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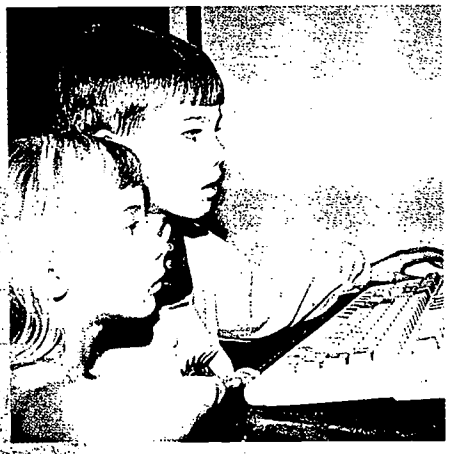
ABSTRACT

In the emerging economy, access and control of information and technology will greatly determine individual and national economic accomplishments. Two primary purposes of public schools--transmitting cultural values and providing socially beneficial knowledge--explain the substantial contribution of public education to employment, earnings, and equality of opportunity. Composing 49 percent of national totals, state taxes finance schools, in most states through minimum foundation programs, and in others with percentage-equalizing, flat grant, and full state funding programs. At 44 percent of the total, local property taxes remain major sources of funding in spite of tax limitations in more than 40 states. At only 7 percent, federal support is targeted to students with specific needs, such as Head Start and school-lunch programs. Expenditures continue to rise because of inflation, expanding roles for education, improved teacher quality, and lower student-teacher ratios. Continuing investments in public education are essential. Global changes are driving a transition toward a service-oriented economy in the U.S., and the declining importance of natural resources and capital, combined with technological changes, make public education the only factor of production allowing continued success. Private-sector models such as charter schools fail to balance important equity concerns with efficiency. Investment in public education, reducing class sizes, more rigorous curricula, higher graduation requirements, and teacher training support equitable and efficient use of resources and promote prosperity. (Contains 13 references.) (TEJ)

INVESTING IN PUBLIC EDUCATION

THE IMPORTANCE OF SCHOOLING IN THE NEW GLOBAL ECONOMY



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INVESTING IN PUBLIC EDUCATION

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MARCH 1999

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PREFACE

The agricultural and manufacturing industries that made America great in the middle and late twentieth century are becoming less important economically. These once-robust industries are being replaced by new service-oriented industries consisting of international global marketing firms, financial institutions, telecommunication companies, and computer technology corporations. The beginning of the twenty-first century undoubtedly will be dubbed The Information Age. In this new and emerging economy, access and control of electronic information and technology will greatly determine both individual and national economic accomplishments.

But what role will education play in the new global economy? In 1990, NEA Research published "What Everyone Should Know about Financing our Schools." That study described historical economic trends in order to illustrate the importance of the U.S. economy and its ability to sustain public education. However, as we approach the year 2000, economic times have changed. The question of note now becomes: What is the importance of education and its ability to sustain our new global economy? "Investing in Public Education" uses historical trends to address these issues by answering four questions:

- Why do we provide public schools?
- How are the expenses for public education paid?
- Why have the costs of public education grown?
- Why should our investment in public education continue?

A special acknowledgment goes to Dr. Neil Theobald, of Indiana University's School of Education, whose foresight provided the basis for this presentation on the importance of a continued economic investment in public education.

Please contact Anthony Rolle, NEA Research, with any comments or questions about this study.

INTRODUCTION

Suppose you are a major stockholder in a corporation that employs 3 million people, invests $300 billion dollars a year, and owns office space worth $600 billion dollars. Your company produces a resource worth five times as much as all of the nation's material, mineral, soil, oil, and forest resources combined. This enterprise directly affects the welfare and safety of your family, your community, and your country. Wouldn't you want to meet regularly with the business managers and other stockholders to discuss what your corporation is attempting to do, how well it is doing, and how it could improve? Of course! You would follow the activities of your company closely and occupy front-row seats at all of the stockholders' meetings.

Now, providing education to public school students cannot be compared directly to the assembly lines of business corporations. Still, public school buildings and school grounds are similar to business offices. Our children are different types of natural resources that principals, teachers, and other educational staff invest in and develop. In a similar sense, each of us is a stockholder in public education. Therefore, we should monitor the organizational and financial structures of our public schools. Yet, few of us give much time or thought to understanding some basic questions that underlie our investment in public education:

- Why do we provide public schools?
- How are the expenses for public education paid?
- Why have the costs of public education grown?
- Why should our investment in public education continue?

When asking these questions, one should remember that decisions to spend money for public education take place in political arenas where bureaucrats, politicians, and special interest groups support the programs they value—not always the programs that are best for students. In taking a close look at a subject as broad and complex as K–12 education

funding, it is easy to get lost in technical details. We hope to avoid such technical discussions in this report. Instead, the report outlines the basic elements for an understanding of the purposes, politics, and methods of funding public elementary and secondary education in the United States.

WHY DO WE PROVIDE PUBLIC SCHOOLS?

The two main purposes of public elementary and secondary education are, first, to transmit time-honored customs and cultures of the adult world to children; and, second, to provide knowledge and information to our children that will return benefits to society. The transmission of customs and cultures involves political struggles over competing values and conceptions of the ideal society. The transfer of important skills, knowledge, and information from teachers to students—as well as other aspects of education—also is shaped by political debates. Almost any educational issue—from organized school prayer to school uniforms to charter schools—can be seen as a struggle among different groups trying to ensure that their ideals are reproduced in students (Hurn 1993: 1–39).

Public education in the United States also represents a monetary investment in our children and ourselves. Most people understand that education is an important investment and support their public schools through annual expenditures of more than $300 billion nationally. Investment in education today will shape standards of living, levels of employment and earnings, and equality of opportunities in America tomorrow. Ultimately, controversies surrounding educational spending reflect broader economic, political, and social concerns about the quality of American society and our status globally.

U.S. Standard of Living

A nation's standard of living depends on its natural wealth and on its average level of education. In both respects, the United States is fortunate, with the world's second highest standard of living based on constant Gross Domestic Product (GDP) per person.[1]

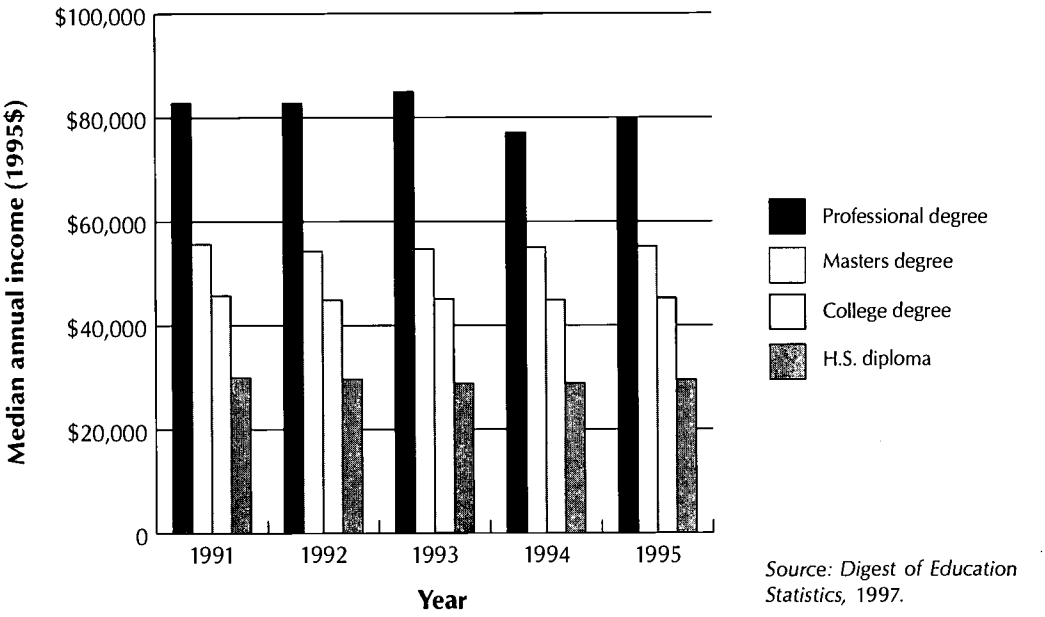
[1] GDP per person measures the total economic output of the nation—all households, businesses, government, and international sectors—in "total numbers of all dollars generated" for each individual. GDP does not include the effects of profits that arise from foreign investments.

International comparisons by the Organization for Economic Cooperation and Development (OECD 1998) indicate, for 1996, a GDP per person of $27,821 in the United States; $25,402 in Switzerland; $23,255 in Japan; $21,529 in Canada; and $21,200 in Germany. Only Luxembourg was ranked higher.

Employment and Earnings

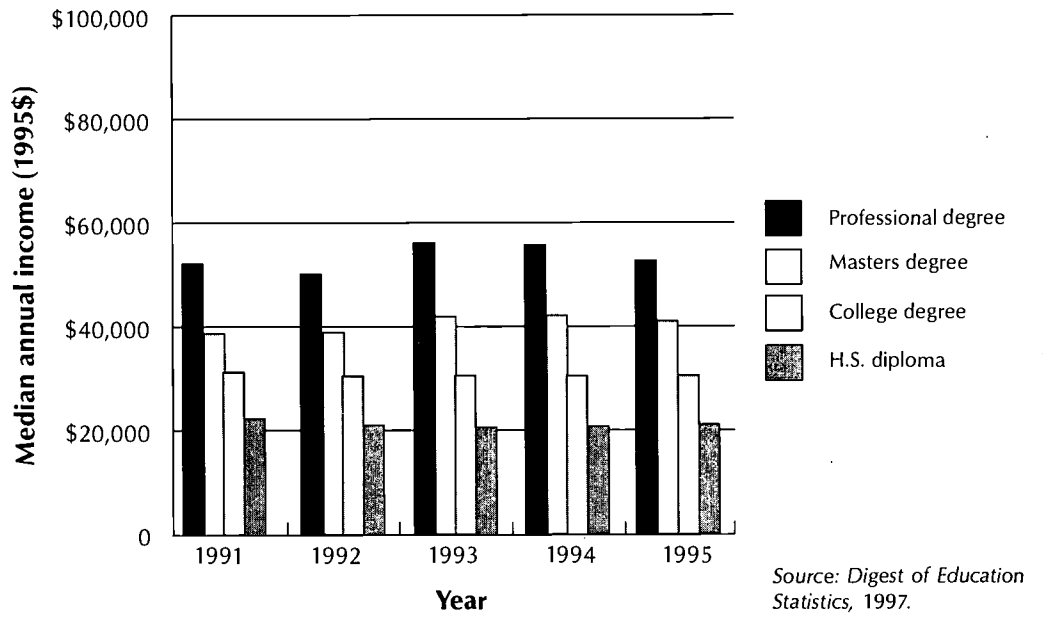
High levels of education also provide gainful employment for the labor force. The greater the level of education attained, the greater the amount of economic gain received. Figures 1A and 1B show

FIGURE 1A: MEDIAN ANNUAL INCOME OF MEN 25 YEARS AND OLDER BY LEVEL OF EDUCATION COMPLETED



Source: Digest of Education Statistics, 1997.

FIGURE 1B: MEDIAN ANNUAL INCOME OF WOMEN 25 YEARS AND OLDER BY LEVEL OF EDUCATION COMPLETED

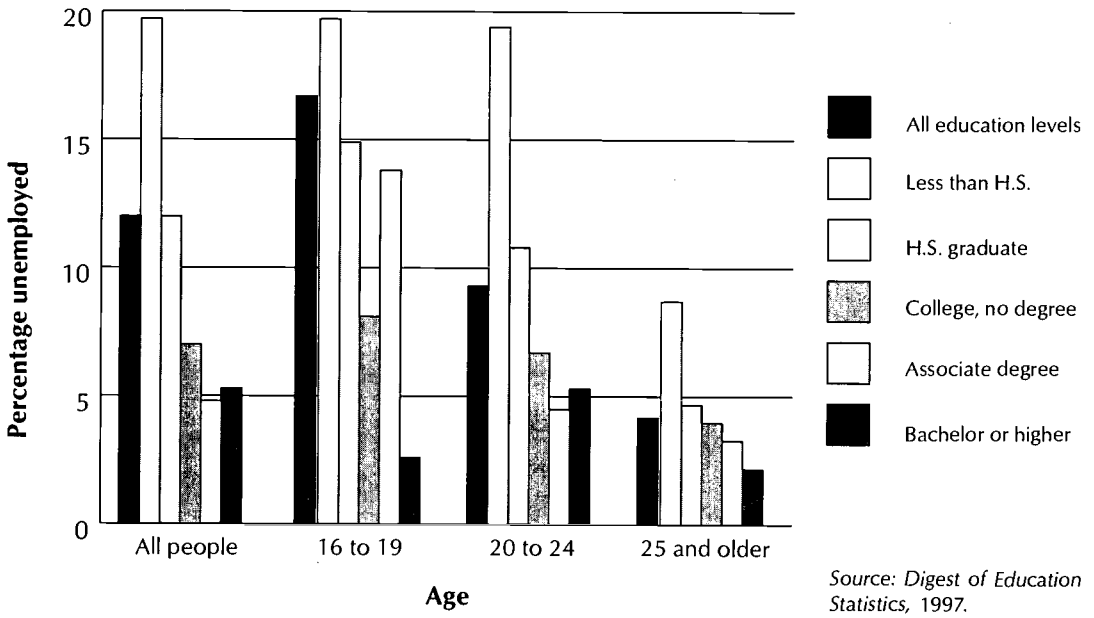


Source: Digest of Education Statistics, 1997.

annual income by levels of education completed for men and women, respectively. Interpreting these charts in terms of dollars earned in a lifetime, a person who is only a high school graduate will earn half as much as a person who is a college graduate.

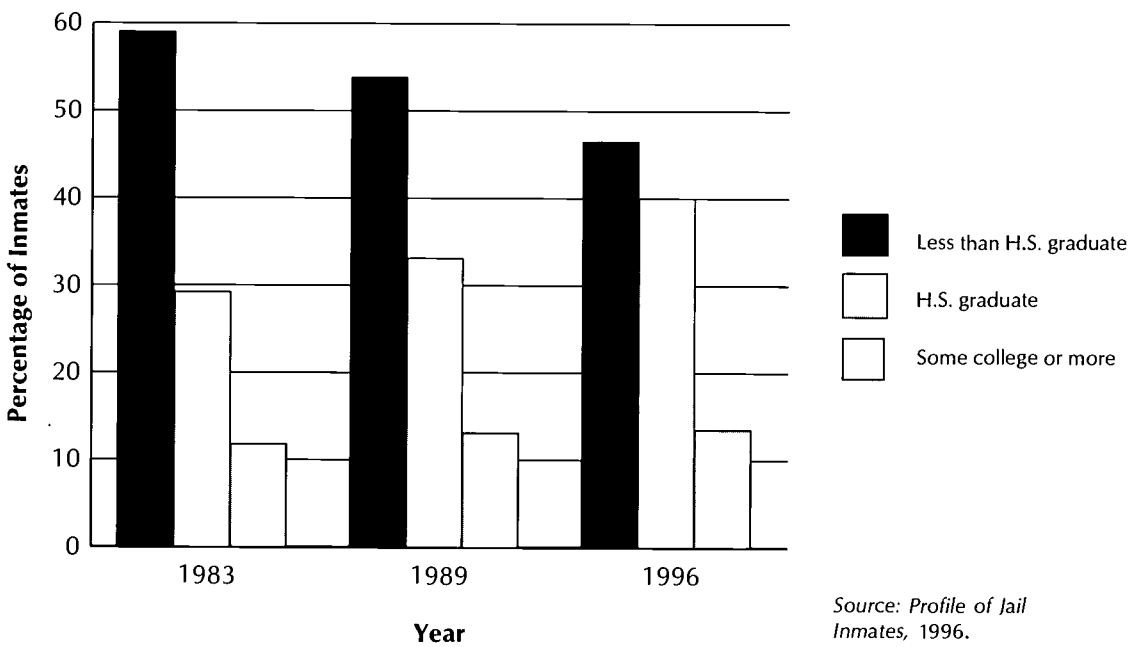
Figures 2A and 2B show unemployment rates and incarceration rates, respectively, for people 16 years and older by the level of education completed. People with lower levels of educational attainment were far more likely to be unemployed or in jail than those with more education.

FIGURE 2A: UNEMPLOYMENT RATE OF PERSONS 16 YEARS AND OLDER BY HIGHEST DEGREE ATTAINED, 1996



Source: Digest of Education Statistics, 1997.

FIGURE 2B: PERCENTAGE OF JAIL INMATE POPULATION BY LEVEL OF EDUCATION, 1983–96

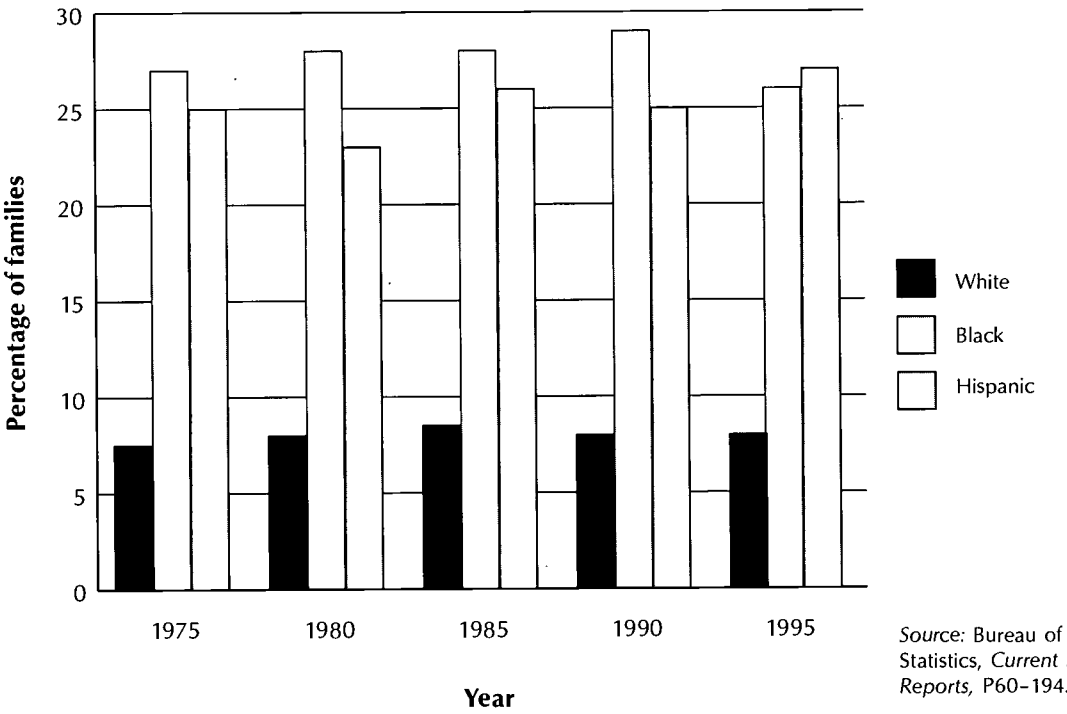


Source: Profile of Jail Inmates, 1996.

Equality of Opportunity

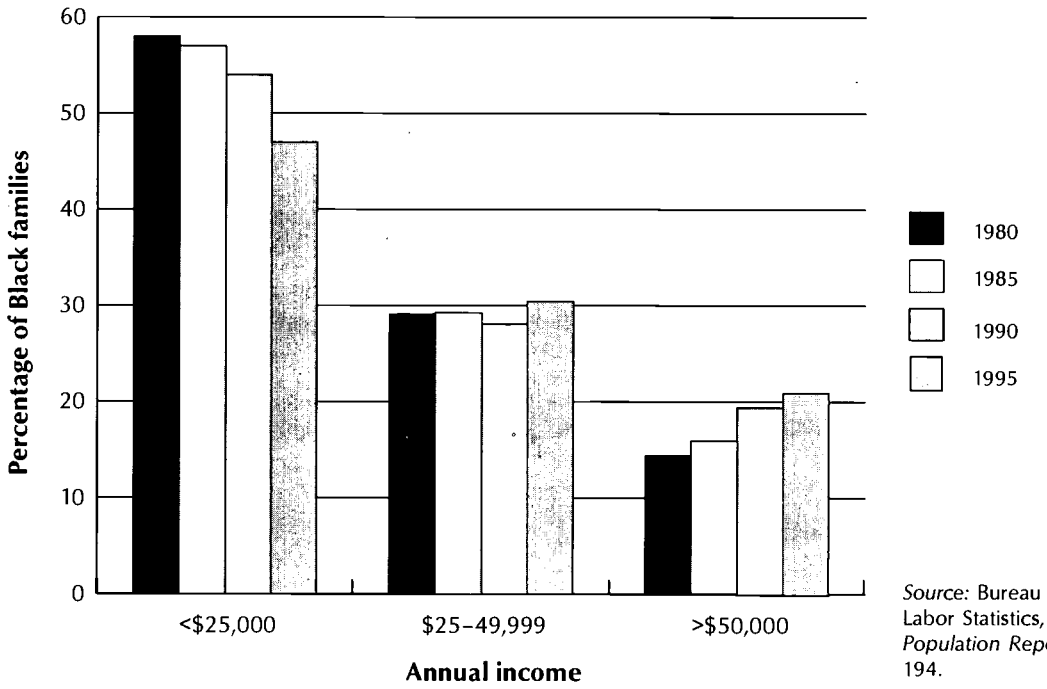
Public education is a great force for creating and enhancing equality of opportunity. Traditionally, achievement in education provided the means through which millions of poor or immigrant children realized economic opportunity in America. Today, although much work remains, equal educational opportunity is being expanded to millions who were neglected previously. For example, although the percentage of Black and Hispanic families below the poverty line is relatively unchanged (Figure 3A), the percentage of these families earning more than $50,000 per year has increased since 1980 (Figures 3B and 3C).

FIGURE 3A: PERCENTAGE OF FAMILIES LIVING BELOW POVERTY LEVEL BY RACE, 1975–95



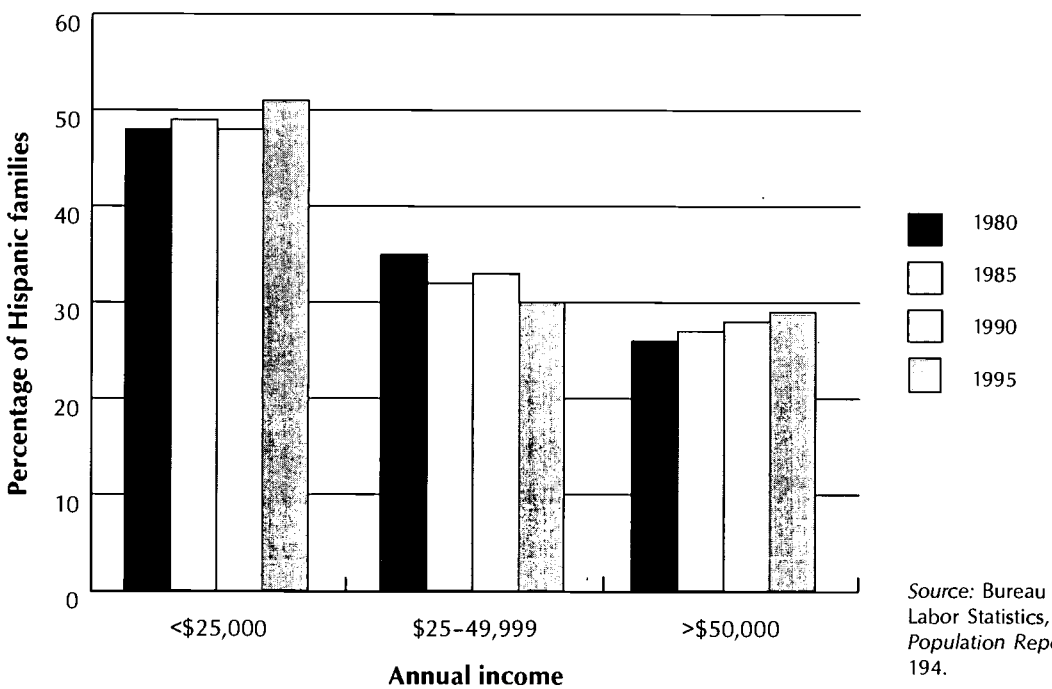
Source: Bureau of Labor Statistics, *Current Population Reports,* P60-194.

FIGURE 3B: DISTRIBUTION OF INCOME AMONG BLACK FAMILIES (1993$)



Source: Bureau of Labor Statistics, *Current Population Reports*, P60-194.

FIGURE 3C: DISTRIBUTION OF INCOME AMONG HISPANIC FAMILIES (1993$)



Source: Bureau of Labor Statistics, *Current Population Reports*, P60-194.

How Are the Expenses for Public Education Paid?

Contrary to popular belief, the U.S. Constitution does not address education specifically; consequently, each of the 50 state constitutions mandates its state legislature as responsible for defining the organizational structure and supplying the budget for public education. The federal government provides financial support for very specific elementary and secondary school programs. As a result, state and local governments provide the vast majority of money for school district budgets. Nationally, state taxes provide 49 percent of public school budgets, and local school districts generate 44 percent—the federal government pays for only about 7 percent of the total spending for public schools.

State Support of Education

Most state governments finance a substantial percentage of their education budgets. Nationally, this portion is just above 49 percent of all school costs. State-to-state variations in financial support reflect a variety of concerns, such as the importance placed on public education, the structure of the state tax system, or the amount of local district control desired (Table 1).

Unlike local school districts, which depend on property taxes as their primary source of stable revenue, states have access to a variety of tax sources. The most important of these is the *general sales tax*, generating more than $132 billion for 45 states. Next in importance is the *individual income tax*, generating almost $126 billion for 41 states. *Selective sales taxes* on motor vehicles, gasoline, tobacco, and alcohol—along with state property and corporation taxes—are lesser sources of state revenue. All of these funds help to support state government activities, including education (Table 2).

Distribution of State Money for Education

Each state uses some type of formula to distribute tax dollars to school districts. The most popular

TABLE 1: EXPENDITURES PER STUDENT AND SPENDING BY SOURCE, 1998

State	*Expenditures per student ($)*	*Percentage from state sources*	*Percentage from local sources*
Hawaii	5,681	90.3	2.3
Michigan	6,993 *	81.8	11.6
New Mexico	5,278	70.4	20.8
Washington	6,034	68.2	24.8
Delaware	7,840	67.3	25.6
Arkansas	4,860	66.1	25.6
Kentucky	5,632 *	66.0	26.5
North Carolina	5,438	65.8	27.1
Idaho	4,665 *	64.7	28.8
Alabama	4,963	64.5	26.0
Alaska	9,132 *	63.6	23.9
West Virginia	6,619	62.8	28.6
Utah	3,695	62.6	31.1
Oklahoma	4,309 *	62.5	27.8
Oregon	6,098	61.7	31.2
Kansas	5,674	58.7	35.9
Minnesota	6,220 *	57.3	38.8
California	5,303 *	56.8	34.3
Mississippi	4,421 *	56.8	30.2
Wisconsin	6,809	55.0	40.7
Iowa	5,421	54.1	42.2
Indiana	6,080 *	53.6	41.4
South Carolina	5,365	52.4	40.1
Georgia	5,758	52.3	41.2
Tennessee	5,179 *	51.5	40.6
Louisiana	4,805 *	49.8	38.2
U.S. and D.C.	**6,098**	**49.4**	**43.8**
Montana	5,619	48.6	41.5
Florida	5,518	48.5	44.3
Arizona	4,611 *	48.1	44.1
Wyoming	5,911	48.0	45.2
Maine	7,010 *	45.9	47.8
Colorado	5,292 *	44.5	49.9
Ohio	6,003	43.3	50.0
Texas	5,794	43.0	49.4
Rhode Island	7,683	42.4	52.4
North Dakota	4,858	41.7	46.6
Pennsylvania	7,153 *	41.2	53.3
Connecticut	8,803	40.4	55.0
Maryland	6,866	40.3	54.0
New York	8,872	40.3	53.2
Missouri	5,227 *	40.0	54.1
New Jersey	9,704 *	37.7	59.2
Nebraska	5,480 *	37.2	59.0
Virginia	6,115	37.1	57.5
Massachusetts	7,308 *	36.1	58.8
South Dakota	4,852 *	31.7	58.9
Nevada	5,058	31.4	64.4
Vermont	6,840 *	28.0	67.2
Illinois	5,748 *	26.7	66.3
New Hampshire	5,964 *	6.1	90.8
District of Columbia	7,119 *	—	85.2

Source: NEA Database, 1998.

TABLE 2: STATE REVENUE BY TYPE OF TAX, 1995

(AMOUNT IN MILLIONS OF DOLLARS)

Category	Amount ($)	% of total revenue
General sales tax	132,236	33.1
Individual income tax	125,610	31.5
Other selective taxes	48,876	12.2
Motor vehicle and fuels	37,873	9.5
All corporate taxes	34,093	8.5
Alcohol & tobacco taxes	10,945	2.7
Property taxes	9,518	2.4
Total revenue	399,151	100.0

Source: Bureau of the Census, *State Government Finances,* Series GF, No. 3, 1997.

method is called the *minimum foundation program.* In general, the minimum foundation program works like this:

- The state determines the minimum amount of money to be spent on each student in all of the districts throughout the state.
- The property tax rate to provide this amount in the wealthiest of school districts is calculated.
- All districts are required to tax themselves at this rate.
- The state makes up the difference between the dollars raised locally through the mandated tax and the dollars required by the minimum foundation program.

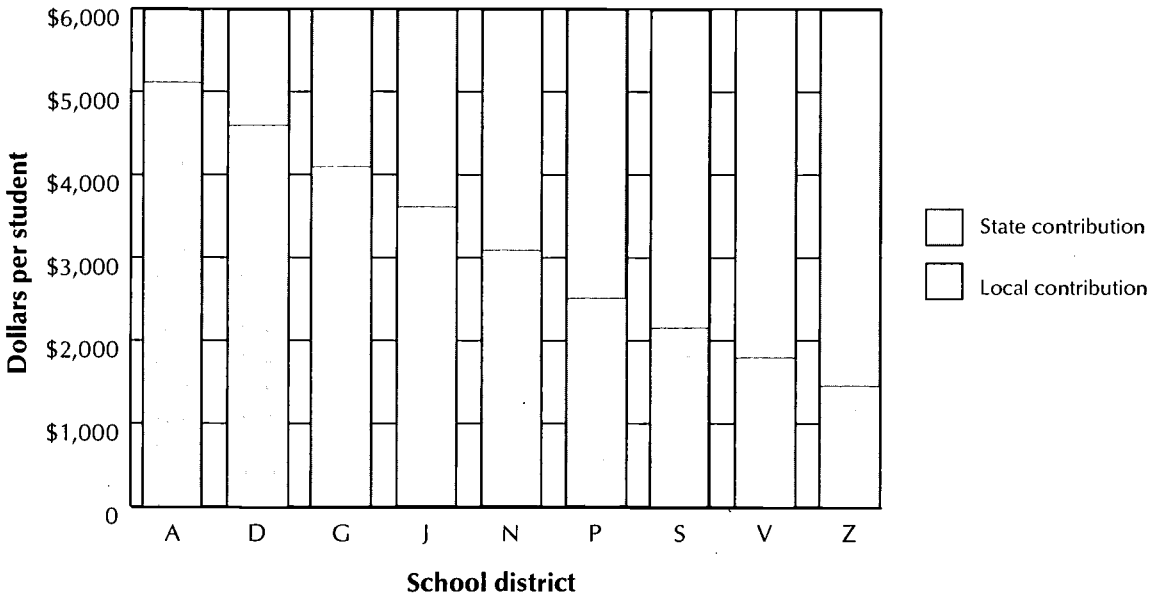
Figure 4 illustrates how funds typically are distributed under a minimum foundation program. Suppose a $6,000 per student foundation level has been established for all districts. In District A, the wealthiest district, the required local tax raises $5,200 per student, and the state contributes $800. District Z, the poorest district, can raise only $1,400 per student, and the state contributes $4,600. As a result of the minimum foundation program, each district has the same amount of general-fund resources available for its students.

About 40 states use some form of the minimum foundation program. The main advantage of this funding program is that it provides a means of equalizing general fund revenues per pupil independent of local property wealth.

The most complex methods for distributing state funds to education are *percentage-equalizing programs* (a group that includes guaranteed tax base, guaranteed tax yield, and district power equalizing programs). Under these funding systems, the state provides a certain percentage of educational expenditures in inverse proportion to district property wealth. In general, percentage-equalizing programs work like this:

- The state determines what percentage of total statewide expenditures it will provide.
- Within a predetermined range of expenditures, local school districts determine the amount they want to spend.
- State aid ratios are calculated for each district using mathematical formulas that include variables such as per pupil wealth and previous year's enrollment.

FIGURE 4: HYPOTHETICAL MINIMUM FOUNDATION PROGRAM



- The state aid ratios are applied to each school district budget to determine the amount of state aid that will be provided.

Two advantages are seen with percentage-equalizing programs. First, in a manner similar to foundation programs, each school district receives state aid in inverse proportion to its wealth. Second, within the maximum and minimum range allowed by the state, local districts can choose their desired level of expenditures.

Variations of *flat grant programs* (each school district receives the same amount of money for each student in specific education categories) and *full state funding programs* (the state pays for all educational costs) also exist as pieces of school funding formulas, but they are less common as major components of state funding systems. Regardless of the distribution method used, as state contributions increase, differences in expenditures between high-spending and low-spending districts tend to decrease.

Categorical State Aid

In addition to the general-fund aid states distribute, states allocate other funds for special purposes. These monies are called *categorical aid* and generally compose 20 to 30 percent of total education expenditures. Examples include funds for bilingual education, vocational education, special education, and transportation. School districts receive categorical money based on the extent to which they meet specific program criteria that generally are not used in the state's distribution formula. For example, a district may be reimbursed a certain dollar amount for each student transported to and from school on a bus.

Local Support for Education

District control of public schools is a uniquely American tradition. Nowhere else in the world are communities given as much control over public education as they are here. Within each state's guidelines for quality, local districts can introduce variety and experimentation that produce changes and improvements in the education system. Success in one district often is investigated carefully and then adapted for use in other districts. Until the late 1970s, local property taxes provided most of the money to operate schools. But, as a result of reforms in school finance, limits on taxation, and legal demands for more fiscal equity among districts, the high degree of local influence over education that once prevailed with high levels of local funds now is replaced by state resources and state mandates (Table 3).

Property Taxes

Historically, state legislatures delegated the governance of public schools to local districts; therefore, each school district had to be financed by local revenues. Districts obtained their share of school revenues almost exclusively from property taxes. Now exceeding $100 billion annually, such revenues have served education well as a reliable source of funding. Therefore, it is important that schools maintain access to this revenue base. To do so requires equitable, accurate, and uniform property assessment practices as well as a limited number of exemptions. Property tax exemptions, combined with poor assessment practices, lead to an uneven distribution of benefits among property owners and school districts. In other words, some property owners will pay more than others to receive the same services. Full market value assessments can ensure equal treatment among property owners, whereas comparable assessment practices ensure equal treatment among property owners and school districts. Both practices contribute to improving tax equity.

Tax Limitations

In more than 40 states, property tax limitations restrict the ability of schools to generate dollars for operating expenditures. Many of these laws were enacted out of frustration with high inflation during the mid-1970s, particularly with inflation's effects on property values and the subsequent increases in property taxes paid. Since then, state government involvement in school district governance and finance has become more restrictive. These limits on taxation—many without provisions for a local voter override—prevent school boards from raising revenues for schools' general operating expenses, maintenance, and construction, thereby reducing local control of public education. As a result, tax limitations directly challenge the belief that school district governance should be close to—and accountable to—local voters.

The Local School Budget

Each school district in the United States prepares an annual budget that defines school programs and how much they cost. Although districts vary in size and scope of programs, they all share two features: account definitions and budget formats. Many school districts use a generally accepted set of budgetary accounts and definitions recommended by the National Center for Education Statistics (Table 4).

Within these budget accounts, schools list the purpose and amount of each expenditure for items such as salaries, benefits, and supplies. By using similar accounts, school districts are able to study trends over time and make comparisons with other districts.

TABLE 3: CHANGES IN LOCAL REVENUES FOR EDUCATION SPENDING, 1970–98

Year	*Federal* %	*State* %	*Local* %
1970	7.2	40.9	51.8
1975	8.1	43.6	48.4
1980	9.2	49.1	41.7
1985	6.8	49.0	44.2
1990	6.3	48.3	45.4
1995	6.9	47.6	45.5
1996	6.7	48.1	45.2
1997	6.8	48.9	44.3
1998	6.8	49.4	43.8

Source: NEA Database, 1998.

TABLE 4: SAMPLE OF COMMON BUDGET ACCOUNTS

Budget code and subcode	*Description of category*
1000	Instruction
1100	Regular programs
1200	Special programs
1300	Adult programs
2000	Support services
2100	Students
2200	Instructional staff
2300	General administration
2400	School administration
2500	Business services
2600	Operation & maintenance of facilities
2700	Student transportation
2800	Central support
3000	Food, enterprise, & community services
4000	Facilities acquisition and construction
5000	Debt service and fund transfers

Source: U.S. Department of Education, National Center for Education Statistics.

Quality of Budgets

In order to evaluate a district budget and determine whether or not it will facilitate the operation of high-quality schools, it is necessary to determine whether the budget provides for the following:

- Small class sizes
- A full range of course offerings
- Up-to-date books and instructional materials
- Well-stocked libraries, computer labs, and resource rooms
- Salaries that will attract and retain the best available instructors for the courses offered
- Sustained professional development that will ensure that the quality of education remains high
- A sufficient number of guidance counselors and instructional specialists to assist teachers
- Sufficient funds to maintain and repair school buildings for safety, effectiveness, and appearance
- The long-term needs of the district.

Federal Support for Education

Federal dollars are targeted to specific student populations or educational needs; therefore, they are not distributed evenly among the states. Figure 5 shows the distribution of states according to the percentage of federal aid in the state budget. The largest group, containing 20 states, lies in the 6 to 8 percent range. Four states and the District of Columbia receive more than 10 percent of their revenue through federal aid, whereas 5 states receive less than 4 percent. The federal share of school budgets has never reached 10 percent of total school expenditures.

Throughout the 1980s, the proportion of federal support for elementary and secondary education fluctuated between 6 and 7 percent because of cuts in the federal budget and increased competition for federal dollars from other programs. In 1998, as state legislatures continued to take more financial responsibility for education, federal education assistance to the states averaged just less than 7 percent.

The Role of Federal Government in Schools

The federal government provides funds for specific groups of students or educational needs that cannot be addressed adequately by all states. Examples include the National Head Start Program, which prepares low-income children for entry into kindergarten; the National School Lunch Program, which provides breakfast and lunch to low-income students free of charge or at reduced prices; the National Defense Education Fund, which strengthens mathematics, science, and foreign language skills; and the Drug Abuse Prevention Act, which funds programs designed to decrease drug use and abuse among children. Each federal education program has criteria, objectives, and goals designed to support national, state, and community interests.

Federal Funds for Education Programs

The U.S. Department of Education distributed more than $20 billion to states and school districts during 1997. An examination of this figure by program area shows that the largest single amount—$7.7 billion (or 36 percent of the federal education budget)—was spent on programs for economically disadvantaged students (Table 5).

The programs for economically disadvantaged students, commonly known as Chapter One Programs, transfer money to school districts that then provide services for children from low-income families. Funds used in "federally affected areas" are considered *general aid* for use at the discretion of school districts. These monies are paid primarily to districts that have a large number of children whose parents live on federal properties. Because federal properties are exempt from paying local property taxes, the national government makes these payments to the districts instead. In addition to U.S. Department of Education programs, the U.S. Department of Agriculture contributed more than $8.7 billion in cash and commodities to public elementary and secondary schools in 1997; those contributions were for child nutrition programs.

FIGURE 5: DISTRIBUTION OF STATES AND DISTRICT OF COLUMBIA ACCORDING TO PERCENTAGE OF FEDERAL AID IN THE STATE EDUCATION BUDGET

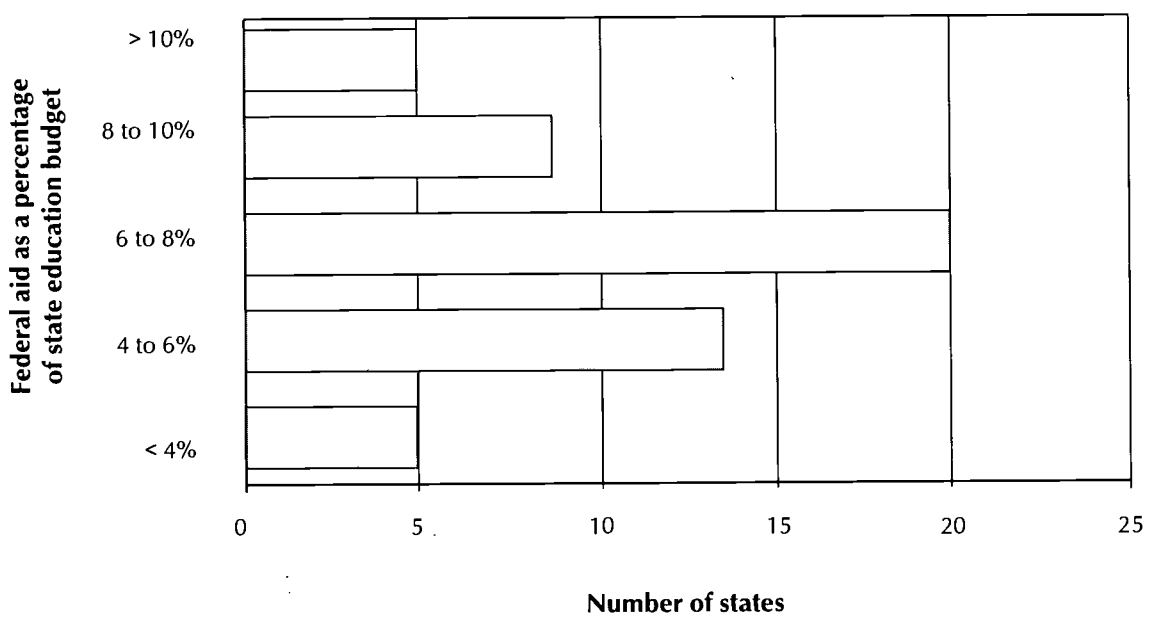


TABLE 5: FEDERAL FUNDS FOR EDUCATION PROGRAMS, 1997

Program	*Funding ('000$)*
Elementary and secondary education	**10,508,000**
Grants for disadvantaged	7,731,000
School improvement programs	1,434,000
Bilingual education	262,000
Indian education	61,000
Education reform & Goals 2000	1,020,000
Education for the handicapped	**6,749,000**
State grant programs	3,119,000
Early childhood education	891,000
Special centers, projects, and research	115,000
Captioned films and media services	20,000
Personnel training	93,000
Handicapped rehabilitation services and research	2,511,000
Vocational and adult programs	**1,528,000**
Basic programs	1,140,000
Adult education, grants to states	370,000
Other	18,000
Assistance in federally affected areas	**839,000**
Maintenance and operations	790,000
Construction	22,000
Disaster assistance	27,000
Other federal programs	**1,713,815**
Total federal aid to states and districts	**21,337,815**

Source: Digest of Education Statistics, 1997.

WHY HAVE THE COSTS OF PUBLIC EDUCATION GROWN?

Expenditures for public elementary and secondary schools, excluding expenditures for debt services and construction, rose from $71.5 billion in the 1977–78 school year to $158.5 billion in 1987–88 to an estimated $278.6 billion in 1997–98. In current dollars, these figures translate into $1,636 per student, $3,962 per pupil, and $6,098 per student, respectively. Four factors—inflation, the expanded role of education, improved teacher quality, and lower student–teacher ratios—account for nearly all of the increases in public school spending (Hanushek and Rivkin 1997).

Inflation

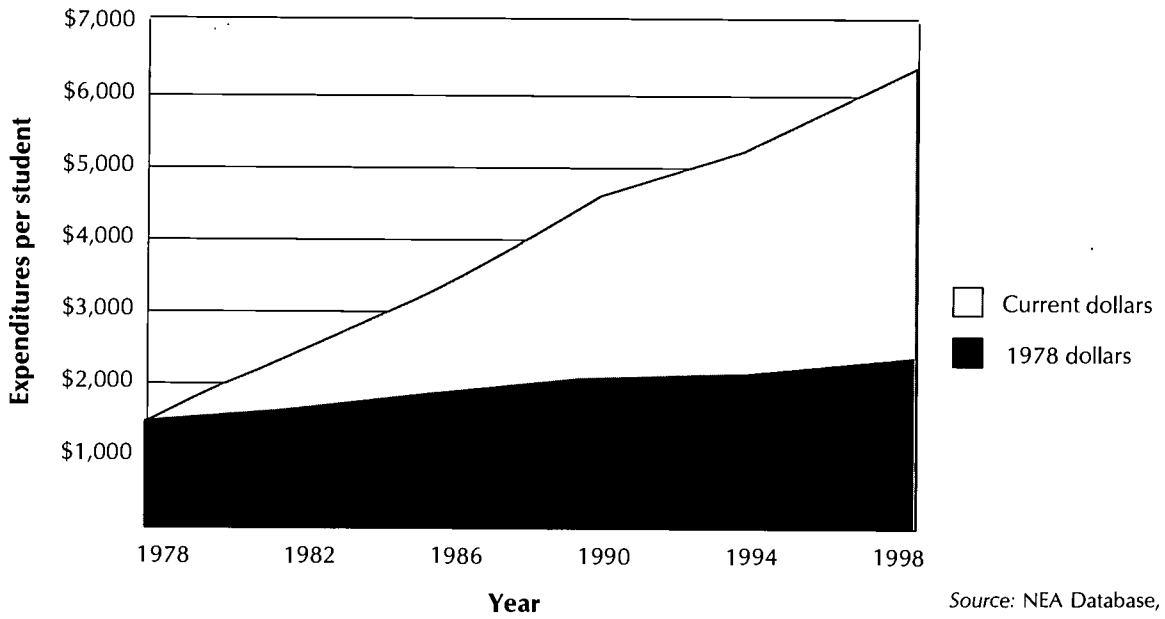
When education spending is adjusted for the effects of inflation, total real expenditures for public education increased only 3.2 percent per year since 1978—real expenditures per pupil increased only 2.8 percent per year. In other words, *even though current dollar school expenditures increased more than 360 percent during the past 20 years, purchasing power increased only 56 percent* (Figure 6). The loss in buying power of education dollars, stemming from a rise in the purchase prices of goods and services, amounted to 80 percent during 1978–88 and 67 percent during 1988–98. Economic factors contributing to this loss of purchasing power include double-digit inflation from 1979 to 1981 and a mild recession from 1990 to 1991.

Expanded Role of Education

Although the absolute number of dollars spent on education has increased, comparing the proportions of school expenditures budgeted for classroom teacher salaries to total current expenditures from 1978 to 1998 shows that teacher salaries became a smaller part of school budgets each year (Figure 7).

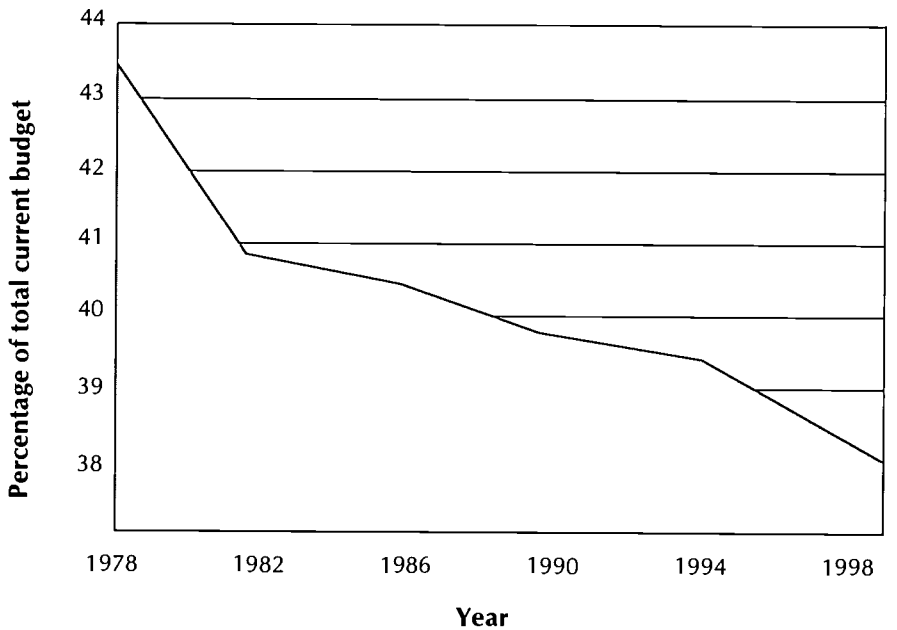
For example, the growth in the number of students identified with handicaps—coupled with legal requirements that mandate providing specific educational services for these students—increased the size of spe-

FIGURE 6: CURRENT AND REAL EXPENDITURES PER STUDENT, 1978–98



Source: NEA Database, 1998.

FIGURE 7: AVERAGE TEACHER SALARY AS A PERCENTAGE OF TOTAL EDUCATION BUDGET, 1978–98



Source: NEA Database, 1998.

cial education programs across the country. But even though special education is noticeably more expensive per student than regular education and accounts for a disproportionate share of the growth in school expenditures, it still explains only a small proportion of total spending growth. Rapid increases in other portions of school budgets also are major causes of increased educational expenditures. These expenditures include employee benefits; noninstructional staff and services (e.g., guidance counselors, library services, health services, and campus security services); utilities; and transportation costs.

Quality of Teachers

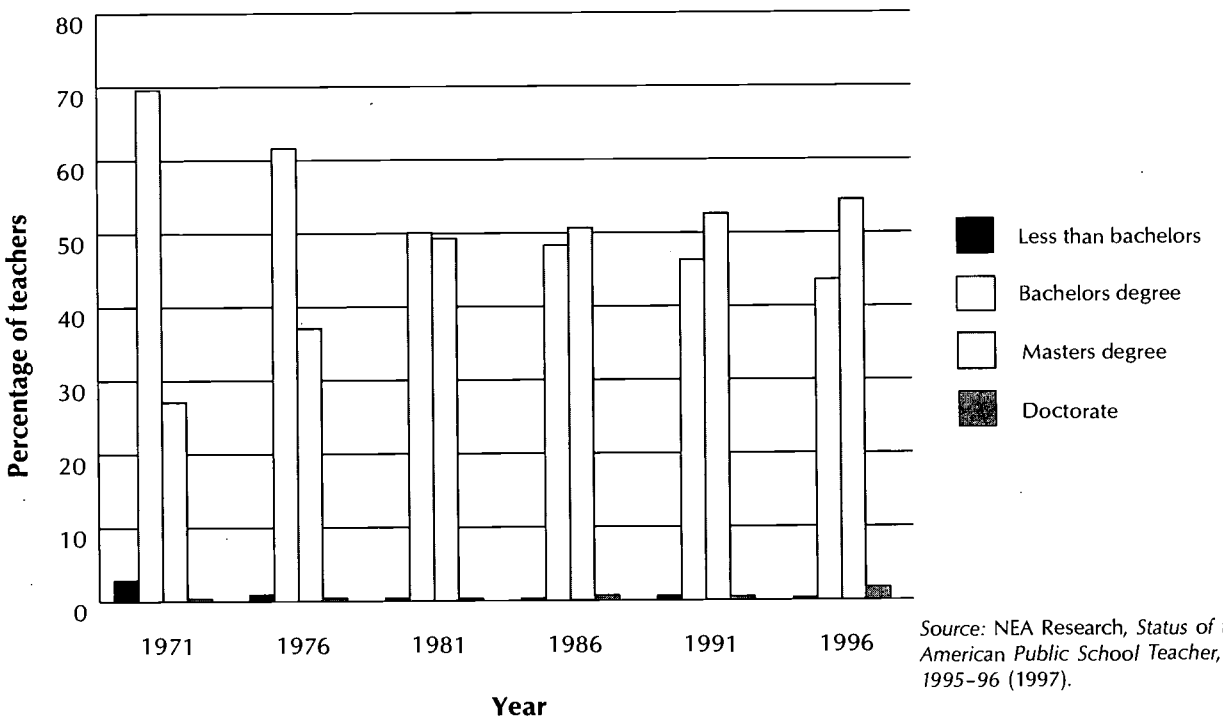
Between 1976 and 1996, the academic quality of America's teachers improved substantially (Figure 8). In 1976, 62 percent of teachers held a bachelor's degree, and 37 percent held master's degrees. In 1986, 48 percent of teachers held a bachelor's degree, and 51 percent held master's degrees. In 1996, 42 percent of teachers held a bachelor's degree, and 55 percent held master's degrees. In addition to increased levels of education and training, the median amount of classroom teaching experience also increased from 10 to 16 years.

The increase in teacher training and experience—and a decrease in the percentage of new teachers entering the profession—contributed to increases in teacher salaries and benefits, the major items in school budgets. Nevertheless, additional spending for teacher salaries was muted by inflation, which allowed the purchasing power of the average teacher to increase a total of only 11 percent over the past 20 years (Figure 9).

Student-Teacher Ratios

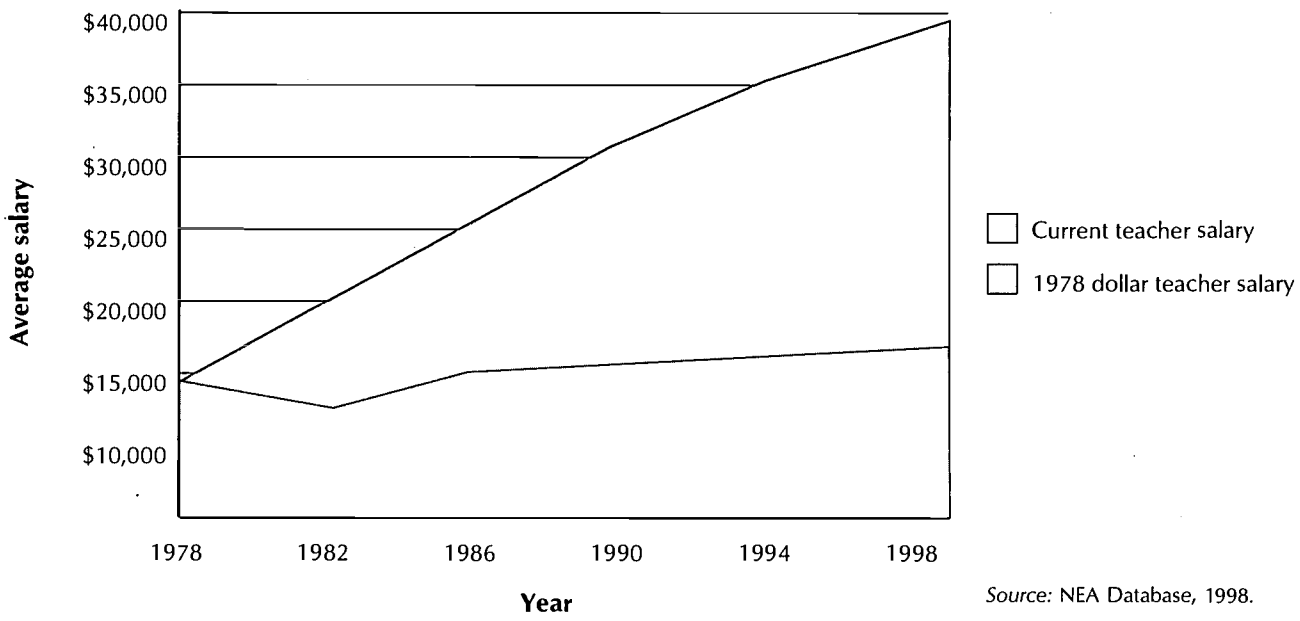
Decreasing student-teacher ratios also add to the costs of schooling—smaller class sizes mean more instructors are needed to teach them. Overall, this ratio was reduced from 20 students per teacher in 1978 to 17.6 students per teacher in 1988 to 16.9 students per teacher in 1998. These improvements in the educational system were made possible by the addition of approximately 500,000 teachers during the last two decades.

FIGURE 8: EDUCATION LEVEL OF TEACHERS, 1971–96



Source: NEA Research, *Status of the American Public School Teacher, 1995-96* (1997).

FIGURE 9: CURRENT AND REAL AVERAGE TEACHER SALARY, 1978–98



Source: NEA Database, 1998.

WHY SHOULD OUR INVESTMENT IN PUBLIC EDUCATION CONTINUE?

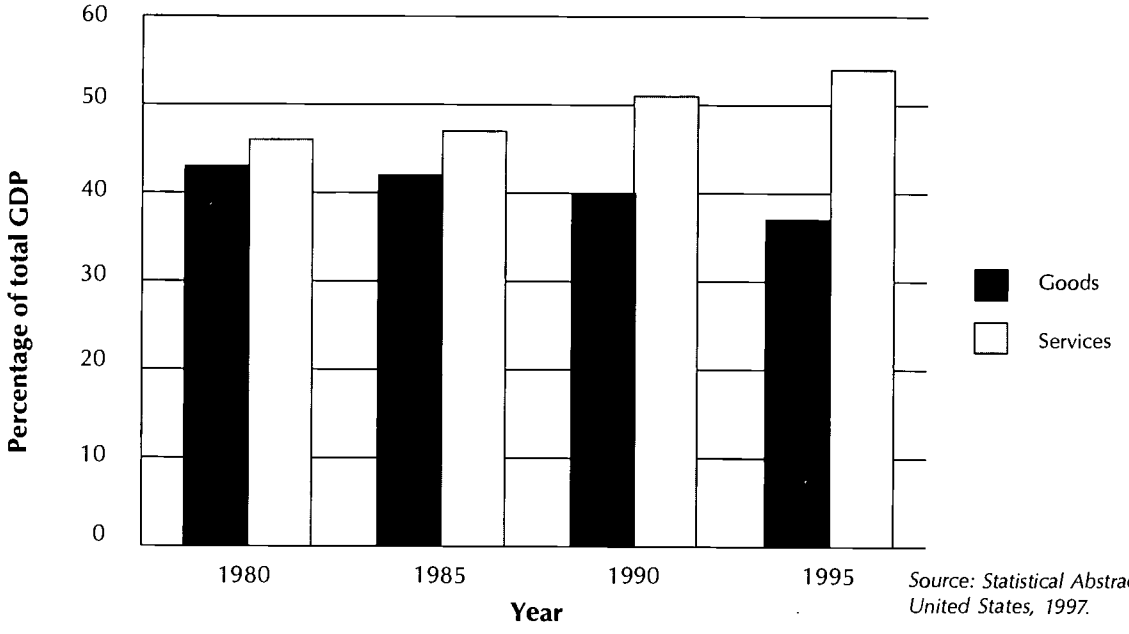
The proportion of the American labor force employed in the goods-producing sector of the economy—mining, agriculture, manufacturing, and construction—dropped from 60 percent in 1960 to 28 percent in 1984. Correspondingly, the service sector—all other industries and government—increased from 40 to 72 percent during the same period. Employment shifts from goods industries to service industries are predicted to continue into the next century. These shifts can be illustrated through the examination of each sector's percentage of GDP (Figure 10). Retail trade and general sales will account for more than 70 percent of new employment; unfortunately, approximately half of these jobs will be at or near minimum wage (Johnson 1993).

The increase in the size of the service sector in the United States—a phenomenon observed in all advanced industrial societies—is a naturally occurring economic trend that is based on technological advancement and increases in demand for services by upper-class citizens. Advancements in technology, especially in the computer and robotics industries, allow industry to realize gains in productivity without increasing the number of its employees. In turn, society's manufacturing needs are met, but workers displaced from newly automated industries must find employment in other types of economic activities (Johnson 1993).

Changes in the Factors of Production

As the United States transforms itself from a goods-producing society to a service-oriented one, the rules that allowed nations—and the citizens of those nations—to improve their standard of living or grow poorer also are changing (Theobald 1997; Theobald bases his presentation on the work of two Nobel laureates; see Becker 1964 and Schultz 1971). Previously, if a nation possessed more capital, a better-educated work force, more natural resources, or better technology than other nations, that nation was more prosperous than others. These four

FIGURE 10: PERCENTAGE OF U.S. GROSS DOMESTIC PRODUCT BY TYPE OF PRODUCT, 1980–95



Source: Statistical Abstract of the United States, 1997.

factors of production, used singly or in some combination and accompanied by reasonable management, allowed some nations to maintain an economic advantage over other nations. For example, the global economic power of the 1800s was Great Britain. By inventing the steam engine, the spinning jenny, and the Bessemer steel furnace, the British achieved and maintained economic domination until the turn of the century. These three key innovations of the Industrial Revolution all occurred in a country that had access to some of the largest coal deposits in the world.

Economic Advantages in the 1900s

In the early and middle 1900s, the United States was the nation that achieved great wealth. America had one great advantage and four key innovations. The great advantage America possessed was an abundance of natural resources. We combined these natural resources with uniquely American inventions:

- The first public schools
- The first compulsory attendance laws
- The first public universities
- The first system of mass higher education (the GI Bill).

Universal mass education did not emerge in the rest of the world until after World War II. The United States educated its citizens—depending on who you were and where you lived in this country—50 to 100 years before the rest of the world. More specifically, Americans were part of a well-educated, better-skilled, and highly motivated work force that no other country in the world could match. We improved common technologies and applied them more efficiently—and therefore more profitably—to our abundance of natural resources. As a direct result of this prowess in education, Americans saw their standard of living increase dramatically.

Economic Success in the Future

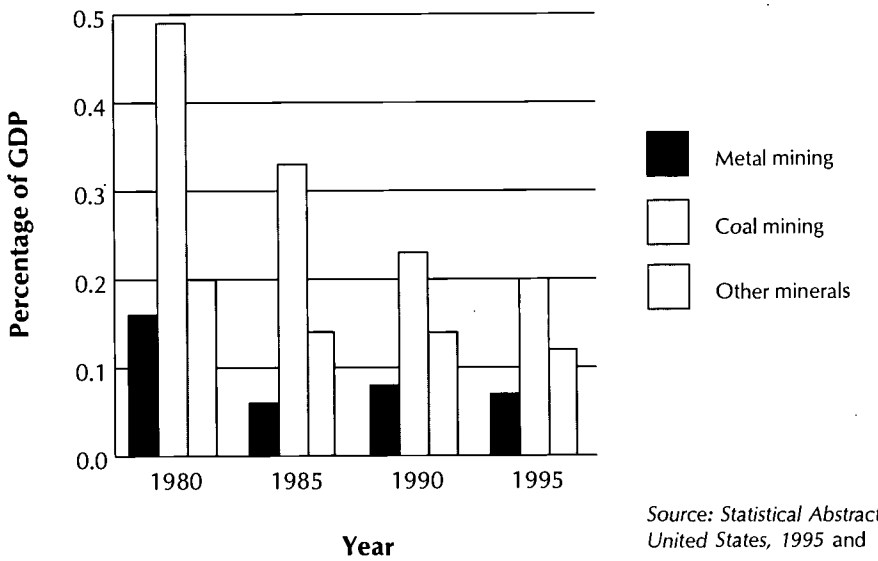
As we approach the year 2000, a whole series of scientific, technical, and industrial revolutions will continue to occur. Suppose you are a twenty-first century historian writing a book about the economic trends of the late twentieth century. Your book will focus on the four factors of production—capital, education, natural resources, and technology—and their influence in permitting individuals to be wealthy, companies to be successful, and the United States to generate a high standard of living. Your task is to do the following:

- Describe the factor that diminished almost completely in terms of its economic importance.
- Describe the factor that diminished substantially in terms of its economic importance.
- Describe the factor that was "reversed" in terms of its economic importance.
- Describe the factor that remained the key determinant of a nation's standard of living in the twenty-first century.

Natural resources vanish almost completely in terms of economic importance. Because of the revolutions in environmental and material sciences, natural resources already have begun to become irrelevant in the late twentieth century. Examining the use of mineral resources in terms of GDP reveals a steep reduction in usage (Figure 11A). What is true of the metal and coal industries is true of almost all natural resources, including the oil and natural gas industries (Figure 11B). Despite the fact that the American economy is twice as large, mineral and petroleum industries contribute less than half as much to the economy as they did in 1980. Moreover, all of the natural resource industries in the United States combined employ less than 5 percent of the working American population.

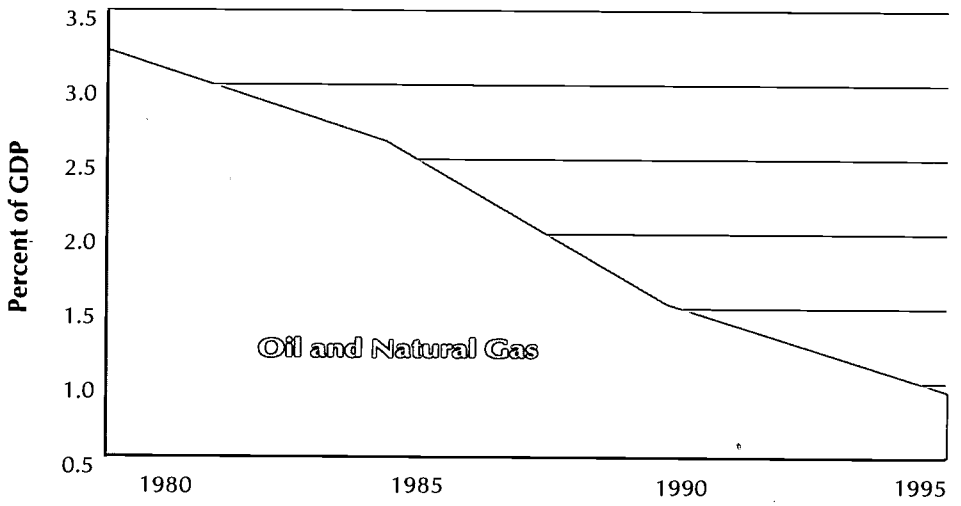
Capital diminishes substantially in terms of economic importance because of innovations in the computer, telecommunications, and global networking industries. These innovations created a global capital market that allows people to build factories and market services anywhere in the world. A global capital market means that an entrepreneur from Germany can build a facility in Nigeria that is just as capital intensive as any facility built in the United States. Consequently, Americans no longer have the same economic advantage over the Germans that they once possessed. It is important to remember that capital does not completely drop out of the economic equation: Living in a wealthy country is still more advantageous economically than living in a poor country. But the simple fact that one happens to be an American no longer gives one the same economic advantages that living in a rich country gave one's parents and grandparents.

FIGURE 11A: PERCENTAGE OF GDP FROM MINING INDUSTRIES, 1980–95



Source: Statistical Abstract of the United States, 1995 and 1997.

FIGURE 11B: PERCENTAGE OF GDP FROM OIL AND NATURAL GAS INDUSTRIES, 1980–94



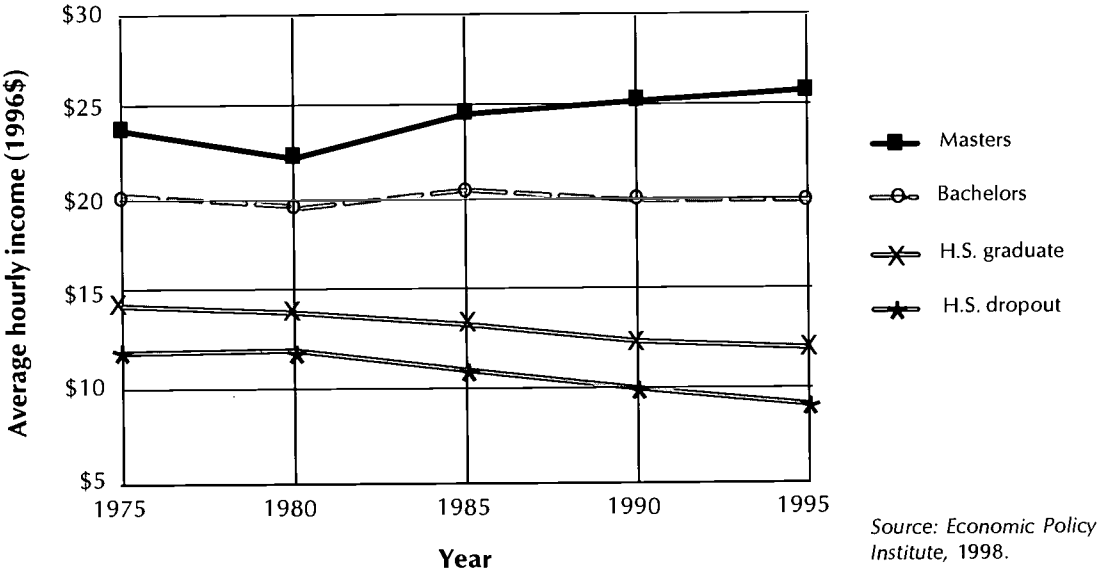
Source: Statistical Abstract of the United States, 1995 and 1997.

Technology is still important but in an opposite manner; it is the factor reversed in terms of economic importance. The process of production is becoming more and more technical; therefore, workers need to become more and more skilled. In the past, a high-quality education was needed only for the top 20 to 25 percent of the student population because someone in this "inventor" group was likely to create a new product. The remaining 75 to 80 percent of students—the "builder" group—would be employed in jobs supporting the inventors and their inventions. Now that manufacturing industries incorporate computer technology and problem-solving skills into their production processes, the most critical group to educate becomes the builders. Now, more than basic skills are needed to sustain highly technical production industries. If workers cannot adapt their current skills to new and highly technical occupations, employers will have to retrain them or seek better-educated workers elsewhere.

As a result of natural resources and capital being less important economically—and technology being important in a different way—education remains the only factor of production that will continue to allow individuals to be wealthy and companies to be successful. More specifically, *if a person living in the United States does not possess the knowledge and skills to master technology, their wages will drop continuously until they equal the wages of similarly "unskilled" workers who live in less economically developed countries.* Even though the United States has experienced sustained economic growth throughout most of the 1990s, it is readily apparent that "a rising economic tide" raises only the "boats" of men and women who are well-educated (Figures 12A and 12B, respectively).

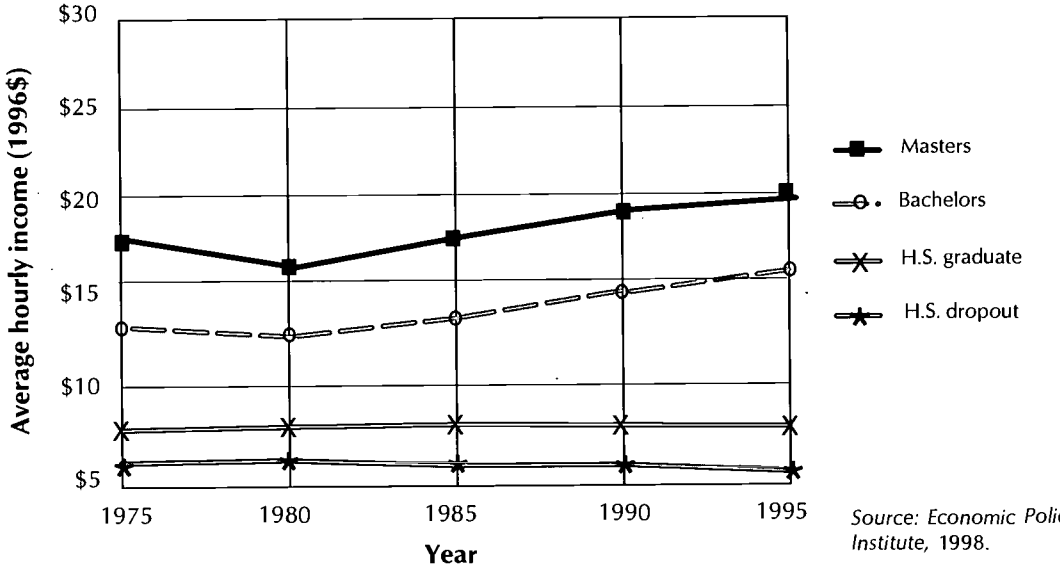
What economic theory predicts, reality is delivering: *Investment in education leads to greater economic productivity, and increased economic productivity creates greater lifetime earnings.* Therefore, the quality and quantity of education provided to public school students—especially the quality of education provided to the bottom half—requires U.S. citizens to continue investing in public education in order to continue generating a high standard of living.

FIGURE 12A: AVERAGE HOURLY INCOME OF MEN BY LEVEL OF EDUCATION, 1975–95



Source: Economic Policy Institute, 1998.

FIGURE 12B: AVERAGE HOURLY INCOME OF WOMEN BY LEVEL OF EDUCATION, 1975–95



Source: Economic Policy Institute, 1998.

CONCLUSION

For less than $35 per student per day, school districts are expected to provide a broadly based curriculum, fully equipped classrooms, quality teaching materials, new technologies, qualified teachers, and a wide range of extracurricular activities. In addition to these academic expectations, public schools also must provide students with transportation, academic counseling, health and psychological services, school libraries, and other noninstructional services.

Yet, despite a history of increased spending on schools generating quality academic programs, improving vocational-technical programs, making more kindergarten classes available, and producing well-educated students, the claim is still commonly made that "more money does not matter" in the improvement of educational outcomes. Granted, simply investing more money into our public education system is not enough to satisfy the critics—or supporters—of public schools. There also must be efforts to trace and analyze the use of expenditures beyond district financial offices to individual schools and classrooms. Superintendents, teachers, and parents need to know where and how money is spent in order to improve the quality of education provided to students—not just that more money is needed. For example, an Economic Policy Institute (EPI) report found that 80 percent of district education budgets was spent on regular education programs in 1967 compared with only 57 percent in 1996 (Rothstein 1997). This type of "accounting research" just is beginning to discover that more money does matter in improving educational outcomes *as long as the financial resources reach individual schools, classrooms, and students* (for a more thorough discussion of the debate over whether money matters in improving education, see Cooper and others 1994; Hanushek 1981, 1989; Hedges, Laine, and Greenwald 1994; Laine, Greenwald, and Hedges 1996).

At the heart of the debate over whether increased educational spending will improve public education are the ideas of *equity* and *efficiency*.

Quite simply, the term equity means "being fair." We all want to be sure that public education resources are distributed so that no student is given preference over another. But being fair, or equitable, is not always easy because there are two kinds of equity to consider: *horizontal equity* and *vertical equity*.

Horizontal equity requires that students with similar qualities be treated in the same manner. Vertical equity requires that students with different characteristics be treated differently. Efficiency, on the other hand, means "getting the biggest bang for the buck." Balancing the desires for equity and efficiency requires both state legislators and school officials to consider variations in the costs of different types of educational programs, variations in the costs of educating students in different grade levels, and variations in the costs of educating different types of students.

For example, suppose we have two exceptionally bright students—one is from a low-income family, and the other has middle-income parents. We know both of these students are very bright; therefore, both are placed in accelerated classes. The act of treating students with similar qualities in the same manner is called horizontal equity. As the school year progresses, the low-income student seems to have trouble concentrating during class. A teacher discovers this student's family—and other students who are in similar situations—cannot always provide breakfast for their children. As a result, the school begins a free breakfast program for "needy" students but excludes other students. The act of treating students with different characteristics in a particular manner *in order to give them an equal opportunity to compete academically* is called vertical equity.

Efficiency, by contrast, is concerned with how much education or knowledge is delivered to—and acquired by—students and at what cost. In the private sector, being "more efficient" means one of two things when discussing finance and economic issues:

- Increasing output levels while using the same amounts of input
- Maintaining output levels while using lesser amounts of input.

Supporters of private sector efficiency models for education—such as voucher, charter, and for-profit schools—claim that public monies are spent inefficiently and that more financial accountability is required to improve educational outcomes. However, the standard used to measure efficiency in public schools is not the same standard often used in the business community. Public school spending is conducted so that *no student's educational situation is made worse in order to improve the situation of another student.* In contrast, if public schools acted like private businesses, they would invest educational dollars only in the students who were most likely to experience the greatest positive educational outcomes—other students would be ignored.

Public education professionals agree that improvements in educational efficiency are desirable—just not at the expense of equity. As more dollars reach classrooms, investments in public schools will yield large dividends to individuals, communities, and the nation as a whole. Class-size reductions—especially at the elementary school level—will permit greater individualized instruction, a more rigorous curriculum, and higher graduation requirements that enhance student achievement. Rigorous teacher education programs and more stringent state qualifications will improve the quality of teachers. The alternative to such investment is to restrict educational opportunity and be satisfied with a slow-growth—or no-growth—economic future. For all these reasons, citizens need to support both equitable and efficient uses of local, state, and federal tax dollars for public elementary and secondary education.

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