Overview of Elementary and Secondary Education Facilities

Date: November 1999

Today's editorial cartoon

Walking to school, eh? It builds character, trudging through whatever mother nature can dish out! Why, in my day...

I've got a ride to school, Grandpa. This is for the classroom!
Percent Distribution of Elementary-Secondary Public School Revenues by Source: 1996-97

- State Sources: 45%
- Federal Sources: 48%
- Local Sources: 7%

Source: U.S. Dept. of Education, NCES, CCD Survey
Total Projected Expenditures for Education in America, 1998-99

- Elementary and Secondary
  - Federal - $22.6 billion, 6.1%
  - State - $162.4 billion, 43.9%
  - Local - $147.5 billion, 39.9%
  - All other sources - $37.6, 10.2%

- Subtotal, Elementary and Secondary - $370.1 billion

- Subtotal, Postsecondary - $245.0 billion

- Total Educational Expenditures, All Levels
  $615.1 billion

Source: U.S. Department of Education, Fy2000 Budget Summary
National Distribution of Educational Establishments

## School Growth: Districts

<table>
<thead>
<tr>
<th>Enrollment</th>
<th>Districts</th>
<th>% of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>25,000+</td>
<td>230</td>
<td>31.5</td>
</tr>
<tr>
<td>10,000 - 24,999</td>
<td>572</td>
<td>18.6</td>
</tr>
<tr>
<td>5,000 - 9,999</td>
<td>1,038</td>
<td>15.5</td>
</tr>
<tr>
<td>2,500 - 4,999</td>
<td>20,790</td>
<td>15.9</td>
</tr>
<tr>
<td>1,000 - 2,499</td>
<td>35,24</td>
<td>12.5</td>
</tr>
<tr>
<td>600 - 999</td>
<td>1,775</td>
<td>3.1</td>
</tr>
<tr>
<td>Less than 600*</td>
<td>5,587</td>
<td>3.0</td>
</tr>
</tbody>
</table>

* includes non reporting districts

There are 14,883 local school districts. 61% of them educate 96.9% of all students.


At The National Level

• In 1998 school construction totaled $18.20 billion
  – $7.1 billion = Primary Schools
  – $3.6 billion = Middle Schools
  – $7.0 billion = High Schools
  – $ .4 billion= Vocational Schools

• In 1999 school construction totaled $20.5 billion
  – $7.9 billion = Primary Schools
  – $3.4 billion = Middle Schools
  – $8.8 billion = High Schools
  – $ .39 billion = Vocational Schools

– Source: National Clearinghouse for Education Facilities

The National Level

TOTAL SCHOOL CONSTRUCTION
44% increase over 7 years

Source: National Clearinghouse for Education Statistics

## Building Costs at the National Level

<table>
<thead>
<tr>
<th></th>
<th>Bldg.</th>
<th>Bldg.</th>
<th>National</th>
<th>$</th>
<th>Sq. Ft.</th>
<th>#</th>
<th>Size</th>
<th>Cost</th>
<th>Students</th>
<th>(Sq. Ft.)</th>
<th>(000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Medians</td>
<td>$/Sq.Ft.</td>
<td>/Student</td>
<td>/Student</td>
<td>Students</td>
<td>(Sqr. Ft.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1997</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elem.</td>
<td>$97.69</td>
<td>$11,429</td>
<td>119.0</td>
<td>550</td>
<td>67,000</td>
<td>$6,500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle</td>
<td>$93.49</td>
<td>$14,286</td>
<td>145.9</td>
<td>709</td>
<td>105,000</td>
<td>$9,500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>$92.86</td>
<td>$16,872</td>
<td>184.8</td>
<td>762</td>
<td>140,000</td>
<td>$13,500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1999</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elem.</td>
<td>$100.00</td>
<td>$11,478</td>
<td>120.0</td>
<td>600</td>
<td>72,000</td>
<td>$7,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle</td>
<td>$100.00</td>
<td>$14,500</td>
<td>141.7</td>
<td>800</td>
<td>113,000</td>
<td>$12,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>$106.67</td>
<td>$20,000</td>
<td>178.3</td>
<td>865</td>
<td>152,000</td>
<td>$18,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: School Planning and Management-1999

Summary:

Schools, Students

Teachers
There are about 87,600 public elementary and secondary schools

- 37.5 percent are in small towns and rural areas (25.2% of all students)
- 29.2 percent are in large towns and cities (35.3% of all students)
- 33.3 percent are in suburban areas (39.5% of all students)


In 1999 more than 47,200,000 students are currently enrolled in K-12 public schools

- 8.6 percent are in pre-kindergarten and kindergarten
- 39.9 percent are in grades 1 to 5
- 22.9 percent are in grades 6 to 8
- 28.7 percent are in grades 9 through 12

Source: U.S. Department of Education, NCES, Baby Boom Echo Report
Expenditure per pupil in average daily attendance

- $6,392 average for 1996-97
  - Represents a 13 percent increase over the amount spent a decade earlier (after adjustment for inflation)

Source: U.S. Department of Education, NCES, CCD Survey
<table>
<thead>
<tr>
<th>Grade Level</th>
<th># of Students 1996</th>
<th># of Students 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindergarten/Pre-K</td>
<td>4,208,000</td>
<td>3,997,000</td>
</tr>
<tr>
<td>Grades 1-5</td>
<td>18,050,000</td>
<td>18,287,000</td>
</tr>
<tr>
<td>Grades 6-8</td>
<td>10,501,000</td>
<td>11,171,000</td>
</tr>
<tr>
<td>Grades 9-12</td>
<td>12,834,000</td>
<td>14,746,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>45,592,000</strong></td>
<td><strong>48,201,000</strong></td>
</tr>
</tbody>
</table>

Bureau of the Census projections show that school populations will increase at least until 2050. The increase has already moved into the secondary grades, and is beginning to affect college enrollment.

Source: U.S. Department of Education, NCES, Baby Boom Echo Report

More than 2.7 million teachers are employed in public schools

- There are 16.8 pupils for each teacher

- Average class size:*  
  - elementary schools: 23  
  - secondary schools: 24

*Reported by NCES preliminary Frss Survey 1998

Source: U.S. Department of Education, NCES, CCD Survey

A Crumbling Infrastructure in K-12 Education

Source: School Facilities: Condition of America’s Schools, U.S. General Accounting Office, GAO/HEHS-95-61
Condition of K-12 School Facilities

• Major Problems
  – Maintenance and repair
  – Obsolescence
  – Environmental Hazards
  – Overcrowding
  – Structurally unsound

Source: U.S. General Accounting Office (GAO)
Condition of K-12 School Facilities

- 1995 GAO Report
  - Condition of America’s Schools
    - $112 billion needed to bring buildings to good condition
    - 1/3 need extensive repair or replacement
    - 60% need at least one major building feature repaired or replaced
    - 1/2 have environmental problems
    - 46% have inadequate wiring for computers, communications and technology

Source: U.S. General Accounting Office (GAO)
Condition of K-12 School Facilities

- 1995 GAO Report
- 30 percent of schools need extensive repair or replacement
  - 14 million students
- 40 percent of schools need repair or replacement of one or more physical components
- 65 percent of schools need additional funds to fulfill Federal mandates
- Over 46,800,000 students attend schools with unsatisfactory environmental condition

Source: U.S. General Accounting Office (GAO)

Condition of K-12 Schools

- 1995 GAO Report
  - Condition of America’s Schools
    - 28,000+ schools have less-than-adequate heating, ventilation and air conditioning systems
    - 23,000+ schools have less-than-adequate plumbing
    - 21,000 schools have less-than-adequate roofs

Source: U.S. General Accounting Office (GAO)

Present Condition of K-12 Schools

- Most school buildings built more than 25 years ago have reached the end of their useful life. The average public school is 42 years old.
- While almost 60 percent of schools built since 1985 were connected to the Internet in 1995, only 42 percent of schools in the oldest condition were connected to the Internet.
- Deferred maintenance has become standard procedure.
- The typical school has more than one building (including temporary buildings) each built at a different time.

Sources: NCES, GAO, Am&U

Estimated Percent of Schools with Unsatisfactory Environmental Conditions by Geographic Region

Source: U.S. General Accounting Office (GAO)
Estimated Percent of Schools with Unsatisfactory Environmental Conditions by Community Type

Source: U.S. General Accounting Office (GAO)
Current Outlook for School Construction
School Conditions have an Impact on Student Achievement

• A study of overcrowded schools in New York City found that students in such schools scored significantly lower on both mathematics and reading exams. [Rivera-Batiz and Marti, 1995]

• A study in the District of Columbia found that students in school buildings that were in poor condition had achievement 11 percent below students in schools in excellent condition [Edwards, 1991]

• Another study of high schools in rural Virginia examined the relationship between building condition and student achievement. The study found that student scores on achievement tests were up to 5 percentile points lower in buildings with lower quality ratings, after adjusting for socioeconomic status. [Cash, 1993]
Between 1999 and 2009…..

- Public high school enrollment is expected to increase by 9 percent while elementary school enrollment will reduce by less than 1 percent.
- Fourteen states will have a high school enrollment increase of at least a 15 percent (50 percent for Nevada, 35 percent for Arizona and 21 percent for Florida, North Carolina and Georgia)
- Long range projections by the U.S. Bureau of the Census indicate a rising number of births after the year 2008
- A record 53.2 million children are enrolled in public and private elementary and secondary schools today, and this number will climb to 54.2 million by 2009.
- At least 2,400 new public schools will be needed by 2003
- Unlike at the end of the "baby boom" of the 1950s and 1960s, we will gain no respite from the current enrollment boom, as births will begin edging up from 4.1 million in 2008 to 4.5 million in 2018.

Source: NCES, 1998; Baby Boom Echo Report, 1999
Learning is a Social Process

- Learning is life long and inclusive
- Society is becoming learning centered and on demand require learning on demand
- Learning techniques and technologies will continue to change
- Learning processes can no longer be monopolistic
- Learning will increasingly be shared
Trends in Future School Design

• Schools in the 21st Century will be characterized by:
  – Providing increased community services
  – Flexible, sustainable and part of the daily life of the community
  – Expand hours of education
  – Designed for improved day lighting, indoor air quality, and temperature control and technological changes
  – Facilitate cooperative/practice teaching styles
Recent Departmental Activities

- National Symposium on School Design
  - Involving the entire community in the design of new schools will lead to:
    - stronger community support
    - opportunities for cost sharing
    - maximize use of the facilities
- Proposed $10 million competitive grants program “Schools as Centers of Community” grant program
- National Clearinghouse for Education Facilities
  - WWW.EDFACILITIES.ORG
  - 1-888-552-0624
- Departmental Web Site
  - www.ed.gov/inits/construction/
Public education is the nation’s public enterprise