12).

Our field work found even more dramatic gains in some of the colleges. New York City Technical College had fourteen thousand continuing education students in 1989 compared to eleven thousand in degree programs.[25] Bronx Community College enrolls equal numbers of matriculated and nondegree programs. Five to seven million dollars is spent on the nondegree programs while the standard programs cost about twenty-five million dollars. These programs are funded from dozens of sources and the division of continuing education at the college has sharply increased its involvement in proposal writing and developing soft-money projects.

[25] The data in this paragraph is not directly comparable to the numbers in Table 10. Those numbers are for enrollments in one semester while the data from the field work includes enrollments throughout the year.

The Adult and Continuing Education Division at LaGuardia Community College has also grown sharply in the last five years. A new building is being built to house the division, but so much growth has taken place since the building was planned that it will be too small on the day that it opens. In 1971, there were about fifteen-hundred continuing education students. By the 1981-1982 school year, that number had risen to just less than six thousand. Over the next six years, enrollments in the continuing education division tripled to 17.5 thousand. The degree-granting programs enroll about eight-thousand students. Of the seventeen-thousand continuing students, more than six thousand are enrolled in basic skills remediation or in English as a Second Language (ESL) programs. Another three thousand are in a special program to prepare New York City Cab Drivers. The remaining nondegree students are enrolled in an ever expanding array of programs, many directly related to work. These include a program to train Korean owners of small businesses, instruction in aviation maintenance technology, special training to teach small businessmen and women to use various types of IBM personal computers, a sixteen-week review course to help employed animal health technicians prepare for a certification exam, a two-hundred hour qualifying course for licensing in refrigeration machine operation and steam operation, a program for dietary managers, instruction in desktop publishing, and training in real estate sales.

The continuing education divisions are often proving grounds for programs that eventually find their way into the degree-granting departments. This gives added flexibility to the process for developing a degree program which is usually lengthy, complicated, and costly. At Kingsborough Community College, administrators say that it took them eight years to develop and get approval for a new program for physical therapy assistants, and they have yet to receive a firm commitment on funding. In contrast, most new programs at New York City Technical have been developed out of customized training projects; the computerization program for GM eventually became a regular course in the School of Engineering. Establishing the programs is far easier when the blueprint for them already exists, staff are already on hand, and a market for the programs has already been demonstrated to exist.

The community colleges have, therefore, been responsive to changing occupational demands, but the perceptions of community college faculty and administrators of the new demands in the workplace and their implications for curriculum vary widely. The most common perception is simply that many more jobs now require more advanced technical

knowledge—secretaries must master the use of computers and various types of software, for example, and programmers must have more sophisticated skills. A small number of respondents showed that they are aware of the discussions in the broader educational community concerning the increasing importance of problem-solving and social skills. Bronx Community College has purchased an educational package designed to help students "learn how to learn." The administrators of LaGuardia Community College's cooperative education program stated that they believe that workers now have to be more flexible and more able to work without explicit instructions. Yet, in contrast to research that suggests an increasing emphasis on social interaction on the job, these respondents also argued that new technology is tending to isolate workers. The faculty teaching in the secretarial programs are aware of the social skills required for the job, although this finding is not surprising since such skills have traditionally been important for secretarial jobs.

Understanding the more subtle dimensions of emerging skill needs was not a serious preoccupation of most of the faculty and administrators we interviewed. Most were more concerned with just getting their students to be proficient in very basic skills. Others conceptualized the problem as primarily a need for more skills rather than different types of skills. For example, an accounting instructor at Borough of Manhattan Community College agreed that the required functions of accountants have become much more diverse and that, in many cases, their activities have come to resemble those of consultants. Nevertheless, he argued that this change has had no effect on his role. His program simply teaches the very basic bookkeeping and accounting skills which were still needed in the new environment. A data processing professor in the same school is trying to offer more theoretical courses, but his goal is not to prepare students for different challenges on the job but rather to reorient his program towards transfer to four-year computer science programs. He is skeptical about the need for the amount of theory taught in such four-year programs.

Responsiveness to Students and Remedial Education

Not only have the community colleges responded more flexibly than other providers to compositional changes in labor demand in the urban economy, but these institutions have also been able to move decisively towards establishing a more flexible structure that permits students to tailor their participation to match more chaotic career paths. While this strategy is clearly in the interests of the community colleges—it helps to

preserve and build total enrollment while traditional, full-time enrollees decline in numbers—the trend may also be consistent with the demand for more ways to reintegrate youths in education after they have dropped out.

Between 1984 and 1988, enrollment in the city's community colleges grew by about fifteen hundred, but all of this growth was accounted for by part-time students—full time enrollments declined slightly. The part-time share grew from forty to forty-four percent. Part-time enrollments in the senior colleges grew as well, increasing their share from thirty-eight to forty-two percent (City University of New York, 1985, 1989). The age of community college students is also rising. For example, the average age of a student at both the Bronx Community College (BCC) and at LaGuardia is now twenty-seven. At BCC only one-third of the students in any one year are graduates of the previous year's high school class. Another third have been out of high school for several years before enrolling in the college. Thus, the community colleges' policies must be viewed in the context of a broader effort to provide more varied entry points into adult education and occupational training.

Students find that it is acceptable to drop out and drop in again, as many are required to do because of obligations to work or to care for children. In our sample, BCC and LaGuardia have been particularly aggressive in establishing satellite programs in the communities they serve. LaGuardia has established centers at Riker's Island Correctional Facility, at Astoria and Woodside in Queens, in Chinatown, and at a location on Manhattan's Lower East Side. This more open-ended structure of schooling is the only one that is appropriate or possible for many of the students that now attend the community colleges.

Most importantly, the community colleges have an increasing commitment to enabling poorly prepared students to attend college by providing remedial education. Indeed the large majority of students entering community colleges in New York need some remedial education—for example, ninety percent at BCC and eighty percent at Kingsborough. All of the community colleges we visited have extensive remedial programs. Some students must enroll in full-time remedial programs before starting the regular curriculum.

Much of the frantic activity in the continuing education divisions, in fact, involves remediation. As we pointed out earlier, almost one-half of LaGuardia students in the division are in adult basic education (ABE) or ESL courses, and many of the grants that fuel these burgeoning divisions are explicitly for programs to serve students with serious academic problems. Thus, the lists of continuing education offerings include programs funded by the JTPA, the local Private Industry Council, federal funds for ABE or displaced homemakers, and the New York State Employment Service.

Community colleges would become even more involved with straight basic education programs if they could find the funding. Not surprisingly, this involves a political struggle with the New York City Board of Education over state and federal basic education funding. Indeed, in a provision, obviously favored by the board, the state legislature has earmarked the large majority of federal ABE funds for the high schools.

Of course, the interagency competition can go both ways. An attempt to attract older students increasingly drawn to community colleges was one of the most important motivations behind the establishment of the Board of Education's Adult Education Division. This division's program is a good example of the attempt to integrate training and basic education that also characterizes many community college programs.

The board now enrolls over fifty-thousand students in adult education classes that are given at three comprehensive centers and at numerous other sites around the city. Administrators have focused increasingly on integrating basic literacy training (leading towards the GED) with occupational programs and placement counseling. At one of its adult education centers, for example, all incoming students are tested and placed in appropriate basic education classes (or, if they pass certain requirements, directly into occupational programs). Students are encouraged to join prevocational classes as they attain the necessary basic education levels and eventually to complete occupational training from which most graduates emerge ready and able to get jobs. "In theory," the Mid-Manhattan Adult Education Center Director, Boykin Martin, reports, "a student could come in here not knowing how to read and could leave here with a GED, a set of skills, and a job." In the adult division's nursing programs, the board has also established credit acceptance at one of the CUNY community colleges so that graduates can go on for further training. Adult education specialists argue that this strategy of combining basic education, occupational training, and career counseling is the only one that makes sense, particularly

for young adults who may be highly motivated but who are often too poorly educated to enter training programs and doubt that basic education alone will lead them to jobs.

Program Effectiveness

All of these examples indicate that at least some community colleges are well connected to the local business and employer community and that they are making aggressive attempts to seek out new areas for training and new sources of funding. They are also orienting themselves more toward older, often employed, students who need more flexible and varied instructional schedules. These developments appear to correspond well to both the increasing uncertainty and pace of change of the overall economy and to the growing need for training and retraining throughout the working lives of adults. Nevertheless, other trends suggest a more complicated assessment of the trajectory of community colleges as they respond to changes in their environment.

Attempts to develop more formal and precise evaluations of the institutions are thwarted by lack of systematic data. The evaluations that are made often arrive at ambiguous or discouraging conclusions. One problem is that community college administrators have resisted attempts to develop common standards, either for post-training placement or for substantive exit standards. The defense for this posture is that such standards are inappropriate for institutions that serve a diverse group of students with varied goals and often serious educational deficiencies (Cohen, 1989). In any case, in New York, it is very difficult to find systematic data on student achievement, graduation rates (based on longitudinal measures), or postgraduation (or for noncompleters, post-enrollment) activities. The New York State fiscal problems that emerged in 1989 and 1990 led to further cuts in data collection and analysis.

The data from the individual colleges certainly suggest low completion rates. For example, BCC has about five-hundred to six-hundred graduates a year out of a matriculated enrollment of close to fifty-eight hundred. About twelve-hundred nongraduating students who finish the Spring semester do not show up in the Fall, and during a year about seven-hundred fifty students are suspended. Less than two percent of any entering class will graduate in four semesters. At LaGuardia, thirty percent and at Kingsborough forty percent of the two-year degree students graduate within four years of entry. These

numbers are aggregates of program outcomes that are widely divergent even within a given school. Less than ten percent of the secretarial program at New York City Technical College drop out each year and, according to the program administrator, every graduate gets at least one job offer, but the accounting program in the same school typically loses fifty percent of its students over the course of a given year.

Table 13 displays the enrollments in associate degree programs during the Fall of 1984 and 1987 and the associate degrees granted during the corresponding academic years. During the 1986-1987 year, about one associate degree was granted for every ten students enrolled in associate programs at the beginning of the year. There is some minor variation among the broad categories presented in Table 13. If all students attended full-time, there were no dropouts, and the total number of enrollees was stable, then there should be one degree for every two enrollees. Since close to half of the students attend part-time, the completion rates (according to the measure in Table 13) even for a program with no dropouts would be below fifty percent. Nevertheless, these numbers suggest that well under one-half of the enrolled students end up with degrees.

Community college faculty argue that there are several reasons for these apparently low completion rates. Many students do not arrive prepared for college-level work. Other students may enroll in a degree granting program with no intention of graduating because they have very specific training goals that can be met in a semester or two. (Nationally, while about 450,000 students receive community college associates degrees each year, 350,000 transfer to four-year colleges without getting a degree.) Furthermore, many community college students are working adults with family responsibilities, and their studies can be easily disrupted by outside factors.

Without systematic data from a wide variety of colleges on outcomes and postschool activities, it is very difficult to make a judgment about the effectiveness of these New York institutions. Completion rates certainly appear low. Although the explanations for the low rates are not without some validity, we cannot determine whether they account for all, or only part of, the problem.

Table 13

The City University of New York
Associate Degree Enrollments and Degrees by Major Field of Study

	Students Enrolled Fall 1984	Degrees Granted 1984-1985	Percent (%)	Students Enrolled Fall 1986	Degrees Granted 1986-1987	Percent (%)
Business and Commerce Technologies	22,238	2,576	11.6	21,763	2,676	12.3
Data Processing Technologies	10,476	983	9.4	7,218	885	12.3
Health Science and Paramedical Technologies	10,327	1,128	10.9	8,759	1,119	12.8
Mechanical and Engineering Technologies	4,732	482	10.2	4,435	436	9.8
Natural Science Technologies	201	37	18.4	333	30	9.0
Public Service Related Technologies	3,803	328	8.6	4,770	452	9.5
Liberal Arts and Science	15,786	1,375	8.7	15,076	1,456	9.7
Total	67,563	6,909	10.2	62,354	7,054	11.3

Note: This data includes associate degree students in community and senior colleges.

Source: The City University of New York, 1985, 1987.

The Transfer Controversy

For the New York City community college system, the process of transfer to four-year colleges remains controversial. Critics of the community colleges have argued that they are, or at least have the potential to become, second-class institutions that track students into subordinate and dead-end occupations—that is, they provide opportunities, but limit those opportunities. Even if there is a strong demand for community college graduates, if these students must overcome significant barriers to transfer to higher-level schools, then some tracking into lower positions is indeed taking place. If, however, transfer to higher-level institutions is a realistic possibility, then the community colleges can sell themselves as alternative routes to wider opportunities. Moreover, they would be justified in arguing that the colleges constitute the best possible path towards higher aspirations for disadvantaged populations. Thus, in defining the nature and role of the

community college in our society, the transfer issue takes on a significance much greater than the actual number of transfers might suggest.

The problem of transfer is often confused with controversies surrounding the mix between occupational and academic instruction in the community colleges. Some observers have viewed the vocationalization of these institutions as an explicit move away from the broader opportunities that transfer represents (Brint & Karabel, 1989). Administrators are particularly sensitive to the criticism that the shift towards occupational programs will have an adverse impact on the college-going careers of the minorities, who are overrepresented in the community colleges.

The linking of transfer to the strength of the liberal arts programs is misleading. Although we have no systematic and disaggregated data on transfer in New York community colleges, overall transfer rates indeed appear to be low. Typically, no more than thirty or forty percent of entering students get their degrees within four or five years, and, of these, about half transfer (although some who do not earn associate degrees also transfer), but administrators say that occupational students are just as likely to transfer as liberal arts students. Enrolled liberal arts students are slightly less likely than occupational students to earn degrees (see Table 13). This is a trend that we saw in the evolution of high school vocational education as well. In another similarity to the high schools, some students are drawn to occupational courses because of the opportunities to earn money while they continue to attend school. The occupational courses are a vehicle for continued education.

Furthermore, the demand for occupational courses is also associated with the increasing role of community colleges in providing remedial instruction to incoming students. Students who have difficulty with academic subjects may find a niche for themselves in occupational courses that carry more hands-on training. Such courses may, in fact, serve to motivate students to complete academic requirements in order to graduate.

However, the enrollment of large numbers of students needing remediation comes into conflict with a goal of increasing transfer rates. Terminal degrees are made more attractive to students who have to do much remedial training; in most cases, they will not receive full credit for remedial courses, or even for regular courses with some remedial component, if and when they transfer to senior colleges. The problem of transfer credits is

acute even between the community and senior colleges of CUNY. Except where special links have been established between programs at the two levels—and such arrangements are multiplying—students seeking transfer must refer to a thick book of course equivalencies and almost always find that they will have to repeat some credits when at senior colleges.

Further, the need for remedial work slows students down in earning their two-year degrees. This is already a lengthy process since most students work while studying and, as we have seen, very few students earn their associate degrees in four semesters. Clearly, the longer they spend earning a two-year degree, the greater the incentive to see immediate improvement in their employment status after graduating and the more likely they will be to pursue a specifically occupational course of studies.

Emerging Problems

So far we have developed a picture of a system that seems very responsive to employer needs (although perhaps not on the cutting edge of modern curriculum development) and that at least works hard to recruit students who have educational deficiencies or other problems that would keep them out of more traditional postsecondary institutions. Criticisms of completion rates and transfer rates can at least be turned aside by reference to the particular role of the institutions and the characteristics of the students, but a closer look at the system suggests some emerging problems.

First, enrollments in associate degree programs in the New York City public university system fell by about eight percent between 1984 and 1986 (Table 13). In this light, the explosion of continuing education programs and the emphasis on remediation appears to be primarily an effort to maintain resources and enrollments. The community colleges appear to have been more successful in attracting funds and students for remedial or ESL programs than for noncredit customized or special occupational programs. Indeed, the continuing education rosters of programs are dominated by remedial type programs. The numerous and well-publicized programs for employers usually enroll rather small numbers of students. Their success in attracting students needing remedial and basic skills education has perhaps allowed the schools to keep up their enrollments, but it does of course increase the concentration of poorly prepared students in the colleges.

This is not necessarily bad; after all, these students in particular should be in school. In addition to the enrollment trends, shifts in the economy and workplace are also moving the associate degree programs towards preparation for lower-level occupations. In occupations in which skill needs are increasing, terminal associate degree programs may no longer be adequate to provide the required instruction. Alternatively, if opportunities for four-year college graduates expand, then terminal programs in community colleges will appear less attractive. Occupational projections suggest that those jobs that are currently filled by workers with a high school diploma but less than a bachelor's degree are expected to grow during the period between 1988 and 2000 at the same rate as the economy as a whole. Nationally, those jobs that are now filled by college graduates are expected to grow at a much faster rate (Bailey, 1990, Appendix). The effects of this relative shift towards four-year degrees can already be seen in New York City.

For example, despite a continuing demand for computer processing personnel, holders of associates degrees in data processing have found it increasingly difficult to find employment. As one administrator at the Borough of Manhattan Community College (BMCC) put it, "all of the simple programs have been written. Original programs for most applications are now beyond the capability of graduates of two-year associates degree programs." Packaged software has become the norm for simple business computer applications. This shift in skill demands is reflected in the thirty percent decline in associate degree enrollments in data processing in New York City community colleges between 1984 and 1987. Realizing that their current terminal data processing program was now obsolete, staff at BMCC are in the process of upgrading their program to turn it into the first two years of a four-year computer science program. Thus its emphasis will be on transfer rather than immediate placement after graduation. Demand for lower-skilled computer "operators" also trained in the college has remained healthy, so at least in terms of their terminal programs, this data processing department is putting greater emphasis on lower-level positions. At Kingsborough, the same problem has been met by abandoning programming instruction and focusing on terminal and customized training in the use of specific software packages. Thus, the Kingsborough solution was to downgrade the entire program.

Health, especially nursing, and secretarial programs have lost enrollment as the traditional female labor force for these occupations have sought better jobs that now require bachelor's degrees. New York City Technical College has had trouble filling its highly

respected secretarial programs as other opportunities have opened for women. Overall, secretarial science enrollments dropped from five thousand in 1984 to just over thirty-five hundred in 1987.

Despite the city's burgeoning health care sector, health programs lost about twenty percent of their associate degree enrollments between 1984 and 1987—in fact, nursing enrollments fell by about forty percent. The drop in nursing enrollments has caused particular problems for schools that had built up well-known specializations in nursing during the 1970s. Kingsborough and BCC have had to scramble to find specializations outside of nursing and the health professions.

These examples suggest that in terms of their terminal programs, the community colleges in New York are indeed moving towards lower-level occupations. As this trend continues, the transfer function will become much more crucial to maintaining the community colleges system as an institution with the potential to broaden students' opportunities. Without a strengthened transfer function, the community colleges will head in exactly the direction that their critics have so long denounced—towards educational institutions that train students with many educational deficiencies for undesirable jobs. This would correspond to the "dumping ground" stage of development of the secondary school vocational programs. Because the vast majority of the students in community colleges in major urban areas are minorities, and since minorities are coming to depend more on these institutions, their transformation into dumping grounds would turn the community colleges into another focus for a crisis in minority education.

Policy Directions

As the economy and the demands of the workplace continue to evolve, so will the role of the community colleges in relation to the other educational institutions and providers. The central policy goal will be to strengthen the role of these colleges as flexible training providers to which a diverse group of students have access, without transforming them into second-class institutions that only open opportunities to relatively undesirable jobs. In line with this goal, we see three general policy directions—all three based on the integration response strategy: greater institutional integration, more explicit attention to

curricular innovations to encourage the integration of vocational and academic education, and increased emphasis on retraining and upgrading for experienced workers.

Linkages to other educational institutions and to employers can help counteract the isolation of community colleges, which tends to strengthen their subordinate position in the educational hierarchy. Promoting transfer to four-year colleges is one form of institutional integration. Since 1983, the Ford Foundation, through its Urban Community College Transfer Opportunities Program, has been actively promoting this strategy. Bronx and LaGuardia Community Colleges have participated in this project. Indeed, in New York, various types of ties to other educational institutions appear to be multiplying. A number of programs are directly linked to senior college programs since this is one way of encouraging transfer while avoiding credit problems. Both New York City Technical College and Staten Island College have combined two- and four-year programs within the same colleges. Another possibility would be for community colleges to provide some types of training or education for students in four-year colleges (as BOCES schools provide training for comprehensive secondary schools).

Within a strategy that tries to promote greater links among schools, the community colleges could benefit from their greater emphasis on teaching and especially on teaching students who are not prepared for college. Just as high school administrators have looked to the pedagogical and motivational aspects of occupational programs to help them achieve general educational goals, community colleges could also use their practical orientation and links to employers as tools to achieve broader goals. Moreover, the community colleges are logical places in which to work explicitly on developing teaching methods and curricula that are more in tune with the characteristics of the emerging environment in many workplaces. This is not likely to happen without a major effort. The extent to which more-or-less traditional occupational training in the community college seems to have such an obvious role in the preparation of many middle-level workers (based on the quantitative adjustment model) discourages fundamental reevaluation of the community colleges curriculum.

We have seen that the continuing education divisions for noncredit training programs are increasingly important in the community colleges. This trend reflects their flexibility and responsiveness. Nevertheless, the short-term nature of many of the programs and their reliance on adjunct instructors militate against the curriculum reform and

linkages to other educational institutions that are needed to strengthen the colleges and combat their potential isolation. The tendency for the extension programs to change the character of the colleges is even stronger if the bulk of such programs are for adult basic skills remediation.

This is not to say that growth of the nondegree programs should be reversed but, rather, to recognize that the trend accentuates the movement away from using community colleges as schools to prepare students right out of high school. Indeed one possibility would be to push this trend even farther and concentrate much more explicitly on upgrading and retraining adult workers. It might be time to think about moving away from sending recent high school graduates to two-year institutions. Two- and four-year programs could be maintained, but within the same college. The extent to which curricular innovations reduce the distinctions between vocational and academic education or between the content of two-year terminal programs and the first two years of four-year programs would ease the problems of integrating two- and four-year schools.[26]

The realignment would have some advantages. In serving young people who are not fully established in the labor market, it would move away from educational stratification within the public higher education system. To be sure, there would undoubtedly be differentiation within the system, but it would be easier to mitigate any ill effects if the different tracks did not also correspond to different institutions. (To the extent that the magnet system works in New York high schools, it is only possible because the zoned schools were all under the same Board of Education.) Adult workers are already on a career trajectory of some kind and potential inequities associated with tracking them in a particular direction are less salient. An emphasis on upgrading may also be a partial solution to labor shortages in occupations like nursing and secretarial positions that still have high demand. These positions may look much more attractive to older workers in lower-level jobs, who could be promoted if they had some retraining, than to recent high school graduates with their sights set on bachelor's degrees.

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[26] Already community college students in terminal vocational programs are at least as likely to go on to four-year colleges as students in liberal arts transfer programs. Student selection processes may explain this trend (better and more motivated students enroll in the terminal programs), but it does suggest that reformers might be successful in reducing the distinctions between two-year programs and the first two years of four-year programs.

Conclusion

Educational policy once again appears to be at a turning point. Despite profound problems, there is evidence of reform in the New York City secondary and postsecondary education systems. This reform movement is still dominated by the quantitative adjustment model. According to this model, all students should receive a more-or-less traditional liberal arts education through the secondary school and more specific occupational training should be received in postsecondary institutions, but despite the widespread acceptance of this model, anxiety about the failures of the educational system appears to be as acute now as it was in 1983.

Other models, including some of the elements of the integration strategy, have also been tried. We have argued that the integration strategy has advantages for students at all socioeconomic levels and for the functioning of the economy. Moreover, to the extent that the strategy incorporates (rather than segregates) types of education (such as occupational instruction) traditionally reserved for minority or working class students, a movement towards the integration strategy may make it easier to break down entrenched class and race distinctions in education systems, but nothing guarantees this. Just as the post-Sputnik reforms of the 1960s opened educational opportunities for the best high school students while having little impact on the majority, occupationally oriented theme schools can also be elite, selective institutions. Strong community college programs with good ties to local employers and strong possibilities for transfer can be dominated by whites despite a predominance of minority students in community colleges. Indeed, some data suggests a movement in that direction. This trend will probably be strengthened to the extent that elements of the integration strategy are seen as special programs rather than principles that form the basis of a general educational reform strategy.

Moreover, at least in the high schools, the integration strategy has been viewed, and certainly implemented, primarily as a reform of occupational education. As long as this limitation is maintained, it will be difficult to rid this strategy of the reputation of being an approach for those who cannot make it in the academic programs. Positive developments in community colleges can also be overwhelmed by the particular problems associated with educationally disadvantaged groups.

In New York, the integration strategy remains stratified with some growth in programs for elite students while much of the reform is absorbed under the general heading of special efforts for the disadvantaged. This bifurcation remains even though underlying educational principles appear to be the same. In the ongoing discussion of educational policy, it is probably time to start thinking seriously about how to use the various approaches that characterize the integration strategy to educate the most successful students as well as those with many problems. We suspect that this has the potential for strengthening the education that even the best students receive, and it certainly will provide a stronger political basis for turning a series of related programs and efforts for particular student populations into a broad strategy for far-reaching educational reform.

PHILADELPHIA

Introduction

Many of the central trends in urban economic and demographic development in the United States are reflected in Philadelphia. Over the past quarter century, the Philadelphia metropolitan area has enjoyed moderate growth in employment and population. Jobs requiring higher levels of skills and education have tended to grow faster than those that have traditionally provided employment for unskilled workers with little education.

However, trends such as these in metropolitan areas like Philadelphia have disguised sharp disparities that exist between many U.S. suburbs and central cities. Indeed, the city of Philadelphia, like so many other older central cities, has lost both population and employment, but the growth of both people and jobs in the suburban areas has more than made up for the central city losses. The relative shift toward high-level employment has been stronger in the city itself, although professional, managerial, and technical jobs have also grown in the city's suburbs. Meanwhile, the relative minority population of the central city has grown as has the poverty rate. The minority share is even higher in the Philadelphia public schools. The more highly educated population has in effect shifted to the suburbs more rapidly than the higher-level jobs. As a result, over the last two decades the share of Philadelphia jobs held by commuters has grown.

These trends frame the challenge that faces the central city educational system. From the point of view of disadvantaged groups in the city, in the context of a shrinking number of low-skilled jobs, the educational system is called upon to provide the skills that will open opportunities for higher-level jobs. Employers also look to the school system (including the postsecondary system) for the labor supply to fill their jobs. Until the last few years, the city's employers have not been overly concerned with developments in the schools. Even now, it is not the fast growing professional and managerial jobs that are most problematic for Philadelphia employers. Any deficiencies here in the city's labor force can be remedied through commuting or outright recruitment from other parts of the country, and despite a low (5.1%) unemployment rate, most firms report they are still able to find entry-level workers. On the other hand, recent surveys show employers are increasingly worried about the basic academic skills and work habits of the entry-level labor pool, a development which reflects both an increase in job requirements and the need to dip lower into the labor queue. Employers appear to face most difficulties in filling

middle-level jobs such as secretaries or some skilled blue collar positions that do require some education and skill yet appear to be less likely to draw commuters.

This report analyzes the response of the school systems in the Philadelphia metropolitan area to these economic trends. There is no question that educational reform has risen on the Philadelphia (as well as national) social policy agenda. The waves of school reform in the 1960s and 1970s were motivated primarily by the problems of access and equity for minorities, while the current movement owes its fervor to the fears about the role that deficiencies in the educational system presumably play in the country's perceived weaknesses in international markets. Yet, despite the importance that the competitiveness issue plays in current discussions, the problems of minority access and equity have never been solved, and, indeed, many observers believe that they have worsened.

This report (and the reports on New York and Chicago that comprise this overall project) is an attempt to bring together the issues of competitiveness and equity in an overall analysis of educational reform at the institutional level. These two issues are almost always considered separately. Moreover, research so far has either focused on broad changes in educational outcomes such as trends in test scores or has been concerned narrowly with particular reforms such as school/business partnerships, school-based management, and so forth. What this report will attempt to provide is a focused view of educational reform in response to the changing economy based upon a discussion which concentrates on those educational institutions that are most closely associated with the economy—the high school vocational education system and the community colleges. Although we realize that this poses some limitations to the scope of the project, the goal is to try to determine whether those educational institutions which are most tightly linked to the labor market have responded to underlying economic changes and, if so, how they have responded. Ultimately, by understanding what has happened, we will be in a better position to suggest what should be done in the future.

After a brief discussion of the changes in the economy of the Philadelphia region and city, the report presents information drawn from interviews with employers concerning their skill needs and their views on the adequacy of the available labor supply and the local educational systems. The following section is a detailed discussion of the educational systems and the last section presents conclusions and policy directions.

The Philadelphia Area: Economy and Population

Overview

Approximately 4,770,000 people live in the Philadelphia Primary Metropolitan Statistical Area (PMSA), a region which includes the city of Philadelphia, four surrounding counties in Pennsylvania, and three counties in New Jersey. Of these, 1,650,000 people, or about thirty-five percent of the total population, live in the city (Stanback, 1988).

In recent decades, the population has shifted significantly from the city to the surrounding counties, leaving a city population that is absolutely smaller, relatively poorer, and more heavily minority than the city of the 1950s or than the suburbs of today, which remain overwhelmingly white. The city's population has considerably lower education levels and lower employment/population ratios than the suburbs. Economic activity has shifted to the suburbs as well. A shift from manufacturing to services has occurred, although that shift has been most pronounced in the city itself. There, a flourishing downtown with a heavy emphasis on financial, insurance, and real estate (FIRE); business; and health and legal services contrasts with barren stretches of abandoned factories in the old manufacturing areas of the city. Manufacturing has actually grown in the suburbs, although not as fast as services and other nonmanufacturing jobs. Recently, the fastest growth rates have been in the most outlying suburban areas. High technology industries are growing as well, with the heaviest concentration along Route 202 and other highways which form an outer-suburban ring. The fastest growing occupations in the region have been managerial, technical, and professional. While many low-wage, low-skill service and retail jobs exist, unskilled blue collar jobs are fast disappearing. The proportion of managerial, technical, and professional jobs is highest in the city, clustered in the downtown industries as well as in major educational institutions and government agencies.

The Philadelphia economy suffered hard times in the 1970s and early 1980s, as manufacturing jobs declined precipitously. Unemployment was high in the suburbs and higher still (11%) in the city during the Reagan recession. However, the region's economy has rebounded since then. Unemployment is low in the city (4.7% as of March, 1989), and 2.9% in the suburbs, where employers face very tight labor markets.

The total population of the region has changed little since 1970, when it stood at 4,824,110. Total nonagricultural and nongovernmental employment grew about fourteen

percent from 1,793,000 to 2,046,000 in 1985, with thirty-five percent of these jobs in the city. Table 14 shows the distribution of population and nongovernmental employment for Philadelphia and its suburbs. Government jobs, while excluded from this table, are a significant share of total employment, especially in Philadelphia where the Navy Yard, the post office (a regional postal center), city, state, school district, and other federal agencies accounted for about 146,000 jobs in 1980—nearly nineteen percent of total jobs.

Table 14

Population and Per Capita Income
Philadelphia Primary Metropolitan Statistical Area (PMSA), 1980

	Population	Population	Per Capita Income (1979)
Philadelphia City	1,688,210	1,688,210	6,053
Suburban Counties	3,028,608	3,028,608	8,241
PMSA	4,716,818	4,716,818	7,458

Distribution of Nongovernment Employment
Philadelphia PMSA, 1980

	Manufacturing	Construction	TCPU	Trade	FIRE	Service	Other	TOTAL
Philadelphia City	145.0	26.4	42.0	133.7	68.4	213.6	3.0	632.1
Suburban Counties	309.1	57.8	44.4	280.8	61.3	240.5	11.2	1005.1
PMSA	454.1	84.2	86.4	414.5	129.7	454.1	14.2	1637.2

Source: Summers and Luce, 1987

Suburban Dynamism and City Decline

Employment and population growth rates in the region lagged behind national rates in the 1980s. In fact, they have lagged national growth rates at least since the early 1950s. However, the overall stagnation of population and stately pace of employment growth disguise dramatic intraregional differences, differences which paint a vivid picture of suburban dynamism and city decline. Population has steadily decentralized, shifting from the city to the suburbs. From 1950 to 1970, as the baby boomers grew up, the city's population hovered around two million but its share of the region's population declined from fifty-six percent to forty percent. Its share of employment dropped from sixty-seven percent to fifty-one percent. During this period, the city's job base decreased slightly, so most of the shift in shares of population and jobs was the result of suburban growth. From 1970 to 1980, suburban growth rates moderated, but the city experienced large decreases in population and jobs. Job loss in the city was led by a hemorrhaging of manufacturing jobs, while the suburban loss of manufacturing was relatively modest. Thus, from 1970 to

1980, absolute decline of the city in population and jobs (especially manufacturing) combined with continued suburban growth to accelerate the speed of decentralization—especially in employment. Table 15 shows the shift in share of population and employment in the area from 1950 through 1980.

Table 15

Population Share
Philadelphia PMSA, 1950-1980

	Percentage Population (%)			
	1950	1960	1970	1980
Philadelphia City	56.4	46.1	40.4	35.8
Suburban Counties	43.6	53.9	59.6	64.2
PMSA	100.0	100.0	100.0	100.0

Employment Share
Philadelphia PMSA, 1950-1980

	Percentage Employment (%)			
	1950	1960	1970	1980
Philadelphia City	67.5	60.2	51.2	38.6
Suburban Counties	32.5	39.8	48.8	61.4
PMSA	100.0	100.0	100.0	100.0

Source: Summers and Luce, 1987.

Since 1983, the Philadelphia area, like the country as a whole, has rebounded. Unemployment for the region, which was 9% in 1982, was down to 4.1% in March, 1989, with a 4.7% rate in the city and a 2.9% rate in the suburbs where the labor markets were extremely tight (First Fidelity Bancorp, 1989). The pattern of rebound is similar to earlier periods, however. The region as a whole has lagged behind the nation, because of slow growth in total employment in the city, while the suburbs have surged at rates higher than the nation (Summers & Luce, 1987, pp. 9-12). Suburban growth has been led by services and other nonmanufacturing employment, but manufacturing has also grown greatly. In the city, by contrast, modest nonmanufacturing growth led by legal services and health care has been offset by continued steep declines in its shrunken manufacturing base.

Table 16 elaborates upon this data by showing the leading growth industries per county in a somewhat different time period—1980 through 1985. This data shows that the growth in the 1980s has been led by legal and assorted health services, with slow growth

in business services as well. This table does not capture the growth in FIRE and retailing in the second half of the decade, however.

Table 16

Leading Growth Industries Philadelphia City

Sector	1985 Employment	Annual 1975-1980	Growth 1980-1985
NONMANUFACTURING			
TCPU*			
Passenger Transport	9,893	-0.37	6.86
RETAIL TRADE			
Food Stores	17,583	-0.19	1.43
Grocery Stores	13,981	-0.87	1.23
Eating and Drinking	31,216	3.61	0.84
FIRE**			
Fire and Casualty Insurance	11,060	0.30	0.06
SERVICES			
Business	38,666	3.69	1.85
Personnel Services	9,650	12.68	5.11
Health	74,648	4.47	2.82
Nursing Facilities	9,424	10.53	3.49
Hospitals	47,988	3.19	1.83
Legal Services	13,993	6.12	7.89

*TCPU=Transportation, Communication, and Public Utilities
**FIRE=Finance, Insurance, and Real Estate

Source: Summers and Luce, 1987.

In 1980, Philadelphia, while not generally noted as a high-tech area, ranked fifth among all PMSAs—in employment in high-tech industries, trailing Los Angeles, San Jose, Chicago, and Dallas. Computer servicing and data processing, communications equipment, and the pharmaceuticals industry provide the backbone of its high-tech sector. Jobs in high-tech industries accounted for six percent of employment in the region. Overall, growth in high-tech has not been as fast in the region, however, as it has in other leading PMSAs in the 1980s. Again, city and suburban differences are pronounced and familiar. Philadelphia, with fifteen percent of the area's high-tech jobs in 1985, lost jobs in this sector at a rate of 4.3% per annum in the 1980s, while most suburban counties were gaining. Montgomery County leads in high-tech employment, which is concentrated on the Route 202 corridor, a suburban ring highway, although several other counties are growing more rapidly (Summers and Luce, 1987).

Recasting employment data in terms of occupations, Table 17 shows that the fastest growing occupations in the region are professional, managerial, and technical (PMT) jobs, while the greatest decline is in blue-collar jobs. In 1980, PMT was the largest occupational category in the city, as is consistent with the growth of business and professional services, while blue-collar jobs in the city showed the fastest decline. Blue-collar jobs (as a share of employment) declined almost as rapidly in the suburbs, in part because of the more rapid growth of nonmanufacturing industries. In 1980, they remained the largest occupational category outside the city.

Table 17

Occupational Distribution of Workers
Philadelphia PMSA, 1970-1980

	PMSA		Philadelphia		Suburbs	
Occupation	**1970**	**1980**	**1970**	**1980**	**1970**	**1980**
PMT*	23.9	28.1	23.6	29.9	24.1	26.9
Sales	7.6	9.9	6.9	8.2	8.3	11.0
Clerical	21.2	20.5	24.0	23.1	18.4	18.6
Services	11.5	12.4	11.5	12.3	11.5	12.5
Blue Collar	35.3	28.4	34.0	26.4	36.7	29.7
Other	0.5	0.7	0.0	0.1	0.9	1.0

*PMT=Professional, Managerial, and Technical Jobs

Source: Summers and Luce, 1987.

Within Philadelphia, central business district employment is growing while jobs elsewhere in the city are declining, led by the decline in manufacturing. In the central city, PMT jobs are also growing most rapidly and are 34.6% of the total, with white-collar jobs as a whole accounting for 73.6% of employment (see Table 18).

If we take the number of blue-collar and sales jobs as a rough indicator of low-level jobs, then the share of Philadelphia employment accounted by these jobs fell from 41.0% in 1970 to just under 35.0% in 1980. The drop in the suburbs was much smaller, falling from 43.0% to 40.7%. If we link this development to the fact that employment grew in the suburbs, then it is clear that there was a significant shift of low-level jobs to the suburbs.

Table 18

Central Business District Occupations
Philadelphia, 1989

PMT*	34.6
Sales	8.9
Clerical	30.1
Services	11.7
Blue Collar	14.7

*PMT=Professional, Managerial, and Technical Jobs

Source: Philadelphia City Planning Commission. Computer printouts supplied to author.

This might suggest that reverse commuting might be a solution, but relatively few Philadelphians appear willing or able to cross the city line in search of employment. Table 19 shows that, in 1980, suburban country residents are about three times as likely to commute to jobs outside their county of residence as Philadelphia workers.

Table 19

Percentage of Workers 16 and Older Working Outside County of Residence (1980)

County	Percent Commuting
Bucks	35
Burlington	33
Camden	37
Chester	31
Delaware	41
Gloucester	43
Montgomery	31
Philadelphia	13

Source: Summers and Luce, 1987.

Analyses performed by Hughes and Madden (1987) show a significant decrease in city-suburban interaction in the economy. That is, from 1970 to 1980, there were larger increases in the numbers of suburban workers employed in their county of residence or commuting to other suburban counties than suburbanites commuting to the city. In fact, suburban commuters to other suburban counties now exceed the number of suburban commuters to the city. Philadelphians do not share in this mobility. While there is a slight trend towards reverse commuting, the number of Philadelphians employed in Montgomery

and Delaware Counties, the two largest suburban counties, was lower in 1980 than in 1970, both overall and in every occupational sector except for secretaries.

The contrasts in population growth, economic growth, and intercounty mobility suggest a city which is not only decaying (save for an island of relative strength in its downtown business sector) but also increasingly isolated from its region. The pattern of economic difference and isolation is reconfirmed, not surprisingly, by the demographics. While the suburbs grow in population, jobs, and affluence, the city declines in virtually all but two aspects: the poverty population and the downtown professional services economy, where commuters hold many of the best jobs. Between 1969 and 1979 the city's population fell by 262,000, but the number of poor people increased by 46,000. As Table 20 shows, the overall poverty rate went from 15.4% to 20.6% (while national rates fell from 12.1% to 11.7%). The poverty rates in Philadelphia rose for whites, African Americans, and Hispanics in this period. For children, eighteen and under, the increases were sharpest: from 8.0% to 14.8% for white children, from 32.9% to 43.0% for African Americans, from 49.1% to a staggering 56.3% for Hispanics. In all three major ethnic groups, the rate of female-headed households also rose, accounting for larger and larger shares of poverty households with children. The percentage of students eligible by virtue of poverty or AFDC status for Chapter 1 education aid in the public schools has risen from fifty-eight percent in 1979 to sixty-seven percent in 1989, according to the school district's director of categorical programs.

Decline in the white population effectively accounts for all of the population loss in the city between 1970 and 1980, while the African-American population dropped slightly and the small (and doubtless undercounted) Hispanic population grew (although changes in classification make exact comparisons impossible, since some persons classified as African American or white in 1970 may have been classified as Hispanics in 1980). The result was that in 1980, the white share of the population decreased from sixty-five percent to fifty-eight percent, while the African-American population share grew from thirty-three percent to thirty-seven percent, with Hispanics accounting for four percent and "other," primarily Asians, one percent.

Table 20

Poverty Rates in Philadelphia, 1969 and 1979
Total Population, Family Status, Children, and Race

	1969			1979		
	TOTAL	< POV	Percent	TOTAL	< POV	Percent
Total Population	1,914,885	294,294	15.4	1,653,164	340,517	20.6
Families	479,265	53,705	11.2	415,891	69,192	16.6
Under 18	605,414	117,473	19.4	428,181	128,540	30.0
Fem Hd -% *	21.0	64.0		34.0	71.0	
Total African American	643,382	165,121	25.7	629,153	202,364	32.2
African-American Families	147,664	31,636	21.4	150,117	43,005	28.6
African American < 18	254,145	83,728	32.9	199,138	85,539	43.0
Fem Hd -%	38.0	72.0		53.0	78.0	
Total Hispanic	26,541	10,044	37.8	63,244	29,013	45.9
Hispanic Families	5,637	1,918	34.0	14,330	6,156	43.0
Hispanic < 18	14,005	6,883	49.1	26,812	15,091	56.3
Fem Hd -%	23.0	43.0		38.0	60.0	
Total White	1,244,962	119,129	9.6	964,213	112,352	11.7
White Families	325,964	20,151	6.2	252,474	20,851	8.3
White < 18	337,263	26,862	8.0	205,357	30,321	14.8
Fem Hd -%	11.0	48.0		17.0	54.0	

*"Fem Hd -%" means the percent of all households with children headed by women.
**1969 data applies only to Puerto Ricans.

Source: U.S. Bureau of the Census, 1980."

Analyses by Hughes and Madden (1987) suggest that skilled blue-collar workers have been among the whites leaving the city for the suburbs where, presumably, many have managed to find employment in manufacturing, while others are construction workers who now commute to the city to work on major downtown development projects. By 1980, it is estimated that Philadelphia, with thirty-five percent of the total population, had seventy-five percent of all poor people in the region. By 1985, it had eighty-seven percent of all minorities.

Rounding out the demographic profile of the region, Table 21 shows that education levels of the city population are, as one would expect, considerably lower than those of the suburban population. Further, as one would also expect, African-American/white differences are considerable. African Americans in the city are less than one-third as likely as whites to have completed fourteen years of schooling.

Table 21

Distribution of Population Aged 16 to 65 By Education Level–Philadelphia PMSA, 1985 (Percentage Distribution)

Race	City	Suburbs
White		
Less than High School	25.0	18.0
High School–Less than 2 Years College	48.6	52.7
More than 2 Years College	26.4	29.4
African American		
Less than High School	41.1	29.9
High School–Less than 2 Years College	51.1	53.4
More than 2 Years College	7.8	16.8
All Races		
Less than High School	32.0	18.7
High School–Less than 2 Years College	49.7	52.8
More than 2 Years College	18.3	28.5

Educational Attainment of Population, Aged 16 to 65 Philadelphia PMSA and Select PMSA's (Percentage Distribution)

	Philadelphia	New York	Chicago	Los Angeles
City				
Less than High School	32.0	32.8	35.0	30.1
High School–Less than 2 Years College	49.7	38.9	36.8	49.7
More than 2 Years College	18.3	28.3	28.3	35.4
Suburbs				
Less than High School	18.7	13.9	15.5	27.7
High School–Less than 2 Years College	52.8	47.3	45.4	38.7
More than 2 Years College	28.5	38.8	39.1	33.6

Source: Stanback, 1988.

Qualitative Changes in the Labor Market: Training Requirements and Employer Perceptions of the Labor Force

Skill requirements in the PMSA generally appear to be rising (consistent with the switch to services and changing methods of production in manufacturing). This is unequivocally so in the growing portion of PMT jobs, and it is equally true if one confines the discussion to jobs that pay above poverty wages, if one gives credence to the employers interviewed for this study. Almost all of them see skill requirements rising and are concerned, in current tight labor markets, with the available quantity and quality of the labor force.

Nevertheless, there remain many low-paying jobs (e.g., fast food, mail room clerks, messengers, retail clerks, and security guards) that require little skill but do require reliability and some ability to get along with customers and fellow workers. There also remain some low-skill jobs which pay reasonably good wages. The post office, which is the best example, is a very large employer in Philadelphia, which is a regional postal headquarters. The post office continues to offer plenty of low-skilled, relatively high-paying jobs, and the head of personnel commented wryly, but seriously, that his major problem is finding "people who are willing to work like automatons" in highly repetitious mail sorting tasks.[27] However, the post office is unusual in offering good wages for little skill. Most low-skill jobs do not provide a family-support wage.

Moreover, employers do not report widespread difficulties in finding professional workers. Whether through promotion, importation, or hiring of (out-of-region) graduates from local colleges, the supply of professional workers has not yet emerged as a major concern (with a few exceptions such as nurses). But employers of many types are worried about the ability to find entry-level workers, and some are further concerned about the "promotability" of those entry workers they do hire.[28] These concerns are, without a doubt, exacerbated by the tight labor market—especially in the suburbs—but employers in Philadelphia also cite, as they do in many national surveys, a lack of "work ethic" and/or interpersonal skills, weak basic academic skills, and weak occupational skills at a time when they see the requirements for all these skills, especially the interpersonal and academic skills, rising.

The situation is typified by banks and hospitals (two major employment sectors) where tellers and entry-level nursing and technical aides require increasing technical skills and/or skill in relating to customers. Parallel developments confront such traditional blue-collar trades as steamfitters, plumbers, building maintenance workers, and machine trades, where applications of technology require increasing math and problem-solving skills. The training director of the Steamfitters Union, for example, states that entry into apprentice programs requires some knowledge of trigonometry, and, as a result, new apprentices are more likely to be drawn from the ranks of college dropouts than from the high schools (where, in Philadelphia at least, less than ten percent of high school students take any trigonometry).

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[27] Interview with the author.
[28] Author's interviews with officials of Provident Bank, CIGNA.

Most employers do say that the literacy and training of their current workforce is adequate. The concern is that new entrants with adequate basic skills are hard to find. Many employers report they must screen twice as many applicants to make a hire as they did ten years ago, although problems are most severe in the suburbs and it is not always easy to separate the effects of tight labor markets from educational weaknesses. The vice-president for personnel of the Provident Bank, for example, reported extreme difficulty in finding entry-level workers—ranging from mail clerks and backroom clerks to tellers—for suburban branches, but no serious problem in Philadelphia, where a recent (1988) "Open House" designed to attract applicants for twenty jobs attracted five-hundred people and fifty were hired (most with starting salaries of about $6.50/hour). A small retailer (four gift shops) has paid employees bonuses for bringing in new sales clerks for her suburban outlets in the Christmas rush but had adequate help in the city. In the suburbs, a number of shopping centers and industrial parks have recently established private transportation systems, primarily van pools, in an effort to import workers from Philadelphia. Fast food outlets in the suburbs are paying between five and six dollars an hour, and a supermarket on the Main Line has established a relationship with a Philadelphia high school which brings students by van for after-school jobs at similar wages.

Every company we interviewed with suburban outlets reported similar difficulties with one interesting exception: Strawbridge & Clothier, a highly successful local department store chain with seventeen-thousand employees in the Philadelphia area. While paying only $4.50 an hour—that is, less than McDonald's—for entry-level sales clerks (plus benefits and a twenty percent discount on purchases for employees), Strawbridge's reported little difficulty filling jobs with qualified personnel in either city or suburban locations. Perhaps this results from the company's reputation as a very stable, decent, family-controlled business which prides itself on strong employee relations.

One problem which almost all employers (including Strawbridge's) did mention, however, was the need to interview increasing numbers of workers to fill entry-level jobs. Major employers such as Strawbridge's, Provident Bank, and United Hospitals reported having to interview ten people for every one they hired and suggested that this ratio had about doubled in the past five years. Interestingly, one in ten was also the modal response from a diverse group of ninety-two firms responding to a survey conducted by the School District of Philadelphia (Aniloff, 1988), that asked employers what percentage of those

they interviewed were qualified for entry-level jobs. Some other surveys, mentioned later, report similar rates or higher.

It remains an open question whether this apparent increase in the ratio of interviews to hires is a function of a tight labor market forcing firms to reach lower into the queue, or of the failure of schools to keep up with the skill needs of industry. Employers, in fact, had different responses. VIZ Manufacturing is a four-hundred thirty-five-employee manufacturing firm in Philadelphia which manufactures weather balloons and related meteorological instruments. It has a fifty-five percent minority workforce. The director of human resources was of the opinion that preparation of workers has deteriorated steadily over the past fifteen years, particularly in the area of basic skills and work ethics. At United Hospitals (with over thirty-five hundred employees in both city and suburban sites), the vice-president for human resources saw it as a mixture of factors: a combination of the failure of schools to teach the "more complex" skills—both academic and interpersonal—required in today's hospital workforce, a cultural bias for choosing college over work "whether it makes any sense for the individual or not," and a shrinking supply of entry-level workers located further down the queue. At Provident, personnel officials also felt there was excessive emphasis on college attendance but saw the main problem as being one of shifts in the labor queue, not deterioration or failure of the schools.

The city has a large parochial school system, and there is a stark contrast in image (as well as in test scores) between the city's public schools (bad), the parochial schools (better) and the suburban public schools (best). In this setting, we expected to find some city public school bashing. Moreover, there has been a tradition of major firms in Philadelphia hiring from the parochial schools and eschewing the public schools. However, employers with an opinion in this area saw no difference in the quality of preparation.

While employers differed somewhat in their opinions about current deficits in the basic academic, interpersonal, and work ethic skills of entry-level workers, most believed that the situation would deteriorate. Their awareness of demographic trends, the increasing interview-to-hire ratios, and general publicity about the noncompetitiveness of the U.S. workforce all seem to fuel these concerns. Large firms talked about the possible need to expand training in the basic skills as well as plans to tighten working relationships with the public schools (which they saw as a more fertile ground for recruiting entry-level workers

than the community colleges, where numbers are smaller and aspirations higher). This growing sense of angst is confirmed by a number of other sources:

- A survey of twenty-six large firms, conducted by the managing director of the city of Philadelphia, in which most companies responded that their current workforce has adequate basic skills, but that it is getting harder to find entry-level workers with adequate skills (City of Philadelphia, Mayor's Commission on Literacy, 1988).

- The ninety-two respondents to the school district survey mentioned above, a mixture of large and small concerns across a wide range of industries, who overwhelmingly cited improved basic skills, interpersonal skills, and work ethic as in short supply among entry-level workers (Aniloff, 1988).

- Seventy-two employers from a wide range of industries involved in evaluating vocational programs in Philadelphia's comprehensive high schools, who have been more critical, generally, of academic and social skills development in the vocational programs than of trade skills development (O'Brien, 1989a, 1989b).

Beyond generalized concerns about academic and social skills, virtually all employers reported problems finding qualified secretaries with adequate typing, proofreading, language and, in some cases, arithmetic skills. Some traced this to the opening of professional jobs to women; one argued that "despite competitive salaries, the job has a bad rap." One employer criticized the Philadelphia School District for teaching typing with typewriters (instead of word processors), but most felt it was a deeper problem of basic academic skills—a finding confirmed by a recent employer evaluation of business education programs in the city schools (O'Brien, 1989b).

At Provident Bank, the concern with basic skills was focused not so much on entry-level jobs but on finding employees with the ability to promote beyond entry level. Banks traditionally have had fairly well-articulated career ladders, especially for those who enter as tellers. Yet, moving up the teller ranks or out of them into customer service increasingly requires stronger abilities to learn new procedures and new products. Provident, while able to attract tellers with a $6.50 entry salary, is starting to encounter problems finding people to promote internally.

Beyond shortages in secretarial skills, there was no coherent pattern of job skill shortages at entry levels which we encountered in this limited study. However, we did encounter isolated instances of specific skill shortages in manufacturing areas. For example, Penn Ship in Chester, Pennsylvania, experienced extreme difficulties in finding welders to work on a major new shipbuilding project, and one observer went so far as to suggest that the inability to find or train welders was placing the entire company in jeopardy. (The company has since entered Chapter 11.) VIZ Manufacturing reported a need for solderers and had searched without success for any training programs preparing them. The owner of a restaurant/catering business reported plans to import skilled waiters from Europe for his upscale business. The service manager of a large automobile dealer reported difficulties finding mechanics with the requisite combination of academic and entry-level job skills to work on new car engines, with their increasingly complex computer systems and service manuals. Further, employers involved in evaluating vocational programs in the Philadelphia schools, while giving top priority to work ethic and academic skills (presumed indicators of trainability on-the-job or in other post-employment training), nonetheless also considered basic job skills an important component of high school vocational programs, a point to which this paper will return.

Conclusions

Because of the strong contrasts between the city and the suburbs, it is difficult to draw overall conclusions about the economic health of the Philadelphia region beyond observing that substantial decentralization has occurred, accompanied by a shift from manufacturing to services and increased isolation of minorities who are residentially, educationally, and economically segregated. If one views the region as an interdependent whole, it is at best in fair shape, having pulled out of the decline of the late seventies and early eighties, but still lagging the rest of the country in growth. If, on the other hand, one posits two distinct and independent economies—one comprised by the city and one by the suburbs—there are two different conclusions: the city, despite some strength downtown, is sluggish and vulnerable, while suburban growth prospects are rosy, with tight labor markets appearing to be the major constraint on growth.

Whichever view one takes, when the demographic and economic data are combined, they suggest employment problems for minorities and residents with low educational attainment. These problems are most acute in the city. Philadelphia has become the repository of the poor and the nonwhite. While unemployment rates are low,

poverty rates remain high, due to a combination of low labor force participation and/or inability of large portions of Philadelphia residents to access jobs which offer security and decent wages. Analysis suggests that the decentralization of jobs in the region have been, to a considerable degree, a matter of jobs following the people and not vice versa (Hughes & Madden, 1987). What appears to have happened is that the better educated and more skilled members of the region's labor force have moved to the suburbs. The jobs have followed them. The suburbanites also remain able to access the best jobs in the city, but low-income city residents are able neither to access the city's best jobs nor to follow the jobs to the suburbs. There is no thorough analysis, to my knowledge, of the reasons for this inability to get suburban jobs, but casual empiricism suggests that, whatever the historical reasons, the current reasons include inability to afford to live in the suburbs; insufficient education or employment skills to access jobs in the suburbs which make commuting pay; racism; and limitations of a public transportation system that radiates in spokes outward from the city's central business district and makes commuting from most Philadelphia neighborhoods to most suburban areas inconvenient, expensive, and time consuming for those who cannot afford a car.

Many factors are involved in explaining the slow growth and tenuous condition of the city's economy, and it is difficult to estimate the extent to which limits to the human capital of city residents have played a role, as opposed to other factors (e.g., land, changing markets, tax structures, and loss of business confidence in city government—which, in the Rizzo years of the 1970s and the Goode years of the 1980s has indeed been low). As the interviews and survey data summarized above indicate, employers' anxiety about labor force supply seems more prospective than retrospective. Nonetheless, it is tempting to conclude that some mixture of racism, limited education, and job skills of city residents have had a debilitating effect on the city's economy. The slow growth that has taken place has occurred largely in areas requiring a high degree of human capital. The decline of manufacturing in the city—as opposed to its modest growth in the suburbs—may well have been exacerbated (although it certainly was not solely caused) by the nature of the city's workforce.

The extent to which improvements in human capital might trigger improvements in the economy of the city itself is problematic. However, it seems highly probable that improvements of the human capital of city residents, especially of minorities—regardless of discrimination—will lead to improvements in their economic status, especially if suburban

growth and tight labor markets continue. In part, then, this frames the challenge to vocational education, which will be discussed in the next section of this paper.

Secondary and Postsecondary Vocational Education in the Philadelphia Area

Introduction

Insofar as the economy of the region requires native talent to grow, current labor shortages (and the shrinking entry-level pool) suggest a moment of opportunity to improve the economic status of minorities in Philadelphia through improved education including—but not limited to—vocational education. However, the opportunity could prove ephemeral and capitalizing upon it will not be easy.

While vocational education is enjoying a relative boom at the postsecondary levels, it is in a state of disarray at the secondary level, with enrollments declining drastically, missions uncertain, and effectiveness in question. This disarray results in part from changes in the workplace which have (long since, it can be argued) undercut the traditional rationale for vocational education as an alternative for academically weak students, and, in part, from the crowding out of vocational courses which has resulted because of increases in academic courses required by state law.

On the one hand, the current disarray of secondary vocational education creates fertile ground for changes, which the moment of opportunity demands; on the other hand, it makes change problematic. Nevertheless, any reform program, especially one aimed at improving education for minorities who are concentrated in the city schools, is complicated by the racial and economic stratification and segregation which characterize the region as a whole. This stratification is recapitulated in the education system at large, further reinforced within the Philadelphia public schools, and, as we shall see, echoed again within the vocational education system which itself is two-tiered, comprised roughly of *relatively* elite magnet programs and a large second tier of dumping ground programs.

For years, vocational education has served as an alternative (i.e., a lower track or dumping ground) for many students with weak basic skills. Increasingly, basic academic skills are also basic vocational skills, and the dualism which has prevailed is highly

dysfunctional. Many leaders of vocational education, including the director of vocational education in Philadelphia, are arguing that vocational education may be "saved"—and, indeed, that it may help in the reform of the high school—if its potential as a motivational and pedagogic vehicle for increasing cognitive growth can be realized.

Basic and Vocational Education Systems: Descriptive Overview

Public Educational Institutions

For purposes of manageability, this paper confines itself to addressing the educational system in Southeastern Pennsylvania, which comprises most of the region, other than a brief look at Camden County Community College in New Jersey.

The main elements of the publicly supported educational system of the five county area of Southeastern Pennsylvania, which includes Bucks, Chester, Delaware, Montgomery, and Philadelphia (where there is no separate county government) are

- Sixty-two local kindergarten through twelfth grade school systems.
- Twenty area vocational technical schools (AVTS), most organized since a 1963 act of the legislature. (In many instances, the AVTS schools supplanted LEA vocational schools/programs.) AVTS organization is the responsibility of so-called "Intermediate Units"—countywide administrative entities which exist largely for the purpose of handling certain state funds and providing state-funded services across local district lines (most notably, special education). In Philadelphia, the school district and the intermediate unit are coterminous.
- Four countywide community colleges, also developed after the state legislature's 1963 community college act. (Chester, the most rural county, has no community college.)
- Two "state-related" private universities (Temple and branch campuses of Penn State, which receive operating subsidies from the state) and several state colleges.

The area is also rich in private schools and colleges, with a high proportion of elementary and secondary students (about 30%) attending the large Archdiocesan Catholic school system and a broad array of independent schools. The University of Pennsylvania,

Bryn Mawr, Haverford, Swarthmore, Drexel University, La Salle University, and Villanova University are among the leading independent colleges, of which there are over fifty, in the region, as well as a number of medical schools.

The sixty-one elementary and secondary school districts in the four counties outside Philadelphia follow a common pattern of governance and funding. Most are organized on a township basis (with some combining two or more townships) and the schools span grades kindergarten through twelfth grade. An elected local school board sets policy, within confines of the state school code, and levies taxes. Local taxes constitute fifty-five to sixty percent of the budget of most of these school districts, with the balance coming from the state. With the notable exceptions of several smaller cities (e.g., Chester, Norristown, and Coatesville), these are affluent, largely white, suburban school systems. Most high schools are comprehensive in nature—they offer some vocational classes—but they are nonetheless heavily oriented to college preparation.

Philadelphia presents a different pattern. With close to forty-five percent of total school enrollments (and 40% of secondary school enrollments) in the region, it is governed by a school board appointed by the mayor. It is a "majority minority" school system: sixty-three percent of its 196,000 students are African American, thirteen percent Hispanic, two percent Asian and the remaining twenty-two percent white. The school board has no taxing authority. Local school taxes must be raised by the elected city council; however, the council has been somewhere between indifferent and hostile to increasing taxes for the schools for the past fifteen years, during which the local share of Philadelphia's school budget has decreased from fifty-eight percent to thirty-seven percent, with the state providing the balance (exclusive of federal categorical funds). Philadelphia has fared well in Harrisburg and now gets more state aid per pupil than any other district in the state—but the cost has been growing hostility from rural and suburban legislators who now appear unwilling to support additional school aid to the city unless local effort increases.

In 1987, the median "net instructional cost" per pupil in the region was $3,431. In Philadelphia, it was $3,251, five percent below the median. (Philadelphia ranked forty-first of sixty-two districts in per pupil spending, with the top suburban district spending $5,418 per pupil. The net instructional cost figure excludes health care, transportation, homebound instruction, and categorical grants. It is based on "weighted" pupils: half-day

kindergarten pupils are weighted at 0.5; secondary pupils are weighted at 1.36, a factor used in the state subsidy formula.)

Just over fifty percent of the public school students in Philadelphia come from families who receive some form of public assistance, and two-thirds are eligible for Federal Chapter I aid to the disadvantaged. Within the city, roughly ninety percent of minority students, but only a third of white students, attend the public schools. Since ninety-three percent of minorities in the region live in Philadelphia, one can extrapolate that roughly eighty-four percent of all minority students attend the Philadelphia public schools. The low-income minority share of enrollment increased substantially through the 1970s and early 1980s, partly as a function of demographics but also because of chronic fiscal deficits in that period. These deficits were the backdrop to eleven teacher strikes in twelve years, which in turn sped an exodus of middle-class families (African American and white) to suburban or private schools. Labor and fiscal situations have been stable in the past five years, under a reformed board of education and a popular superintendent, but recent labor agreements may lead to new deficits. Moreover, the constituency for increases in local educational funding is at best weak. Only eleven percent of voters have children in the public schools, and many are poor people with limited political clout. While the business community has emerged in recent years as a fairly strong supporter of the schools, business is far from unanimous in support of increased taxes for education.

The Vocational Education System

In Philadelphia and the region, occupational education is in a period of transition, characterized by the following major developments:

- Increases in formal employer-based training, particularly among large firms.
- Gradual increases in secondary vocational education enrollment from 1963 to 1983, followed by dramatic declines in the past five years. The decline appears to have more to do with increase in state academic requirements for graduation than with labor market changes per se—although one can argue that these requirements are a crude, approximate response to changing labor market conditions.
- The late birth (1963) of Pennsylvania's community college system and its rapid growth in all aspects—college transfer programs, occupational programs, continuing education, and customized training. The community colleges have

clearly become the main players among vocational institutions (although total secondary schools enrollments are somewhat higher).

The following discussion will focus on publicly-funded vocational education which occurs primarily in three settings: the comprehensive high schools of local education agencies, in Area Vocational Technical High Schools (AVTS), and the community colleges.

Secondary Vocational Education

Throughout the region, secondary vocational education occurs in three distinct settings: comprehensive high schools with a range of both vocational and academic courses; AVTS schools which offer vocational programs only (students take their academic subjects at sending comprehensive high schools), and comprehensive AVTS schools—that is, schools where all students are enrolled in vocational courses but also take academic subjects there. All three settings are found in Philadelphia, but in the suburbs there are no comprehensive AVTS schools. Within Philadelphia's comprehensive high schools, business, trade, and industry education occur in a distinctive school-within-a-school pattern known as high school academies which are jointly run by business and the schools.

There are six AVTS schools in Philadelphia and fourteen in the four surrounding counties. Except for Philadelphia, where the city school board is also the vocational board, each AVTS has a board drawn from board members of member school districts. Multiyear joint operating agreements among the member school districts establish funding and other administrative arrangements. The AVTS schools serve both public and private school students. In Philadelphia, four of the AVTS schools offer all academic courses as well as vocational courses, while two (so-called "Skills Centers") offer only vocational courses, on a "week about" basis. That is, students spend a week taking academic subjects in their home comprehensive high school and a week studying a trade at the AVTS. Some suburban AVTS schools also use this "week about" pattern, although half-day and alternate day patterns are more common. With the exception of a few special programs (typically, programs designed as alternatives for potential dropouts or "alienated" youth), the AVTS schools outside Philadelphia do not offer academic courses.

Trade, industry, and technical programs predominate in the AVTS system while most business education (office work) courses are offered in comprehensive high schools.

Philadelphia, however, has a somewhat different pattern. While AVTS schools focus on trade, industry, and technical programs, and comprehensive schools offer most of the business education—as elsewhere in the region—the comprehensive high schools also offer a fairly broad range of trade and industry programs. Many of the comprehensive high school "T & I" programs have earned a deserved reputation as dumping grounds, as we shall see, and they themselves are on the verge of being dumped. One bright spot in the comprehensive high schools is the High School Academies program, "schools within a school," organized around an occupational theme, which are run jointly by business and the school system. The academies serve some sixteen hundred students and are in a planned expansion to five thousand—roughly twelve percent of comprehensive high school students.

Postsecondary Vocational Education

Community colleges may be established by a county government, a municipality, or a consortium of local school districts. The city of Philadelphia and three of the four surrounding counties (Bucks, Delaware, and Montgomery) have organized community colleges, which *in theory* are funded one-third by the state, one-third by local taxes, and one-third by tuition. (In practice, percentages vary, with local taxes sometimes amounting to less than a third, being offset by grants and other forms of revenue.) The New Jersey community college system is similarly organized. All the community colleges offer two-year associate's degrees in both vocational and academic areas, for-credit and noncredit continuing education, and customized training for employers (some of it bearing credit, some not). The last service is funded by a variety of sources, including government grants, contracts with companies, and company tuition-reimbursement plans.

An exhaustive description of the vocational system would also address occupationally-oriented offerings in colleges and universities (e.g., health, engineering, and business education at the baccalaureate level and professional schools at the postgraduate level), employer-based training programs, and proprietary schools. We will discuss briefly employer training programs, although no comprehensive information about these programs is readily available. We will omit college and university programs because, while they may be important to the local economy, they are of secondary importance to this paper's focus on low-income minority students. It is worth noting, however, that a couple of small four-year institutions are building programs with a predominantly occupational thrust. For example, Holy Family College in Northeast Philadelphia has switched from a

liberal arts school to a college in which most of its two-thousand students are enrolled either in education or health majors, and it has become the largest single provider of nurses in the region.

There are over seventy-five proprietary schools in Southeastern Pennsylvania (total enrollment not available). While some have solid reputations (a culinary school and some secretarial and computer programming schools), their general reputations are poor. Several employers interviewed for this study characterized them as "fast buck operators," and a senior education official from the state confirmed this view, stating that in Philadelphia, in particular, the record of proprietary schools is poor. Further support for this view comes from the student loan default records of proprietary schools. In 1986, one-hundred twenty proprietary schools in the state (and twenty-eight in Philadelphia) had more than thirty borrowers entering repayment status. Of fifty-nine schools with a high default rate (25% or more), twenty-five were in Philadelphia. In other words, Philadelphia has only twenty-three percent of the large proprietary schools in the state, but forty-two percent of the high default schools. Nearly ninety percent of Philadelphia's proprietary schools fell in the "high default" category, and seven of the ten schools with default rates above sixty-seven percent were in Philadelphia. While the poverty backgrounds of Philadelphia students may partially explain these high rates, it also suggests that proprietary schools are not doing a good job of getting students into jobs which pay enough to enable them to pay back loans.

Occupational Enrollment Trends and Course Offerings

The total population in the Philadelphia PMSA has been fairly stable since 1970, but elementary and secondary school enrollments declined dramatically, reflecting lower birth rates (and increased longevity). According to school district budget documents, total school enrollments in Philadelphia, for example, declined from 314,000 to 196,000 between 1970 and 1989, a thirty-eight percent decline. Despite gains in overall population, suburban enrollments dropped almost as steeply. (Relative to the suburbs, Philadelphia's decline was somewhat cushioned by higher fertility rates of its large minority and low-income populations.)

In Southeastern Pennsylvania, at the high school level, the drop has been particularly sharp in the 1980s, where enrollments declined eighteen percent between 1981

and 1986, as Table 22 shows. By contrast, the community colleges, the newest segment of the system, are continuing to experience growth, in both for-credit and noncredit courses. While comprehensive data is not available for the last couple of years, administrators at both suburban community colleges interviewed in this study report growth rates in excess of six percent per annum in the past two years for degree enrollments. These colleges plus Philadelphia Community College (whose degree enrollment has declined slightly) report even higher growth rates in noncredit activities, including both career-related courses or training and leisure-time continuing education.

Table 22

High School and Community College Enrollment Trends

	1977	1981	Change 1977-1981	1986	Change 1981-1986
High Schools	195,759	178,633	-8.7%	144,935	-18.9%
Community Colleges	NA	35,670	NA	39,185	9.9%

Note: Community college data for 1985/1986; high school for 1986/1989. Community college data is full-time enrollment in credit courses.

Source: Philadelphia Department of Education, 1979, 1982, 1988. Internal data supplied to author.

Secondary Vocational Enrollments

As Table 23 shows, high school vocational enrollments increased, in both absolute and relative numbers, during the late 1970s. Given the large concurrent declines in overall secondary enrollment, these were relative boom years. These increases continued through 1983 (not shown on table) when the trend reversed itself and a precipitous drop began, with vocational enrollments falling roughly twice as fast as overall secondary enrollments (Pennsylvania Department of Education, 1988, p. 3). The percentage of students enrolled in vocational courses dropped from thirty-four percent to twenty-six percent between 1981 and 1987, representing a thirty-seven percent decline in numbers enrolled. The local trend mirrors statewide trends, giving strong support to the belief that this sudden turnabout was the result primarily of post *A Nation at Risk* education reforms which increased the number of academic courses required for graduation, on the one hand, and led to tougher state scrutiny of what constituted an approved vocational program, on the other.

Table 23

Vocational Enrollments as Percentage of High School Enrollments, Philadelphia PMSA, 1978 to 1987

County	Enrollment	1977-1978	1980-1981	1986-1987
Bucks	High School	31,534	29,031	24,905
	Vocational	9,226	9,169	5,475
	Percent Vocational (%)	29.3	31.6	2.0
Chester	High School	19,171	18,286	16,627
	Vocational	4,595	3,807	2,525
	Percent Vocational (%)	24.0	20.8	15.2
Delaware	High School	29,990	25,924	19,417
	Vocational	9,809	8,060	5,049
	Percent Vocational (%)	27.4	31.1	26.0
Montgomery	High School	36,817	32,249	25,799
	Vocational	9,809	8,914	4,851
	Percent Vocational (%)	26.6	27.6	18.9
Philadelphia	High School	78,227	73,143	58,187
	Vocational	28,118	30,093	20,320
	Percent Vocational (%)	35.9	41.1	34.
PMSA	High School	195,739	178,633	144,935
	Vocational	59,958	60,043	38,220
	Percent Vocational (%)	30.6	33.6	26.4

Sources: Philadelphia Department of Education, 1979, 1982, 1988. Internal data supplied to author.

As Table 23 also shows, the percentage of students enrolled in vocational courses is substantially higher in Philadelphia than in the suburban counties, where a more affluent population emphasizes college preparatory courses. By 1987, Philadelphia enrolled forty percent of all high school students in the region, but thirty-five percent of secondary vocational students. As Table 24 shows, the rate of decrease in enrollments between 1981 and 1987 was sharper (45% versus 32%) for AVTS schools than for vocational enrollments in comprehensive high schools. The share of all secondary vocational enrollments in comprehensive high schools increased from sixty to sixty-four percent.

Table 24

Vocational Enrollments in Area Vocational Technical Schools and Comprehensive High Schools (Philadelphia and Southeastern Pennsylvania)

	1977-1978	1980-1981	1986-1987
Total Enrolled	59,958	60,043	38,220
Comprehensive High Schools	35,217	35,818	24,270
Percentage of Total (%)	58.7	59.7	63.5
Area Vocational Technical	24,739	23,972	13,950
Percentage of Total (%)	41.3	39.9	36.5

Source: Philadelphia Department of Education, 1979, 1982, 1988.

While enrollment in secondary vocational programs has declined dramatically overall, there is considerable disparity in trends among different institutional settings.. The hardest hit institutions have been the suburban AVTS schools and the Philadelphia Skills Centers, which offer vocational courses only to students who take their academics in a home comprehensive high school. State regulations adopted in 1983 simultaneously increased academic requirements and tightened minimum time requirements for approved vocational courses (i.e., courses qualifying for extra state subsidy). Thus, for students to meet both sets of requirements (and make up any academic courses they flunked) required a longer school day and/or creative scheduling (e.g., using the same course to meet both vocational and academic requirements). Since they must coordinate with a number of sending schools, it was virtually impossible for the noncomprehensive AVTS schools to schedule creatively. According to many AVTS directors, comprehensive high school principals simply stopped sending students out for vocational education (unless they were trying to "dump" them). Indeed, faced with declining high school enrollments, comprehensive high schools were already having to cut teachers and programs, giving them an added incentive to hold on to vocationally oriented students.

Interviews and site visits suggest that in many cases, the result has been that some excellent programs have simply been unable to attract students. The skills centers in Philadelphia, for example, have been highly rated in terms of equipment, instructors, and programs by several third-party evaluations, but their enrollments have dropped so low that they will probably be converted to other purposes. The director of a Montgomery County AVTS showed a visitor a state of the art machine shop recently outfitted with $500,000

worth of equipment, much of it computer-controlled. He has an active business advisory board, hungry employers from small- and medium-sized businesses who will "hire almost anyone I train," and a school board which gave him *more* than he requested in his last budget. However, there are only eleven students enrolled in machine trades. "We've got everything in place but the students," he lamented.

The same squeeze has reduced business education enrollments and trade and industry enrollments in comprehensive high schools, but there are exceptions to the pattern of enrollment declines. Enrollments at the four comprehensive AVTS schools in Philadelphia—vocational schools offering academic courses as well—have remained stable. These schools, which have a longer school day than the comprehensive high schools, have been able to accommodate increased state academic requirements. Further, these schools are quasi-"magnets," drawing students from a broad area. While admission requirements are not rigorous, there is moderate selectivity to these schools, and students must have the motivation to apply and participate in a longer school day. Their quasi-magnet status and ability to accommodate state requirements appear to be the reasons their enrollments have held up. Similarly, enrollment has been growing in the High School Academies programs in the comprehensive high schools. While less selective, these programs also employ a longer school day and have long boasted an integrated vocational/academic curriculum.

Demographics of Secondary Vocational Students

In the suburban counties, as in the state as a whole, minority students are somewhat more likely than white students to be enrolled in vocational courses, although it is doubtful that differences would be significant if one controlled for socioeconomic status. In the suburban counties, whites are ninety percent of total high school enrollments, but account for only eighty-two percent of vocational enrollments. By contrast, in Philadelphia, whites were twenty-three percent of high school enrollments but constituted twenty-seven percent of vocational enrollments.

It is often argued that minority students are disproportionately routed into vocational tracks based on low expectations. Some studies have found that among minority males enrollment in vocational education leads to lower aspirations and achievement (Grasso & Shea, 1979). While on their face, the suburban data is at least consistent with (although they do not prove) this viewpoint, the Philadelphia data is not. In fact, if one probes the

Philadelphia data further, a *prima facie* case can be made that whites are overrepresented and African American and other minority students are underrepresented in quality vocational programs. Total vocational enrollments in Philadelphia are split nearly evenly between comprehensive high schools and AVTS schools, including both "week about" skill centers and comprehensive AVTSs. As we shall see later in this report, the AVTS schools have generally good reputations and fairly strong track records at placing students in jobs and/or postsecondary education. By contrast, the comprehensive high school programs are generally much weaker. If we view the AVTS schools as the quality brand of vocational education, and the comprehensive high schools as "Brand X," an analysis of enrollment patterns shows that whites are overrepresented in the quality schools, while minorities are overrepresented in the "Brand X" programs. That is, using 1989 School District data, we find the distribution of enrollments by race as displayed in Table 25 shows whites as more likely (and nonwhites less likely) to be enrolled in AVTSs and skills centers. Further, the data also suggests that whites are more likely to be studying higher-paying occupations, while African Americans dominate in such nonentities as home economics, although the data is too limited to carry this analysis very far.

Table 25

Racial Composition of Philadelphia Vocational Students by Type of School

	White (%)	Non-White (%)	Total (%)
All Vocational Education	27	73	100
Adult Vocational Training Schools/Skills Centers	31	69	100
Comprehensive High Schools	23	77	100

Source: School District of Philadelphia, 1989.

Across all five counties, female enrollments in vocational education slightly outnumber male enrollments. There is a distinct pattern of sex stereotyping, with females dominating by wide margins in such areas as cosmetology, nursing, office work, and home economics, while males dominate in agriculture and trade and industry areas. In Philadelphia, females are also slightly underrepresented in the AVTS schools.

Shifts in Course Offerings

Accompanying the steep slide in enrollments have been shifts in the courses taken. Ideally, changing enrollment patterns should reflect changes in labor force demands and requirements. In reality, while some modest shifts in enrollment do appear to be responsive to labor market changes, the major shifts appear to reflect state regulations and student preferences which are at best tangentially related to labor market factors.

Table 26 shows the changes in secondary vocational enrollment by course area from 1978 through 1987. The state department of education determines the courses eligible for reimbursement as vocational subjects. There are over a hundred approved occupational courses. These have been condensed into twenty-seven related groupings or clusters in this table. In theory, the state approves titles based on both labor market demand and appropriateness of teaching the course at the secondary level. It also assesses degree of difficulty to determine how many periods per week a course shall be taught (ten to fifteen periods for most). In reality, however, there is considerable latitude granted local districts in determining the exact content taught under a given course title and monitoring for compliance with required hours is loose. This leads to reputedly widespread divergence from state requirements in the Philadelphia comprehensive high schools, in particular. Further, the meaning of "enrollment" varies. In theory, enrollment means a student enrolled in a multiyear program taking the required number of hours per week. In reality, some students opt to take a vocational class such as typing as an elective but are not enrolled in business education for the requisite hours. Many others hopscotch from one vocational area to another. Under state regulations, such students should not be counted as enrolled in vocational programs. In fact, however, many apparently are reported as such by the schools, either because of careless record keeping or because state reimbursement of vocational costs offers an incentive to inflate numbers. Accordingly, the numbers in Table 26 should be interpreted with some caution: courses with the same name may, in fact, constitute quite different offerings.

Based on course titles, Table 26 shows that the distribution of courses has not changed dramatically over a ten-year period. The biggest gain in terms of "market share" has been home economics, which accounted for 16.7% of vocational enrollments in 1978 and 20.1% in 1987. Home economics is a vocational course in name only—it does not prepare one for a job—but it is required of all students to graduate. The biggest loser of

Table 26

Secondary Vocational Enrollments
Changes From 1978-1987

		1978	Percent (%)	1987	Percent (%)	Gain/ (LOSS)	Percent Gain/ (LOSS) (%)	Percent Share Change (%)	Rate Of Share Change Percent (%)
1	Agriculture/ Horticulture	1,575	2.6	1,186	3.1	(389)	-25	0.5	15.9
2	Appliance/ Engine Repair	798	2.3	306	0.8	(492)	-62	-0.5	-65.2
3	Automotive	4,461	7.4	2,577	6.8	(1,884)	-42	-0.7	-9.7
4	Business Education	17,206	28.7	10,123	26.7	(7,083)	-41	-2.0	-7.7
5	Child Care and Development	263	0.4	301	0.8	38	14	0.4	44.7
6	Carpentry	2,212	3.7	1,441	3.8	(771)	-35	0.1	2.8
7	Clothing-Care and Production	1,712	2.9	741	2.0	(971)	-57	-0.9	-46.4
8	Custodial/ Maintenance	461	0.8	641	1.7	180	39	0.9	54.4
9	Distribution/ Marketing	2,908	4.9	1,393	3.7	(1,515)	-52	-1.2	-32.2
10	Diversified Occupations	0	0.0	524	1.4	524	NA	1.4	NA
11	Drafting	931	1.6	873	2.3	(58)	-6	0.7	32.4
12	Electrical Trades	874	1.5	588	1.5	(286)	-33	0.1	5.8
13	Electronics	797	1.3	736	1.9	(61)	-8	0.6	31.4
14	Food Services	1,910	3.2	1,296	3.4	(614)	-32	0.2	6.6
15	Graphics/ Printing	1,682	2.8	1,153	3.0	(529)	-31	0.2	7.6
16	Health Occupations	1,653	2.8	1,012	2.7	(641)	-39	-0.1	-3.5
17	Home Economics	10,040	16.7	7,643	20.1	(2,397)	-24	3.4	16.8
18	Machine Shop	1,196	2.0	609	1.6	(587)	-49	-0.4	-24.4
19	Metal Work	1,063	1.8	624	1.6	(439)	-41	-0.1	-7.9
20	Other Services	276	0.5	79	0.2	(197)	-71	-0.3	-121.3
21	Other Trades and Industry	1,367	2.3	637	1.7	(730)	-53	-0.6	-35.9
22	Plumbing/ Heating, Ventilation, Air Conditioning	764	1.3	483	1.3	(281)	-37	0.0	0.2
23	Cosmetology	1,693	2.8	1,490	3.9	(203)	-12	1.1	28.0
24	Other Technologies	565	0.9	3	0.5	(359)	-64	-0.4	-73.7
25	Data Processing/ Computers	652	1.1	548	1.4	(104)	-16	0.4	24.6
26	Electrical Technology	1,299	2.2	770	2	(529)	-41	-0.1	-6.9
27	School Coop Education	1,598	2.7	0	0	(1,598)	-100	-27.0	-100.0
		59,956	100.0	37,980	100.0	(21,976)	-37		

Source: Philadelphia Department of Education, unpublished data.

market share was business education, which declined from 28.7% to 26.7% of enrollments, despite high demand for (and reported shortages of) secretarial and clerical workers. Business education fell only slightly in AVTS schools but precipitously in comprehensive high schools (from 15,171 to 8,667—43%), where it was particularly vulnerable to increased academic course requirements. The same applies to distributive education (sales and marketing) which is taught primarily in the comprehensive high schools. These facts, plus the steep decline in vocational enrollments which followed changed graduation requirements in 1983, support the conclusion that state regulations have more to do with secondary vocational enrollments than labor market demands.

It is interesting to note that after home economics and business education, the three most popular vocational areas in 1987 were automotive (2,577), cosmetology (1,490), and carpentry (1,441). While many students do enroll in these fields because of a career interest, they are also widely acknowledged to be courses which many others select for strictly personal reasons. Some business education enrollments are also for reasons of personal enrichment (i.e., wanting to master typing). These facts suggest, then, that leisure time interests of students, or desire for a hands-on experience—as distinct from career interests—are also significant determinants of enrollments.

In examining the remaining course offerings and their changes over time, it is difficult with this rudimentary data to draw many conclusions at all. Changes in share of enrollments are quite modest, for the most part. In some instances where the rate of change in market share is large, the base numbers are quite small, so the significance is in doubt (e.g., the absolute and relative increases in child care and child development, the large decreases in "other services"). With these caveats in mind, however, it does appear that, in addition to nonvocational student interests and changes in state regulations, these numbers do reflect in modest but fairly straightforward ways both qualitative and quantitative changes in the labor market.

If we confine the analysis of Table 26 to course areas in which more than five-hundred students were enrolled (in either 1978 or 1987), the big winners (in terms of growth rate) are

Custodial and maintenance workers	+54%
Drafting	+32%
Electronics	+31%
Data Processing/Computer Science	+25%

With the exception of drafting, these growth areas are generally consistent with growth in occupational demand, in Philadelphia and the nation.

By contrast, the big losers are

Other technology	-73%
Small appliance and engine repair	-65%
Clothing care and production	-46%
Other T & I	-36%

With the exception of "other technology" (such as chemical, audiovisual, and environmental control technologies) where the base is small and the decline in secondary enrollments may reflect requirements for postsecondary training, losses are also generally consistent with labor market changes.

Hence, if one asks whether vocational education has changed with overall changes in the labor market, the data is somewhat ambivalent. Overall, it appears that matters of state education policy and student interests have more impact on program enrollments than labor market factors. The decline of business education in the face of high demand is a prime example. At the same time, however, detailed analysis of course offerings in other areas give support to the assertion of AVTS directors that (on the margins) they have been able to change their offerings to reflect changing requirements of the labor force. Finally, we would note that the number of labor force entrants coming directly from vocational programs in any given occupation is fairly small. Thus, as one principal observed to us, it is possible, with good relations with a few employers, for vocational programs to find a niche even in declining industries and, insofar as placement upon graduation is the goal, achieve good results.

Adult Education Enrollments at AVTS Schools

Faced with falling enrollments of secondary school students, some AVTS schools have become active in recruiting adults. While lower than 1978 totals, adult enrollments at AVTS schools have risen somewhat recently. Total adult education enrollments in the region, many of which are vocationally oriented, are about thirteen thousand. AVTS schools receive negligible state reimbursement for adult enrollments, so combinations of tuition and grants are required for them to attract this population, about which there is little systematic data available in terms of subjects studied, course completions, or placements. The governor has recently supported steps to permit AVTS schools to become "technical

institutes," a category of postsecondary education created by 1963 legislation but never implemented. If the governor's plan is adopted, AVTS schools will be able to apply for Pell grants for adult students and will also be in position to receive higher state reimbursement for adult students. AVTS directors, who see adults as a potential new market for their declining industry, strongly support this development (although community colleges oppose it).

Community College Enrollments

Data was not available for community college enrollments prior to 1980-1981. As Table 27 shows, community college enrollments in vocational courses rose nearly nineteen percent between 1981 and 1986, climbing to 21,966. Occupational education's share of total enrollments also climbed from fifty-two to fifty-six percent in this period, although it fell slightly at the Community College of Philadelphia (CCP) which, in a reversal of the secondary school pattern, has a lower percentage of occupational enrollments than its suburban counterparts. This fact may reflect CCP's sense of mission—the past president who resigned in 1989 stressed college transfer programs—although occupational students at CCP are more likely than academic students to transfer to a four-year school.

Table 27

Total and Occupational College Enrollments, Full- and Part-Time Students (1981 and 1986)

Year		Bucks	Delaware	Montgomery	Philadelphia	Total
1980-1981	Total Enrollment	9,041	6,020	7,410	13,199	35,670
	Total Occupational	5,044	2,770	4,422	6,268	18,504
	Percent Occupational	56	46	60	47	52
1985/1986	Total Enrollment	9,233	7,638	7,047	15,267	39,185
	Total Occupational	6,952	3,783	4,227	7,004	21,966
	Percent Occupational	75	50	60	46	56

Sources: Philadelphia Department of Education, 1982, 1987. Internal data supplied to author.

It should be noted that community college figures in Table 27 are for students taking for-credit courses, which are further subdivided into degree programs and supplemental courses, which do not lead to degrees. Comprehensive data on the number of students receiving two-year degrees or certificates was not available. However, administrators at Delaware County report about twenty-five percent of students complete an associate's degree in three years or less, while CCP reports a rate of about fifteen percent.

Table 27 does not include students enrolled in continuing education and customized training. Neither comprehensive current data nor trend data are uniformly available for Pennsylvania community colleges in these areas, although all three community colleges interviewed for this report cited substantial growth in continuing education, and two of the three (Camden County and Delaware) reported substantial growth in customized training. Delaware County Community College's (DCCC) president has stated that seventeen-thousand individuals received customized training at DCCC in 1988, which is twice the number of its degree students, but the college was unable to provide us back-up information on this figure. Data provided by CCP (Community College of Philadelphia) were

Continuing occupational courses and customized training	4,525
Literacy programs	1,322
Other	1,886
Total	7,733

Hence, while growing faster, continuing education and customized training serve fewer students than degree programs at CCP.

We interviewed personnel at three community colleges—Philadelphia, Delaware, and Camden County. At all three, officials argued that the occupational programs at their colleges have effectively made the transition from a manufacturing to a services and high-tech orientation. However, the community college in Delaware County, which retains a strong manufacturing base, has done customized training for manufacturers (including an unsuccessful attempt to train welders for Penn Ship); and Camden Community College defines its occupational mission largely in terms of helping small manufacturers adapt new production technologies so they can compete effectively.

Both Camden and Delaware Community Colleges have highly entrepreneurial occupational education directors who, with the encouragement of their respective presidents, have pursued links to industry aggressively. In addition to their regular courses, these institutions have emphasized customized training, which has been a growth area for them. While some of the training is funded through government economic development and training funds, some has also come from employers. Delaware County's customized training ranged from basic skills remediation to traditional trades to CAD/CAM,

and fees received from employers helped make up a shortfall in local tax revenues for the college.

Camden Community College, which offers programs in fiber optics, lasers, and CAD/CAM among other topics, has developed a "model factory" to house a new program in computer-integrated manufacturing (CIM). General Electric (GE) helped them build this factory, and IBM is designing computer and information systems for it. This program will manufacture parts for GE, serve as a demo lab for IBM, and serve as a classroom for Camden County students.

Both Camden and Delaware County Community Colleges say that small- and medium-sized businesses which lack in-house training capacity are their major market. In addition to job training, both colleges offer management consulting and business development advice to these firms, and they maintain, they say, highly active industry advisory boards and considerable other interaction with industry through participation on boards and involvement with the chamber of commerce.

CCP, the largest of the three institutions, is considerably less aggressive in its pursuit of industry linkages and customized training. Its customized training depends almost entirely on government grants. Its biggest program was a $1.6 million grant from the state to provide basic skills training for employees of the Budd Company, a major manufacturer of transportation equipment, which was part of a package the state put together to keep Budd from moving out. The CCP president and vice-president (the latter was former head of occupational programs) do not perceive any large demand for their services from small- and medium-sized businesses. They have provided some "on-site" academic and clerical skills training for city government, and they run a word-processing program at the request of several banks, which bank employees take on a tuition basis.

Table 28 provides a breakdown of vocational enrollments by race and sex. Not surprisingly, it shows that most minorities are served by CCP. Hispanics are substantially underrepresented. The percentage of African-American students fell from twenty-four to eighteen percent in five years—consistent with declines in overall African-American enrollment in higher education in Philadelphia and throughout the country.

Table 28

Community College Occupational Enrollments By Race and Sex, 1981 and 1986

1981	Bucks	Delaware	Montgomery	Philadelphia	Total	Percent (%)
African-American Female	45	280	61	2,372	2,758	15.0
African-American Male	14	187	34	1,440	1,675	9.1
White Female	3,005	1,282	2,568	1,112	7,967	43.4
White Male	1,927	850	1,664	1,063	5,504	30.0
Hispanic Female	11	41	11	91	154	0.8
Hispanic Male	7	29	2	69	107	0.6
Other Female	15	23	23	16	77	0.4
Other Male	20	27	37	16	100	0.5
Total	5,044	2,719	4,400	6,179	18,342	100.0

1986	Bucks	Delaware	Montgomery	Philadelphia	Total	Percent (%)
African-American Female	40	108	99	2,315	2,562	11.7
African-American Male	35	116	93	1,312	1,556	7.1
White Female	5,026	1,986	2,212	1,198	10,422	47.4
White Male	1,785	1,516	1,670	1,616	6,587	30.0
Hispanic Female	17	16	18	166	217	1.0
Hispanic Male	11	4	14	121	150	0.7
Other Female	13	21	56	93	183	0.8
Other Male	25	16	65	183	289	1.3
Total	6,952	3,783	4,227	7,004	21,966	100.0

Sources: Philadelphia Department of Education, 1982, 1987.

It is notable that at CCP, minority students comprise nearly fifty percent of all enrollments but close to sixty percent of occupational enrollments. As we shall see, occupational students at CCP are considerably more likely to complete a degree than academic students. The president of the college attributes this to a stronger sense of personal objectives. However, it appears true as well that selectivity plays a roll: most occupational courses at CCP are limited to students who score above a cut-off point in math and reading tests. By contrast, as many as forty percent of the students enrolled in liberal arts programs must take essentially remedial level courses. On the face of it, then, CCP appears to be providing a useful service to minority students who are motivated to pursue an occupationally oriented course of study.

Table 29 shows current vocational enrollments by course area in the CCP and DCCC (for-credit courses only), the only data we were able to secure. Both schools offer occupational courses in over forty fields, which we have condensed here to five categories. Figures are for the Fall of 1987.

Table 29

Occupational Enrollments by Course Area in Two Community Colleges (Fall 1987)

	Community College of Philadelphia		Delaware County Community College	
	Number	Percent (%)	Number	Percent (%)
Business				
Management	1,643		1,838	*
Data Processing/Computer Operation	1,061		176	
Accounting	957		418	
Office/Secretarial	208		226	
All Other	446		111	
Subtotal	4,315	69	2,769	60
Engineering and Technology	606	10	835	18
Health				
Nursing	250		265	
Allied Health	291		278	
Subtotal	541	9	543	12
Behavioral Science and Human Services	152		235	
Early Childhood	148		198	
Justice	280		0	
Mental Health/Addiction		28	20	
Subtotal	608	10	453	10
Other Occupations	148	2	30	1
TOTAL	6,218	100	4,630	100

*Includes 1,194 "college parallel" enrollments.

Sources: Community College of Philadelphia and Delaware County Community College, 1988. Numbers supplied to author.

The large totals under management include such categories as real estate, hotel, food service, and retail management, as well as general management. On their face, the offerings of these community college programs appear to conform reasonably well to labor market demand, and both institutions report high placement rates: eighty-five percent at CCP (inclusive of some students who also transfer to higher education) and ninety-two percent at DCCC.

Outcomes of Secondary Vocational Education

The Pennsylvania Department of Education issues an annual report on the postgraduation activities of vocational students. This data is based on school district reports which in most instances appear to be "guesstimates," of what students think they will do after high school, not the result of follow-up surveys. Further, this report does not disaggregate data by county. Across the state, however, it is reported that 1986 graduates of secondary programs were distributed as follows:

Employed, related to training	35.6%
Employed, unrelated	23.2%
Military service	6.8%
Postsecondary education	23.7%
Unemployed/not in labor force	10.8%

Note that of those working, sixty-one percent report they are working in the field they studied (Pennsylvania, Department of Education, 1988).

This statewide data lumps together AVTS and comprehensive school students, and the extent to which they reflect results of AVTS schools in suburban Philadelphia is unknown. Given the hot labor market and the comments of AVTS principals we interviewed, higher percentages in "employed, related to training" seem possible, but this is speculative.

Philadelphia, on the other hand, has conducted some follow-up surveys of samples of its graduates (School District of Philadelphia, Office of Planning Research and Education, 1986, 1987, 1988a, 1988b). These permit a comparison of outcome rates for vocational students from both AVTS and comprehensive high schools. Modest sample sizes and low (circa 60%) response rates limit the accuracy of these surveys, but they do represent student reports a year after graduation. Further, a number of outside evaluations of various vocational programs are also available.

The picture which emerges from these surveys and studies is a varied one, with results quite sensitive to the institutional setting and program type. For the class of 1986, the four AVTS schools and the two skills centers showed a high percentage of graduates either working (53%), attending school full-time (29.7%), or in the military (11.5%), with 5.7% unemployed. Of those working, eighty-seven percent were working full-time and

fifty-four percent were employed in their field of study. No data was collected on the employment of students attending school full-time, nor on part-time school attendance. (With a forty-five percent random sample of graduates and a sixty percent response rate, this appears to be the most reliable follow-up study conducted by the School District.)

A second School District survey was conducted with a sample of 623 graduates of the 9400 graduating in the class of 1986. This was a stratified sample drawn to represent all high schools (magnets, comprehensive highs, and ACTSs) in proportion to their graduates. There were 371 respondents, who, in turn, were classified by type of curriculum they studied: academic, business education, general education, or trade and industry. Numbers were deemed large enough to permit comparisons among curricula in the percentage of graduates pursuing higher education or employed a year later, as follows:

Curriculum		(A) Full-Time School	(B) Full-Time Work	(C) Total (A + B)
Number		%	%	%
153	College Prep	71.2	22.9	94.1
64	Trade and Industry	18.8	60.9	79.7
63	General	23.8	46.0	69.8
60	Business	31.7	46.7	78.4

The balance of graduates were either working part-time, unemployed, or in the military (defined as not in school, working, or in the military). Numbers in these categories are too small to break out by curriculum. For the whole sample they were 5.7% working part-time, 8.9% unemployed, and 8.3% in the military.

The trade and industry category here includes roughly equal proportions of comprehensive high school and AVTS students. Hence, no comparisons can be made with the parallel study of AVTS graduates. Indeed, the numbers are too small to make any comparisons among the trade, general, and business graduates, but it is clear (and not surprising) that college prep students do better, overall, than any others. However, there are some other studies and fragments of data which, taken in their totality, lead one to conclude the following:

- Unemployment rates for college prep students are only one or two percent a year after graduation.

- After college prep students, AVTS students are the most likely to by employed or in school a year after graduation and least likely to be unemployed. Their programs are generally sound and are coupled with fairly high academic standards (ergo the 30% postsecondary enrollment data reported earlier).

- Business education students from the comprehensive high schools are about as likely as AVTS students to be enrolled in further education but are two-to-three times as likely to be unemployed (c. 15%).

- Comprehensive high school students in the "general track" (some of whom take occasional vocational classes) or in trade and industry curricula are the worst off. About thirty percent of graduates from these tracks are unemployed a year after graduation. Less than a quarter are enrolled in school full-time. Of those trade and industry students from the comprehensive schools who are employed, a follow-up study of the largest group (automotive) found that only fourteen percent were employed in the automotive industry.

These conclusions, synthesized from a number of studies, are further supported by program evaluations. The school district's Advisory Council on Career and Vocational Education (1985) conducted a 1984 study comparing trade and industry programs in the AVTS, Skills Centers, and comprehensive high schools. It found the equipment, instructional program, and qualifications of instructors generally adequate to excellent in the AVTS and Skills Centers, and generally adequate to poor in the comprehensive high schools. A 1989 study, conducted by De Lone, Kahn, and Associates for a business organization, the Committee to Support Philadelphia Public Schools (O'Brien, 1989a), reached similar conclusions. This study included surveys of students, teachers, and principals as well as site visits by some seventy-five employers, covering all trade and industry programs and a twenty-five percent sample of business programs. It found sixty percent of the trade and industry programs in the comprehensive schools to be inadequate, usually for a complex of reasons which included outmoded equipment, inadequate supplies, out-of-date training, and staggering rates (averaging over 40%) of student absenteeism which appear to reflect widespread assignment of students to courses which they did not select and in which they stated they had little or no interest: that is, they were dumped there.

The business education programs received higher marks in terms of course content, instruction, and equipment, but, again, there were problems of absenteeism, student assignment, and, in the observation of employers and teachers alike, a low level of basic skills among students which rendered their employability dubious regardless of the quality of the vocational offering per se.

In both business education and trade and industry programs, the comprehensive high schools were also faulted for limited to nonexistent contacts with employers, and too little use of work/study options such as cooperative education, which has never had a strong presence in Philadelphia. Employers were particularly critical of the lack of work experience provided for students coming, in many instances, from welfare families where working role models are scarce.

There is one important exception to the generally dismal state of vocational education in the comprehensive high schools. This is the High School Academies program. The academies, as noted earlier, are run jointly by schools and businesses (the latter involved through the nonprofit High School Academies Association, which organizes and oversees the academies). They are "schools within a school," enrolling an average of one-hundred sixty students in each of the ten current academies. Academies are linked to different industries and organized around occupational themes, including business, health, electrical, automotive, horticulture, and environmental technologies. Of the sixteen-hundred students currently enrolled, some eighty percent are African American, with thirteen percent white and the balance Hispanic and Asian. In other respects, students in the academies seem representative of the comprehensive high schools in which they are located, with two differences: first, they choose the academy, and, secondly, at the time of choice, they are generally judged unlikely to enroll in college. The basic academies model, which costs about ten percent more per student than the standard high school program, involves

- joint planning of an integrated academic/occupational curriculum by academic and occupational teachers,
- advice on occupational elements from industry, and
- guaranteed work experience for eleventh and twelfth graders.

The Academies program has been the subject of a favorable recent independent evaluation by Public/Private Ventures, and its own carefully maintained data suggests considerable success:

- An annual dropout rate of four percent—compared to ten percent for the comprehensive high schools.
- Average daily attendance of eighty-eight percent—compared to sixty-five percent for the comprehensive high schools.
- Of its 1989 graduates, fifty-seven percent entered employment, thirty-one percent enrolled in postsecondary education (80% in four-year colleges), and nine percent were either not employed or not in the labor force.

In short, whether because of their moderate selectivity or because of their programs, which feature a longer school day and slightly higher per pupil cost, the AVTS schools and the High School Academies appear to offer considerably better opportunity to students not enrolling in college prep programs than do the remaining programs in the comprehensive high schools.

Community College Results: Completion, Transfer, and Placement Rates

Three complementary outcome measures for community college occupational programs have face validity. The first two, applicable to degree candidates only, are completion rates and transfers to four-year colleges. The third, universally applicable, is placement in employment. Job placement data is scarce, although community college staff report that placement is not a problem. Indeed, since many community college students are already employed in their field of study, it is almost a moot issue. However, DCCC reported ninety-two percent of its occupational education students placed in jobs, while CCP reported eighty-four percent. They also reported twenty-three percent and forty-three percent of their occupational students, respectively, transferred to four-year colleges.

CCP states that about fifteen percent of its students compete degrees within three years, while DCCC reports twenty-five percent. (Data was not available from other community colleges.)

It is notable that at CCP, completion rates appear to be dramatically higher for occupational education students. In 1988, for example, academic students accounted for fifty-two percent of the colleges full-time equivalent enrollments (4,315 of 8,251 FTEs), but only thirty percent (287 of 967) of the associate's degrees (and or completion certificates) it awarded. A similar pattern existed at DCCC, where occupational students accounted for thirty-nine percent of FTEs but seventy-two percent of associate's degrees awarded. It is not clear to what extent higher completion rates reflect program quality, motivation, and clarity of purpose on the part of students, or selectivity of students admitted to these courses (i.e., entrance exams in mathematics required for admission to many of CCP's occupational programs). Nevertheless, if achievement of a degree is an important benchmark for success, occupational students at these two colleges are far more successful than their academic counterparts. (A caution is in order, however, since some academic students transfer to four-year colleges before completing community college.)

Transfer rates into four-year colleges by completers at both schools are reported to be higher for academic students. The difference is large at DCCC (64% versus 24%) but less marked at CCP (69% versus 43%). However, because of the higher completion rates at both colleges, a somewhat higher percentage of occupational students appear to transfer to four-year colleges. At CCP, occupational students were 1.5 times as likely as academic students to complete their degree and transfer to a four-year college. As with secondary AVTS schools in Philadelphia, it is not possible to disentangle effects of selection procedures from program effects in viewing the apparently superior results of occupational programs in the community colleges.

Vocational Education and Employers

Employer Perspectives

Employers interviewed in this study—primarily personnel executives—have generalized concerns about education but little specific to say about vocational education, excepting those who had been recruited for formal participation on vocational advisory bodies or for participation in evaluation of specific programs. We suspect this is because their views derive from two perspectives: first, what they read in the press or professional sources about the education crisis, and secondly, their direct experience in hiring. On the first score, they have all read the demographic projections, heard scenarios similar to those

projected in *Workforce 2000*, and been exposed to a smattering of the dismal reviews of American education issued by a long string of commissions and study groups. Their general worries about basic skills and the work ethic reflect this exposure.

On the second score, schools are but one of a number of sources of recruitment for them, and vocational schools or vocational programs in comprehensive high schools are but a small portion of this source. Hence, unless an individual has directly served on an advisory committee—there is no clear perception of vocational education as distinct from the schools in general. Indeed, some, such as VIZ, rarely hire from the schools, preferring entry-level workers who are over thirty, and encouraging particularly applicants from among new Asian immigrants. (Conversely, it is possible that vocational schools serve a fairly small and stable set of employers who did not show up in this sample.)

Nonetheless, some generalizations can be made:

- Community colleges generally have a good reputation among employers—even those who do not do much hiring from them. Community colleges are not a major source for entry-level workers, the main concern of those we interviewed.

- Philadelphia employers, however, tend to view the city's community college less positively. For instance, the head of the city's major business civic organization, an organization concerned primarily with regional economic development, was among several who criticized CCP for lack of aggressive leadership in seeking to serve industry with customized training and other programs.

- Those who had an opinion about proprietary schools saw them as a mixed bag. "A lot of them are fast buck operators," said the vice-president of a bank, "especially the ones which rip off government money and pretend they're turning welfare recipients into secretaries." The same individual reported occasional success in hiring programmers and other data processing technicians from proprietary schools, and one leading proprietary school, the Restaurant School, is generally credited with having played a major role in spurring Philadelphia's "restaurant renaissance."

- As noted earlier, in survey after survey employers' primary concerns are with basic skills and the work ethic, not occupational training, although a basic grounding in occupational skills is cited as important by the majority of employers who hire

directly from secondary schools, and some firms seek specific and relatively advanced job skills in specific trades.

- Large employers, including most banks, Bell of Pennsylvania, and insurance companies, have been steadily expanding in-house training staff and programs in the past ten years, for both executive training and employee training.

- Some companies do offer basic skills instruction to their employees, typically either through contracts with schools, community colleges, or individual vendors. VIZ, for example, has contracted with the Adult Education Department of the School District to teach English as a Second Language (ESL). Bell of Pennsylvania has contracted with a nonprofit consortium of local colleges and community colleges.

- However, the majority of companies do not as yet offer basic skills training, and there is general reluctance to do so. "That's not our business—that's what the schools are supposed to do," said one executive, rather plaintively; and some others who see the need (e.g., United Hospitals) do not have the money.

Finally, there is growing involvement with the public schools, in particular, in a number of dimensions, as discussed immediately below. While not focused exclusively (or even primarily) on education for employment, in the past year both top school officials and business leaders have begun to give high priority attention to the comprehensive high schools and their failure to prepare most students (if dropouts are included in the base) for participation in the labor force. Some ambitious plans have emerged from this concern.

School/Business Partnerships and Education for Employment

Through the 1970s and early 1980s, there was very little interaction between business and the public schools—in part, no doubt, because the Philadelphia schools had a corrupt administration with a severely tarnished image, and, in part, because employers were enjoying a labor surplus. Against a backdrop of a reform school administration and tightening labor markets, this is changing.

First, more companies are beginning to look at the schools as a source of recruitment for entry-level labor as other supply sources (i.e., immigration, women reentering the labor market) decline. Provident Bank, VIZ, and Strawbridge's, for example, are all in this category: Provident has stepped up recruiting at high schools

throughout the region; VIZ has established a relationship with a nearby high school; and Strawbridge's vice-president for human resources is developing a plan.

Some employers have gone farther. For example, Provident, Prudential, and Aetna, and a consortium of mid-sized insurance companies have initiated small programs which offer summer jobs to tenth graders and then provide part-time or summer employment right through graduation, at which time successful performers are guaranteed jobs. In Provident's program, students also participate in company-sponsored education and training programs during the summer. If they become full-time employees, they are eligible for the bank's tuition reimbursement program and can mix college with work. Two other banks are considering similar programs.

Beyond these efforts by individual companies, education for employment has been a major—and growing—concern of the Committee to Support Philadelphia Public Schools. This is the city's major school/business partnership. The Committee is formed of eight CEOs, six college presidents, and two foundation chiefs. It has designed and implemented a number of initiatives in partnership with the schools, whose annual budget exceeds $5.4 million. These include programs to strengthen math and science education, the humanities, programs of management assistance, in-depth analysis of financial needs, and education for employment.

The committee began an education for employment initiative in 1985, which, after starting in one high school, is now being implemented on a pilot basis in nine high schools and twenty middle/junior high schools. It includes a dropout prevention program for highly at-risk seventh through tenth graders—a program which has been quite effective on a small scale at improving attendance, promotion rates, and holding power; and establishing employment centers which, in conjunction with the Private Industry Council and the State Job Service, provide career counseling, job readiness training, develop work experience opportunities, and offer job placement assistance to graduates. The employment centers have resulted in a doubling of the numbers of students receiving work experience in the pilot schools.

The framers of this initiative viewed these pilot programs—which serve no more than ten percent of the students in any of the pilot sites—as a holding action, at best, pending an opportunity to address more broadly and systematically the questions of

education for employment and the revamping of vocational education, especially in the comprehensive high schools.

In 1985, the school district was not ready to address these issues on a large scale. In 1989, it did begin to, as a result of several developments including

- gentle but persistent prodding from the business community through the Committee to Support Philadelphia Public Schools, the High School Academies Association, and others;
- national attention focused on education for employment issues through such reports as *Workforce 2000* and *The Forgotten Half*; and
- an eight-million dollar grant from the Pew Charitable Trusts to support a massive restructuring of the comprehensive high schools, in part, aimed at cutting dropout rates and improving the employment rates of high school graduates.

Top school officials argue that improving education for employment in the high schools would require not only placing greater focus on it in the schools, but also overhauling vocational programs and increasing business community involvement. Accordingly, the Committee to Support Philadelphia Public Schools has recently agreed to assume responsibility for guiding overall restructuring of education for employment activities in the comprehensive high schools, and has begun to do so, working closely with school officials, on three major fronts:

1. Development of a new systemwide plan for career and vocational education. (The employer evaluations of vocational education discussed in this section were the first step in the development of this plan.)
2. Working directly with teams of teachers in comprehensive high schools to make "education for employment"—a concept which includes but is not limited to occupational training—an integral part of the school restructuring plans.
3. Organizing employers for much greater involvement in planning, evaluating, and delivering occupational education, as well as in providing work experience for students and hiring of graduates on a priority basis.

The (still-evolving) plans for this effort are complex and long-term and cannot be treated in detail here. The major themes, however, can be briefly summarized:

- Every comprehensive high school will be expected to provide a carefully planned, individualized program of "employability services" to all students in a sequence spanning grades nine through twelve and operating both after school and during the summer.

- The delivery system for vocational offerings will be changed substantially as follows:

    - Most trade and industry programs in the comprehensive high schools will either be eliminated entirely or replaced with High School Academies programs, jointly run by business and the schools, or by other off-site, employer-based programs such as apprenticeships, cooperative education, and for-credit on-the-job-training opportunities.

    - One skills center will become a comprehensive AVTS school and the other will probably merge with a comprehensive AVTS, ending the "week-about" pattern which has proven unable to attract students.

    - All occupational courses will be redesigned as broad-based programs (in contradistinction to "job specific") with the following characteristics:

        - Close integration of vocational and academic content.

        - Heterogeneous student grouping.

        - Deferral of occupational training, in most cases, until eleventh grade or later.

        - Articulation of secondary occupational courses with postsecondary education and/or training at community colleges, four-year colleges, trade schools, union, or employer training programs.

- Comprehensive high schools will continue to offer business education, with greater use of cooperative education and integration of basic skills instruction into the business education program.

- Technology education, with a strong emphasis on applied physics and mathematics, will be offered in a variety of forms in all comprehensive high schools.

An important aspect of this initiative, it should be noted, is to expand three-fold the High School Academies program which has been the brightest spot in vocational education in the comprehensive high schools. The academies have adopted a plan and begun raising the funds and attracting the employers needed to expand from sixteen-hundred to five-thousand students—roughly 12.5% of the comprehensive high school population. If they achieve this goal, the academies will enroll approximately the same number of students as the trade and industry programs do today, and they will have effectively replaced those programs.

In short, there is a significant increase in business involvement with the public schools, much of it fueled by the widespread perception that the economic and social costs of an ill-prepared workforce could be devastating to the city in the next decade, and much of it attempting, as well, to address the issues confronting vocational education in the cities which have been reviewed in this report.

Conclusions and Policy Implications

In broad perspective, vocational education in the Philadelphia area appears to be thriving at community colleges and losing a war of attrition at the secondary school level. It is tempting to conclude that this divergence reflects changes in the labor market—especially higher cognitive requirements—which, in turn, require more years of formal schooling before an individual can benefit from occupational training.

Granting that some education inflation has occurred, and that the correlation between more years of schooling and higher levels of cognitive functioning is far from perfect, there is some evidence to support this broad view. The growth areas in the region's economy are in high-end jobs (e.g., professional, managerial, and technical) which typically require more than a high school degree, and in low-end jobs (e.g., counter sales and low skill service jobs) which do not warrant an investment in vocational education. Clearly, the community colleges, with extensive involvement in training of nurses, allied health professionals, paralegals, and a host of computer-related technical

jobs, have responded to key markets where cognitive requirements are high. In addition, outside Philadelphia, community colleges have been fairly aggressive in pursuing customized training contracts with firms who are upgrading their workforces—particularly small- to medium-sized manufacturing concerns adapting to new technologies.

While changes in the labor market explain much of the growth of occupational education in community colleges, the predominant reason for the overall decline of occupational education at the secondary level is not clear. There remain a substantial number of occupations requiring some preservice training in which demand for high school graduates is strong. A wide range of employers, for example, are available to snap up business education students who are reliable and can type over forty words a minute, often at wages of ten dollars an hour and more. While documentation is weak, principals of AVTS schools make a convincing anecdotal case that they have found niches in the labor market and can (at least in a reasonably strong labor market) place virtually everyone who completes their program. The principal of Philadelphia's Randolph Skills Center refuses to consider placing students in jobs that pay less than $6.50 an hour, but at Randolph and many other vocational facilities, enrollments are plunging. Paradigmatic is the case of the Montgomery County AVTS director whose school board appropriated more money than he requested, who has a machine shop with $500,000 in new equipment, and an active advisory committee of employers hungry to hire—but only eleven students enrolled from a half-dozen sending schools. "Everything is in place except the students," he lamented.

In short, the decline in secondary vocational enrollments seems much sharper than can be explained by labor market trends, unless one assumes that students have deeply discounted the future value of available training. The more likely explanation lies in the interaction of three factors: (1) the (presumably unintended) consequences of state regulations; (2) a failure of vision; and (3) rigidities built into the governance and institutional structure of secondary vocational education in much of the region which limit its ability to adapt to new conditions.

As noted, vocational enrollments were rising, despite overall decline in secondary enrollments, until 1983 when the state simultaneously adopted increased academic requirements for graduation and tightened up on requirements—notably, number of credit hours—for approved vocational courses. These actions choked off demand for vocational education, as vocational classes were crowded out of the curriculum and, ironically, tended

to reinforce dysfunctional distinctions between vocational and academic education—distinctions which only make sense, however strained, if one assumes vocational education is the alternative track for academically inept students (as, indeed, the dumping ground stand the vocational tradition has assumed).

Surely, any vision of secondary vocational education worthy of a future must be based on a thorough integration of vocational and academic learning. That is, higher education and employment need to be viewed as complementary goals of secondary education. High academic standards must be built into vocational programs, and occupational themes should be employed as a context for the development of cognitive skills. While some lip service has long been paid to the idea that vocational settings can enhance academic learning for students who do not achieve well in traditional classroom settings, there are relatively few examples in the Philadelphia region of programs which have rigorously and aggressively pursued this vision. Rather, for the most part, math and English remain math and English, and "voc" is "voc," with vocationally certified teachers complaining that the academic side of the house sends it ill-prepared students, and academic teachers assuming that is precisely whom they should send!

In the case of suburban AVTS schools and the Philadelphia skills centers, schools which offer no academic instruction and which students attend on a "day-about" or "week-about" basis from home sending schools, institutional form stands in the way of integrating vocational and academic instruction. Some AVTS directors in the suburbs have expressed an interest in becoming comprehensive vocational schools, by adding academic classes. Not all facilities are designed to permit this, and in a time of declining enrollments they would be competing for students with school systems whose representatives constitute the AVTS board.

Therefore, unless some strong counter measures are taken through state leadership, the ten suburban AVTS schools appear likely to wither away or be recycled into some new use for a different target population. If so, secondary vocational education in the suburbs will return to the local education agencies (LEAs) and comprehensive high schools from which it was severed in 1963. Decisions as to what to offer and how to deliver it will be in the hands of sixty-one different school districts, so wide variation in practice will no doubt follow.

Potentially, at least, the possibility of a reformed vocational system appears considerably stronger in Philadelphia, where "education for employment" is viewed as one of the themes which can help revitalize the high schools. Since seventy percent of the students who leave the high schools in that city (combining dropouts and graduates) currently do not go directly into further education, there is a logical imperative to this view.

In Philadelphia, it appears likely that the "week about" skills centers will become comprehensive vocational schools—one standing alone and one serving as an annex to an existing comprehensive AVTS. While the comprehensive AVTS schools are somewhat uneven in quality and do not actively integrate vocational and academic education, they are able to accommodate both, by virtue of a longer school day and moderate selectivity of students. Given the relative success of these schools, planners have decided to leave the AVTS schools alone, for the foreseeable future, on grounds that "if they ain't broke, don't fix them." Rather, the emphasis is on overhauling the programs in the comprehensive high schools, as described briefly earlier.

Planners believe that this program has considerable potential for improving the educational and economic attainment of minority students, especially if the following occur:

- The envisioned expansion of the High School Academies occurs and becomes the predominant mode of delivering occupational education in the high schools.
- High levels of employer involvement can be secured and sustained in a wide variety of roles, from designing, evaluating, and sometimes delivering vocational courses to providing work experience and hiring of graduates.
- There is sustained commitment on the part of educators in the system to develop, test, and refine the programmatic and pedagogic strategies necessary to integrate vocational and academic education in mutually supportive ways.

It is perhaps surprising that the Community College of Philadelphia (CCP) has placed so little emphasis on occupational education, given both community needs and the apparent success of those programs it has run. To some extent, the underdevelopment of occupational programs at the community college appears to reflect the priority the last president placed on academic subjects and transfers into B.A. programs, an irony given the fact that—by virtue in part of admission requirements—the occupational students at CCP

are among the stronger academic students there. The example of the suburban community colleges, as well as community colleges in other urban areas, suggests that CCP can play a much greater role in occupational education to the benefit of its students, both minority and majority, as well as to the benefit of local employers. What it will take to do so is aggressive leadership in this area and support for strong marketing efforts to industry and work in developing ties and programming linkages not only to four-year colleges but also to the schools, the welfare system, the JTPA system, and other sources for the recruitment and effective induction of more minority students into CCP.

In sum, a revised and revalued vocational education system, one which breaks down invidious distinctions between vocational and academic, has the potential to contribute much more than it currently does to ameliorating the education and employment needs of minorities in Philadelphia. Achieving this potential remains, however, a daunting task. Major conceptual, programmatic, and institutional changes are required at both the secondary and postsecondary levels. In the context of the Philadelphia area economy, with its rapid degree of decentralization of both population and economic activity on the one hand, and centralization/segregation of poverty and minority groups on the other, it remains an open question as to how much the education system, however dynamic and however configured, can do.

CHICAGO

Introduction

Chicago, as much as any city, came to stand for failure of urban education in the 1970s and 1980s. The public school system was bankrupt in 1979 and a few years later, President Reagan's Secretary of Education, William Bennet, labeled the Chicago Public School system the "worst in the nation." During the 1970s and 1980s, the Chicago metropolitan area also experienced profound economic changes. Chicago has always had a diversified economy in which service and financial institutions such as Sears Roebuck and Company and the Chicago Mercantile Exchange have played important roles and, as in other cities, the service sector grew throughout the 1980s. Nevertheless, heavy manufacturing industries such as meat packing and steel comprised the foundation of the city's economic and political structure. These industries were not just important economically, but their owners and managers and the unions that represented their workers played key political roles in the city. The virtual collapse of these industries in Chicago during the 1970s and 1980s in particular marked the developments of these decades. Chicago and New York both experienced a shift from manufacturing to services, but if New York was a case of an exaggerated growth of services, especially business services, Chicago was more characterized by its exaggerated decline of heavy manufacturing.

At the same time, the city's demographics have shifted. During the post-War years, the African-American population grew dramatically and, as a result, African Americans have gained power in local Chicago politics. More recently, while the size of the African-American population stabilized, the Hispanic population growth has picked up.

How did the education system in Chicago respond to this population and economic transformation? Certainly, racial conflict has dominated the reform movements of the 1960s, 1970s, and 1980s. The most significant reform before the late 1980s was the development of the magnet schools as part of court-ordered desegregation plans. As in many other cities, the magnet program in Chicago was designed, in effect, to encourage whites to attend school with African Americans or other minorities by creating special schools and programs with access to extra resources. The desegregation effects of the plans have almost become moot, however, as the white share of the students in the Chicago Public Schools dropped to twelve percent at the end of the 1980s.

Direct responses to the economic transformation of the city have otherwise been minimal. The vocational offerings have shifted from teaching manufacturing-oriented skills to preparing students for clerical and office-oriented occupations, but this only affects a minority of students. In contrast to cities in many other states, the *A Nation-at-Risk*-like reforms in high school graduation requirements—what we have referred to as the quantitative reform strategy—did not have a strong effect in Chicago. A reform in 1984 made only marginal changes in high school graduation requirements. Since then, many groups and commissions have met to create further revisions, but few have ever presented concrete proposals to the board.

Other state and local initiatives during the early and middle 1980s only met limited success—many were never implemented. The integration of vocational and academic education and other elements of what we have referred to as the integration reform strategy had some support, but these, too, never penetrated the surface of school policy. Similar reforms made more headway in New York and Philadelphia.

The community colleges in many parts of the country are key institutions in the educational response to the changing economy and skill needs on the job and Chicago's City Colleges did develop programs designed to address the needs of employers. Nevertheless, as the basic skills deficiencies of the population became clear during the 1980s, the City Colleges focused increasingly on remedial and adult basic education (ABE).

Certainly, the most significant reform initiative in Chicago at the beginning of the 1990s involved a radical experiment with school governance. In 1989, all of the 524 public schools in Chicago came under the direction of local school councils (LSCs) which had the authority to hire and fire the principal and to distribute funds allocated by the board of education. Thus, after years of stalled educational reform, reformers succeeded in developing a governance structure that, in theory, could lead to significant changes without the approval or even participation of the central board of education. As implementation of this reform only started in 1989, in the early 1990s, it is too early to assess its effects.

We shall argue that in order to understand the reform movements in Chicago, three factors must be considered. The first is the previous importance and subsequent demise of the factory economy; the second is the strength and salience of local politics in Chicago;

and the third is the extreme level of racial polarization in the city. These factors have overwhelmed and shaped school reform and have limited the role that vocational education could play in the development of a new educational reform movement. Indeed, substantive reforms of the schools have made very little progress. These three factors also help explain, in the face of stalled board-led reform, why Chicago has turned to such a radical reform of its school governance.

In the next section, we describe in more detail the economic and demographic transformation of Chicago during the 1970s and 1980s. The following section provides an overview of the educational system in Chicago. That section emphasizes in particular the extent of racial segregation in the system. We then turn to a brief history of the development of vocational education in Chicago ending with a discussion of the reforms of the 1980s. The subsequent section discusses the extent of the implementation of the integration strategy in Chicago. The City Colleges are next discussed along with general conclusions which comprise the final section.

The Chicago Economy and Population

Chicago is the nation's third largest urban center and was a focus of industrial and political power in urban America just a generation ago. The only world city between the coasts, the Chicago area has faced economic decline, demographic transformation, and political collapse in the last generation. All of this has happened at the same time the city was experiencing the largest downtown building boom in its history, the development of one of the world's most expensive shopping districts on North Michigan Avenue, and very visible gentrification in a limited number of neighborhoods. A short distance from the new skyscrapers in the Loop, however, are wide stretches of dying inner city slums.

Much of Chicago's older economy has been devastated by the rapid growth in international competition and the radical shrinkage of its factory economy and its powerful labor union workforce. Chicago also faces profound challenges caused by the huge in-migrations and out-migrations that have made whites a rapidly shrinking majority in the metropolitan area. During the 1960s and early 1970s, greater Chicago was experiencing a strong economic boom, its political machine, one of the strongest in the nation, exercised power at both state and national levels, and it had a base of well-paid blue- and white-collar

workers. By the late 1980s, Chicago had become a city of huge boarded-up plants, many neighborhoods with few homeowners or middle-class residents, and racially polarized politics that left higher levels of government largely powerless even as the city's needs for assistance soared. It became a city characterized by dazzling wealth among parts of the Lakefront and the Loop, a shrinking middle class, and large and spreading economically and socially devastated communities.

Job opportunities and the needs of the labor market also changed. Young people needed better training and education, but the institutions charged with providing that appeared much weaker. Chicago's young were growing up in a society of deeper economic inequalities and much weaker government programs for redistribution of opportunities.

A new economy and a new social structure were growing, primarily in the suburbs, as the old one decayed. The new service economy, however, did not have the relatively well-paying jobs for poorly educated workers that had been provided by the older factories. The entry-level workers demanded by the growing sectors of the economy were much more likely to be young women working on computer terminals than young men needing strength and skill with their hands. The same young man who could have made an excellent worker a generation ago in the stockyards or in handling the molten metal in a steel mill might well be unemployed in Chicago at the beginning of the 1990s.

The Economy

Table 30 displays the distribution of jobs among the main industrial sectors in Cook County in 1970, 1980, and 1987. (Chicago accounts for most of Cook County.) Between 1970 and 1980, Cook County lost 135,000 manufacturing jobs. This loss continued throughout the 1980s. In 1970, manufacturing accounted for thirty percent of jobs in the county, but that share had dropped to twenty-two percent by 1987. Heavy manufacturing was particularly hard hit. Primary metal and transportation equipment manufacturing each lost more than forty percent of their jobs over this seventeen year period. Machinery manufacturing, which accounted for about ten percent of Cook County employment in 1970, lost over fifty percent of its jobs by 1987, dropping its share from one tenth to one twentieth.

The decline of the steel industry is a graphic example of the fate of Chicago's heavy industry. During the period from 1981 to 1987, the employment of the nation's steel industry dropped fifty-eight percent and more than one-fourth of the productive capacity was eliminated. The base wage in the 1980s fell sharply in real dollars. Although during this period the share of U.S. steel jobs in the Illinois-Indiana area actually increased, the absolute number of steel-related jobs in metropolitan Chicago and Northwest Indiana fell from 497,000 in 1978 to 299,000 in 1988, a forty percent drop. At Inland Steel, the largest steel company headquartered in Chicago, ten-thousand employees were cut at the mills and a thousand in management (Barry, 1989, pp. 16, 19).

By 1988, many of the large steel company losses of the early 1980s had been recouped and in some cases they were earning large profits, but the jobs did not come back (Siler, 1988). In any case, a significant number of the remaining jobs, particularly in new plants, were being moved away from the cities by companies looking for lower costs and a nonunion labor force (Barry, 1989, p. 19).

Table 30 also shows the pattern of growth of service industries. While overall employment in Cook County barely changed between 1970 and 1987, finance, insurance, and real estate (FIRE) grew by almost fifty percent and services grew by over sixty percent despite a twenty-eight percent drop in personal services. Business, health, and legal services all grew by very large percentages. In general, growth was in industries in which good jobs required substantial education.

Table 30

Chicago Employment Distribution by Industry 1970, 1980, and 1987

Industries	Number of Employees 1970	Distribution (Percentage of total)	Number of Employees 1980	Distribution (Percentage of total)	Number of Employees 1987	Distribution (Percentage of total)	Percent Change 1970-1987
TOTAL	2,227,054		2,312,659		2,213,434		-0.61
Agriculture/Mining	5,193	0.23	5,730	0.25	5,779	0.26	11.28
Contract Construction	91,408	4.10	96,888	4.19	91,400	4.13	-0.01
Manufacturing	817,985	36.73	682,455	29.51	490,863	22.18	-39.99
Food and Kindred	71,344		50,793		43,623		-38.86
Apparel	20,367		12,722		9,836		-51.71
Printing and Publishing	83,210		66,675		61,573		-26.00
Chemicals	32,663		23,970		19,955		-38.91
Primary Metal	58,289		45,126		18,514		-68.24
Fabricated Metal	93,960		83,549		63,526		-32.39
Machinery	215,591		168,349		110,947		-48.54
Transportation Equipment	26,247		29,232		15,369		-41.44
Transportation and Public Utilities	160,900	7.22	144,639	6.25	136,828	6.18	-14.96
Wholesale Trade	205,871	9.24	190,805	8.25	188,746	8.53	-8.32
Retail Trade	373,202	16.76	392,599	16.98	401,106	18.12	7.48
Finance, Insurance, and Real Estate	165,977	7.45	216,306	9.35	241,400	10.91	45.44
Services	401,311	18.02	572,329	24.75	653,058	29.50	62.73
Personal	37,002		25,370		26619		-28.06
Business	89,351		128,754		153,124		71.37
Repair	20,866		24,090		27,528		31.93
Health	85,589		150,509		171,879		100.82
Legal	9,981		20,618		30,766		208.25
Educational	38,569		53,591		52,987		37.38
Social	N/A		23,099		30,047		N/A
Nonclassifiable Establishments	5,207	0.23	10,908	0.47	4,254	0.19	-18.30

Source: U.S. Department of Commerce, Bureau of the Census, (1970, 1980, 1987).

The Population

The high population growth rates of previous decades in both Chicago and Illinois were also reversed in the 1970s and 1980s. Illinois grew by 10.2% in the sixties but only 2.8% during the next decade. The change in metro Chicago was more dramatic, declining from a 12.1% growth to a 1.8% increase. The Chicago Department of Planning projected a stable population but large racial changes within the city of Chicago. The 1989 report predicted substantial white decline, a continuing out-migration of both African Americans and whites, and a growing Hispanic population. During 1980-1985, Chicago reported a net annual out-migration of eighteen-thousand whites and seventy-seven hundred African Americans and a net Hispanic in-migration of twenty-five hundred.

Thus, the city population was expected to decline from forty-six percent white in 1980 to thirty-two percent white in 2010, while the African-American fraction was expected to rise slowly to forty-four percent and the Hispanic numbers to jump from fourteen percent to twenty-four percent. Among children under fifteen, the proportion of African Americans was forecast to reach forty-nine percent, Hispanics thirty-one percent, and whites only twenty percent. Within the population between fourteen and forty-five, whites were expected to decline from forty-four percent to twenty-nine percent by 2010 (Chicago Department of Planning, 1988, pp. 1-21).

As the minority share of the population and workforce is growing, the relative economic position of minorities and especially African Americans has deteriorated. The entire state had higher unemployment levels than the national average and an even worse relationship between white and African-American levels of joblessness than the nation as a whole. In 1980, unemployment for African Americans in Illinois was about twice as high as it was for whites in the U.S. During the 1980s, however, the relative situation of African Americans deteriorated substantially on a national level and even more rapidly in the State of Illinois. In the nation, African Americans became about 2.5 times as likely as whites to be jobless while in Illinois the ratio went over three to one in the most recent three years for which data is available (Table 31).

Table 31

Illinois Unemployment by Race
1975-1987

Year	Percent (%) White	Percent (%) African American	African American/White Ratio Illinois	U.S.
1975	6.3	13.4	1:2.1	1:1.8
1980	7.3	15.5	1:2.1	1:2.3
1985	6.9	24.7	1:3.6	1:2.4
1987	5.8	18.1	1:3.1	1:2.5

Source: Calculated from data in Illinois Department of Commerce and Community Affairs, 1988.

Increasing Economic Polarization

During the period from the mid-1970s to the 1980s, the Chicago area saw growing economic division, widespread poverty of young families and terrible problems for female-headed families, particularly in the inner city. In 1975, the average white household in the city had an income that was seventy percent of the average suburban family. The average city African-American family had forty-three percent as much income as the typical suburbanite family and the average Hispanic family fifty-nine percent. By 1983, the ratio was unchanged for white families in the city, but the African American household's income was down to thirty-five percent of the suburban norm and the Hispanic household in Chicago had only forty-eight percent of the suburban average (Fossett & Orfield, 1987, pp. 165-172).

The changes contributed to the emergence of large sections of the city which had concentrated poverty and many aspects of "underclass" life. William Julius Wilson (1987) notes the spread of poverty and isolation:

> whereas only sixteen of Chicago's seventy-seven neighborhoods were designated community poverty areas in 1970 . . . by 1980 . . . the number of community poverty areas had increased to twenty-six and nine of these were extreme-poverty areas.
>
> whereas only five community areas in Chicago had an unemployment rate of at least 15 percent in 1970, by 1980 twenty-five community areas did. (p. 50)

Unemployment data shows that within the city of Chicago itself, African Americans, especially African-American men, were doing particularly badly in the labor

market. During 1987, white, African American, and Hispanic males were more likely than females to be jobless (see Table 32). Among young people, the disproportions are striking. There is an extraordinarily low level of labor force participation and of employment for young African-American men throughout the last two decades (see Table 33).

Table 32

Unemployment Rates by Race and Sex, Chicago 1970-1987

	Whites	African Americans	Hispanics
Males			
1970	3.2	6.3	4.9
1980	6.6	17.5	11.2
1987	8.3	18.9	11.5
Females			
1970	3.3	7.7	6.5
1980	5.6	14.2	13.9
1987	6.6	15.1	8.7

Source: Current Population Survey Public-use Tapes.

Table 33

Employment and Unemployment Rates By Race, Sex, and Age Chicago, 1987

	Whites	African Americans	Hispanics
Males 16-19			
Percent Working	45.7	14.3	42.1
Percent Unemployed	13.6	59.7	10.4
Females 16-19			
Percent Working	36.7	20.0	16.7
Percent Unemployed	15.6	42.8	36.7
Males 20-24			
Percent Working	80.0	52.9	90.5
Percent Unemployed	9.8	26.8	3.6
Females 20-24			
Percent Working	62.9	37.7	40.9
Percent Unemployed	8.2	20.8	7.6

Source: Current Population Survey Public-use tapes.

Thus, a significant majority of Chicago's potential workers in both age categories were African American or Hispanic but a large majority of those who actually had jobs

were white. Low levels of employment are reported for young African-American men and young Hispanic women. Only one-seventh of sixteen- to nineteen-year-old African-American men had jobs and only one-sixth of Hispanic women in the same age group. Forty-six percent of white males and forty-two percent of Hispanic young men had jobs (see Table 33).

Politics

Chicago was long known as a community with powerful locally oriented business leadership with the capacity and will to take strong action, but Chicago's economic transformation weakened particularly the city's political elite. New York's economic crisis of the 1970s actually strengthened that city's traditional elite, based as it was on the financial and related services which prospered in the crisis aftermath. In contrast, Chicago's elite was centered in the very industries hurt the most by the economic transformation. Thus, during the 1980s, Chicago's largest firms faced profound transformations, often involving loss of local leadership. In local matters, the city's business leadership had far less interest and power than in previous decades. Many executives were transferred in and out by multinational firms that are based elsewhere and provided little opportunity or reward for strongly identifying with Chicago problems. Very few businessmen had serious contacts with local minority political leaders, who played a very large role in contemporary city politics. Businessmen, obviously, would have liked a better educated workforce and more effectively run institutions, including schools and job training, but there was little concrete agreement about large institutional changes. As a number of city institutions passed under African-American control, the business leaders, who were virtually all white, played a receding role with little coherence and little real leverage.

The Public School System

In 1990, there were over five-hundred public schools in Chicago, sixty-four of which were high schools. Two, Lane and Lindblom, were selective college preparatory "technical" schools drawing from separate halves of the city. Eight were vocational schools which served the whole city. Students must apply to these schools, but the schools had varying levels of formal selection criteria. Ten schools were classified as "magnet" schools. These schools were set up in the early 1980s as part of a desegregation

plan. They were provided with additional resources and had to comply with guidelines concerning the racial distribution of their students. Six additional schools were classified as "community academies." These usually were based on a particular pedagogic approach such as the Paideia Program at Austin High School. Other academies emphasized computer-assisted instruction. Finally, the remaining thirty-eight schools were general neighborhood schools that were open to all students in the appropriate neighborhood. Almost all of these general schools had some specialty magnet-like programs housed in them with some various substantive as well as racial entry guidelines.

In 1989, there were a hundred-thousand students in high schools in the Chicago Public School System. Table 34 presents the racial distribution of these students. Only twelve percent of the students were white, sixty percent were African American, and almost a quarter were Hispanic.

Of course, the Chicago Public School System is only a part of the overall education system in the Chicago metropolitan area. In addition to the public schools and community colleges, there are very large parochial systems in the area and private postsecondary education has expanded rapidly, relying heavily on federal scholarships and guaranteed loans. Parochial schools offer little specific vocational training, having a strong focus on academic subjects and fewer curricular options. In addition, the state operates adult education and significant numbers of young men receive some training and eligibility for future training in the armed forces. There are also eight two-year community colleges (The City Colleges of Chicago). These schools offer terminal occupational programs, academic programs designed for transfer to four-year colleges, and a wide variety of nondegree adult education programs in basic literacy, ESL, and job training. Overall, metropolitan Chicago contains fifty-five general purpose colleges, thirty-three of them granting B.A. degrees.

Table 34

Chicago Student Racial/Ethnic Composition (by Type of School), October 31, 1989

	Total Students	White	Percent (%) Distribution	African American	Percent (%) Distribution	Total Hispanic	Percent (%) Distribution	Other	Percent (%) Distribution
General/Technical	64,516	9,972	15.5	35,566	55.1	16,256	25.2	2,722	4.2
Vocational	11,644	348	3	10,360	89	905	7.7	31	0.3
Magnet	14,116	1,915	13.5	8,198	58.1	2,838	20.2	1,165	8.3
Community Academies	10,513	196	1.9	6,358	60.5	3,894	37	65	0.6
Totals	100,789	12,431	12.3	60,482	60	23,893	23.8	3,983	4.0

Source: Chicago Public Schools, Racial/Ethnic Survey—Students as of October 31, 1989.

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Race and Segregation in Chicago Schools

Race-related political conflicts have dominated the history of the Chicago Public Schools in recent decades. In the 1980s, whites accounted for a dwindling share of the Chicago area's school population and the system was increasingly segregated. Even in the wider metropolitan area, the school age population was approaching fifty percent nonwhite in the mid-1980s. Fall 1988 enrollments showed 47.5% nonwhite enrollment in the metro region (Illinois State Board of Education, 1989) The city of Chicago predicted that its school age population will be only about one-fifth white by 2010, even counting the students enrolled in private and parochial schools. Well-established trends show that the suburban white enrollment has been dropping rapidly for some time and that public school enrollment across the entire metropolitan region should be predominantly minority by the early 1990s. By 2010, estimates suggest that the Chicago public school population will be approximately two-thirds nonwhite, with a very large Hispanic enrollment.

The metropolitan Chicago white public school enrollment dropped by fifty-two percent between 1978 and 1988 while the total minority enrollment remained virtually unchanged (Orfield, Monfort, & Aaron, 1989, Table 2). During the same period, there was also a substantial drop in the Catholic school enrollment; from 1981 to 1985, for example, white enrollment in the Chicago archdiocese schools servicing Cook and Lake Counties fell by eleven percent (Orfield, 1988, Tables 7-22, 7-24).

The trends changing the public schools of Chicago have been in place for many years. The school district's enrollment fell twenty-six percent between 1967 and 1986, declining from forty-one percent white in 1967 to twelve percent white in 1988. Its percent of African-American students increased slowly—fifty-two percent in 1967 to sixty percent in 1988. The number and percent of Hispanics soared from nine percent in 1968 to twenty-five percent in 1988 (Orfield & Monfort, 1988; Houston, 1989).

The schools of Chicago, the metropolitan area, and the State of Illinois were extremely segregated and minority schools were inferior on most measured criteria. There has been a very high level of African-American segregation and a sharp increase in Hispanic segregation since the 1960s, and in the mid-1980s, predominantly minority schools in almost all cases enrolled the most economically disadvantaged students and had the lowest levels of educational achievement.

In the schools of metropolitan Chicago in 1986, the typical African-American student was in a school with ten percent white students and the typical Hispanic student was in a school with twenty-one percent whites. Within the city of Chicago, eighty-one percent of the African-American students and fifty percent of the Hispanics were in segregated schools with ninety to one hundred percent minority children. The typical African-American student was in a school with only six percent whites and the typical Hispanic student was in a school that was seventeen percent white. For African-American students, it was a level of extreme racial separation that made Illinois the most segregated state in the country for African Americans throughout the 1980s. For Hispanics, the level of segregation increased very rapidly from 1968 to 1986 (Orfield & Monfort, 1988; Orfield, Monfort, & Aaron, 1989).

This segregation is closely related to poverty and educational opportunity. In metropolitan Chicago in the 1980s, African-American and Hispanic schools, with few exceptions, were schools with large fractions of low income students and severe educational problems. They were schools serving communities with high unemployment rates, low incomes, severe housing problems, lack of basic safety, poor health conditions, low parental education, and few models of success or sources of information on higher education or good jobs. White schools were never predominantly poor, and there were fewer teachers and counselors per thousand students in the minority high schools. There was also a strong relationship between race, poverty, and school achievement, as measured by the average ACT score—the dominant college entrance test in the Midwest. Table 35 shows the broad contrasts between the city high schools and those of the entire suburban ring, as well as data for the most prosperous suburban county, DuPage.

Table 35

City and Suburban High School Characteristics

	Chicago	Suburb Total	Du Page
Percent Minority	80.5	13.9	3.7
Percent Low Income	44.7	6.8	1.8
ACT Score	11.9	19.8	21.4
Percent Taking ACT	46.5	60.8	67.1
Dropout Rate	47.7	8.5	2.4

Note: ACT=American College Testing examination.

Source: Orfield & Mitzel, 1984.

Almost all city high schools had a greater number of lower income students than any suburban school and only one of sixty-five city high schools had test scores higher than the suburban average. The correlation between the percent of African-American and Hispanic students in a school and the percent of low income students was an astonishing .92. The relationship between the percent minority and graduation rates was .83 and the correlation between percent minority and the average ACT score at a school was .92. These relationships were so high and so consistent that one could predict a great deal about the students at a school knowing nothing but the school's racial statistics with no information at all about the educational programs. Two decades after the Elementary and Secondary Education Act, the Headstart program, and a variety of other state and federal reforms, this is a profoundly disquieting picture. It indicates that the schools have been much more effective in reflecting underlying economic and social differences than in changing them.

The changing nature and location of jobs, the persistent unemployment and concentrated poverty almost untouched by the economic expansion of the 1980s, and the deep and lasting racial inequalities in all institutions provide the context for reform of the Chicago educational system. In the next section, we shall examine the history of vocational education and its relationship to race, politics, and the nature of the economy in Chicago.

The Development of Chicago's Vocational Schools

There have been disputes about the proper role of the schools in preparing the young people of Chicago for the labor market throughout the twentieth century. Chicago has had very strong advocates of strikingly different approaches to vocational education and has produced educational institutions and programs reflecting the varied goals of the vocational movement. The development of vocational education has also been closely associated with struggles over racial integration and improved minority education in Chicago.

This history is important because it has shaped the potential not only for reform of vocational education, but also for the development of a broader educational reform strategy in the city in which the integration of vocational and academic education could play a key role. The story of the development of vocational education in Chicago illustrates several

points. First, in Chicago, organized labor which was closely linked to the nature of the Chicago economy had a strong influence on the evolution of education, especially vocational education, in the city. Although the unions are now much weaker, the effects of their earlier influence has lingered. Second, in the past, there had been very close links between vocational education and the most important industries in Chicago. These links of course faded as those industries shrank, but the history of these relationships continued to shape the city's vocational program. Third, as we have seen in other cities, vocational schools, because they can be more selective than neighborhood schools, can be attractive to students for reasons other than their substantive content. Finally, the evolution of vocational education offers another opportunity to examine the historical interaction between race and education in a large urban setting.

Early Vocational Education Movement

The complaints of contemporary employers about the inadequate preparation of Chicago students for work echo similar comments from past generations. The business leadership of Chicago, operating through the City Club, strongly advocated vocational schooling in an important 1912 report. Business leaders argued that Chicago's education system during the first decade of the century was not adequate to meet the city's needs for skilled workers. The 1912 study showed that seventy-four percent of the businesses saw a shortage of skilled workers and nine-tenths favored industrial schools for fourteen- to sixteen-year-olds to help solve the problem. Business favored a separate system of public vocational schools but unions attacked them as a dead-end effort to channel working class students into limited career options. Industrialists backed a plan to create a vocational education system separate from the public school system. The unions and professional educators opposed this plan arguing that it would be too closely controlled by business. This idea was defeated in several sessions of the state legislature. After the federal government enacted the Smith-Hughes vocational education law in 1917, vocational education was firmly established under the control of the public school system. The unions would have preferred a stronger apprenticeship system under their control. Expanded vocational offerings in the high schools, which prevented predominant influence by either management or the unions, emerged from this struggle (Katznelson & Weir, 1985, pp. 154-160).

By 1930, the Chicago vocational system included three technical schools and the Washburne Trade School, which offered apprenticeship training for craft unions. William

Bogan, the Superintendent of the Chicago School system from 1928 to 1932, was an advocate of vocational education. Like other "progressive" educators, Bogan saw "voc ed" as part of general education for life rather than as training for narrowly defined skills but was unable to implement most of his ideas. Many of these arguments are voiced today by advocates of the integration of vocational and academic education.

Bogan's successor, Superintendent William Johnson, took the opposite perspective, advocating a much narrower employer-linked vocational program. He went so far as to advocate converting the entire school district to an overwhelmingly vocational emphasis, ending college-prep work for most students. The plan was harshly attacked by labor unions, the teachers' union, the Citizens' Schools Committee and others and was soon discarded. Johnson did, however, oversee substantial expansion of vocational education, including the creation of Jones Commercial High School, designed to train office workers, and the expansion and rehabilitation of the Washburne Trade School (Katznelson & Weir, 1985, p. 171).

Katznelson and Weir (1985, p. 176) argue that union participation had confined specific vocational education to these specialized schools. Despite close ties to business, the relatively small size of these schools prevented the predominant business control over training that the unions had feared. In order to assuage union fears that the Washburne Trade School would promote nonunion competition, the unions were given influence over entry into the Washburne apprenticeship programs.

Thus, these struggles resulted in a narrow employer-oriented vocationalism in separate schools purposely distinct from programs in the comprehensive high schools. Having thwarted broad-based business control and having secured control over participation in apprenticeship programs, union involvement in broad educational issues declined. This structure set the stage for the stratification and educational differentiation as well as some of the racial conflict that still plague the Chicago School System.

Some of the worst contemporary racial conflicts in Chicago have been generated by discriminatory practices in the apprenticeship programs. Ever since the African-American population began to make up a significant share of Chicago's population, efforts to desegregate schools have met with fierce white resistance. In 1930, African Americans accounted for just over five percent of Chicago's school enrollments (including Catholic

schools). By 1963, that share had risen to more than one-third (Havighurst, 1964, p. 54). As they are today, Chicago public schools were among the most segregated in the country and the intransigence during the early 1960s of Superintendent Benjamin Willis made him a national symbol of white resistance to African-American educational demands (Orfield, 1969, pp. 155-156).

This segregation was starkly reflected in the Chicago vocational education of the 1960s. In the middle of the decade, the vocational system was reviewed in a comprehensive survey of Chicago education prepared for the Chicago Board of Education by Robert Havighurst and researchers from across the country. The system then consisted of nine vocational high schools, the two technical high schools, Washburne Trade School, and industrial arts education in the general high schools. The two technical schools were highly selective and provided a heavier concentration in mathematics, science, and shopwork in technical fields to prepare students for admission to engineering, scientific, and technical studies. These schools were well on their way to the situation that would exist in the 1980s, when Lane Tech would have by far the highest achievement level of any Chicago high school and be overwhelmingly college preparatory.

During the early 1960s, school officials told researchers that vocational schools were primarily ways to hold in school students not interested in an academic program. Havighurst (1964) went on to say that "Too often, the vocational high school is placed in a buffer position between general high school and 'undesirable' students" (p. 247), and that

> Today's theory of counseling and placement too often clings to the antiquated concept that the school trains either brain or brawn—not both—and therefore students with below-average academic ability should be placed either in vocational high schools or the industrial arts course in general high schools. (p. 252)

Not surprisingly, African Americans were overrepresented in the vocational schools. While they accounted for one-third of the total public and private school enrollment and forty-six percent of the public school enrollment, over fifty-three percent of the students in vocational schools were African American (Havighurst, 1964, pp. 53, 249).

The vocational schools themselves were stratified and segregated. While African Americans accounted for just under fifty percent of all public school students, four of the nine vocational schools were less than twenty-five percent African American (three less

than ten percent) and the other five were more than seventy percent African American. One school that was seventy-six percent African American, Flower, had a separate branch, Richards, that was ninety-one percent white. There was one all-African-American school and one all white.

Four of the schools had admissions requirements that served to sift out those students whose abilities were below average. While 50% of the African Americans in vocational schools were in selective schools, 78.5% of the whites were in such schools, and two-thirds of those African Americans were in one all-African-American school, Dunbar, which, according to Havighurst, often waived the entrance requirements.

Those schools with admissions requirements, on the other hand, had a tendency to become nonvocational as they became avenues to college: "The more some vocational schools are able to resist accepting below average students for enrollment, the more college preparatory conscious these institutions become" (Havighurst, 1964, p. 248). It was only at the selective schools that the researchers believed either the vocational or the academic training to be effective, with the better courses there providing "excellent training." Their graduates could "secure employment in the fields for which they were prepared or can enroll in institutions of higher education if they so chose" (p. 250). The "academic curriculum in those vocational high schools with admission requirements is comparable to that in the good general high schools" (p. 256).

The nonselective schools, which included four of the five predominantly African-American schools, had deep educational problems including dropouts, weak curriculum, a negative image in the city, and what the report described as "grossly insufficient" facilities.

The industrial arts programs in the comprehensive high schools had a different purpose from the programs in the vocational schools. Vocational schools were traditionally designed to prepare students for immediate postgraduation employment. Thus, during their junior and senior years (four semesters) they attended four-hour "shops" in their chosen occupation. Industrial arts programs were meant to be more exploratory or to introduce students to basic tools and processes. Thus, their classes were shorter—shops met for ten hours a week and most schools only offered one or two semesters of any given subject. (Students taking more semesters in woodworking for instance simply repeated the same classes.) This appears to be a legacy of the struggles in the 1930s that resulted in confining

complete preparation for employment to instruction in a limited number of special vocational schools.[29]

Havighurst (1964) presented much less data on enrollments in the industrial arts programs in the comprehensive schools, but these apparently were programs of last resort. According to Havighurst,

> For reasons stated earlier, many freshmen students of below average academic ability are often counseled or persuaded to attend vocational high school by counselors' statements on parent-interview day that a certain minimum attainment must be achieved before successful matriculation in the general high school is possible. If "counseling away" fails, the general high school has the responsibility of admitting these students, as it does for all students. It must make available to them facilities, teachers and instructional materials which appeal to and suit their interests and abilities. The industrial arts program, whatever its original purpose and design as part of the general curriculum of a general high school, has largely become a program attended by students at the Basic, Essential, and EMH levels [the three lowest of the eight tracks used in Chicago schools at the time]. (pp. 266-267)

Thus, we see in Chicago a pattern, albeit perhaps more extreme, that emerged in the other cities in this study. Through the 1960s, vocational schools were classic "dumping ground" schools for students who were believed to be unable to make it in standard academic programs. At the same time, the opportunity to select and reject students did in some cases improve the quality of some of these schools. Vocational programs in the comprehensive schools appeared to be of even lower quality. Finally, African Americans were overrepresented with respect to their share of public school enrollments (to say nothing of public and private school enrollments) in the vocational schools and even more so in the nonselective vocational schools.

The Reforms of the 1980s

We now turn to the national reform movements of the 1980s and early 1990s as they were realized in Chicago. A great deal happened, but reform took a route in Chicago that was very different from the trends in New York and Philadelphia. The quantitative reform strategy following the *A Nation at Risk* emphasis on increasing academic standards barely affected Chicago. Despite some talk, reform of the content of education along the

[29] The ten hour/twenty hour distinction between vocational schools and vocational programs in comprehensive schools still exists in Chicago.

lines of the integration strategy has been weak at most. Certainly, the most profound educational reform in Chicago has been the radical decentralization of control over the public schools. As we discussed in the first section of this report, decentralization and school-based management was indeed one of the possible components of a broader strategy based on the integration principle.

The Chicago Public School system was bankrupt at the start of the 1980s. A series of accounting maneuvers had hidden a growing underlying budget deficit which came to light in the 1979-1980 school year. This resulted in the resignation of the superintendent and increased state fiscal control. There followed a spate of reforms designed to promote racial integration, to improve the substance of education, and to reduce the influence of city-hall patronage in the Chicago public schools.

A desegregation lawsuit initiated by the U.S. Justice Department in 1980 was settled by a consent decree that encouraged desegregation through a system of magnet schools to encourage voluntary student transfers. Substantive reforms included "effective schools," "High School Renaissance," and "Mastery Learning." Mastery Learning was a Taylorist approach to teaching that divided basic skills into hundreds of subskills that could be learned through a series of multiple-choice exercises. This strategy is anathema to the contextual learning and problem-solving approaches that are more popular today. These reforms did not have significant effects.

The state did make a minor reform of high school graduation requirements, but compared to broad reforms such as the Regents Action Plan in New York State, Illinois's changes were minor. Before 1984, Illinois students had to take four units of English; three of social studies; two of math and one of science or two of science and one of math; one half unit each of art and music; one unit of health/physical education; and six elective units. The 1984 reform made two changes. Students were required to take at least two years of math; therefore, they no longer had the option of taking two years of science and only one of math. Second, and more important, "essential" courses (remedial courses) could no longer count towards graduation, but, in contrast to reforms in many other states, this reform did not reduce the time available in the school day for vocational courses.

Chicago has always been known for the strength of its political machine, and until the mid-1980s, the operation of the public schools was closely tied to that machine—the

roughly twenty-thousand nonteaching personnel in the Chicago public schools were appointed by city hall (Moore, 1989). Following the system's bankruptcy, the political control began to erode when for the first time, the board hired a superintendent from outside of Chicago—Ruth Love. The old system was further weakened as African Americans gained political power, particularly with the election of Mayor Harold Washington in 1983. Washington's reform-minded appointments to the board of education came into conflict with Love whose contract was not renewed in 1985.

At the same time, there was growing awareness of the serious problems in the city's school system. A 1985 report presented data on the fate of the 39,500 freshmen originally enrolled in the class of 1984. Approximately 18,000 (48%) had dropped out, 3,000 had transferred to other school systems, and 18,500 had graduated. Of the graduates, only 6,000 read at or above the "national average for seniors," and 5,000 of the graduates were reading at or below the eighth-grade level (Designs for Change, 1985).

These perceptions of failure were accompanied by a growing realization that almost all efforts at school reform in the city had failed. All of the various attempts discussed above appeared to have stalled. A business group, Chicago United (1987), made an assessment of the impact of school reforms that they had proposed in 1981 and found that only about half of their proposals had been implemented. The state Urban School Improvement Act in 1985, which proposed modest structural reform of the schools, was not implemented. The basic assumption of school critics was that the city's schools could do much more with diminishing real resources and increasing concentrations of children from highly disadvantaged families if they were appropriately coerced or reorganized. During the early and mid-1980s, this proposition was never really tested since all reforms stalled.

Thus, the mid-1980s were characterized by some efforts at desegregation, a growing sense of school failure, widespread but ineffective reform programs, and growing minority political power set in the context of the tradition of strong local political power. This set the stage for the changes during the second half of the decade.

The Integration Strategy and Contemporary Vocational Education

In 1989, 11,644 students were enrolled in vocational public high schools in Chicago. This accounted for about eleven percent of all students (see Table 34). Many more were enrolled in vocational courses and sequences in the magnet and general high schools. African Americans were very much overrepresented in the vocational schools, accounting for eighty-nine percent of all vocational school students, while they made up sixty percent of all Chicago secondary students. In contrast, there were few Hispanic students in the vocational schools.

In a rough sense, the distribution of teachers among the occupational areas corresponded roughly to the emerging shape of the city's economy. In 1988, thirty-two percent of the 1,250 vocational teachers were teaching business education, ten percent were teaching drafting, while another ten percent were teaching home economics. None of the other subjects except auto repair, electricity, and health had as many as fifty teachers in the entire Chicago system. The next subjects, in rank order, were industrial arts, graphic arts, wood shop, and coop work training (Chicago Panel, 1985, 1986).

Table 36 displays the enrollments of eleventh and twelfth graders in vocational courses during the 1988-1989 school year.[30] Enrollment totaled just over fifty-three thousand students. Over fifty-four percent were enrolled in business and office programs. The manufacturing-related occupations—mechanic and repair and precision production—accounted for another twenty-five percent. The personal service-oriented jobs such as food service, cosmetology, child and day care categorized under home economics or occupations of the home accounted for another twelve percent.

[30] In Chicago, freshmen and sophomores take exploratory vocational sequences and choose a specific vocational area for their junior and senior years. Therefore, it is only eleventh- and twelfth-grade enrollments that reflect, however inaccurately, preparation for future employment.

Table 36

Chicago Public Schools Enrollment in Eleventh and Twelfth Grades in Vocational Courses 1988-1989

Actual

	Agriculture	Business Office	Marketing/ Distribution	Allied Health	Occupations of Home	Home Economics	Construction Trades	Mechanic/ Repair	Precision Production	Special Programs	TOTAL
Vocational	15	3378	83	98	73	915	359	608	2158	1	7688
Technical	23	471	0	0	0	0	46	1238	1694	0	3472
Magnet	196	3957	21	137	275	228	124	379	696	88	6101
General	575	21069	15	72	2138	2850	2469	1695	4218	707	35808
TOTAL	809	28875	119	307	2486	3993	2998	3920	8766	796	53069

Percent

	Agriculture	Business Office	Marketing/ Distribution	Allied Health	Occupations of Home	Home Economics	Construction Trades	Mechanic/ Repair	Precision Production	Special Programs	TOTAL
Vocational	0.2	43.9	1.1	1.3	0.9	11.9	4.7	7.9	28.1	0.0	14.5
Technical	0.7	13.6	0.0	0.0	0.0	0.0	1.3	35.7	48.8	0.0	6.5
Magnet	3.2	64.9	0.3	2.2	4.5	3.7	2.0	6.2	11.4	1.4	11.5
General	1.6	58.8	0.0	0.2	6.0	8.0	6.9	4.7	11.8	2.0	67.5
TOTAL	1.5	54.4	0.2	0.6	4.7	7.5	5.6	7.4	16.5	1.5	100.0

Source: Department of Vocational and Technical Education, Chicago Board of Education, 1990. Computer printout prepared by Vocational Education Data System.

While the vocational system seemed to match the economy in terms of occupational areas, what role was vocational education playing in broader reform based on the integration strategy? This would come about both through a stronger emphasis on academic instruction within vocational programs—this is the thrust of the calls for the integration of vocational and academic education in the 1990 amendments to the Carl D. Perkins Vocational Education Act—as well as the use of a more applied problem-solving approach, often characteristic of vocational education, to the more academic instruction. In the first section of the paper, we referred to this aspect of the integration strategy as curricular or content integration. In addition, we outlined two other elements of the integration strategy which were referred to as organizational integration—the movement towards more decentralized educational administration—and institutional integration—the growth of institutional links between schools and businesses.

The Chicago case illustrates something about each of these points. First, there is some evidence of content integration, but, at least so far, this has been rather superficial and isolated. Some of the vocational schools have good reputations, but this is associated as much with the deterioration of the neighborhood schools as the positive achievements and innovation in the vocational schools. In general, as elsewhere, the vocational programs in the neighborhood schools have bad reputations. Second, in some sense, vocational education in Chicago has a tradition of strong links to employers and unions, but this hurt the system when the manufacturing economy collapsed. Furthermore, Chicago presents a classic case in which racial discrimination in the workplace is incorporated into the schools when there are close ties between the educational system and the relevant employers or labor market institutions. This illustrates some of the serious problems and dangers with close relationships between schools and the workplace. Third, the 1988 school reorganization in Chicago is perhaps the most radical decentralization of a major urban school system in the country.

Content Integration

Basic high school graduation requirements during the last three decades have not differed for vocational and general or academic students. All had the same twelve unit requirements and all of the vocational courses were taken in the six elective units. Since the basic requirements included only three units in math and science and no foreign languages, college-bound students used most of the six electives for these academic subjects, thus creating a sharp distinction between vocational and college-bound students. During the

1980s, there has been some movement toward breaking down this type of sharp division between vocational and other students.

Lane Tech is considered the best school in Chicago. It is highly selective and its students perform on a par with students from good suburban schools, but this school was and still is a technical school in which all students must take some applied shop courses. From time to time, there have been efforts to end those requirements—these efforts have been defeated.

As in New York, many of the special magnet schools are actually organized around vocational or occupational themes. Most of the magnet high schools are also referred to as metropolitan schools which, according to the board of education, are schools that "provide, in addition to the core high school curriculum, in-depth instruction in a special area for four years" (Chicago Public Schools, 1988, p. 20). In general, the magnets are either explicitly college preparatory such as Von Steuben High School, which requires a three-year sequence in both math and laboratory science for all students, or they have specific occupational themes such as High School of Communications (Hirsch), the School of Business and Commerce (Jones), the School of Medicine and Health Sciences (Marshall), and Chicago Agricultural. Chicago Agricultural, which teaches a college-prep curriculum in plant and animal science and other agricultural-related areas was featured by the National Center for Research on Vocational Education as an "exemplary urban career-oriented high school" (Mitchell, Russell, & Benson, 1989). The school explicitly uses applied material to teach basic academic skills—that is, it tries to integrate vocational and academic instruction. About twelve percent of all eleventh- and twelfth-grade students enrolled in vocational courses are in the magnet schools (see Table 36).

Since the early 1980s, the Industrial Education Department of the Chicago Board of Education has been promoting a program to broaden vocational education. Curie High School is one of the schools that is implementing this program. Curie is a magnet school that is thirty percent African American, twenty-five percent white, thirty-nine percent Hispanic, and six percent Asian. Curie is the cite of the Metropolitan School of Performing Arts, and it also serves as a neighborhood school for local students. The school also has a vocational magnet program drawing students from other parts of the city. The administrators of the vocational programs emphasize that they have designed the program to prepare their students both for college and post-high-school work. The vocational

classes meet for eight minutes a day which makes the school day longer for these students than for the regular academic students, although they do not have the 160-minute daily classes that characterize the freestanding vocational schools. It is interesting that whites are overrepresented in this program, accounting for thirty percent of Curie vocational students while they account for only twenty-five percent of all Curie students, and twelve percent of all Chicago high school students.

Curie has moved to the cluster approach for its vocational programs. Thus, the school has incorporated auto mechanics into the "transportation" program, woodworking into the "production" program (in which students also learn about business record keeping), architecture is combined with computer design, and the print shop maintains its own business in which it finances equipment purchase through the surplus from sales. The school also has a special program funded by the National Science Foundation to combine math and physics with the electronics program in addition to integrating math and drafting instruction.

Chicago Careers for Youth is another program that suggests the development of content integration in Chicago schools, although this program also represents an attempt to promote closer ties between schools and businesses. Rather than focus on particular occupations or skills, this program is based on dividing education for employment into sixteen clusters.[31] For example, instead of teaching construction skills, schools will conduct programs in a "built environment" which will include project planning, architecture, budgeting, and other broader issues as well as traditional construction trades. The supporters of this approach argue that each school should specialize in a small number of clusters and that selectivity should be avoided. This is also designed particularly as a vehicle for business involvement in the schools. Students in pre-high-school years attend presentations by "role models" from each of the sixteen clusters. Based on the current course offerings, each is designated as having programs in one or more of the clusters. This approach, by moving away from a focus on task skills to a broader view of jobs and occupations, can eventually form the basis of the integration of vocational and academic instruction. Continued interaction between the role models and the schools can potentially have many positive effects for the schools and the students. Furthermore, the program

[31] The clusters include agriculture; arts, culture, and religion; built environment; communication; education; energy; finance; government; health care; hospitality; insurance; manufacturing; natural resources; personal and business service; retail and wholesale; and transportation.

advocates want this approach to spread to all of the high schools, not just the vocational ones. As of early 1991, career days and seminars were being carried out in about one fourth of the elementary schools (Chicago does not have junior high schools). Several of the vocational schools have shown some interest, but the program is still developing.

Therefore, there was a basis for a movement towards content integration in Chicago schools. Nevertheless, serious barriers remained. For example, the broadening of vocational programs that was initiated in the early 1980s and implemented in schools such as Curie High School, by the end of the decade had had effect on only about one-half of the industrial programs in the city according to the industrial program staff at the board of education. In many cases, vocational school staff were wedded to a traditional approach to vocational education, and while in some cases vocational programs in the magnet schools and in some of the general schools appeared more open to innovative approaches, the vocational programs in most general high schools were still seen as opportunities of last resort. Staff at the Office of Vocational and Technical Education at the board of education pointed out that the teachers in those programs reported that the students enrolled in the vocational programs in the general high schools had increasingly serious problems. The problems with the vocational programs in the general schools are particularly significant since they account for two-thirds of all vocational enrollments of eleventh and twelfth graders (see Table 36).

Efforts to open up course requirements to allow more flexibility for vocational or occupational programs were also thwarted. By late in the decade, after many discussions about revising high school requirements, an official proposal was finally put together. This once again was only a minor change that allowed students to take one additional unit of vocational education. In the requirements that held at the end of the decade, students had to take one music course and one art (or drafting) course. Drafting was required for the vocational students. According to the new plan, students had to take one less social studies and one more science course, and they had to choose two units from among art, music, drafting, vocational education, and foreign language (one of these had to be either art, music, or drafting). These were proposed to take effect in 1992, but even these modest changes stalled during the 1990-1991 academic year.

Another indication of the barriers to reform involves Chicago Careers for Youth. The program appeared to be gaining support by the early 1990s, but the strategy had

already been around for over a decade. Its wider acceptance was due in large part to the efforts of advocates outside of the board of education, in particular John Gnaedinger, the president of STS consultants. It has only gradually picked up support from professional educators in the city. Moreover, at least in its early stages, the key to the program was contact with the business community through the role model mechanism. In terms of curricular content, the main effort was to categorize the existing offerings within the clusters rather than develop a fundamentally new curriculum.[32]

We have seen in both New York and Philadelphia that the vocational schools have tended to improve relative to zoned high schools, at least partly because they were able to select their students and to send back to the neighborhoods those with problems. A 1985 study by a Chicago education advocacy organization, Designs for Change, classified the city's high schools into four types: selective academic high schools, selective vocational schools, nonselective integrated schools, and nonselective segregated schools. The most restrictive, Selective Academic High Schools, which enrolled six percent of the district's students, had admissions restrictions intended to produce a class preparing for four-year colleges. These high schools included Lane Tech, the only school performing at a solid suburban level, Lindbloom Tech, an all-African-American selective school on the South Side, and Whitney Young, a magnet school. The study estimated that less than five percent of their seniors would graduate with reading scores below minimum competency (eighth-grade norm).

The next most successful group was comprised of "selective vocational schools," five schools (Prosser, Dunbar, Chicago Vocational, Simeon, and Westinghouse) serving a tenth of the Chicago high schoolers, that had admissions standards that "would exclude many Chicago High School students" (Orfield, 1989). Nineteen percent of the students were in nonselective integrated schools (at least 30% of the students were white), and the remaining sixty-five percent of the students attended nonselective segregated schools (at least 70% of the students were members of minority groups). The selective vocational schools were substantially more successful than most of the neighborhood African-American and Hispanic high schools. They tended to have higher completion rates and their students had higher scores on reading tests.

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[32] Gnaedinger argues that it is better to try in the early stages to minimize the internal changes in the school by emphasizing that the schools already have programs that can be placed in the clusters. Immediate demands for major curricular changes would block the eventual success of the program by generating immediate opposition.

The selective vocational schools were not, however, schools without problems or schools that could compare to typical suburban schools. About three-fourths of the ninth graders at the selective academic schools graduated, but only fifty-two percent of those at the "selective" vocational high schools did. This was, however, far above the thirty-eight percent completion rate in the minority neighborhood high schools. Only thirty-two percent of the seniors graduating from the selective vocational schools read at or above the national average. In the nonselective neighborhood African-American and Hispanic schools, however, even after sixty-two percent of the students dropped out, four of every five surviving to graduation were below the national norm on reading skills (Designs for Change, 1985, pp. 36-37). Amid an overwhelming educational crisis, the better vocational schools offered more hope.

Chicago Vocational School (CVS)

A more detailed look at CVS, an all-African-American, freestanding vocational school, will illustrate the interaction between vocational education, educational reform, the changing ethnicity of the population, and the evolution of the economy. CVS was the showplace of vocational education at the peak of the city's industrial prosperity in the 1950s and the early 1960s. Its decline since then mirrors overall changes in the Chicago schools as well as special problems of vocational education in a changing economy. A recent study records

> During the 1950s, Chicago Vocational School . . . thrived amidst the industrial expansion of south Chicago. Graduates with basic industrial skills could readily find work in the steel mills, auto manufacturing plants, and other heavy industries in the area. Skilled labor from the school was also in demand.
>
> Enrollment at CVS climbed to over 4,000 students. . . . Administration and faculty turnover during the 1950s was almost nonexistent. Faculty members present during that time refer to the physical plant at CVS with such words as "immaculate" or "gleaming." (Green, 1989, p. 4)

Current staff point out that during the 1950s, CVS served almost as an apprenticeship for the steel industry. Moreover, at that time, almost all of its students were white. Even in 1964, the student body was still three-fourths white, although by then it was in rapid racial change that would make it over three-fourths African American by 1970, reflecting the vast exodus of whites from Chicago's South Side (Green, 1988, p. 6).

By the 1970s, the school served as a precursor of the magnet schools for city African Americans: "During a time when academic performance was deteriorating and physical safety was an issue in most all-African-American general high schools, CVS began to attract students in search of college preparatory courses and an orderly environment." Some of the traditional vocational teachers objected to this change in the school's mission. The school's traditional mission was severely damaged by the collapse of much of its traditional job market, rapid loss of much of the old faculty, the breakdown of ties with employers and industries, and the school district's financial crises of the 1970s which made it impossible for the school to buy machines which reflected the rapidly changing industrial technology (Green, 1988, p. 9).

In 1990, the principal argued that students still come to the school, not so much because it is a vocational school, but because it has a "safe, caring, environment and because it was known as a good school." Indeed, when compared to the system as a whole, the school has a low dropout rate. Eighty-eight percent of the students graduate, while citywide, about sixty-three percent of the entering freshmen in the class of 1984 completed high school in the Chicago system (Designs for Change, 1985, Table 1). Another eight percent transferred to a school outside of the system.

The school also has serious problems. To some extent, competition from the magnet schools have drawn off some of the applicant pool. The enrollment fell to about three thousand in 1990, although the decline more or less mirrored the decline for the system as a whole. Towards the end of the decade, the school loosened its entrance criteria. In 1988, one observer noted

> CVS still has a reputation of being safe and providing both vocational and college preparatory skills at a higher level than the all-African American general high schools. Teachers, however, feel that students, even when compared to those as recent as the late 70s, are less motivated and less certain of their goals in either area. Students, for their part, are also uncertain about the goals of the school. (Green, 1988, p. 11)

The leadership of the school perceived the need to broaden the curriculum and to put a greater emphasis on communication and social skills as well as on strengthening the basic academic skills. During the last half of the decade, the principal developed an entrepreneurship program in which, as part of their education, students operated two businesses. The leadership of the school has also considered adopting some of the

principles of the Coalition of Essential Schools, a program developed by Theodore Sizer. Despite the awareness of the need to change and the apparent commitment, developments have been slow. Only about one-hundred and fifty out of the school's three thousand students are involved with the entrepreneurship program and little progress has been made in implementing the program for broadening the vocational curriculum that has played such an important role at Curie High School. The school's leadership has encountered more problems in reorienting the faculty towards a broader approach. Most of the veteran faculty were still focused on task-oriented skills preparation. Limitations of staff and funds have made it difficult to devote the necessary time to inservice training.[33]

In sum, despite a great deal of apparent activity, it seems fair to say that the movement towards an educational strategy based on the integration principle seems quite weak. At best, it is seen as a reform of vocational education rather than the basis for a broader educational reform. The hierarchy of vocational or occupationally oriented education that we found in New York is perhaps stronger in Chicago. Most innovation appears to be taking place in the magnet schools and in some vocational programs in the neighborhood schools, but, in general, the role of the vocational programs in the neighborhood high schools appears to have altered little since Havighurst found them to be programs of last resort in 1964. The vocational schools appear to occupy a middle ground with safer environments, better reading scores, and lower dropout rates, but traditional vocationalism remains strongly entrenched there. At least by the end of the 1980s, while reforms for content integration had generated considerable support and discussion, it remained very much at the margins of high school education in the city.

Institutional Integration

As in many other cities, local businesses have taken an interest in the strength and record of the public schools; most employers are critical of the school system. During 1988, the *Chicago Tribune* conducted surveys of business executives and others about the Chicago schools:

> Not one of the 68 gave the schools an A or B, and nearly 1 in 4 flunked the system. The average grade was a low D. (In comparison, nearly 3 of 4 of the surveyed executives gave the average suburban school an A or B.)

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[33] We spent a morning talking to the principal and two assistant principals about the general issues of educational reform and they said that they almost never have a chance to discuss these issues in depth. Opportunities to spread such a discussion to the staff are even more rare.

> Two of every 3 who expressed an opinion said the schools were getting worse. Only 1 of the 68 company leaders surveyed said he's seen any improvement in the system. (Reardon, 1988, Sec. 1-11)

None of the business leaders found its entry-level job applicants from city schools prepared for work. Citicorp, which was rapidly expanding banking facilities in the Chicago area, reported that eighty-four percent of the applications it received for jobs as tellers and clerks were immediately rejected because they were not correctly filled out. When the Chicago Board Options Exchange gave a test on fractions for entry-level jobs reporting prices, almost half of the 425 high school graduates failed. A group of high school graduates applying for job training with the Mayor's Office of Employment and Training had average reading scores of eighth grade ("Training Grows in Basic Skills," 1988, Sec. 3-2).

Many employers in the Chicago area argued that the quality of job-related training in the schools had deteriorated seriously. Dempsey Travis, one of the city's most famous African-American businessmen, told a meeting of Chicago principals that in the past twenty years the products of the system had become less able to work. He said that it was necessary for his firm to screen seventy applicants who were graduates to find two qualified to work as secretaries. The chairman of Carson Pirie Scott, one of the largest retail firms in the city, said that "if we continue to have a functionally illiterate and uneducated group coming out of the high schools, we'll become a Third World city." (Gruber, 1988, Sec. 3-2).

Interviews conducted for this project with top personnel officials of major downtown Chicago employers found very similar patterns. Institutions that had to remain downtown for business purposes and were eager to obtain qualified nearby workers because of problems of persuading suburbanites to commute in for entry-level jobs found themselves with a much more difficult screening job to do. There were plenty of applications, but most lacked basic skills. There were many secretarial candidates who could not spell, punctuate, or type at required minimum speeds. Even if employers were willing to pay them to learn computer skills and word processing, many did not have the essential basic skills. Applicants with basic skills could rarely be found, they said, among either graduates of the high schools or the city's two-year colleges, although those institutions had provided many employees and reliable training relationships in the past. Among those qualified to take the physically demanding lowest-level laborer jobs, many did not have, for example, the needed arithmetic and reading skills to accurately interpret

directions, carry out measurements, or fill out the forms needed for the much better paying second- and third-level jobs. For basic clerical skills, for example, some employers sent their employees, even those with high school degrees, to private institutions to learn the basic skills they should have mastered by early high school.

This preoccupation with the perceived failure of the city's schools has led to some business involvement with the schools. As we pointed out earlier, Chicago United, a organization of Chicago businesses, has played an important role in building support for educational reform in Chicago and a core group of Chicago employers have been mainstay participants in the cooperative education program for students in Chicago public high schools. Some of the vocational programs also have business advisory committees which serve as vehicles for business interaction with the schools. The Chicago Careers for Youth program also offers an opportunity for individuals and firms associated with each cluster to work closely with relevant schools and students. Indeed, while many people in the board of education and the rest of the city government support Chicago Careers, the program would not exist had it not been for the support and initiative of the STS Consultants and its president John Gnaedinger.

Business organizations were also active in the school reform movement that won state enactment of the bill decentralizing the Chicago schools and setting up Local School Councils. Corporate leaders were about evenly divided on the issue of a possible tax increase for schools but nearly three-fourths favored a tax increase if tied to a *requirement* for increased performance (Reardon & Goozner, 1988, Sec. 1-11).

Nevertheless, the Chicago private sector has not been a central influence on educational reform. Business leaders express concern about the Chicago schools and support for reform, a number of firms have adopted local schools in relatively modest cooperative arrangements, but very few businessmen have children in the Chicago schools or know the schools personally and many are moving existing jobs away from locations where graduates of the Chicago schools would have access. A good many businesses have made contributions to the new "Corporate School" on the West Side, to Marva Collin's widely publicized Providence-St. Mel school, and to the Chicago Archdiocese's "Big Shoulders" fund for inner-city Catholic schools. The basic attitude toward the city public schools is one of profound pessimism, rooting the blame in the school district itself and the teachers' union, not in any social or economic problems. In 1986, Mayor Washington

convened an Education Summit for the purpose of developing a set of agreements between the board of education and the private sector modeled on the Boston Compact. Yet the following year, the Summit explicitly abandoned that strategy and turned instead towards the development of a decentralizing restructuring plan that was eventually implemented in 1989 (Hess, 1990).

In general, the influence of the city's private sector had been weakened when the traditional core industries in the city were decimated by the city's economic transformation and lost influence in city politics. The close ties between manufacturing industries and vocational programs, at CVS for example, evaporated as factories closed.

The Washburne Trade School

One of the themes of this report has been the potential dangers of close ties between schools and employers or other labor market institutions, especially when this acts to spread to the schools inequities or discrimination that are entrenched in the workplace. This problem is starkly illustrated by the history of more than a quarter century of battles over the racial practices of the Washburne Trade School. The school had produced over fifty-thousand building tradesmen in its history, but few were minorities or women.

The school, operated with federal vocational education money and contributions from the Chicago schools and building contractors, reached an apprentice enrollment of almost three thousand by 1929 (Green, 1989). Historically, few building trades unions in Chicago had any significant African-American membership. The relationship between the public schools and white-only unions was one of the earliest subjects of racial protest in the city. An African-American vocational school, Dunbar High, was established in 1942 in response to the protests but was unable to penetrate the building trades jobs, concentrating on less resistant sectors:

> there was a moderate emphasis placed on manufacturing and service trades for males. . . . Dunbar over-emphasized the service and manufacturing trades of cosmetology, dressmaking, millinery, shoe repairing, tailoring and commercial art, trades which were not represented at either Washburne or CVS. From 1946-1961 nearly forty percent of the graduates specialized on one of these trades. (Green, 1988, p. 21)

Vocational training reflected the segregation in the labor market. Dunbar was, however, strongly supported by the powerful Chicago Union League Club and hailed by

former Harvard President James Conant in his very influential book, *Slums and Suburbs*, expressing his view of the need for segmented education in the high schools. He found the school "especially tailored to the vocational aims of its students" and concluded that it "approaches the ideal in vocational education" (cited in Green, 1988, p. 22). A 1988 study concluded, however, that "Dunbar's building trades program was weak from the start, and the school quickly became a training ground for the low-paying vocations in which blacks were traditionally accepted" (p. 23). More than half of the class of 1984 dropped out of Dunbar before graduation and only thirty-seven percent of the seniors could read at grade level (Designs for Change, 1985, pp. 30, 34). Dunbar was a poor substitute for exclusion from Washburne.

In a 1945 hearing, the NAACP attacked the Washburne Trade school, claiming that African Americans never became apprentices. When the civil rights movement came along in the 1960s, the Washburne issue was raised constantly (Green, 1989, p. 110). The Havighurst (1964) report commissioned by the school board itself reported the problems at Washburne. In 1961, the Negro American Labor Council and CORE studied Washburne and found "that approximately 1 percent of its enrollees were Negro . . . and that out of twelve trades surveyed, only five of those had any Negro apprentices" (U.S. House of Representatives, 1965, p. 197). In 1965, after decades of protest, ninety-five percent of Washburne apprentices were still white. By 1970, African Americans were a large majority in the Chicago schools but were only up to eleven percent of Washburne's students (Green, 1989, pp. 26-27).

When an African-American mayor, Harold Washington, was elected in 1983, one of the important issues had been Mayor Jane Byrne's packing of the school board with whites opposed to the African-American demands for equity in the school system. Renewed pressure from the school board and from outside groups including African-American state legislators brought a confrontation over Washburne.

Conflict came to a head in 1986. The students entered the Washburne apprenticeship programs after they had been selected as apprentices by the unions. This was in effect a public school with a private, clearly discriminatory, admissions process. In 1986, the school board ordered that Washburne recruit students to produce a student body that was forty-six percent African American, fourteen percent Hispanic and forty percent

white, approximately reflecting the population of the city. Twenty percent of the apprentices were also to be female. (Davidson, 1986, Sec. 2-1).

The unions argued that the city school board was trying to impose city goals on an institution that served the metropolitan labor market. Ray Scannell, of the Construction Employers' Association, argued that Washburne should actually be seen as an important institution providing "city residents access to suburban jobs."

> The imposition of arbitrary quotas . . . has resulted in the harassment of Washburne's teachers and program coordinators. To no one's surprise, the school's programs have been disrupted. ("Commentary from Ray Scannell," 1986, Sec. 1-27)

The school board produced a major controversy in the biggest remaining apprenticeship program in November 1986 when it threatened to prevent a new class of carpenters apprentices from beginning. A community advisory body recommended canceling the program after recruitment yielded a seventy-four percent white male class ("Chicago Board of Education," 1986, Sec. 2-4). The carpenters union had already announced that they were going to start a training program in the booming, virtually all-white Elk Grove Village region of DuPage County. In early December, the union informed the school board that it had reached a decision to leave Washburne. The union, which had been training three-hundred to four-hundred apprentices a year at Washburne, decided to offer no more training at all for city residents (Harris & Warren, 1988, Sec. 2C-1).

In November, forty-three apprentices in the electrical program at the school walked out when the school board sent in two new teachers who were not electricians in order to integrate the faculty. The students walked out with their leader protesting that the new teachers were not journeyman electricians. Nine of the eleven teachers in the program were white and the teachers transferred in had been teaching appliance electronics rather than the construction skills needed at Washburne (Houston & Wilson, 1986, Sec. 2-2; Recktenwald, 1986, Sec. 2-3). By summer of 1987, only four construction trades continued to have apprenticeship programs at the school (Green, 1988, pp. 27-28).

Washburne's size declined as its percent of minority enrollment rose. The pressure on Washburne came decades too late, at a time when Chicago's position in the regional economy was far less significant and at a time when the federal government, solidly in the hands of civil rights conservatives, offered no support (see Table 37).

Table 37

Washburne Enrollment (Including Non-Apprentice Programs) 1970-1985

Year	Total Students	Percent African American (%)	Percent Hispanic (%)
1970	3467	11	2
1975	2540	12	5
1980	2159	18	9
1985	1956	24	10

Source: Marciniak, 1986.

A 1986 study noted that white enrollment had dropped from three thousand to twelve hundred while the whole struggle had produced an enrollment growth of only eighty-seven African-American students and one-hundred twenty-five Hispanics because their growing proportions were fractions of a rapidly shrinking total school. Among apprentices in the school in 1985, twenty-one percent were African American and nine percent were Hispanic (Marciniak, 1986, pp. 25, 27).

The Washburne struggle was a minor issue in the overall Chicago labor market but it showed the decisive limitations that confronted even powerful local African-American political leadership in changing even one of the most persistently irritating aspects of the education and training system. As African-American leadership took control of Chicago in the 1980s, one of the most visible irritations was the hundreds of out-of-state license plates on the cars at union construction sites in the booming downtown area. By the time there was enough minority political power to bring real pressure to bear on the unions and their school, however, most of the work was suburban, a great many of the craftsmen were suburbanites, and the unions saw much less to be gained from a connection with the Chicago Public Schools than in the past. The end result of a major effort by Chicago African-American leaders focusing on a single school under the control of the city's school district may be even fewer opportunities for minority apprentices or any city residents. Programs at higher levels of government dealing with the entire metropolitan area would be needed to change the pattern today.

Organizational Integration

There is no question that the most significant educational reform to affect the Chicago Public Schools in the last decade was the Chicago School Reform Act which was passed in 1988 and took effect in May, 1989. This act placed all 524 public schools in Chicago under the authority of Local School Councils (LSCs) comprised of six parents elected by parents, two community residents elected by community residents, two teachers elected by the school's staff, and the principal. The LSCs had the power to appoint the principals to serve under four-year performance contracts, to establish a budget for the expenditure of a lump sum allocation from the central board, and to devise a school improvement plan.[34]

It will be well into the 1990s before the effects of this reform can be evaluated, but there are hints of some of the effects now. The LSCs have a great deal of autonomy and are expected to have a profound influence on the curriculum although the effects will certainly differ among schools. Due to the organization of this reform movement, substantive reform across the schools may have even less focus and direction than it had in the past. It seems difficult to imagine the implementation of one overall coordinated reform strategy in the school system. Indeed, two educational researchers who visited "a half dozen schools" and talked with "two dozen participants in the reform process," in the Spring of 1990, one year into the reform, found little impulse among the LSCs for dramatic educational change. Rather than truly fundamental reform, they found LSCs discussing adding two specialists to the staff, buying more computers, adding multicultural curriculum materials, and providing an extra period when teachers could meet and work on lesson plans. One LSC in a severely troubled school discussed whether children arriving at school early on cold mornings could enter the school before the official start of the day (Finn & Clements, 1990). Especially in the high schools that tend to be large, complicated institutions and that draw from larger areas of the city, it seems unlikely that the LSCs will revolutionize the education in their schools. In two high schools that we visited in the early Fall of 1990, there was little evidence of any force for sharp change emanating from the LSCs. LSCs apparently were influential in blocking revisions of the graduation requirements slated to take effect in 1992.

The reform proposal movement put a great deal of emphasis on principal quality, arguing that it was a key to improving school performance. At least during its first year,

[34] For descriptions of the act and the events that led up to its passage, see Moore, 1989, and Hess, 1990.

the large majority of LSCs retained their principals. In the Winter of 1990, "82 percent of all principals up for consideration were retained." Eighty-nine percent of those under consideration "who had previously achieved permanent appointment to the school were retained" (Designs for Change, 1990, p. 3). Certainly the LSCs did not perceive the principals to be the primary barrier to improved schools.

Perhaps one of the greatest problems was that, while the LSCs could allocate their budgets, they could not determine the total level of expenditures. For example, in one case reported in *Chicago Magazine*, one school with 900 students operated in a building designed for 650. There was little the LSC could do to alleviate this problem besides asking the board of education for a new building (Joravsky, 1990).

Of course, many of these problems could be early growing pains. The LSCs have made educational administration a much more public process and, according to two educational researchers, the reform has fostered a "remarkable cross-fertilization occurring around the city as practitioners, activists, and academics pool their intellectual and financial resources in conferences, seminars, retreats, and other forums for learning about and fostering reform."

The LSCs can also provide a route for new ideas and proposals that in the past tended to get lost in the central bureaucracy. The interactions between the LSCs and the Chicago Careers for Youth Project show some of the potential. During the 1980s, despite official support by the board of education, the program languished. Since the establishment of the LSCs, advocates for Chicago Careers have been able to go directly to the LSCs for approval in the individual schools. Every LSC that has been approached has approved the implementation of the plan in their schools, although it is still too early to determine how effectively it will be implemented in practice and what its practical effect will be.

It will be well into the 1990s before any definitive evaluation of the Chicago school reform will be possible, but it is worth asking how this model relates to organizational changes taking place in workplaces. Reform advocates have invoked the trend towards participatory management in the private sector in support of the reform.[35] First of all, there

[35] For example, Hess (1990) argues that "A second basis for the design of the reform act is the theory of participatory management which is sweeping across the American business community" (p. 12).

is no consensus in the private sector concerning the optimal form of participatory management. Participatory management or employee involvement appears to refer to anything from the use of suggestion boxes to worker or union participation on the board of directors. As we pointed out in the first section of this paper, the Japanese and Northern Italian models of work organization contrast sharply yet are both recognized to be successful. It is not obvious that the Chicago reform fits into either of these approaches.

Certainly in Japan, employees are given greater responsibility for their tasks, but that occurs within the context of very strong central leadership that establishes overall objectives as well as the broad strategic plan for achieving them. Employees have strong allegiance to that central leadership, and education and training prepares them to pursue, with considerable autonomy, those central objectives. In contrast, in Chicago, the reform is based to a large extent on the notion that the central leadership has failed and that a reform structure must be set up that minimizes the influence and leverage of a central board. Rather than fostering allegiance to the central authority, the Chicago reform challenges its legitimacy.

The Italian model is not based on a strong central authority but on close relations between sets of small cooperating firms. There is some coordinating function, but this is seen as facilitating work among peers. Overall objectives are set and adherence to those objectives are enforced, both by the demands of the market, by a long tradition of interaction, and by some collective discussion. This also does not seem to match the Chicago reform structure. Since the central authority, the bureaucracy, is defined as the problem, its role in more or less voluntary cooperation is not likely to be effective. It is not clear how the incentives and sanctions that face the schools under the LSCs will force them to make profound changes. Presumably, the pressure comes from the power of the LSCs, but what are the LSCs' objectives. Moreover, as Finn and Clements (1990) suggest, it may be that the LSCs will be weakest precisely in those schools where problems are the most severe.

The decentralization movement in the private sector has been based on a strategy in which large firms delegate authority to smaller units, but the objectives of that authority are established either through the market or through the policy of the central firm. True, the LSCs are expected to raise the test scores of their students, but this remains a vague and

disputed goal. Decentralization programs in firms are not likely to succeed if the smaller units are simply given the objective to "improve quality" or "increase productivity."

In other words, participatory management in the private sector sees decentralization of authority as a means to carry out a broad strategy. In general, these are strategies in which strong central control of the details of production would be ineffective. Thus, the objectives and the procedures for achieving those objectives are inextricably associated.

The overall strategic objective and the means for carrying it out within a decentralized environment seems to be missing in Chicago, thus, the analogy to the private sector is flawed. A further problem with the analogy is that private firms do not depend on the voluntary commitment of individuals as the LSCs do. It is true that these individuals have the ability to strengthen their children's schools, but, in the end, this appeal to self-interest is a weak motivation. A parent can probably do more for his or her child through other means than devoting many hours to LSC activities. As one discouraged council member stated "Sometimes I think I can help my child more by helping him with his homework" (Joravsky, 1990, p. 149).

Therefore, for many reasons, the analogy to the private sector participatory management movement breaks down. This does not necessarily imply that the reform will not be successful. Indeed, the barriers to change created by the central bureaucracy may have outweighed any positive effect it could have had as a leader and coordinator of fundamental reform, but weakening the power of the school board, challenging its legitimacy, and mobilizing many parents to get more involved with the schools are so far the greatest achievements of the reform. What the new structure will be used to achieve and how it will do that has yet to be determined.

The Community College System

Chicago has had junior or community colleges since 1911 when the board of education began offering junior college courses at Lane Technical, Crane Technical, and Senn High Schools. Through the 1960s, the colleges continued to be under the authority of the Chicago Board of Education rather than the state.

During the 1980s, the increase in jobs requiring college training and the growing income gap between those who do and do not have college degrees meant that college education was a key occupational requirement in many sectors of the Chicago economy. Metropolitan Chicago has a very large system of colleges and universities, a total of fifty-five institutions in the metropolitan area. Within the city of Chicago this includes, in the public sector, eight two-year campuses of the Chicago City Colleges, two state universities, and the second campus of the University of Illinois. The state also operates one of the nation's most extensive college scholarship programs through the Illinois State Scholarship Commission. There was a very large expansion of public higher education in the greater Chicago area in the 1960s and 1970s.

By the early 1980s, the community college systems in Chicago had become key mobility institutions for low-income students. According to state data, in 1981, over 214,000 students were enrolled in the City Colleges. Enrollment rose to 240,000 in 1984 but subsequently fell by thirty percent to 168,000 in 1989 (Langan, 1990, Table 1).

How has this system responded to the economic and demographic changes that have swept Chicago? In many cities, the importance of community colleges has increased as more occupations began to require postsecondary training. Community colleges were also well-positioned to provide short-term and customized training for firms as employers tried to respond to the increasingly variable and uncertain demands. Community colleges have traditionally served disproportionate numbers of minority students, so as the minority population of cities in particular grew, these institutions also tended to attract more students. Thus, from one perspective, the community colleges represented a source of opportunity for the poor and working class and a flexible training institution, well-attuned to the rapid changes and increasing technological sophistication of the emerging economy and society. Critics, on the other hand, argued that they were dead-ends designed to prepare students psychologically for middle-level but definitely subordinate roles in the economy. For better or for worse, community colleges experienced solid growth during the 1970s and 1980s.

The City Colleges in Chicago are examples of how the problems of one educational institution affect others and how the attempts of educators to respond to changing educational needs of the economy can be overwhelmed by serious social problems. Certainly, the system has served minorities disproportionately and the colleges have tried to

respond to the emerging needs of the local economy, but changing ethnic distribution of enrollment, very low completion rates, and serious basic skills deficiencies create serious potential problems for these schools.

In the rest of this section, we shall first look at the changing enrollments in the City Colleges, we shall then turn to completion rates, and end with a discussion of the changing role of the City Colleges within the overall education system in Chicago.

Patterns of Ethnic Enrollment

The City Colleges in Chicago have been particularly important for African-American students. In the Chicago metropolitan area, community colleges enrolled sixty-five percent of all-African Americans in postsecondary institutions and by 1985, that figure had risen to seventy-five percent (Illinois State Board of Higher Education, 1989).

Of greater concern, though, is that African-American enrollments in City Colleges actually declined during this period. The African-American share of the City College enrollments rose from forty-two to forty-seven percent between 1980 and 1985, but fell to forty percent by 1989. During the later period, this percentage drop took place while total enrollments were also dropping. From 1985 to 1989, the Hispanic share rose sharply, from seventeen to twenty-eight percent (Langan, 1990, Table 4).

The fall of African-American community college enrollment took place while the African-American share of the city's population continued to rise, albeit slowly. In the high schools, as in the community colleges, the African-American share of enrollment declined slightly between 1980 and 1989 (Langan, 1990).[36]

Degree Completion

A very low percentage of Chicago City College students receive degrees or vocational certificates. Of all students enrolled in credit programs in 1989, only 9.5% received a degree or award by the end of the year. Just over four percent of those in

[36] The drops in African American enrollment in the face of continued population growth also took place in higher education in general. A study of enrollment change in Chicago area colleges from 1980 to 1985 shows declining access for African Americans and Hispanics. Fewer of the minority students going to college by 1985 expected to obtain B.S. degrees. Among the public universities, there was a particularly dramatic drop in African American enrollment at the University of Illinois at Chicago, which declined from seventeen percent African American enrollment in 1980 to eleven percent in 1985 and continued to drop after that period (Illinois State Board of Higher Education, 1989).

associate degree programs and 6.5% of those in vocational and occupational programs received their degrees (Langan, 1990, Tables 17 and 20). Transfers of baccalaureate students to four-year colleges were also low. In 1987, there were about 25,500 students enrolled in baccalaureate programs, but only 1,777 (7%) transferred to four-year colleges the following years (Langan, 1990, Table 23). African Americans, whites, and Hispanics all had similarly low completion rates.

Of course, students attend community colleges for many reasons, and noncompletion does not in all cases imply that students did not benefit from the educational program. Nevertheless, the credential value of a degree is still extremely important, and it is difficult to argue that these completion rates are not much too low.

The Changing Role of the City Colleges

The City Colleges have tried to meet the technical needs of the city's economy. A quarter of a century ago, Havighurst (1964) noted that the city's economy was shifting away from manufacturing and he advocated the "continued development of terminal vocational courses related to the employment needs of the Chicago area" (p. 315). In the late 1980s, the colleges launched the Productive Chicago program. This was a collaboration between the City Colleges and the Department of Economic Development to help supply the skills needs of Chicago businesses. The program offered to set up customized training programs in a variety of industries such as transportation, metalworking, food processing, health and financial services, retail, manufacturing, and others.

Nevertheless, in contrast to systems in other cities, the City Colleges, the baccalaureate, or liberal arts transfer programs, remained the "keystone in curricular offerings" of the Chicago system.[38] Indeed, in 1989, baccalaureate programs accounted for 1.75 times the credit hours as occupational programs. Moreover, this number had actually risen from 1.55 between 1985 and 1989 (see Table 38). In 1989, occupational programs only accounted for thirteen percent of all credit hours.

[38] Statement by the City College Chancellor Nelvia Brady quoted in Langan (1990).

Table 38

Credit Hours by Program for Chicago City Colleges

Program	Fiscal Year 1985	Percent (%) Distribution	Fiscal Year 1989	Percent (%) Distribution	Percent (%) Change
Baccalaureate	451,531	24.3	345,362	22.4	-23.5
Business Occupations	105,747	5.7	70,260	4.6	-33.6
Technical Occupations	128,960	6.9	83,936	5.4	-34.9
Health Occupations	55,434	3.0	43,032	2.8	-22.4
Occupation Subtotal	290,141	15.6	197,228	12.8	-32.0
Remedial/Development	97,954	5.3	70,754	4.6	-27.8
Adult Basic/Secondary	709,707	38.2	883,443	57.3	24.5
General Studies	310,710	16.7	46,123	3.0	-85.2
Total	1,860,043	100.0	1,542,910	100.0	-17.0

Source: Data provided to the authors by City Colleges of Chicago.

The system can hardly be considered a significant stepping stone to four-year colleges and universities. In 1987, only 1777 students transferred to four-year colleges.[39] Even in terms of enrollments, not only are baccalaureate students falling in absolute numbers but in relative numbers as well. Baccalaureate enrollments (and occupational enrollments as well) account for a smaller proportion of a shrinking pie.

Perhaps the most significant change in the Chicago City Colleges is the dramatic growth of adult basic education (ABE) (see Table 38). Already in 1985, over thirty-eight percent of the credit hours were devoted to ABE. While total credit hours for the whole system fell by seventeen percent during the following four years, ABE and secondary education grew by one quarter. By 1989, these courses accounted for fifty-seven percent of the total credit hours in the Chicago City College system. Moreover, state enrollment data suggests that within this, adult secondary education fell during this period (Langan, 1990, Table 12). Thus, growth in ABE accounts for more than the net increase in the ABE/secondary education category. Within this category, ESL grew throughout this period.

[39] Data for transfers in 1979 indicated that only thirty percent of those who transferred from City Colleges attained a bachelor's degree within five years (Langan, 1990, p. 43).

It is difficult to look at the Chicago City Colleges and see them as primary institutions in the adjustment to a more sophisticated, uncertain, and fast changing workplace. To be sure, this probably does reflect at least the increased need for basic literacy in a modern economy, and it may be that the City Colleges are playing a crucial role, but this hardly seems to be appropriate for a postsecondary institution. This response is a long way from some subtle adjustment to the sophistication of the workplace of tomorrow. It is a reflection of the depth of the educational problems that confront Chicago. Indeed, as indication of this fact, a program director of a vocational skills program run by the City Colleges defined his role by saying "we are a school for illiterate high school graduates."

Conclusion

In this report, we have juxtaposed two reform strategies—the quantitative strategy that was fueled by the discussions associated with *A Nation at Risk* and the integration strategy which is based loosely on progressive work reform and associated changes in organization and industry structure. Certainly there is strong support in Chicago for strengthened academic requirements as well as some elements of the integration strategy. Nevertheless, neither approach has really penetrated the Chicago school system. Graduation requirements were barely affected by changes in the early 1980s. Neither has the new vocationalism—content integration—taken root despite considerable support. Traditional vocationalism remains strong in the vocational high schools and vocational programs in the zoned schools also appear to be, as they are in other cities, programs of last resort. At best, notions about the integration of vocational and academic instruction are still seen as a reform of voc ed, rather than as the basis for broader change. The business community has been involved with educational reform but has not been a decisive factor. No new institutional relationships—institutional integration—have been forged between Chicago schools and the private sector. In the past, the large industrial firms did have close ties with some of the schools, but this was precisely the sector of the economy that was hit hardest by the economic transformation. Without denying the dedication and skill of many of the teachers, principals, and administrators in the system, the historical record suggests that little significant reform of the content and organization of education in the city took place until the late 1980s.

During much of that and the previous decades, problems associated with race and discrimination dominated the reform agenda, but efforts to end racial segregation have been thwarted by the exodus of white students from the schools. Integration means little when less than an eighth of the students in the public schools are white. The one legacy of the desegregation movement is the magnet system which, in some cases, provides high quality and innovative programs but also tends to be selective.

The problems in the elementary schools and high schools clearly reached the postsecondary institutions. African-American enrollments have fallen in the community colleges, and in any case, the City College system is increasingly taking on the role of second chance teacher of basic skills.

Given the long frustration with educational reform, it is perhaps not surprising that Chicagoans turned to a radical experiment in educational governance. Certainly, the decentralization has weakened the power of the central board of education and has involved thousands of parents and teachers in school administration, but this can only be a beginning. Work reform in the workplace involves both decentralization of responsibility as well as a coherent substantive strategy. Such a strategy does not seem to have emerged in Chicago. Perhaps it may emerge from the examples of some successful local school councils. Without substantive change within the schools, the continuing industrial transformation and the persistent social and economic problems within Chicago will probably continue to overwhelm school reform efforts and prevent the changes necessary to bring the city's schools more in line with the needs of the emerging economy and society.

CONCLUSION

Since World War II, the United States has experienced several waves of educational reform, but the preoccupation during the 1980s with the role of the education system in preparing the workforce distinguished that decade from earlier eras of change. Educational reform was no longer simply a means to achieve a more just and equal society, but a vital key to our international competitive position.

The dominant strategy that emerged during the decade was based on strengthening and spreading traditional academic education. Ironically, while developments in the economy provided an impulse for reform, in many ways, the dominant strategy, despite many positive elements, was not adequate. Since the mid-1980s, a large variety of projects and initiatives have been started that go well beyond the focus on increased academic achievement.

A fundamental characteristic of the organizational restructuring that is taking place in many progressive companies involves the breaking down and reshaping of the traditional separations and barriers between functions within the firm. These firms have moved from a sequential process to an integrated process; similarly, the education and training carried out by firms have not escaped this restructuring process. Education on the job is not only increasing, but it is increasingly integrated with previously separate functions.

The basic argument of this report is that the logic of the integration process should not stop at the boundary of the firm. The next wave of educational reform (the fourth grand story in Cremin's terms) should be based on the integration of schools and workplaces in terms of educational content, organizational form, and institutional linkages. This tightening relationship could be interactive and involve more than a simple process of schools adjusting to changes in the workplace.

Despite the continued strength of a more traditional reform strategy, and, indeed, the barriers to any reform at all, at least two broad developments suggest that significant changes may be possible. First, many current strands of educational reform are already consistent with the principle of integration. Indeed, many of these proposals have been around for years, but they have individual histories and arose as attempts to confront a diverse group of problems, often being advanced and discussed in isolation by researchers,

analysts, and policymakers who rarely interact. Second, we have suggested not only that many individual reforms can be part of a broad and consistent strategy, but also that many reforms that had previously been seen as good pedagogic techniques are now perceived to be crucial for increased productivity and competitiveness. For better or for worse, reforms that are perceived to serve the economy are more likely to be sustained.

The cases that we present suggest that there is reason for optimism as well as pessimism. In most cases, the quantitative reform strategy has had a strong influence. Innovative ideas consistent with the integration strategy have also flourished and have developed influential constituencies. Nevertheless, these efforts have not penetrated much beyond the surface, and, for the most part, remain more or less isolated initiatives or only incipient broader strategies. Moreover, there is also a tendency in many of the more innovative programs, especially those involving content integration, to be mounted as reforms to vocational education, rather than as the basis of broader educational reform. In no case is there a coordinated strategy that combines content, organization, and interinstitutional linkages and relationships. We have learned from the experience of work reform that these three factors are inextricably related.

In evaluating the progress of education systems towards a more integrated strategy, we should remember the progress that private sector firms have made towards workplace reform. Indeed, despite great competitive pressure, some employers have made significant progress, but many, probably a majority, have shown great reluctance. Moreover, neither has the market been able to determine the most appropriate work reform strategy. Alternatively, very different strategies are perhaps appropriate for different industries or market situations. As we have shown in the preceding sections of this report, the political and economic context in which the school systems operate in the cities that we have studied differ significantly. This will certainly influence the type of overall organization that can be realistically planned for the education system.

An education system based on the principle of integration may be consistent with the needs of the economy, but it may also serve broader educational and egalitarian roles that the schools must play. In this regard, it is significant that the goal of strengthening the relationship between the schools and other institutions was a central focus of reform efforts of the 1960s and 1970s when problems of equity and racial justice were much higher on the nation's social policy agenda than they were in the 1980s. The experience in the cities

that we have examined suggests that there are some significant potential benefits for minorities in an educational reform strategy based on greater school work integration. Nevertheless, just as workplace reform may not necessarily benefit all workers, education reform based on the integration strategy is not guaranteed to benefit students in general or minority workers in particular. Indeed, the cases suggest that as long as the various strands of educational reform are implemented piecemeal or as long as efforts to move towards what we have referred to as the integration strategy are viewed as simply reforms of vocational education rather than overall reforms, then reform may leave educational stratification as strong or stronger.

Certainly, improving the equity and effectiveness of education will always be extremely difficult. Contradictions and conflicts between the communitarian and economic roles of the schools will never be resolved. Practical problems abound even if in principle the contradictions have weakened. Nevertheless, current changes in the economy and the associated work reform movement do offer opportunities to strengthen schools, to broaden access to schooling, to make the economy more productive, and to improve the quality of work.

REFERENCES

Advisory Council on Career and Vocational Education. (1985). *Assessment of trade and industry programs in AVTS—Skills centers and comprehensive high schools.* (mimeo), School District of Philadelphia, Division of Career and Vocational Education, Philadelphia, PA.

Aniloff, L. (1988). Mimeographed results of the business survey of job readiness requirements. School District of Philadelphia, Division of Career and Vocational Education, Philadelphia, PA.

Bailey, T. (1987). Employment and training programs. In C. Brecher & R. Horton (Eds.), *Setting municipal priorities 1988* (pp. 163-196). New York: New York University Press.

Bailey. T. (1990). *Changes in the nature and structure of work: Implications for skill requirements and skill formation.* Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Bailey, T. (1991). Jobs of the future and the education they will require: Evidence from occupational forecasts. *Educational Researcher, 20*(2), 11-20.

Bailey, T. (1992). *Discretionary effort and the organization of work: Employee participation and work reform since Hawthorne.* Unpublished paper prepared for the Sloan Foundation, New York, NY.

Bailey, T., & Merritt, D. (1992). *School-to-work transition and youth apprenticeship in the United States.* New York, NY: Manpower Demonstration Research Corporation.

Barry, P. (1989, February). Back from the brink: How inland steel is beating the odds—and the foreign competition. *Chicago Enterprise, 3*(8), 16-21.

Bartel, A., & Lichtenberg, F. (1987). The comparative advantage of educated workers in implementing new technology. *The Review of Economics and Statistics, 69*, 1-11.

Bennet, W. (1984). *To reclaim a legacy: A report on the humanities in higher education.* Washington, DC: National Endowment for the Humanities.

Berne, R., & Tobier, E. (1987). The setting for school policy. In C. Brecher & R. Horton (Eds.), *Setting municipal priorities 1988.* New York: New York University Press.

Berryman, S., & Bailey, T. (1992). *The double helix of education and the economy.* New York, NY: Teachers College, Columbia University, Institute on Education and the Economy.

Best, M. (1990). *The new competition: Institutions of industrial restructuring.* Cambridge, MA: Harvard University Press.

Bowles, S., & Gintis, H. (1976). *Schooling in capitalist America: Educational reform and the contradictions of economic life.* New York, NY: Basic Books.

Brint, S., & Karabel, J. (1989). *The diverted dream: Community colleges and the promise of educational opportunity in America, 1900-1985.* New York, NY: Oxford University Press.

Carnevale, A., Gainer, L., & Villet, J. (1989). *Best practices: What works in training and development, organization and strategic role.* Alexandria, VA: American Society for Training and Development.

Carnevale, A., & Goldstein, H. (1989). *Schooling and training for work in America: An overview.* Alexandria, VA: American Society for Training and Development.

Carnoy, M., & Levin, H. (1985). *Schooling and work in the democratic state.* Stanford, CA: Stanford University Press.

Chicago Board of Education appoints 3-member negotiating team. (1986, November 20). *Chicago Tribune*, Sec. 2, p. 4.

Chicago Department of Planning. (1988, March). *Population forecast for the city of Chicago, 1980-2010* (Urban Issues Paper). Chicago, IL: Author.

Chicago Panel on Public School Policy and Finance. (1985, July 8). *Staffing analysis of educational programs, Chicago board of education, FY 1985 vs. FY 1986.* Chicago, IL: Author.

Chicago Panel on Public School Policy and Finance. (1986, May). *Who gets extra staff? A review of government funded programs.* Chicago, IL: Author.

Chicago Public Schools. (1988). *Options for knowledge.* Chicago, IL: Author.

Chicago United. (1987). *Reassessment of the report of the 1981 special task force on education.* Chicago, IL: Author.

Chubb, J., & Moe, T. (1990). *Politics, markets, and schools.* Washington, DC: The Brookings Institution.

City of Philadelphia, Mayor's Commission for Literacy. (1988). *Literacy in the workplace* (mimeo), Philadelphia, PA.

City University of New York. (1984). *Data book, 1983-84.* New York: Author, Office of Institutional Research and Analysis.

City University of New York. (1985). *Data book, 1984-85* (Table XV-A). New York: Author, Office of Institutional Research and Analysis.

City University of New York. (1987). *Data book, 1986-87* (Table XIV-A). New York: Author, Office of Institutional Research and Analysis.

The City University of New York. (1989). *Summary report prepared for the higher education data system.* New York: Author, Office of Institutional Research and Analysis.

Cohen, A. M. (1989, March). *Reconsidering the community college contribution.* Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

Cohen, D., & Garet, M. (1975, February). Reforming educational policy with applied social research. *Harvard Educational Review, 45*(1), 21.

Collins, A., Brown, J. S., & Newman, S. (1989). Cognitive apprenticeship: Teaching the craft of reading, writing, and mathematics. In L. Resnick (Ed.), *Knowing, learning, and instruction: Essays in honor of Robert Glaser* (pp. 236-291). Hillsdale, NJ: Erlbaum.

Commentary from Ray Scannell. (1986, November 27). *Chicago Tribune*, Sec. 1, p. 27.

Commission on Workforce Quality and Labor Market Efficiency. (1989). *Investing in people: A strategy to address America's workforce crisis.* Washington, DC: U.S. Department of Labor.

Commission on the Skills of the American Workforce. (1990). *America's choice: High skills or low wages!* Rochester, NY: National Center on Education and the Economy.

Cremin, L. (1989). *Popular education and its discontents.* New York, NY: Harper and Row.

Davidson, J. (1986). Power struggle between unions and Chicago Board of Education. *Chicago Tribune*, Sec. 2, p. 1.

Dertouzos, M., Lester, R., & Solow, R. (1989). *Made in America: Regaining the productive edge.* Cambridge: MIT Press.

Designs for Change. (1985). *Chicago's failing schools and how to save them.* Chicago, IL: Author.

Designs for Change. (1990). *Chicago principals: Changing of the guard.* Chicago, IL: Author.

Dewey, J. (1916). *Democracy and education.* New York, NY: The Free Press.

Dornsife, C. (1991). *Beyond articulation: The development of tech prep programs.* Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Drennan, M. (1981). Economy. In C. Brecher & R. Horton (Eds.), *Setting municipal priorities, 1982* (pp. 59-64). New York: New York University Press.

Drennan, M. (1989). The local economy. In C. Brecher & R. Horton (Eds.), *Setting municipal priorities, 1990* (pp. 27-49). New York: New York University Press.

El-Khawas, E., Carter, D., & Ottinger, C. (1988). *Community college fact book.* New York, NY: Macmillan.

Faist, T. (1992). *Social citizenship and the transformation from school to work among immigrant minorities: Turks in Germany and Mexican Americans in the U.S. during the 1980s.* Doctoral dissertation, New School for Social Research, New York, NY.

Farrar, E. (1988). *The Boston compact: A teaching case.* New Brunswick: Rutgers, State University of New Jersey, Center for Policy Research in Education, Eagleton Institute of Policy.

Feuer, D. (1988, October). Training Magazine's industry report 1988. *Training*, pp. 31-39.

Finn, C. E., Jr., & Clements, S. K. (1990, May). Complacency could blow grand opportunity. In *Catalyst* (pp. 2-6). Chicago, IL: Community Renewal Society.

First Fidelity Bancorporation. (1989, June). Revealing the regional economy. *Regional Economic Trends*, pp. 1-11.

Fossett, J. W., & Orfield, G. (1987). Market failure and federal policy: Low-income housing in Chicago 1970-1983. In G. A. Tobin (Ed.), *Divided neighborhoods* (pp. 158-180). Newbury Park, CA: Sage Publications.

Goodwin, D. (1989). *Postsecondary vocational education.* Washington, DC: National Assessment of Vocational Education, U.S. Department of Education.

Grant, G. (1988). *The world we created at Hamilton High.* Cambridge, MA: Harvard University Press.

Grasso, J. T., & Shea, J. R. (1979). Vocational education and training: Impact on youth. In *A technical report for the Carnegie Council on Policy Studies in Higher Education.* Princeton, NJ: Carnegie Foundation for the Advancement of Teaching.

Green, D. L. (1988, April). *Vocational education and the black community: The case of Chicago and the building trades, 1919-1970.* Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.

Green, D. L. (1989, March). *Urban vocational education amidst economic, political, and racial transition: Chicago vocational school, 1950 to the present.* Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

Grubb, W. N. (1984). The bandwagon once more: Vocational preparation for high-tech occupations. *Harvara Educational Review*, *54*(4), 429-451.

Grubb, W. N., & Lazerson, M. (1974). *American education and vocationalism.* New York, NY: Teachers College, Columbia University.

Gruber, W. (1988, September 30). Work-and-learn system pondered. *Chicago Tribune*, Sec. 3, p. 2.

Hamilton, S. F. (1990). *Apprenticeship for adulthood: Preparing youth for the future.* New York, NY: Free Press.

Harris, C., & Warren, J. (1988, June 30). New union center makes Washburne future hazier. *Chicago Tribune*, Sec. 2C, p. 1.

Havighurst, R. J. (1964). *The public schools in Chicago: A survey for the Board of Education of the City of Chicago.* Chicago, IL: Chicago Board of Education.

Hayes, R., Wheelwright, S., & Clark, K. (1988). *Dynamic manufacturing: Creating the learning organization.* New York, NY: Free Press.

Hess, A. (1990). *Chicago school reform: What it is and how it came about.* Chicago, IL: Chicago Panel on Public School Policy and Finance.

Hirschman, A. (1971). *Exit, voice, and loyalty.* Cambridge, MA: Harvard University Press.

Houston, J. (1989, January 14). City public schools lose 9,307 more students. *Chicago Tribune*, Sec. 1, p. 5.

Houston, J., & Wilson, T. (1986, November 6). Chicago schools superintendent Manford Byrd, Jr. refuses to budge. *Chicago Tribune*, Sec. 2, p. 2.

Hughes M. A., & Madden, J. F. (1987). Shifts among the counties in jobs and resident workers. In A. A. Summers & T. F. Luce (Eds.), *Economic development within the Philadelphia metropolitan area* (pp. 92-189). Philadelphia: University of Pennsylvania Press.

Illinois Department of Commerce and Community Affairs. (1988, October-November). *Illinois Bi-Monthly Economic Data Summary.*

Illinois State Board of Education. (1989, April 29). Unpublished printouts. Springfield: Author.

Illinois State Board of Higher Education. (1989). *1989 report on minorities in higher education* (Part B, Tables 2-5 and 2-12). Chicago: Author.

Johnston, W., & Packer, A. (1987). *Workforce 2000: Work and workers for the twenty-first century*. Indianapolis, IN: Hudson Institute.

Joravsky, B. (1990, September). Hard lessons. *Chicago*, pp. 122-127, 145.

Kantor, H., & Tyack, D. B. (Eds.). (1982). *Work, youth and schooling: Historical perspectives on vocationalism in American education*. Stanford, CA: Stanford University Press.

Kasarda, J. D. (1989). Urban industrial transition and the underclass. *The Annals of the American Academy of Political and Social Science*, *501*(1), 26-47.

Katznelson, I., & Weir, M. (1985). *Schooling for all: Class, race, and the decline of the democratic ideal.* New York, NY: Basic Books.

Kearns, D., & Doyle, D. (1988). *Winning the brain race: A bold plan to make our schools competitive*. San Francisco, CA: Institute for Contemporary Studies Press.

Kett, J. (1989, September). *From useful knowledge to vocational education.* Paper prepared for a conference, "Education and the Economy: Hard Questions, Hard Answers," held at Brewster, MA, and sponsored by Teachers College at Columbia University, Institute on Education and the Economy, New York, NY.

Kiechel, W. (1990, March 12). The organization that learns. *Fortune*, pp. 133-136.

Labaree, D. (1987). Politics, markets, and the compromised curriculum. Review essay. *Harvard Educational Review*, *57*(4), 483-494.

Langan, M. (1990). *Trends in community college education: The role of the city colleges of Chicago*. Chicago, IL: University of Chicago.

Levy, F., & Murnane, R. (in press). U.S. earnings levels and earnings inequity: A review of recent trends and proposed explanations. *Journal of Economic Literature.*

Lilliard, L., & Tan, H. (1986). *Private sector training: Who gets it and what are its effects?* Santa Monica, CA: RAND Corporation.

Lindblom, C. F. (1977). *Politics and markets: The world's political economic system.* New York, NY: Basic Books.

Marciniak, E. A. (1986). *Washburne trade school.* Chicago, IL: Loyola University, Center for Urban Policy.

Marshall, H. (1988). Work or learning: Implications of classroom metaphors. *Educational Researcher, 17*(2), 9-16.

McDonnell, L. M. (1989, September). *Restructuring American schools: The promise and the pitfalls.* Paper prepared for a conference, "Education and the Economy: Hard Questions, Hard Answers," held at Brewster, MA, and sponsored by Teachers College at Columbia University, Institute on Education and the Economy, New York, NY.

Mincer, J. (1989, February). *Labor market effects of human capital and of its adjustment to technological change.* Unpublished conference paper. New York, NY: Teachers College, Columbia Univer ity, Institute on Education and the Economy.

Mitchell, V., Russell, E., & Benson, C. (1989). *Exemplary urban career-oriented high schools.* Berkeley: National Center for Research on Vocational Education, University of California at Berkeley.

Moore, D. R. (1989, May). *Voice and choice in Chicago.* Paper prepared for the Conference on Choice and Control in American Education, University of Wisconsin at Madison.

National Commission on Excellence in Education. (1983). *A nation at risk: The imperative of educational reform.* Washington, DC: U.S. Government Printing Office.

New York City Board of Education. (1985). *Dropouts from occupational education.* A report prepared by the Analytic Studies Unit. New York: Author, Office of Educational Assessment.

New York City Human Resources Administration. (1988). *Dependency: Economic and social data for New York City* (Table 3). New York: Human Resources Administration, Office of Policy and Program Development.

New York State Education Department with the cooperation of the staff of the Board of Education of the City of New York. (1951). *Vocational education in New York City schools.* New York: Board of Education.

O'Brien, L. (1989a). *Evaluation of trade and industry programs in the comprehensive high schools of Philadelphia.* Philadelphia, PA: DeLone Kahn and Associates.

O'Brien, L. (1989b). *Evaluation of business education programs in the comprehensive high schools of Philadelphia.* Philadelphia, PA: DeLone Kahn and Associates.

Orfield, G. (1969). *The reconstruction of southern education.* New York, NY: Wiley Interscience.

Orfield, G. (1988). Race relations in metropolitan Chicago: Problems and possibilities. In *Regional partnership* (Chapter 7). Chicago, IL: Metropolitan Planning Council.

Orfield, G. (1989). *Can the educational system produce the workers needed in metropolitan Chicago?* Chicago, IL: Economic Development Commission of the City of Chicago.

Orfield, G., & Mitzell, H. (Eds.). (1984). *The Chicago study of access and choice in higher education.* Report to the State Senate Committee on Higher Education, Chicago, IL.

Orfield, G., & Monfort, F. (1988). *Racial change and desegregation in large school districts, trends through the 1986-1987 school year.* Alexandria, VA: National School Boards Association.

Orfield, G., Monfort, F., & Aaron, M. (1989). *Racial change and desegregation in large school districts, trends through the 1987-1988 school year.* Alexandria, VA: National School Boards Association.

Pedler, M., Boydell, T., & Burgoyne, J. (1989). The Learning Company. *Studies in Continuing Education, 11*(2), 91-101.

Pennsylvania Department of Education. (1988). *Secondary vocational education statistics, 1986-87.* Harrisburg: Author.

Pincus, F. (1986). Vocational education: More false promises. In L. S. Zwerling (Ed.), *The community college and its critics* (pp. 31-39). San Francisco, CA: Jossey-Bass.

Powell, A., Farrar, E., & Cohen, D. (1985). *The shopping mall high school: Winners and losers in the educational marketplace.* Boston, MA: Houghton Mifflin Company.

Price, J. R., & Stern, J. R. (1987). Magnet schools as a strategy for integration and school reform. *Yale Law and Policy Review, 5I*(2), 291-321.

Ravitch, D. (1974). *The great school wars: A history of New York City public schools.* New York, NY: Basic Books.

Ravitch, D. (1978). *The revisionists revised: A critique of the radical attack on the schools.* New York, NY: Basic Books.

Ravitch, D. (1983). *The troubled crusade: American education, 1945-1980.* New York, NY: Basic Books.

Reardon, P. (1988, May 24). System flunks test of public opinion. *Chicago Tribune*, Sec. 1, p. 11.

Reardon, P., & Goozner, M. (1988, May 24). City's willing to pay for good schools, poll says. *Chicago Tribune*, Sec. 1, p. 11.

Recktenwald, W. (1986, November 4). Forty-three students walk out of classes at Washburne Trade School in Chicago. *Chicago Tribune*, Sec. 2, p. 2.

Resnick, L. (1987). *Education and learning to think.* Washington, DC: National Academy Press.

Rosenbaum, J. (1989, March). *Linkages between high schools and work: Lessons from Japan.* Paper prepared for the National Assessment of Vocational Education, U.S. Department of Education, Washington, DC.

Rothman, R. (1988, November 9). Businesses refuse to sign Boston Compact II. *Education Week*, p. 5.

School District of Philadelphia, Office of Planning, Research, and Evaluation. (1986). *Survey of 1985 graduates* (Report No. 8713). Philadelphia, PA: Author.

School District of Philadelphia, Office of Planning, Research, and Evaluation. (1987). *Follow-up survey of graduates of the automotive mechanics curriculum—1985* (Report No. 8727). Philadelphia, PA: Author.

School District of Philadelphia, Office of Planning, Research, and Evaluation. (1988a). *Survey of 1986 graduates* (Report No. 8835). Philadelphia, PA: Author.

School District of Philadelphia, Office of Planning, Research, and Evaluation. (1988b). *Survey of 1986 graduates, area vocational-technical schools* (Report No. 8845). Philadelphia, PA: Author.

School District of Philadelphia, Office of Planning, Research, and Evaluation. (1989). *Survey of 1987 graduates, area vocational-technical schools* (Report No. 8855). Philadelphia, PA: Author.

Schultz, T. (1975). The value of the ability to deal with disequilibria. *Journal of Economic Literature, 13*(4), 827-846.

Siler, J. F. (1988, December 25). 'Big steel' bets the future on its Indiana mills. *New York Times*, Sec. F, p. 5.

Stanback, T., Jr. (1988). *Analysis of Census Bureau data.* Unpublished manuscript, Conservation of Human Resources, Columbia University, New York, NY.

Stern, D., Raby, M., & Dayton, C. (1992). *Career academies: Partnerships for reconstructing American high schools.* San Francisco, CA: Jossey-Bass.

Sticht, T. (1982). *Basic skills in defense.* Alexandria, VA: Human Resources Research Organization.

Summers, A. A., & Luce, T. F. (Eds.). (1987). *Economic development within the Philadelphia metropolitan area.* Philadelphia: University of Pennsylvania Press.

Teitel, L. (1988). *The impact of business and industry oriented programs on community colleges.* Unpublished dissertation, Graduate School of Education, Harvard University, Cambridge, MA.

Tobier, E. (1984). Population. In C. Brecher & R. Horton (Eds.), *Setting municipal priorities: American cities and the New York experience* (pp. 27-29). New York: New York University Press.

Training grows in basic skills. (1988, June 5). *Chicago Tribune*, Sec. 8, p. 1.

U.S. Bureau of the Census. (1970). *Census of the population: General economic and social characteristics* (PC(1)-C34, New York, Table 85). Washington, DC: U.S. Government Printing Office.

U.S. Bureau of the Census. (1980). *Census of the population: General social and economic characteristics* (PC80-I-C34). Washington, DC: U.S. Government Printing Office.

U.S. Bureau of the Census. (1987). *Survey of participation in adult education.* Washington, DC: U.S. Government Printing Office.

U.S. Bureau of the Census. (1989). *Statistical abstract of the United States 1989.* Washington, DC: U.S. Department of Commerce.

U.S. Department of Commerce, U.S. Bureau of the Census. (1970, 1980, 1987). *County business patterns: Illinois.* Washington, DC: U.S. Government Printing Office.

U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics. (1988). *Digest of educational statistics, 1988.* Washington, DC: U.S. Government Printing Office.

U.S. Department of Education. (1989). *Educational partnerships in public elementary and secondary schools.* Washington, DC: National Center for Education Statistics, Office of Educational Research and Improvement.

U.S. Department of Education. (1991). *America 2000: An educational strategy.* Washington, DC: Author.

U.S. Department of Labor, Bureau of Labor Statistics. (1969, 1971, 1979, 1981, 1986, 1988). Public Use Sample tapes.

U.S. Department of Labor, Bureau of Labor Statistics. (1987). *Geographic profile of employment and unemployment* (Bulletin No. 2305). Washington, DC: Author.

U.S. Department of Labor, Bureau of Labor Statistics. (1990, February). *Employment and earnings, 37* (Tables D1 and 9). Washington, DC: Author.

U.S. House of Representatives. (1965). *Hearings, investigation of de facto segregation in Chicago's public schools*. Washington, DC: Committee on Education and Labor, Special Subcommittee, 89th Congress, 1st Session.

Waldinger, R. (1989a). Immigration and urban change. *Annual Review of Sociology, 15*, 211-232.

Waldinger, R. (1989b). Race and ethnicity. In C. Brecher & R. Horton (Eds.), *Setting municipal priorities, 1990* (p. 55). New York: New York University Press.

Wilson, R. (1986). Minority students and the community college. In L. S. Zwerling (Ed.), *The community college and its critics* (pp. 61-70). San Francisco, CA: Jossey-Bass.

Wilson, W. J. (1987). *The truly disadvantaged: The inner city, the underclass, and public policy*. Chicago, IL: University of Chicago Press.

Wilson, W. J. (1989). The underclass: Issues, perspectives, and public policy. *The Annals of the American Academy of Political and Social Science, 501*(3), 182-192.

Zuboff, S. (1988). *In the age of the smart machine: The future of work and power*. New York, NY: Basic Books.

Zwerling, L. S. (1986). Lifelong learning: A new form of tracking. In L. S. Zwerling (Ed.), *The community college and its critics* (pp. 52-60). San Francisco, CA: Jossey-Bass.

BIBLIOGRAPHY

Adelman, N. E. (1989). *The case for integrating academic and vocational education.* Washington, DC: Policy Studies Associates.

Birenbaum, W. (1986). From mass to class in higher education. In L. S. Zwerling (Ed.), *The community college and its critics* (p. 4). San Francisco, CA: Jossey-Bass.

Carnevale, A., & Gainer, L. (1989). *The learning enterprise.* Washington, DC: The American Society for Training and Development and the U.S. Department of Labor, Employment and Training Administration.

Center for Urban Economic Development. (1986). *Labor force-based economic development.* Chicago: University of Illinois at Chicago.

Center for Urban Economic Development. (1988). *Analysis of the labor force in the mid-southwest area of Chicago.* Chicago: University of Illinois at Chicago.

Chicago Panel on Public School Policy and Finance. (1989, July 21). *Testimony on tentative 1989 Chicago board of education budget.* Chicago, IL: Author.

Christen, B. (1988). Murray Bergtraum High School for Business Careers. In M. Levine & R. Trachtman (Eds.), *American business and the public school: Case studies of corporate involvement in public education* (pp. 57-74). New York, NY: Teachers College Press, Columbia University.

City University of New York. (1988). *Data book, 1987-88.* New York: Author, Office of Institutional Research and Analysis.

Clune, W. H., with White, P., & Patterson, J. (1989). *The implementation and effects of high school graduation requirements: First steps towards curriculum reform* (CPRE Research Report Series RR-011). New Brunswick: Rutgers University, State University of New Jersey, Center for Policy Research in Education.

Cohen, A. M., & Brawer, F. B. (1981). *The American community college.* San Francisco, CA: Jossey-Bass.

Commission on Work, Family, and Citizenship. (1988). *The forgotten half: Pathway to success for America's youth and young families.* Washington, DC: William T. Grant Foundation.

Committee to Support Philadelphia Public Schools, Education for Employment Task Force. (1986). *Education for employment: Imperatives for change.* Philadelphia, PA: Author.

DeLone, R. (1989, November). *Occupational education, minority opportunity and the labor market in the Philadelphia area.* Unpublished manuscript, Columbia University, Conservation of Human Resources, New York, NY.

Faist, T. (1990, March). *Incorporation of the descendants of immigrants in the United States and the Federal Republic of Germany in the 1970s and 1980s.* Paper presented at the Seventh International Conference of Europeanists, Washington, DC.

Goozner, M. (1988, December 21). Other states help factories face future. *Chicago Tribune*, pp. 1, 19.

Grubb, W. N., & Lazerson, M. (1982). Education and the labor market, recycling the youth problem. In H. Kantor & D. B. Tyack (Eds.), *Work, youth, and schooling: Historical perspectives on vocationalism in American education* (pp. 82-117). Stanford, CA: Stanford University Press.

Hess, A., Green, D. O., Stapleton, A. E., & Reyes, O. (1988). *Invisibly pregnant: Teenage mothers and the Chicago public schools.* Chicago, IL: Chicago Panel on Public School Policy and Finance.

Hill, P. (Ed.). (1990). *High schools with character.* Washington, DC: RAND.

Illinois State Board of Education. (1985). *The state plan for revitalizing vocational education in Illinois, fiscal years 1986-1988*. Springfield: Author.

Katz, M. (1968). *The irony of early school reform: Educational innovation in mid-nineteenth century Massachusetts*. Cambridge, MA: Harvard University Press.

Katz, M. (1987). *Reconstructing American education*. Cambridge, MA: Harvard University Press.

Mays, A. F. (1986, November). *A comparative report on business programs at post-secondary schools*. Draft report, Chicago Urban League, Chicago, IL.

McDonnell, L. M. (1988). *Coursework in five states and its implications for indicator development* (Working Paper). Santa Monica, CA: RAND.

McKnight, C. E., Savar, N. L., & Paaswell, R. E. (1986). *Travel behavior of female single parents in the Chicago region*. Chicago: Urban Transportation Center, University of Illinois at Chicago.

Meyer, R. H. (1989, November 3). *New directions in educational reform*. Paper prepared for the 1980 Annual Research Conference of the Association for Public Policy Analysis and Management, Bethesda, MD.

Mier, R. (1983). *Jobs policy: A report to mayor-elect Harold Washington by the employment and economic development research group*. Chicago: Illinois State Department of Economic Development.

Moberg, D. (1989, February 24). Daley on development. *Chicago Reader*, pp. 36-38.

Murphy, K., & Welch, F. (1989). Wage premiums for college graduates: Recent growth and possible explanation. *Educational Researcher, 19*(2), 17-34.

Northeastern Illinois Planning Commission. (1988a, May). Population, households and employment in northeastern Illinois, 1980 to 2010. *Data Bulletin* 88-1. Chicago: Author.

Northeastern Illinois Planning Commission. (1988b, May). The components of population change in northeastern Illinois, 1980 to 1986. *Data Bulletin* 88-2. Chicago: Author.

Osterman, P. (1988). *Employment futures: Reorganization, dislocation, and public policy*. New York, NY: Oxford University Press.

Pennsylvania Economy League. (1989, May). *Philadelphia school district compared to other school districts in southeastern Pennsylvania*. Mimeographed report prepared for the Committee to Support Philadelphia Public Schools, Philadelphia.

Peterson, P. E. (1976). *School politics, Chicago style*. Chicago, IL: University of Chicago Press.

Phelps, L. A. (1985, April). Vocational education: Retooling the enterprise for job training. *Illinois Issues*, pp. 28-33, 43.

Piore, M., & Sabel, C. (1984). *The second industrial divide*. New York, NY: Basic Books.

Raizen, S. (1989). *Reforming education for work: A cognitive science perspective*. Berkeley: National Center for Research on Vocational Education, University of California at Berkeley.

Regional Partnership. (1987). *State of the region*. Chicago, IL: Metropolitan Planning Council.

Regional Partnership. (1988). *State of the region: Background papers*. Champaign, IL: Stipes Press.

Resnick, L. (1988). Learning in school and out. *Educational Researcher*, *16*(9), 13-20.

School District of Philadelphia, Office of Planning, Research, and Evaluation. (1990). *Education for employment: Restructuring career and vocational education in Philadelphia's comprehensive high schools*. Philadelphia, PA: Author.

Scribner, S. (1988, April). *Head and hand: An action approach to thinking* (Occasional Paper No. 3). New York, NY: National Center on Education and Employment, Teachers College, Columbia University.

Shor, I. (1986). *Culture wars: School and society in the conservative restoration, 1969-1984* (Chapter 2). Boston, MA: Routledge and Kegan Paul.

Stern, D., Hoachlander, E. G., Choy, S., & Benson, C. (1985). *One million hours a day: Vocational education in California public secondary schools.* Berkeley: University of California at Berkeley, School of Education.

Tan, H. (1989). *Private sector training in the United States: Who gets it and why.* Unpublished conference paper, Teachers College, Columbia University, Institute on Education and the Economy, New York, NY.

Testa, M., Astone, N., Krogh, M., & Neckerman, K. M. (1989). Employment and marriage among inner city fathers. *Annals, 501*(2), 79-91.

U.S. Federal Reserve Bank of Chicago. (1982). *Seventh district economic data 1982.* Chicago, IL: Federal Reserve Bank.

Wintermute, W. (1984). *"Recovery": An update.* Chicago, IL: Urban League.

Wintermute, W. (1983). *Recession and recovery: Impact on black and white workers.* Chicago, IL: Urban League.