Education Commission States

The Progress of Education Reform 2006

School Facilities

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What's Inside

- Principles of educational design
- The impact of school environments on academic outcomes
- The changing educational facilities needs of the 21st century

Social, Technological and Educational Trends Are Driving Change in the Design and Use of Schools

Some years ago, a team of school-design experts offered this assessment of the facilities in which roughly 60 million children and adults spend a large part of their day, and which cost billions of dollars a year to retrofit, renovate and build.

"The architecture and physical setting of most American schools is deplorable," wrote Anne Taylor, Robert Aldrich and George Vlastos, in a 1988 article published by the Context Institute. "It almost always follows the passive, 'egg crate,' closed-classroom format of 200 years ago, and all too often it is more like a prison than a place of discovery, wonder and creativity."

Today, there is clear and growing evidence of the need to fundamentally rethink the planning, design and use of school facilities in a way that reflects changing educational demands and needs; takes greater advantage of new technologies and new insights into the nature of teaching and learning; and, perhaps most important, forges stronger bonds between schools and the communities they serve.

This issue of *The Progress of Education Reform* provides highlights of several recent reports that shed light on:

- How, and the extent to which, facility attributes – ranging from lighting, acoustics and ventilation, to the character and use of space – affect the performance of teachers and students
- The essential components of well-designed learning environments
- Demographic, social and educational trends that will have a major impact on the design, development and use of school facilities over the next 10 to 20 years.

It also includes links to several Web sites that feature a wide variety of information on school facilities.

Thirty-Three Principles of Educational Design

(Jeffrey A. Lackney, National Clearinghouse for Educational Facilities, February 2003, http://schoolstudio.engr.wisc.edu/33principles.html)

Educational facilities expert Jeff Lackney boils down the knowledge base about well-designed learning environments into 33 succinctly stated principles covering all stages of the facility development process – from initial planning all the way through design, construction, occupancy and facility management.

Drawing on empirical research and the reflective practice of educators and design professionals, Lackney summarizes current and emerging thinking on issues ranging from site and building organization to lighting, acoustics, ventilation, furniture and technology.

The design principles he sets forth reflect changing assumptions about the mission, character and use of schools, as well as new insights into the nature and process of teaching and learning.

In today's world, Lackney says, schools must be both learner-centered and community-centered. That means making more versatile, creative and productive use of school facilities – in close collaboration with parents, neighborhood residents and community partners, and with the needs and interests of not just students, but learners of all ages, in mind. It means rethinking schools from the inside out – beginning with the use of instructional space.

The self-contained classroom is obsolete, he says, and should give way to "instructional clusters" that facilitate both shared and personalized learning, and that take advantage of, rather than marginalize, new technologies. Each cluster would consist of individual "learning alcoves" surrounding a central core of resources and support – informal meeting areas, seminar and conference rooms, storage space, a computer hub and teacher offices. Lackney also envisions:

- Decentralizing administrative space, and providing every teacher with a private or semi-private office
- Eliminating long corridors and hallways in favor of circulation paths that provide "gentler transitions" between spaces
- Creating diverse settings and spaces for learning and interaction – from enclosed "backyards" that can be used for gardening, reading and play, to "privacy niches" that can be used for counseling sessions and impromptu meetings, to "activity pockets" for small-group learning activities
- Providing space for community activities, programs and services ranging from public meetings to child care to job training and adult education and enrichment.

Do School Facilities Affect Academic Outcomes?

(Mark Schneider, National Clearinghouse for Educational Facilities, November 2002, http://www.edfacilities.org/pubs/outcomes.pdf)

The Impact of School Environments: A Literature Review

(The Centre for Learning and Teaching, University of Newcastle upon Tyne, February 2005, http://www.design-council.org.uk/)

These two reports synthesize the findings of dozens of studies examining how, and the extent to which, teaching and learning are affected by the physical environment of schools. Both reports found:

- Strong and consistent evidence that **air quality, ventilation, thermal comfort, acoustics** and **spatial configurations** have discernible effects on teachers' and students' mood, well-being, concentration and ability to perform
- Conflicting evidence – "but forceful opinions," the University of Newcastle report noted – about the impact of **lighting** and **color**
- Inconclusive evidence about the effects of building age, **school size** and **class size**.

Here are a few excerpts from Schneider's analysis:

- Building age is an amorphous concept, and should not itself be used as an indicator of a facility's impact on student achievement. Many schools built as civic monuments in the 1920s and 1930s still provide, with some modernization, excellent learning environments; many newer schools, built in the cost-conscious 1960s and 1970s, do not.
- There is a definite consensus about the positive effects of small school size, particularly on students from lower socioeconomic groups. But this is an area where policymakers need the support of studies that better establish the trade-offs between small schools and other community needs and resources.
- The class-size debate is unresolved. This is an issue that has a serious impact on school planning and design because smaller classes require more classrooms or more schools – a fact that may seem self-evident, but often is overlooked in the debate.

Useful Web Sites

The National Clearinghouse for Educational Facilities, created in 1997 by the U.S. Department of Education, offers a wide array of information about planning, designing, funding, building, improving and maintaining schools. http://www.edfacilities.org

The American Architectural Foundation's **Great Schools by Design** initiative seeks to improve the quality of schools and the communities they serve by promoting collaboration, excellence and innovation in school design. Its Web site offers a variety of information, news and resources, including a downloadable discussion guide for parents and educators and a 17-minute video, "Schools as Centers of Community." http://www.archfoundation.org/aaf/gsbd/index.htm

The **DesignShare Library** provides an in-depth look – photographs, detailed plans, project narratives, furniture layouts and cost data – at more than 300 innovative learning environments in the United States and other countries, ranging from kindergartens, high schools and college campuses to museums, business internships and wilderness learning centers. http://www.designshare.com/projects/library.asp

Educational Facilities within the Context of a Changing 21st Century America

(Kenneth R. Stevenson, National Clearinghouse for Educational Facilities, April 2006, http://www.edfacilities.org/pubs/Ed_Facilities_in_21st_Century.pdf)

This paper takes an in-depth look at eight powerful and converging trends – demographic shifts, technological advances, changing educational needs and demands – that author Kenneth R. Stevenson believes must increasingly be taken into account in the planning, design and modernization of school facilities.

Over the next two decades, rapid and steady growth in the number of school-age children from disadvantaged backgrounds will put more and more pressure on schools to reduce pupil-teacher ratios – which requires more classrooms – and provide an array of basic services: health care, individual and family counseling, before- and after-school care, and not only lunch, but also breakfast and dinner programs.

To meet the diverse and growing needs of the next generation of parents and students, Stevenson says, schools will have to become "virtually full-service facilities that are open year-round, including evenings and weekends," and require not only more instructional space but, but also ancillary space for social workers, nurses and the like.

At the same time, educational systems will find it increasingly difficult to convince taxpayers to support bond issues to build new schools and/or remodel existing ones. Over the next 20 years, there will be enormous growth in the nation's over-65 population, "which has little direct contact with schools, and will be more and more reluctant to tax itself for any purpose, including education," Stevenson says.

"Policymakers and community leaders must find a way to connect an aging population directly with schools," he says. "They must encourage and expect the educational enterprise to broaden its mission so that schools are viewed as truly community facilities, and integral to the lives of even those without children in school."

He envisions schools as places "not just for children, but where anyone, regardless of age, can come most anytime for personal development, interaction and learning," and that serve as neighborhood hubs for preventive health care, recreational and social activities, meals for the elderly and needy, job training and other services.

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