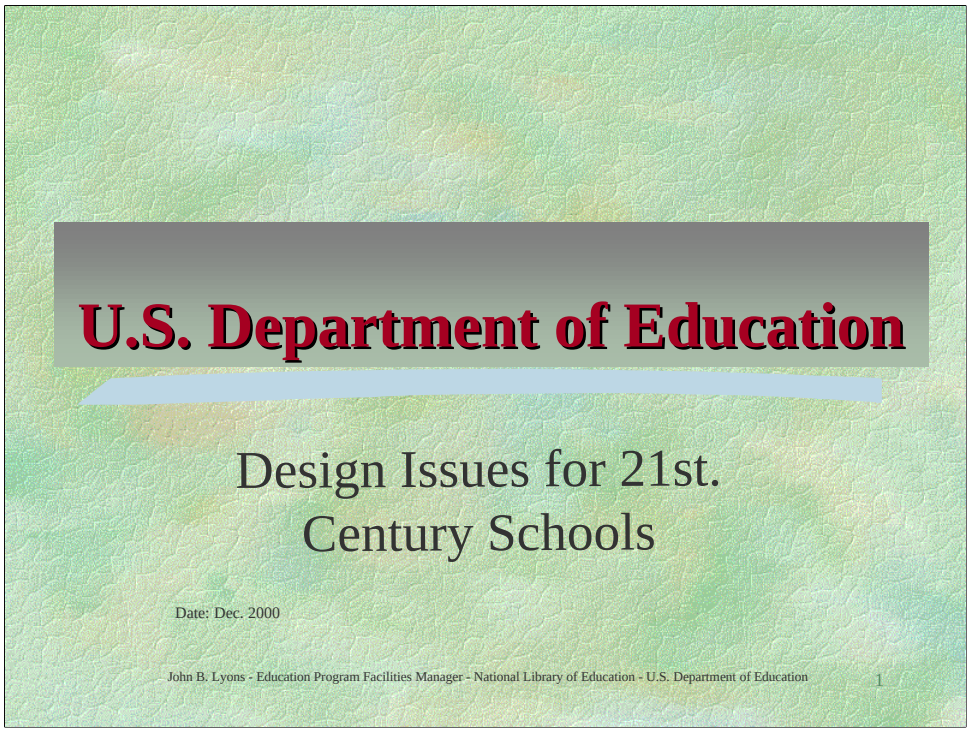
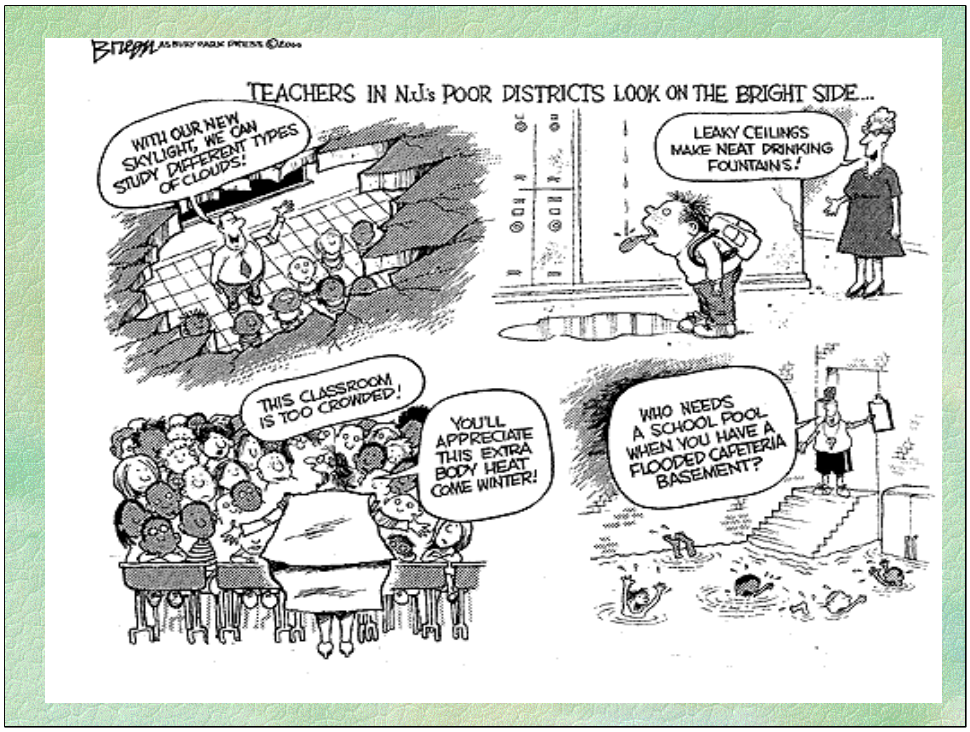


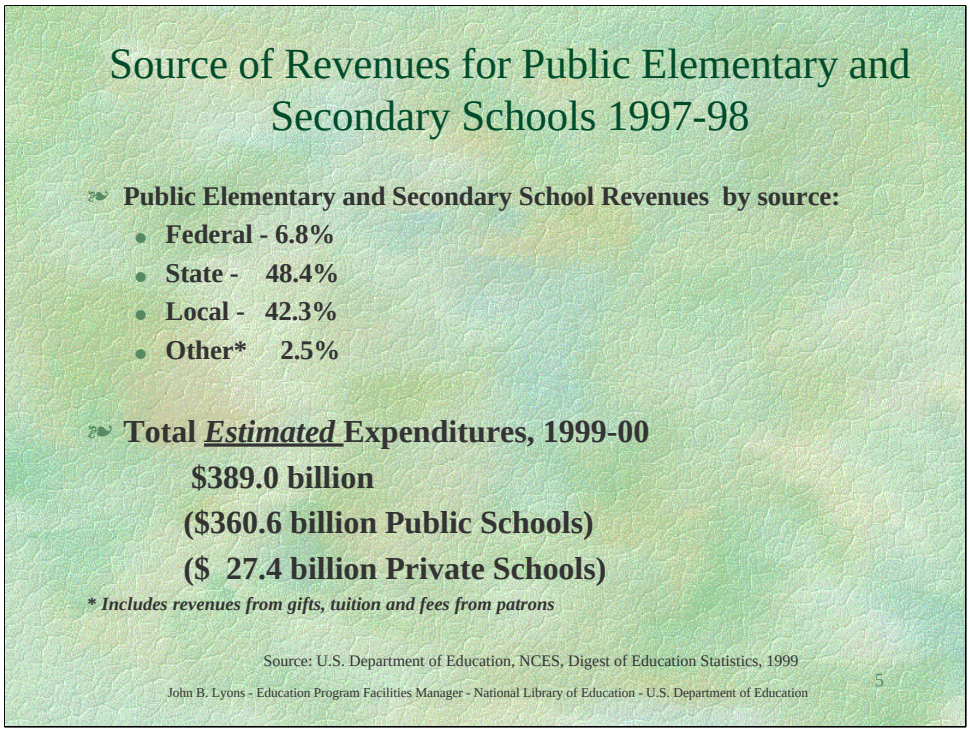

summarize the latest data on schools and students

overview of historic educational trends found in this country

look at school facility design trends for the 21st. Century


TEACHERS IN N.J.'s POOR DISTRICTS LOOK ON THE BRIGHT SIDE...
WITH OUR NEW SKYLIGHT, WE CAN STUDY DIFFERENT TYPES OF CLOUDS!
LEAKY CEILINGS MAKE NEAT DRINKING FOUNTAINS!
THIS CLASSROOM IS TOO CROWDED!
YOU'LL APPRECIATE THIS EXTRA BODY HEAT COME WINTER!
WHO NEEDS A SCHOOL POOL WHEN YOU HAVE A FLOODED CAFETERIA BASEMENT?


The source of some of this material is not yet available in print form but will be available shortly




note the level of Federal support. About 1/3 of this amount comes from other Federal agencies such as HHS (head Start) and Argi (school Lunch).

In 1978-80 the Federal level of support was 9.8% of all revenues and has slowly declined to the present level.

NEA is projecting a Federal support level of 6.9% for the current year

Note the expenditure amount is estimated

## Distribution of Expenditures for Public Elementary and Secondary Schools 1997-98

| | Amount | Percent |
|---|---|---|
| Instruction | $176.5 billion | 52.8% |
| Other current expenditure | $63.9 billion | 19.1% |
| Capital Outlay | $36.2 billion | 10.8% |
| Plant operation & Maintenance | $28.0 billion | 8.4% |
| Administration | $22.0 billion | 6.6% |
| Interest on School Debt | $7.8 billion | 2.3% |
| Total Expenditures | $334.3 billion | |
| Current Expenditure per Pupil* | $6, 662 | |

(Based on average daily attendance)

Sources: U.S. Department of Education, NCES, The Digest of Education Statistics, 2000

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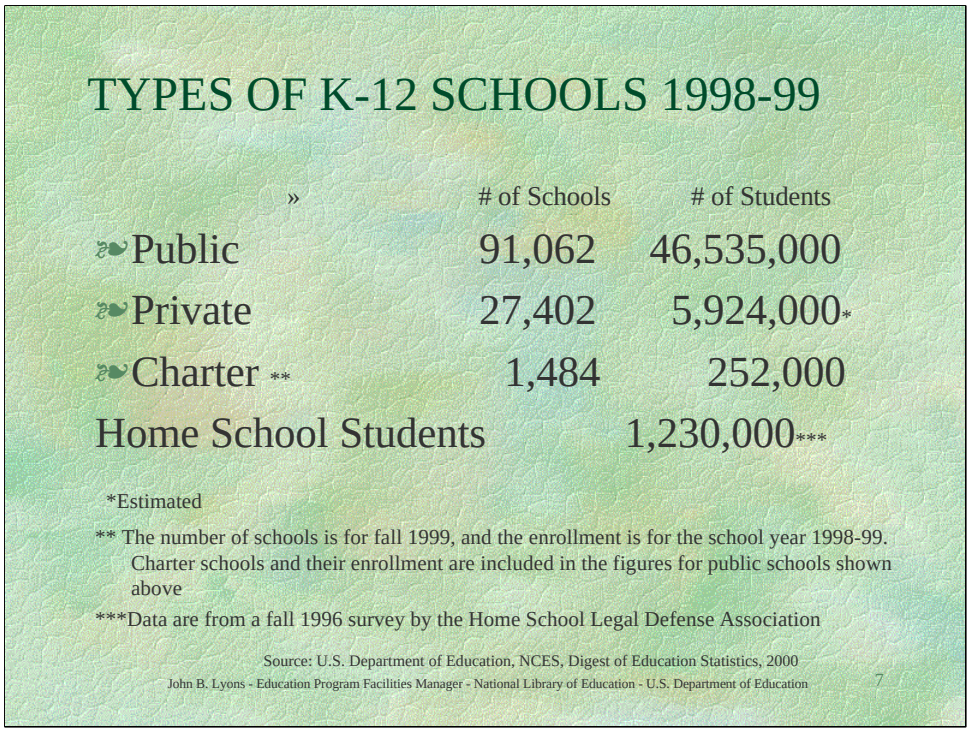
plant operations and maintenance witnessed a steady decline from a high of about 14% in 1920 to 8.6% in 1970

Spending for this activity rose to 10.2 %in 1980 before declining again to 8.6% in 1997

Expenditures per student rose significantly during the late 1980's (the increase from 1988 to 1989 was 9.6%) but increased more slowly during the first part of the 1990's (average 4% a year)




The number of charter schools as well as the number of students taught at home continues to increase

A later slide will show the steady decline in the number of public schools mostly due to a consolidation of one room schools beginning after World War 1

Catholic schools enroll about half of the private school students and account for about 1/3 of all private schools

## U.S. Elementary and Secondary Schools 1998-99

| School Type | Public | Private** |
|---|---|---|
| Elementary | 63,574 | 16,623 |
| Secondary | 22,103 | 2,487 |
| Combined | 3,770 | 8,292 |
| Other (ungraded) | 1,615 | ------ |
| Total | 91,062 | 27,402 |

**Total All Schools** 118,464

**Total Charter Schools *** 1,484

*Number operating in fall 1999. Charter schools are included, as appropriate, in the public school categories above

** 1997-1998 Data

Sources: U.S. Department of Education, OERI The State of Charter Schools; The Digest of Education Statistics, 2000

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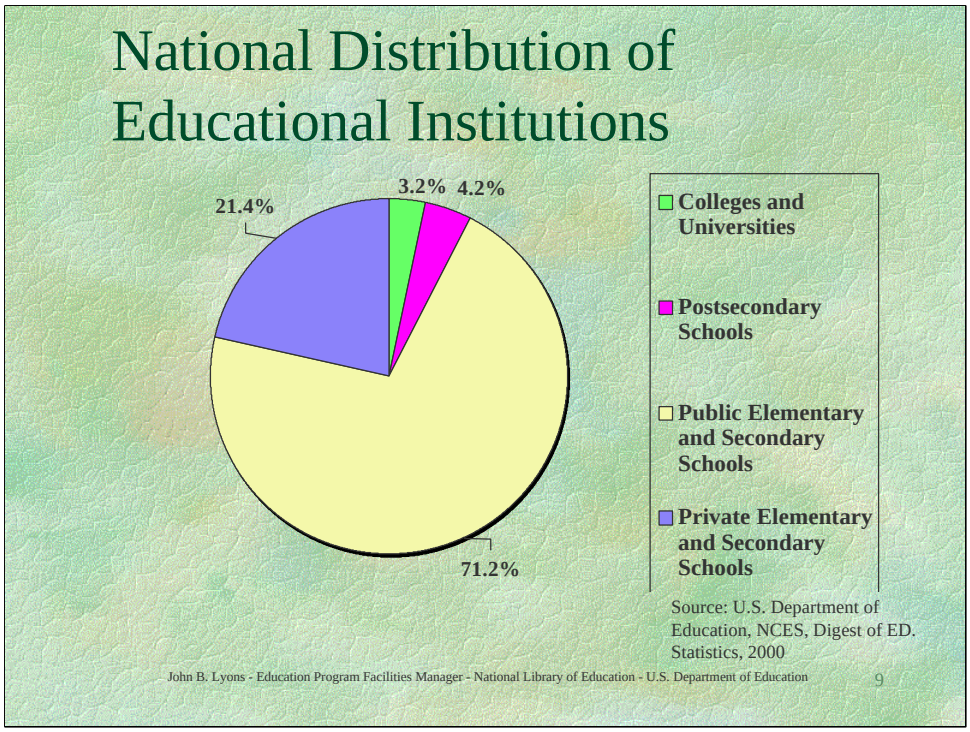
Note that private schools have a much larger concentration of combined elementary and secondary schools

Note also the the charter schools are already counted in the public school levels.




As this chart shows a little over 92% of all the nation's educational institutions are at the K-12 level

Public & private K-12 schools will continue to enroll an increasing number of students reaching a record level of 54.5 million by the year 2006. Between 1997 and 2009 total enrollment is projected to increase in the South by 5% and West 11% but decrease slightly in the Northeast and Midwest

## U.S. Elementary and Secondary Enrollment Fall1998

| Level of Enrollment | Public | Private(Est.) |
|---|---|---|
| Kindergarten through grade 8 | 33,344,000 | 4,597,000 |
| Grade 9 through 12 | 13,191,000 | 1,327,000 |
| Total | 46,535,000 | 5,924,000 |

**Total All Schools** 52,459,000

**Total Charter Schools*** 252,000 (1998)

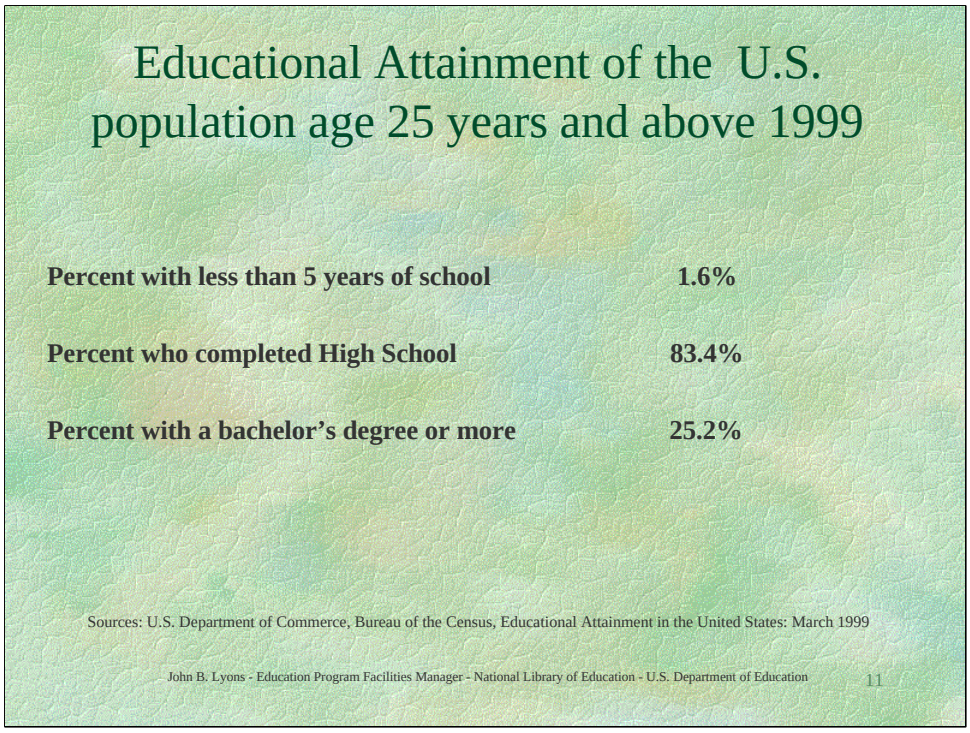
* **Enrollments in charter schools are included, as appropriate, in the public school categories above**

Sources: U.S. Department of Education, OERI The State of Charter Schools; The Digest of Education Statistics, 2000



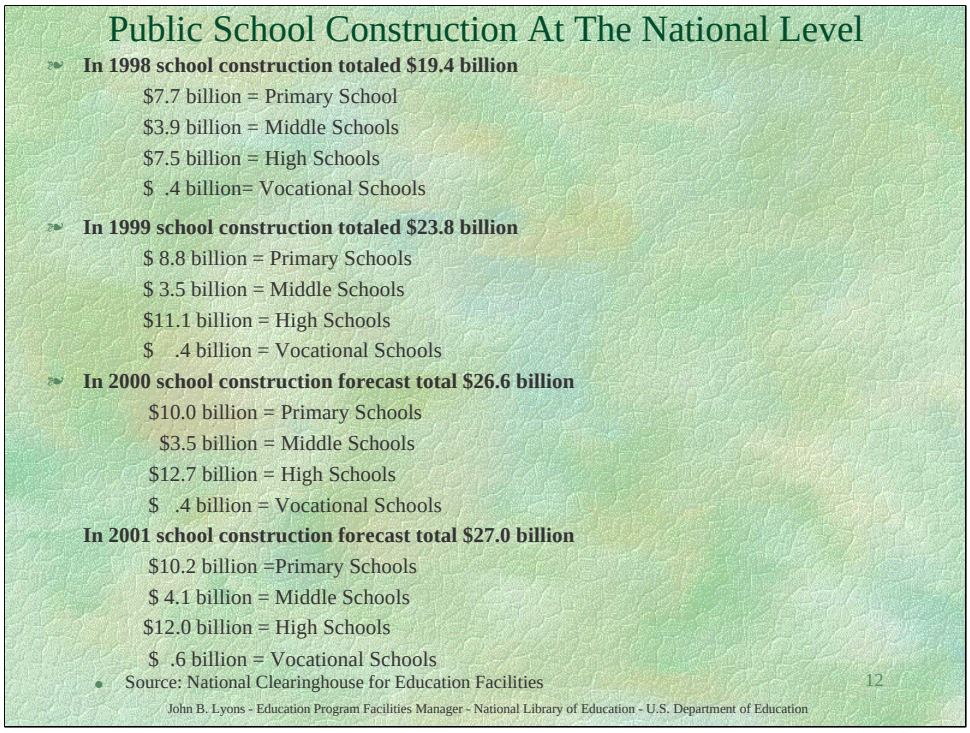
Secondary school enrollments (grades 9 to 12) are projected to increase by 11%for  both public and private schools between 1998 and 2000

while enrollment for pre kindergarten through grade 8 is projected to decrease slightly.




The current dropout rate is about 12% and drops slightly as individuals complete GED programs.

while student achievement has improved in a number of areas, there remain significant gaps in performance between racial/ethnic subgroups as well as males and females.

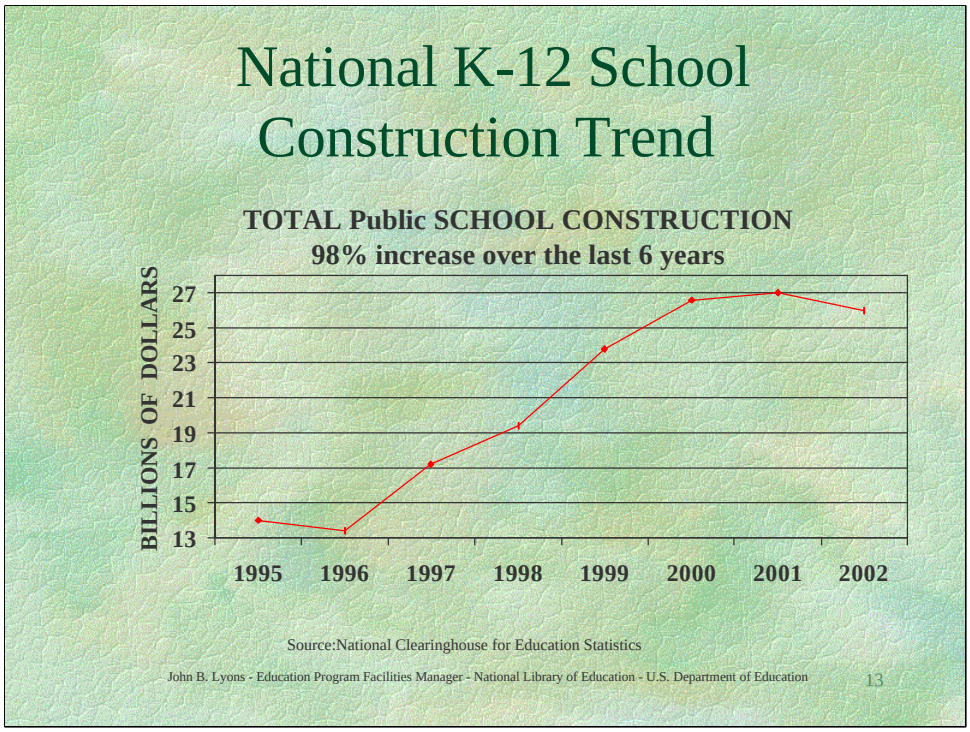



There were 412 K-12 school construction projects in 1999. 47 new primary schools were built with an average cost of 7.6 million,

41 new middle schools were built with an average cost of 17.2 million

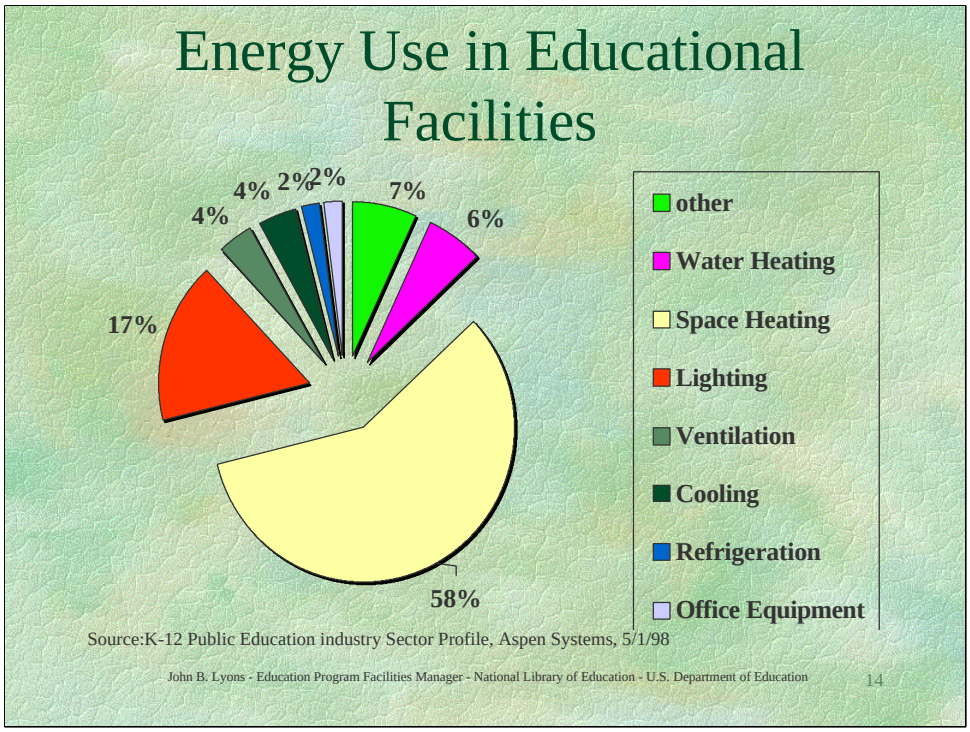
32 new high school were built with an average cost of 12.4 million and

8 new vocational schools were built with an average cost of 12.4 million




A typical school today is likely to have more than one building. It will also include some permanent additions to the original building and a mix of other permanent and temporary buildings.

The 1995 GAO estimate of school construction need was $112 billion, the recent NEA state by state survey was $322 billion. This figure includes $54 billion for technology.




As you can see about 75% of the energy requirements of a typical school are concentrated in space heating and lighting.

Some researchers have indicated that up to 25% savings in energy costs can be found through conservation efforts

# U.S. K-12 Facilities

## Historic Trend

Date:May 2000



John B. Lyons - Education Program Facilities Manager - National Library of Education - U.S. Department of Education


A school is where the knowledge of one generation is passed on to another.

and

Whether we like it or not much of the social and cultural morays are also learned

## Changes in U.S. Public School Facilities 1918-1999

| School Year | Total # Schools | One Teacher Schools | | |
|---|---|---|---|---|
| | | Number | Percent | Enrollment |
| 1917-18 | 277,734 | 196, 037 | 70.6 | 20,854,000 |
| 1927-28 | 254,726 | 156,066 | 61.3 | 25,180,000 |
| 1937-38 | 247,127 | 121,178 | 49.0 | 25,975,000 |
| 1947-48 | 172,244 | 75,096 | 43.6 | 23,945,000 |
| 1957-58 | 120,953 | 25,341 | 21.0 | 33,529,000 |
| 1967-68 | 94,197 | 4,146 | 4.4 | 43,891,000 |
| 1978-79 | 84,816 | 1,056 | 1.2 | 42,551,000 |
| 1987-88 | 83,248 | 729 | .9 | 40,008,000 |
| 1997-99 | 91,063 | 476 | .5 | 46,535,000 |

Sources: U.S. Department of Education, NCES,Statistics of State School Systems 1918 & 1928,The One Teacher School-Its Mid-century Status; 120 years of American Education; Digest of Education Statistics, 2000 NOTE: Prior to 1967, a public school with both elementary and secondary grades was counted as two schools.

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While considerable consolidation has taken place 37% are still located in small towns and rural areas.

39% of students enrolled in public schools are in grades 1-5.

Of the 14, 805 Local School Districts 62% of them educate 97% of all students.

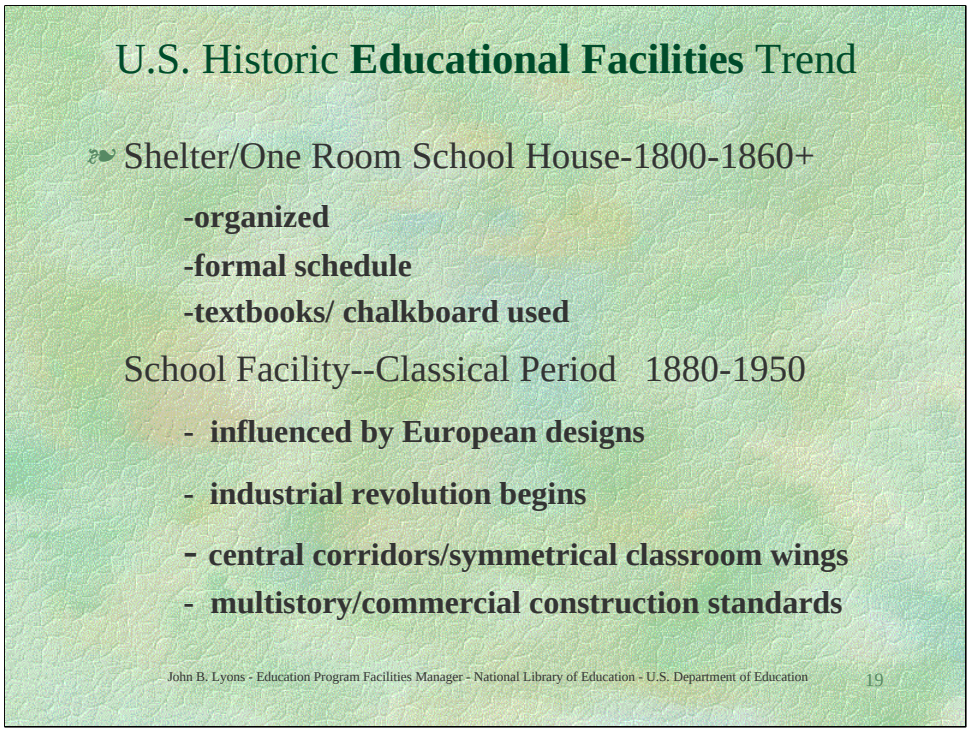
The average age of K-12 schools is 42 years.


To a large extent the divisions used are arbitrary and overlap because it is difficult to find a historic watermark.

As you know the educational system was built around the agricultural needs of our society. And the summer vacation--that social contract is with us today--even if it is slowly being overtaken by the year round school concept.

Prior to the Civil War learning was haphazard. Work life and home life were intermingled. The settlement pattern was semi-isolated and what community life there was revolved around the village

The beginnings of our industrial society began in the Northeast and required a more formal educational process.

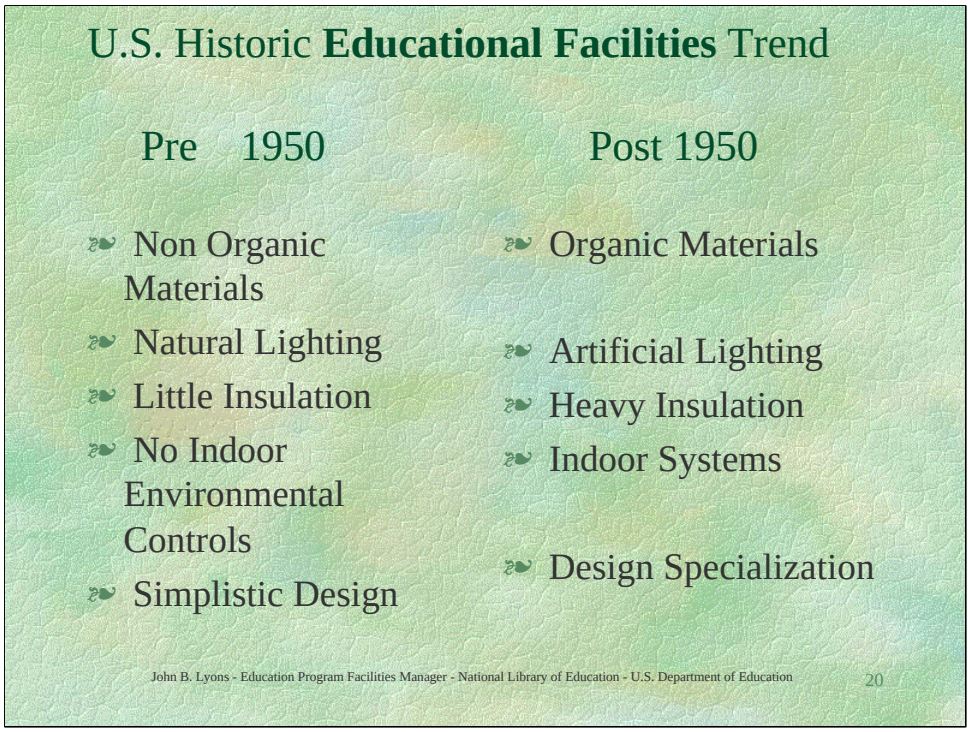



Learning was beginning to move from a self paced process, to a more structured setting where a common set of ideas and principals were shared.

The corporation-a new organizational form was used to pool capital and sustain a high level of individual enterprise. This type of structure required higher knowledge skills.

Education facilities followed the urbanization of society . Constructing “factory model” schools where multiple levels of one-room schools houses were stacked one upon another.

Urban school design early in the 20th century began to accommodate increased student populations by providing auditoriums, cloak rooms administrative offices and specialized

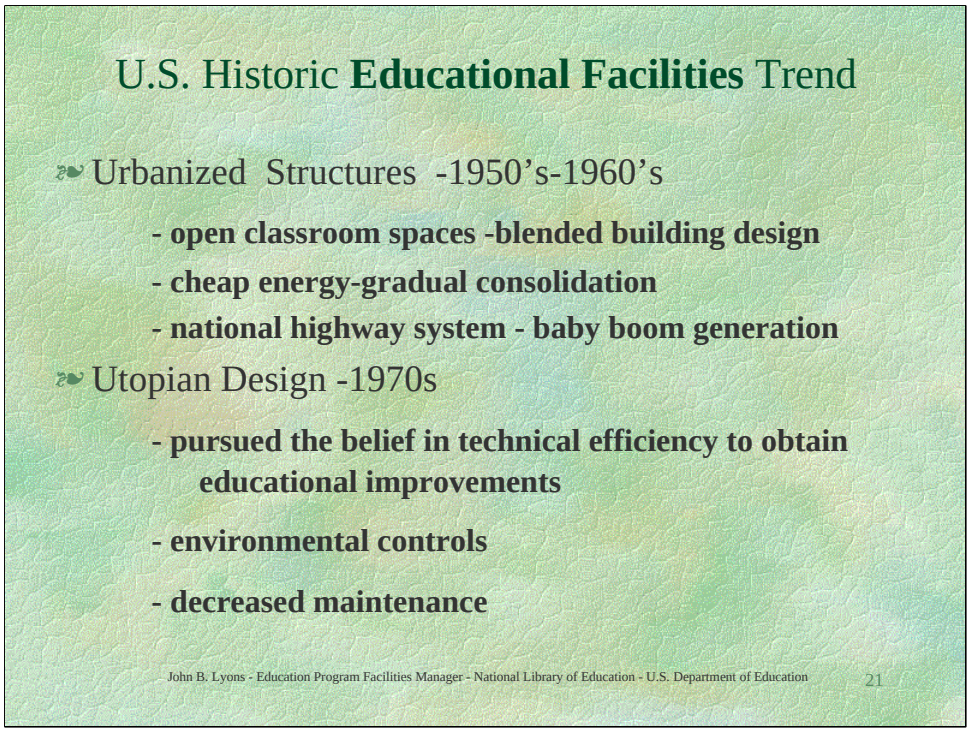



Notice that after WW11 that significant shifts in the availability of new materials and technology became common.

These changes allowed for construction designs that for the first time gave total environmental control of the facility to the designer.

We dropped the concept of one building for all grades to one of specialization

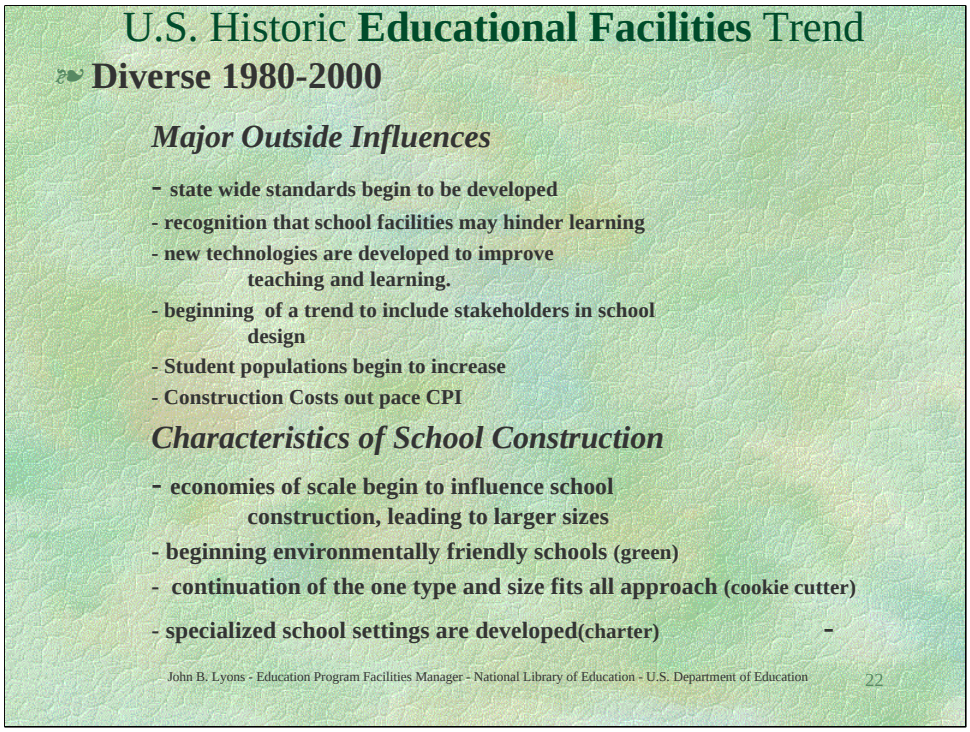
After the oil crisis of 1974 we built schools without windows




After the Second World War the significant advances in technology as well as cheap energy led to the finger design. Structures of this type greatly improved natural light, fresh air and grade separation.

Later

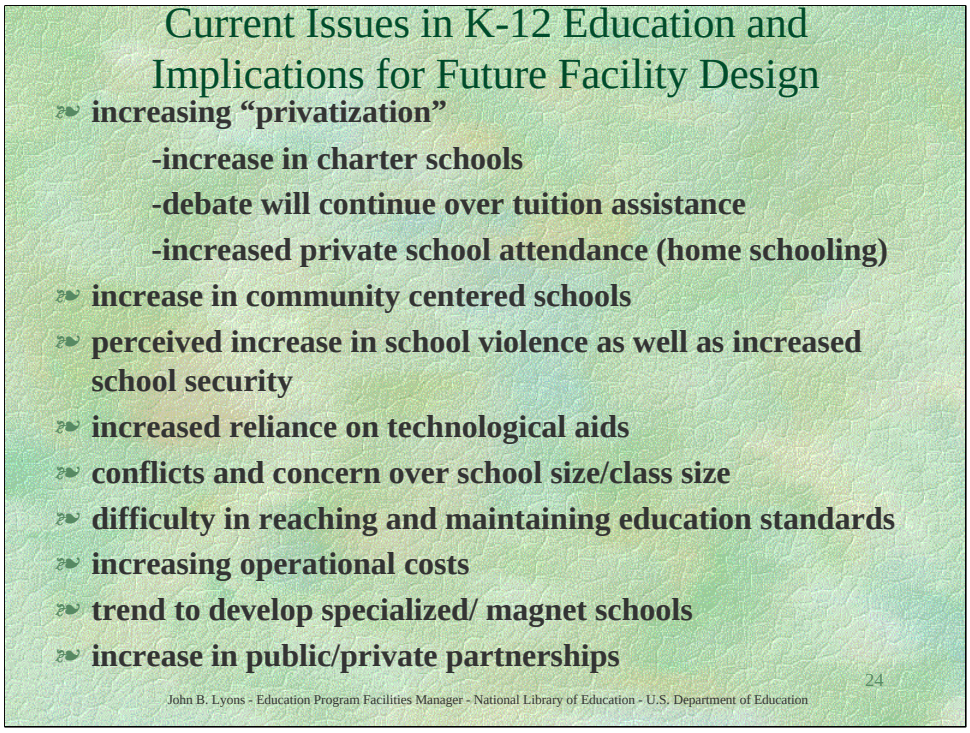
The increasing cost of energy and the use of air conditioning led to the building of the "windowless classroom" Environmental control was the watchword



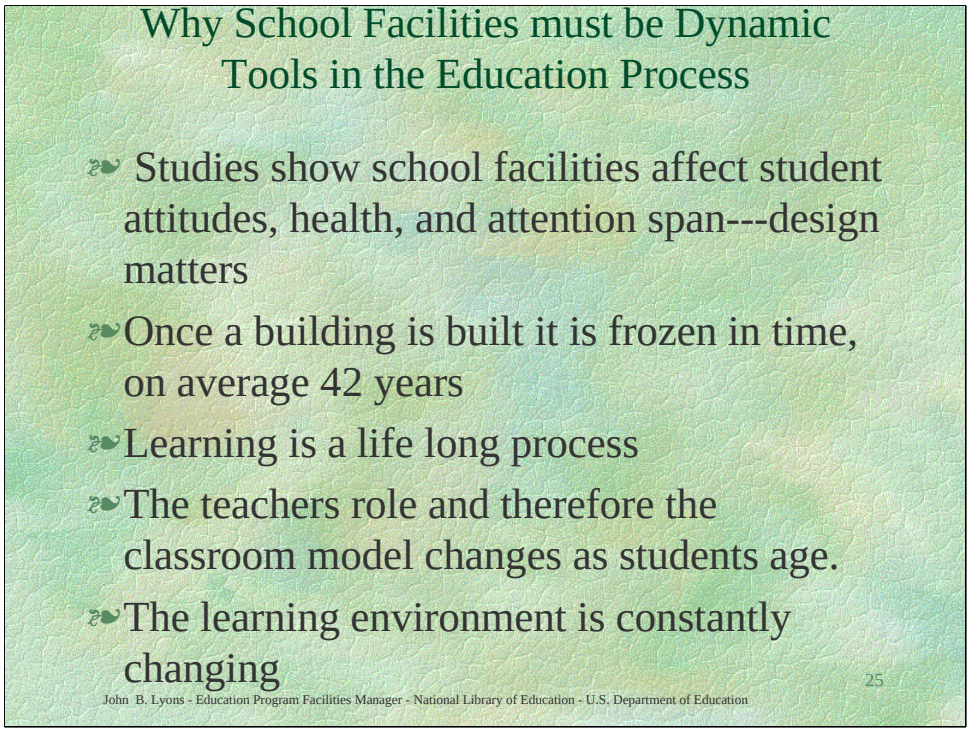

This is the period we are most familiar with and is self explanation. Currently the average age of our K-12 schools is 42 years. We know that the tempo of changes to the learning environment is increasing and that one of the hallmarks of excellent school design is adaptability. Educators have been testing new curriculum content, trying dramatically different class schedules, reorganizing school structures and experimenting with new instructional methods and technologies such as project-based learning, team teaching, precision instruction, peer tutoring, integrated curriculums, computer simulations and Internet-based collaborations have provided limited success in boosting student academic achievement .

Dramatic as these changes have been they have largely ignored the significant influence that school design itself as well as the classroom environment

# Current Outlook for K-12 School Facility Design

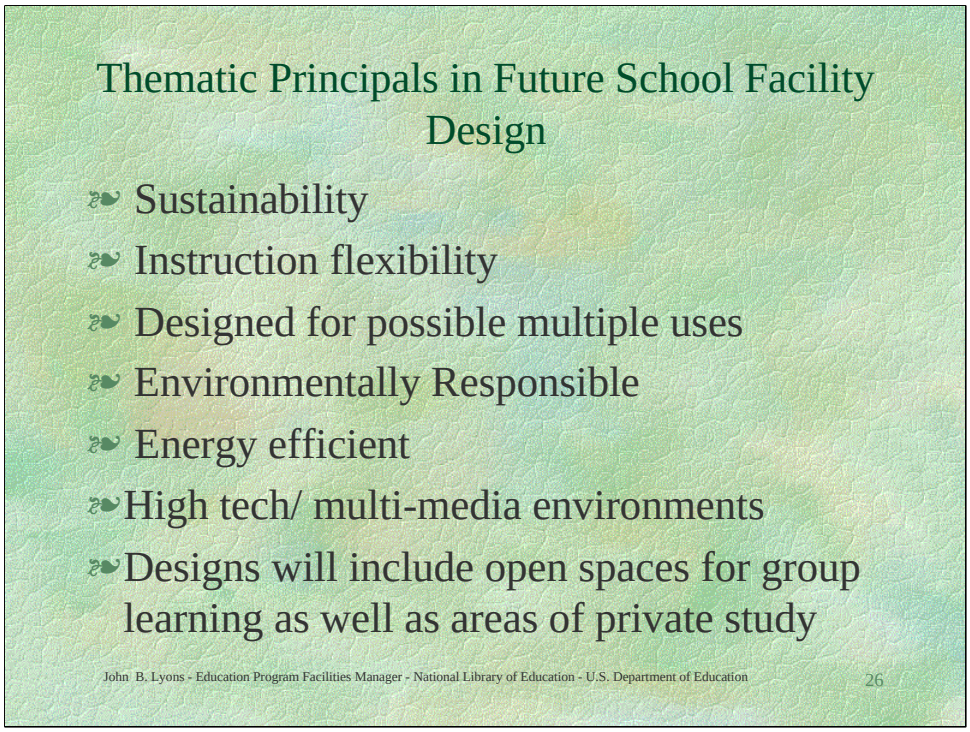



New learning and teaching methods have change the way learning takes place. School learning no longer mainly consists lessons or classes with breaks in between but more often than not features group work situations where individual learners are responsible for assisting in the search and production of knowledge.




Renovation and new school construction will provide opportunities for future innovation. A key question will be how can the school building help not only in the learning process but in developing social skills.

Life Long Learning really means that schools will not continue to operate from 8-2

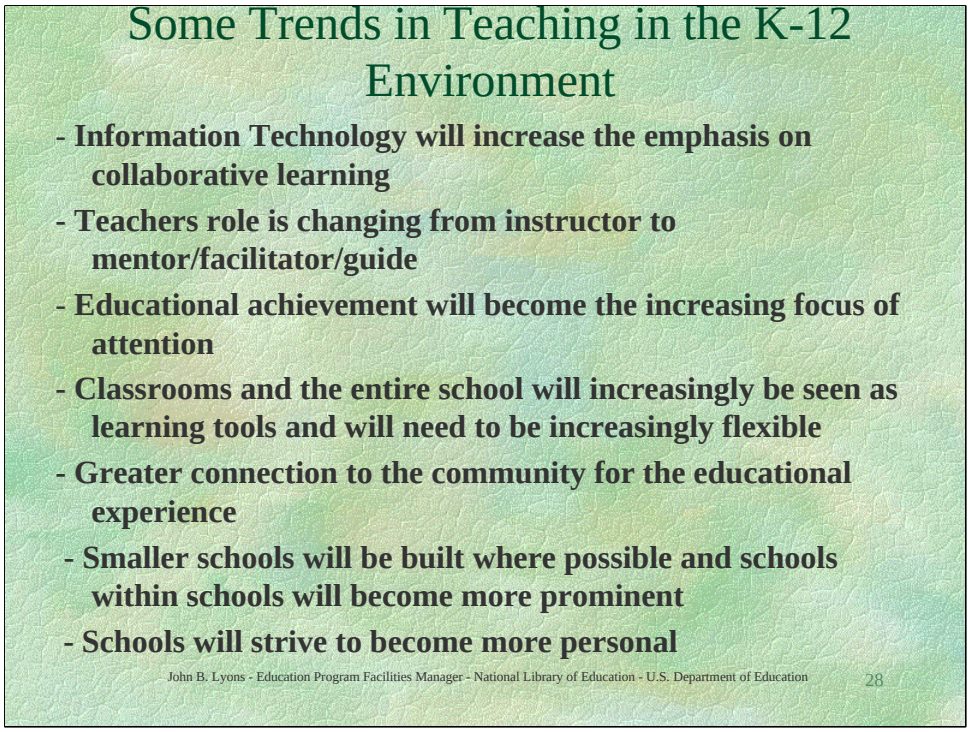



Dutch architect Aldo van Eyck said the house is a tiny city and the city is a huge house. Herman Hertzberger carried the theme further saying that schools are cities where the city center is like the student center, homes like classrooms, streets hallways and parks the common areas. Increasingly the school cultures will become interdisciplinary, team planned and taught

Themes will be used to drive curriculum

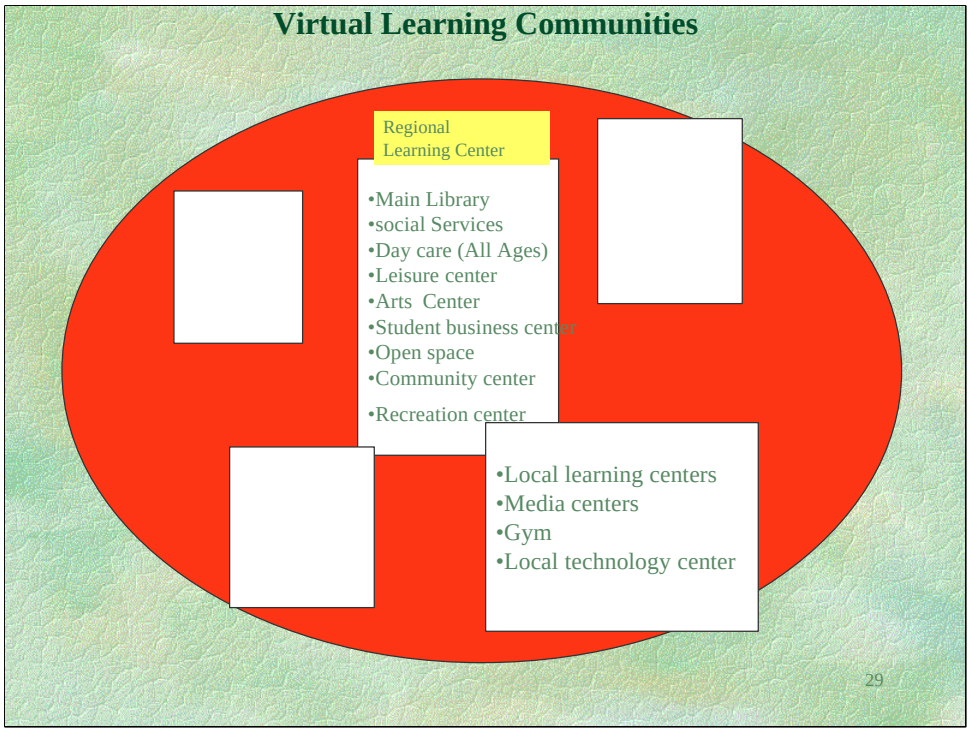
## Thematic Principals in Future School Facility Design

- Integration into the social needs of the community
- Increasing use of energy efficient systems (geothermal/natural lighting)
- Community friendly
- ADA requirements will be fully integrated in the design
- Integrated into regional educational plan




Flexibility--it's possible that we may not have what we know as today's computers in schools---already wireless systems have impacted school design

Learning by Telecommuting is a real option

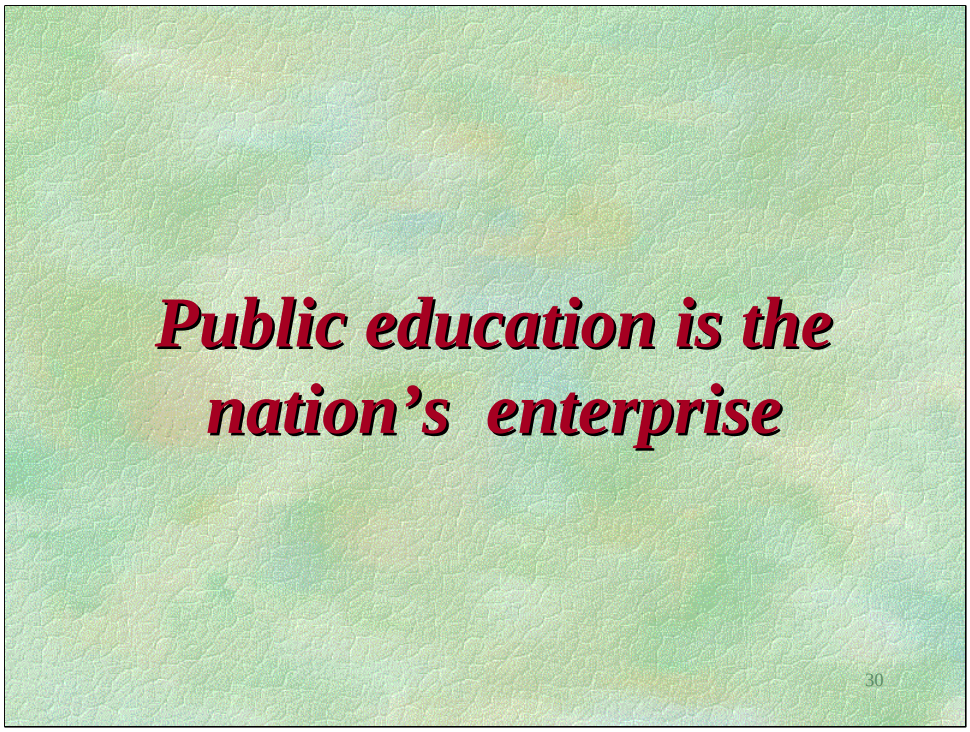



One of the issues that must be overcome is the "smoke staking" of regional budgets.

What's mine is mine and what's yours is mine reflects the realities to today's budget process but does not I would submit reflect varied needs to the communities in which we live, work and raise our families.

Schools with even a moderate amount of community supported activities, can decrease their operations and maintenance costs as well as their capitol outlay

The question for example is not necessarily how Park and Planning control and operate recreation centers but how they can provide services in areas that they don't presently serve by collaborating with schools who already have the basic ingredients necessary. Would it not be more beneficial where


Public education is the nation's enterprise
30