Re-Visioning School Facility Planning and Design for the 21st Century

Creating Optimal Learning Environments

California Department of Education
School Facilities Planning Division

Roundtable Proceedings Report

October 15 - 16, 2008

Prepared by
Center for Cities & Schools, University of California, Berkeley

Re-Visioning School Facility Planning and Design for the 21st Century, Creating Optimal Learning Environments: Roundtable Proceedings Report was developed by the Center for Cities and Schools, University of California, Berkeley, under the direction of Kathleen J. Moore, Division Director, California Department of Education, School Facilities Planning Division.

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The Re-Visioning School Facility Planning and Design for the 21st Century Roundtable was developed and facilitated in partnership with the:

Center for Cities & Schools, University of California, Berkeley

http://citiesandschools.berkeley.edu/

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The Center for Cities & Schools is an action-oriented think tank of the Graduate School of Education and the College of Environmental Design, located in the Institute of Urban and Regional Development at the University of California, Berkeley.

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Core Purpose of the California Department of Education

The core purpose of the California Department of Education is to lead and support the continuous improvement of student achievement, with a specific focus on closing the achievement gap.

School Facilities Planning Division

Mission

To provide the children of California with safe and educationally appropriate facilities and transportation services.

Values

- Responsive quality service for our clients
- Educational specifications and curricula that drive the design of school facilities
- Facility design that promotes the educational, physical, and personal development of students
- A safe and healthy school environment for all students and staff
- Teamwork and proactive planning
- The concept of local control
- Encouragement of the maximum community use of all schools

Guiding Principles

Facilities and Transportation: We work to ensure that all students are provided with safe, healthy, accessible, and educationally advantageous learning environments.

Service: We are readily available to provide to our clientele and colleagues authoritative and responsive service.

Interpersonal Relations: We appreciate our clients and peers, the diversity of experiences, the marketplace of ideas, and our unique perspectives.

Law and Regulations: We administer and champion the state standards outlined in the California *Education Code, Vehicle Code*, and *California Code of Regulations, Title 5* and *Title 13*, helping school districts through our comprehensive planning, analysis, and training.

Leadership: We actively bring new information, best practices, and cutting-edge ideas to our clients and partners.

A Message from the State Superintendent of Public Instruction

I would like to thank all the participants who attended the *Re-Visioning School Facilities Planning and Design for the 21st Century:* Creating Optimal Learning Environments roundtable hosted by the California Department of Education. Your comments and feedback over two intense days has been invaluable to our process of exploring what an optimal learning environment should look like.

I am very pleased to introduce the report that follows. The report satisfies one of the key purposes of the roundtable, which was to identify best practices that strengthen the relationship between schools and communities in an effort to close the achievement gap between segments of our students. With the impact of the learning environment on student achievement well documented, this discussion was imperative.

Discussions of school design principles at the roundtable resulted in the following key recommendations:

Recommendation 1: Establish a state vision and guiding principles on the role of school facilities in supporting student achievement and closing the achievement gap.

Recommendation 2: Incorporate the new vision and principles into the *California Code of Regulations, Title 5.*

Recommendation 3: Increase collaboration among state agencies to aid local educational agencies in the design of 21st century learning environments.

Recommendation 4: Increase state focus on standards and policy governing the modernization of existing schools to provide a 21st century learning environment to a greater number of students.

Recommendation 5: Review and restructure the linkage between school facility finance and design.

It is my hope that you take the time to review this document in its entirety. I am confident that you will have a renewed sense of importance for the work each of you do in developing optimal learning environments. They are essential for the 21st century needs of students in California.

JACK O'CONNELL
State Superintendent of Public Instruction

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Note: Titles and affiliations of individuals named were current at the time of development of this report.

Executive Summary

In October 2008, a diverse group of researchers, education administrators, state policy leaders, design professionals, teachers, and students convened in Sacramento, California, for the *Re-Visioning School Facility Planning and Design for the 21st Century* roundtable.

California's schools need a clear vision for facilities planning and policy to curb alarming dropout rates, accommodate growing enrollments, and provide educational environments responsive to the rapidly changing nature of learning, communities, and necessary workforce skills. Developed by the School Facilities Planning Division of the California Department of Education (CDE) in partnership with Center for Cities & Schools at the University of California, Berkeley, the roundtable explored the historical, contemporary, and visionary future contexts of school facilities in California to advise the state on policy change. This report is a summary and analysis of the roundtable proceedings. It also serves as a guide for further reevaluation of school facilities planning and design policy in the state of California.

Over the course of the two-day event, participants critically engaged topics ranging from emerging technologies and educational programming trends to the relationship between school design and learning and sustainability. Nationally recognized principles of high-quality school design were used to provide a framework for critical analysis and to inspire participants in crafting state policy recommendations:

- Design for the educational program
- Design for adaptability
- Integrate technology
- Promote health and sustainability
- Enhance safety and security
- Connect to community
- Support a small school culture
- Accommodate student diversity
- Support the teacher as professional

The roundtable was structured as a "public research" event. That is, participants worked in a variety of forums, including:

- Panel presentations
- Large-group discussions
- Individual workbooks
- Action teams
- Creating posters as an action team and compiling "report-outs"

The analysis of roundtable processes, discussions, and outcomes brought together the participants' expertise in a variety of related fields — design, policy, research, management, and teaching. A set of findings and recommendations for CDE policy change resulted from the roundtable.

Recommendation 1:

Establish a state vision and guiding principles on the role of school facilities in supporting student achievement and closing the achievement gap.

Recommendation 2:

Incorporate the new vision and principles into the *California Code of Regulations*, *Title 5*.

Recommendation 3:

Increase collaboration among state agencies to aid LEAs in the design of 21st century learning environments.

Recommendation 4:

Increase state focus on standards and policy governing the modernization of existing schools to provide 21st century learning environments to the greatest number of students.

Recommendation 5:

Review and restructure the linkage between school facility finance and design.

Introduction: Roundtable Goals and Structure

On October 15 and 16, 2008, the California Department of Education (CDE) convened a diverse group of stakeholders for the *Re-Visioning School Facility Planning and Design for the 21st Century* roundtable to provide insight and recommendations on ways the CDE can assist local educational agencies (LEAs) in improving school facilities in California. The Center for Cities & Schools at the University of California, Berkeley, designed and facilitated the roundtable.

Goals

The goals of the roundtable were to:

- Gain insight into the design of 21st century learning environments
- Identify the best practices in school design that strengthen the relationship between schools and communities in an effort to close the achievement gap
- Develop a report to assist with the review and update of standards for school design in the *California Code of Regulations*, *Title 5*[1]

Structure

The roundtable included presentations by leading national and statewide experts on emerging technologies, educational programming trends, the relationship between school design and learning, and sustainability. The diversity of speakers and participants fostered in-depth and critical dialogue within the group on what California's high-quality learning environments will require now and in the future. Participants were divided into small "action teams" that reviewed a set of school design elements and proposed prioritized recommendations for the CDE to improve school facilities planning and design in California. Each action team presented its discussions and recommendations to the entire roundtable.

Key to each session was sparking informed dialogue on what school facilities should be like in the 21st century given the rapidly changing nature of learning, communities, and necessary workforce skills. Both Day One and Day Two began with a panel presentation and large-group dialogue. Day One established a foundation of knowledge and highlighted key questions in the school design field. It began with the research panel, "Creating Powerful Learning Experiences," which looked at research on the relationship among schools, students, and school design. Day Two began with the best practices panel, "Redefining Learning Spaces: Innovations from the Field." After both panels concluded, key stakeholders in school facilities design across California commented on the findings and then large-group discussion followed.

[1] *California Code of Regulations*, *Title 5,* relating to school facilities can be found online at http://www.cde.ca.gov/LS/fa/sf/title5regs.asp

The afternoons of both days were dedicated to facilitated teamwork. Eight teams of eight to ten participants were deliberately grouped to include a mix of the stakeholders represented at the roundtable. On Day One, the action teams selected two principles of school design excellence to focus their discussion. Together, the teams addressed the following questions:

- If you have a school that embodies these principles, what would be its characteristics? Under current California state policy, what works well to enable these types of environments?
- Under current California policy, what is *not* working well?
- What goals should the state pursue to create optimal learning environments according to these principles?

On Day Two, the teams revisited their initial assessment of state policy and crafted recommendations to enhance current state policy and identify three priorities for the CDE.

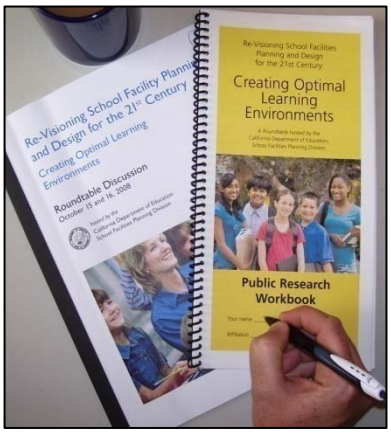
PRINCIPLES OF HIGH-QUALITY SCHOOL DESIGN

1. Design for the educational program
2. Design for adaptability
3. Integrate technology
4. Promote health and sustainability
5. Enhance safety and security
6. Connect to community
7. Support a small-school culture
8. Accommodate student diversity
9. Support the teacher as a professional

Source: List adapted by Center for Cities & Schools from a review of school design literature, including the work of the American Architectural Foundation (AAF).

Public Research

The roundtable was designed as a "public research" endeavor. The CDE could learn from the range of expertise among participants and be informed of the need for the recrafting of state policy on school facility design. The ideas and discussions generated at the roundtable were collected in multiple ways. Participants were given "Public Research Workbooks" to record their personal thoughts throughout the roundtable. The presentations and large-group discussions were all recorded, and the action team facilitators documented their ideas and recommendations on poster boards for presentation. This report by the Center for Cities & Schools summarizes the presentations and synthesizes the key findings and recommendations generated by the roundtable participants.



Through public collaboration, beginning with the roundtable, diverse voices had an opportunity to help shape future legislation to support better school facilities. The proceedings summary will serve as a guiding document for the CDE's ongoing work in improving school facility design policy in California.

Excerpts from Opening Remarks

Jack O'Connell, State Superintendent of Public Instruction
California Department of Education

The California Department of Education's core purpose is to lead and support the continuous improvement of student achievement, with a specific focus on closing the achievement gap. In this process, it is absolutely vital that our efforts in the classroom match our efforts to identify ways school design can aid student achievement. The achievement gap has taught us that all students learn in different ways and that makes it imperative for us to reach all students and understand their varied learning styles. A key component in doing this is gaining an understanding of how facility decisions affect student performance and support teachers. This includes creating and maintaining clean, safe, and healthy school facilities; and it also calls for ensuring that schools are not overcrowded, food services are of the highest order, and that there is an emphasis on the need for physical fitness. Schools must foster strong positive relationships among students, among school staff, and between the school and home, as well as with the community. In this light, the importance of the link between high-quality school facilities and community viability cannot be overlooked. Our schools must be adaptable to our changing world, technology-rich, learner-centered, personalized, sustainable, and integrated into the community.

Kathleen J. Moore, Director
School Facilities Planning Division
California Department of Education

The Superintendent has challenged each of us at the California Department of Education to contribute to closing the achievement gap and the dropout rate that relegates too many young peoples' futures to economic uncertainty and reduced opportunity. We all need to come together around our work and passion for positive educational outcomes and opportunities for all students and translate that into the built environment where students feel welcome, respected, and safe and where teachers and staff have the space and the equipment to excel at their craft. We must remember that learning takes place all across the school campus and into the community, not just those spaces we currently define as classrooms. At this roundtable, we ask each of you to speak openly and

courageously and to discuss how you can help the California Department of Education and the students of California by improving school design. It is time to examine our beliefs, reevaluate how we have been doing business, and commit ourselves to getting even better results.

California's Context: The Legal, Regulatory, and Policy Framework

While scholars and practitioners brought research and models from across the world, a key goal of the roundtable was to directly inform state policy. Thus, to provide the group with the appropriate context, Fred Yeager, Assistant Division Director, School Facilities Planning Division, provided an overview of California's varied local contexts and state policy. He described school facility design and construction, with a specific focus on the roles of the CDE. "At the core of CDE's mission is to ensure safe and educationally appropriate school facilities for California's children," he noted.

Local Contexts

Yeager described the huge numbers of new schools California's local school districts are currently building. "We've approved more than 2,000 new schools in the past ten years, about half of which have been traditional elementary, middle, and high schools — roughly 100 per year."

Figure 1. Number of New California Public Schools, 1997-2007

School Type	Number of Schools in 1997	Number of Schools in 2007	Net Increase from 1997 to 2007*
Elementary	5,185	5,770	585
Middle	1,119	1,293	174
High	860	1,214	354
Alternative	1,015	1,494	479
Charter	142	675	533
TOTAL	**8,321**	**10,446**	**2,125**

* Net increase includes openings and closings.

The need for new schools has been driven, in large part, by the state's continued enrollment growth of more than 500,000 students between 1997 and 2006. But Yeager noted, "After a decade of growth, we're seeing a slight downturn. High school enrollment continues to grow as the younger children, driving recent growth, age. Currently, we're seeing a drop at the elementary level, but we don't anticipate that decline to last very long." Even with these declines, the CDE projects that more than 23,000 new classrooms will be needed statewide between 2008 and 2013.

California is also unique in its wide variation of geography, Yeager observed. "While we have very large districts like San Diego City Unified School District and Los Angeles

Unified School (LAUSD), which serves nearly 700,000 students and is the second largest school district in the country, we also have extremely small districts with fewer than 10 students in them. . . In addition, we have snow, deserts, wind, very urban, very dense, and small rural places." The tremendous and growing racial/ethnic diversity in California should also not be overlooked, he noted. "This gives you a sense of the diversity and the problem with crafting a one-size-fits-all state strategy for our school facilities."

Figure 2. California's Largest and Smallest Enrollment School Districts, 2007

Five Largest Districts	2007 Enrollment
Los Angeles Unified	693,680
San Diego Unified	131,577
Long Beach Unified	88,186
Fresno Unified	76,460
Elk Grove Unified	62,294

Five Smallest Districts	2007 Enrollment
Panoche Elementary	7
Maple Creek Elementary	9
Union Joint Elementary	9
Blake Elementary	10
Ravendale-Termo Elementary	11

State Policy Structure

Yeager then described the current state policy structure governing school facilities planning, design, and construction in California, addressing state agency involvement, school design standards, funding, and finally CDE roles. Between 1982 and 2008, $45 billion in statewide K–12 school construction bonds and $56 billion in local school construction bonds have passed, totaling about $100 billion.

"While the state shares in the responsibility for capital costs, responsibility for the construction, operation, and maintenance of schools belongs to the local districts," he noted. California has more than 1,000 school districts and county offices of education, and each local educational agency (LEA) has wide discretion in developing school designs that meet the needs of its educational program and community. The state does, however, enforce a set of minimum design, construction, and planning process standards that must be met. LEAs are responsible for adhering to state and, in the case of some charter schools, local building codes, other local ordinances, state and federal environmental regulations, and for keeping facilities code-compliant.

California's detailed and peculiar regulatory structure stems from a long tradition of state support for school capital costs. The CDE was the first California agency to become involved with assisting LEAs in the design of educationally appropriate schools in 1927. The powerful Long Beach earthquake of 1933 (6.3 magnitude) caused serious damage to many schools in the area and ushered in the Field Act (*California Code of Regulations*, *Title 24*, sections 1 and 2), requiring all K-12 public schools and community colleges to meet heightened structural safety standards. State fiscal support for school facilities began as the post-war baby boom quickly outpaced the bonding capacity of LEAs. Another watershed moment, Proposition 13 in 1978, further increased the state's fiscal role, and thus, its influence on design.

State Agencies

Because most school construction and modernization projects utilize state funds, state approval is required. Approvals come from four key agencies.

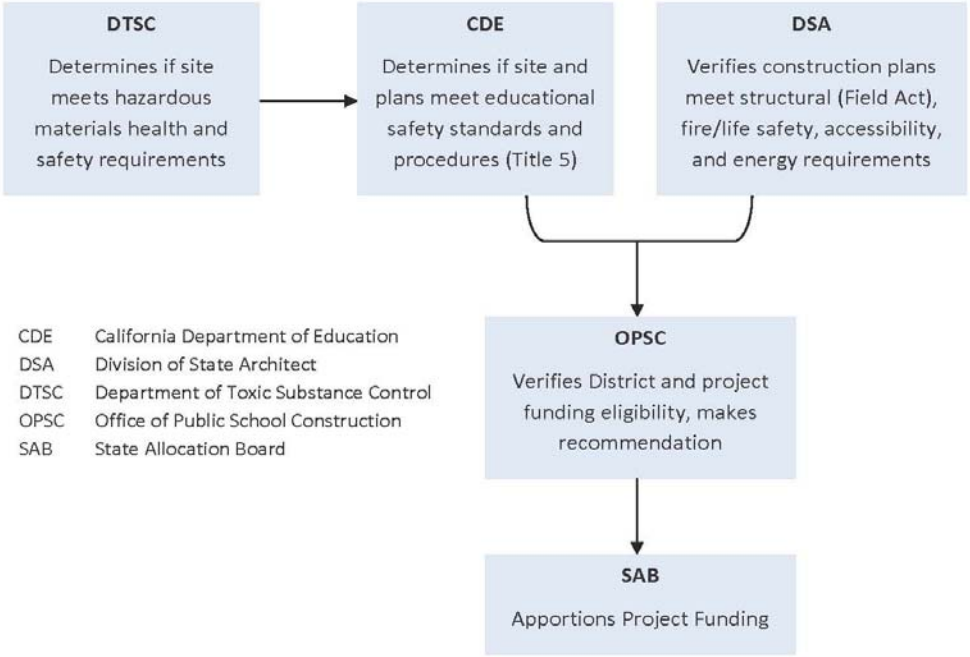
- The **California Department of Toxic Substances Control** (DTSC) operates under the California Environmental Protection Agency (EPA) and determines if potential school sites meet hazardous materials health and safety requirements. The DTSC ensures that state-funded new school sites and existing sites with major additions are not contaminated or are cleaned up to a safe level.

- The **California Department of Education** (CDE) operates under the direction of the California State Superintendent of Public Instruction, who is a statewide elected constitutional officer. The School Facility Planning Division (SFPD) reviews and approves school sites and plans for student safety and educational appropriateness based on standards contained in the *California Code of Regulations*, *Title 5*. The CDE is charged with the development of the standards by *Education Code*, Section 17251.

- The **Division of the State Architect** (DSA) is headed by the governor-appointed State Architect. The DSA is located in the Department of General Services. The DSA reviews projects for seismic, fire and life safety, and accessibility requirements. DSA approval is required for all school projects regardless of funding source, with the exception of some charter schools. The DSA enforces the *California Building Code* (Title 24), including the Field Act.

- The **Office of Public School Construction** (OPSC) is also located in the Department of General Services and is charged with the administration of the School Facilities program funding. The OPSC serves as staff to the State Allocation Board (SAB), the ten-member body that allocates funds to eligible new construction and modernization projects.

Figure 3. Major Agency Roles in California School Facilities Funding Program



After a school district secures the appropriate approvals from CDE, DTSC, and DSA, a funding request is sent to OPSC, which is then submitted to the SAB for final approval and state bond fund allocation.

School Design Standards

Although LEAs have wide latitude in the design of their schools, they must ensure that the design is consistent with the *California Code of Regulations*, *Title 5* (Title 5) standards. The CDE originally established those standards recognizing the need for flexibility and local responsibility. Drawn from years of practice, common sense, and ideas from a variety of education and facility experts, the standards have evolved from what has worked historically and what could be reasonably advocated or mandated as the *minimum* for ensuring student safety and educational appropriateness.

The Title 5 standards were first adopted by the State Board of Education in 1993 and were last amended in 2000. They may be grouped into three main categories:

1. **Process standards** – such as local hearings, environmental proceedings, and LEA board actions
2. **Quantifiable standards** – such as site acreage and minimum classroom square footage
3. **Performance standards** – such as acoustical and lighting issues, parking, and circulation

Some school components contained in Title 5 (e.g., gyms or multipurpose rooms) are not mandated and are applicable only if those components are provided. Title 5 is structured to allow an LEA to vary from any standard if the LEA demonstrates to the CDE that student safety and educational appropriateness are not compromised. Yeager explained, "As a result, schools look different throughout the state, and this wide variation has given rise to the state policy discussions on both fiscal realities and equity issues. From the fiscal perspective, what should a school that receives state construction funds look like? The equity perspective questions why some communities have large schools with amenities such as swimming pools and lighted stadia, while other communities' schools consist of rows of portables with students eating at uncovered picnic tables."

Funding

Yeager then noted the importance of considering California's school facility design standards and funding policies together. "Title 5 must also be viewed with an understanding of the state's capital funding model. The School Facility Program has been described as a 'one-size-fits-all' model, yet in an environment in which budgetary realities often supersede educational needs, how does a flexible Title 5 coexist with a rigid funding model?"

The state of California assists local LEAs in funding school capital projects by way of eligibility calculations. "The funding focuses in on classrooms. How many classroom 'boxes' do you have? If it's not big enough, it won't count as a classroom. If it's too big, it might count as two classrooms," Yeager explained. When the classroom numbers are determined, there is a proscribed calculation of the number of students expected to be housed by each classroom. Following this calculation, a per-student funding allocation of state dollars is made.

LEAs combine these dollars with locally raised funds to pay for new school construction. For districts that meet financial hardship criteria, the local matching share can be waived or reduced, but generally, in the case of elementary schools, LEAs receive about

$8,000 per student from the state. Yeager elaborated, “In some areas, this might be just right to cover capital costs.”

CDE Roles

Yeager described the specific roles of the CDE in school planning, design, and construction.

1. *Develop (and enforce) standards for school site selection and design: Education Code* Section 17251 instructs the CDE to develop standards for school site selection and design, which can be found in Title 5 (sections 14010 and 14030). Yeager described, “They provide minimum standards for safety and educational appropriateness.” Local districts adopt project educational specifications based on their own local process and educational goals. The CDE reviews preliminary school design plans typically halfway through the design process. After local districts respond to CDE comments, the CDE reviews final plans and an approval letter is issued, clearing the way for an SAB funding request.

Yeager used two major standards to highlight Title 5: pedestrian safety and classroom size.

- *Pedestrian safety*: “Title 5 is very specific in saying that students, buses, and cars don’t mix because students lose every time,” Yeager noted. Separating these can be very difficult to do on sites (particularly small sites) where there is only one street access to the site. In addition, he said, “We are seeing fewer students being bused (often due to cutbacks) and more people driving. The result is sites consumed by asphalt for parking and drop-off that is largely used for 20 minutes in the morning and 20 minutes in the afternoon.” Often, parking and drop-off can make up 25 to 30 percent of a total site area.

- *Classroom size*: Title 5 has both prescriptive and performance standards with regard to classroom size. Traditional classrooms are required to be 960 square feet. Performance standards include requirements that school buildings must meet, such as those for acoustics and daylighting. Yeager pointed out that, “These can vary from location to location; it’s a performance standard. For example, we don’t say what decibel level is appropriate or how many foot-candles you have to have.”

2. *Code compliance:* “Our second role at the CDE is code compliance for very specific codes that that have been enacted,” Yeager noted. “Specifically, these

have been requiring telephones in every classroom (in response to recent school tragedies), the increased focus of career technical education (CTE) facilities and site environmental hazards investigations, contamination, and potential clean-ups (in partnership with the DTSC), the California Environmental Quality Act (CEQA) process, and CalTrans airport review."

3. *Provide technical assistance and best practices:* Finally, the CDE provides technical assistance and best practices documents for LEAs. Yeager pointed out that, "We have a dozen or so field representatives distributed throughout the state with a wide range of knowledge on state and local process requirements and design standards, who provide technical assistance to LEAs." Additionally, the CDE provides best practices documents on its Web site. Key documents include *Healthy Children Ready to Learn: Facilities Best Practices* (2007), *Guide to School Site Analysis and Development* (2000), *School Site Selection and Approval Guide* (2000), and *Educational Specifications: Linking Design of School Facilities to Educational Program* (1997).

CDE Review Tensions

Yeager concluded his discussion by outlining important points of tension that exist for the CDE in its role in school facility planning and design.

1. *Responsiveness to local needs*. "There's an enormous tension we have in finding a balance between local desire for flexibility and meeting the state standards," Yeager stated. The state standards exist to establish some level of statewide equity, but they can conflict with local responsiveness. He asked, "How do we resolve this?"

2. *Timing of plan review*. The CDE typically reviews school site and design plans at the halfway stage, when most design decisions have already been made. Yeager noted, "The result is that we are dealing with after-the-fact compliance in most cases. There's tinkering around the edges that we can do, but really to truly partner with districts, we need to be involved earlier so that those best practices are considered during the education specifications process, not after the school is designed."

3. *Cost and time versus better design*. Any change in design often leads to project cost increases. Yeager described, "While we might suggest a design change that even the LEA or architect agrees would be a better solution because we do not see designs until they are halfway done, the response is often that they cannot do it because it's so far along in the process. The change would delay the project and could raise costs by $2 million or $3 million."

4. *Limited focus on renovation projects*. "While California's LEAs have been building about 100 schools per year (and we put a lot of effort into the review and design of those), six million children are sitting in existing schools. Perhaps it's a better use of time and resources to concentrate on bringing those schools up to 21st century expectations," Yeager said. The state participates in funding the modernization and renovation of school facilities only when they are at least 25 years old. Typically, the state level of assistance helps fund new paint, fire alarms, and Americans with Disabilities Act (ADA) access improvements. Yeager observed, "Many people wonder: to best serve students, why don't we educationally upgrade or modify schools at least every ten years?"

5. *Performance standards versus prescriptive standards*. Yeager noted that one way for the state to ensure equity across schools is to require that everybody have the same thing "whether they want it or not." He noted, "The standards are very clear on the 960-square-foot classroom. But in reality there are schools that have project-based learning curriculums and large-group lectures and who say, 'We don't need 960-square-foot classrooms, why are you making us build that?'" These schools may benefit from a more performance-based set of standards and exterior wall loading.

"It is in this setting that the CDE is conducting a review of the Title 5 standards to determine how they can be amended to aid LEAs in developing 21st century learning environments," Yeager stated. In conclusion, Yeager quoted State Superintendent O'Connell's recent State of the State speech: "By improving our school facilities and by promoting facilities design specifically to help close the achievement gap, we can improve California's ability to deliver a world class education to all students."

Research Panel: Creating Powerful Learning Experiences

To provide a foundation of knowledge for participants, a panel of researchers presented on what is known about the relationship between schools, students, and learning environments. The research presentations also established an understanding of how school facilities have changed over time and how they may change in the future.

Chair: **William Ellerbee, Jr.**, Ed.D., Deputy Superintendent, School and District Operations Branch, California Department of Education

School Organizations: Yesterday, Today, and Tomorrow. **Bruce Fuller**, Ph.D., Professor of Education and Public Policy, University of California, Berkeley

Preparing Our Future Workforce and Citizenry. **David Stern**, Ph.D., Professor Emeritus, Graduate School of Education, University of California, Berkeley

Linking Learning and School Design: Responding to Emerging Ideas. **George Copa**, Ph.D., Director, New Designs for Learning

Linking Learning and School Design: Strategies. **C. Kenneth Tanner**, Ed.D., Professor, Educational Leadership, University of Georgia

School Organization: Yesterday, Today, and Tomorrow

Bruce Fuller, Ph.D., Professor of Education and Public Policy, University of California, Berkeley

Bruce Fuller studies the political and economic forces that have shaped school districts in America. He began the review of research with an historical overview of public school administration for the past hundred years. He explained how larger macroeconomic forces influence how and where schools are built today and that these forces need to be understood as we look to the future of school design. Fuller noted that by better understanding these issues, we can, in some cases, affect them, as was done in the *Godinez v. Davis*[2] case that successfully challenged the state of California's funding allocation for new school construction in 1999-2000.

[2] The *Godinez v. Davis* settlement in 2000 sought to address the inequities in the school construction apportionment system. The plaintiffs claimed that urban districts were disadvantaged under the SAB's procedures, given that these schools suffered from years of neglect and overcrowding. Under the settlement, a temporary system was created to prioritize funding to the state's most overcrowded schools. Assembly Bill 16 in 2002 created the Critically Overcrowded Schools (COS) program to be part of future new school construction bonds.

Fuller explained that "designers need to think more about school reform efforts, and at the same time, well-meaning educational reformers need to talk to designers and architects to operationalize some of these ideas and to figure out what's realistic in figuring out how we build new schools." He also said that what is old is new again, citing a new emphasis on localism and community. Fuller shared the history of American school design, from the one-room schoolhouse through the advent of the "school plant" and No Child Left Behind. He discussed how the public concern for efficiency in education has affected how we design schools over time. "Concentrating students into larger school plants and using a factory model to attempt to educate more students at lower expense, produced the "one best system" concept in education, which does not engage students well today," he said.

Recent movements toward community-oriented design and sustainability, Fuller explained, are changing how we think about school design. He proposed that school design could help advance urban revitalization by encouraging denser neighborhoods through innovation and collaboration with city planning departments and urban leaders. This type of collaboration can boost not only student achievement, but also the economic vitality of local neighborhoods and urban centers.

- **Macroeconomic forces (demographics, land use) influence how and where schools are built**
- **School reformers and designers need to collaborate**
- **Educational return to emphasis on localism and community**

Preparing Our Future Workforce and Citizenry

David Stern, Ph.D., Professor Emeritus, Graduate School of Education, University of California, Berkeley

David Stern spoke about public education's traditional goal of producing well-informed citizens who are economically self-sufficient. This imperative of public education, he argued, should direct our work as educators and school designers; yet often students are not given access to experiences that would help inform them to be educated citizens. Additionally, findings from the High School Survey on Student engagement reveal that three-fourths of students say they are bored in class. Holding up a voter information booklet for the 2008 election, Stern stated that "we would like everybody coming out of high school to read, analyze, understand, and make informed decisions about how to vote."

Stern discussed the history of public education in the United States, noting that it was primarily created to produce a better civic environment for a democracy. And yet many students coming out of high school are unable to participate in the civic process (e.g. understanding a voter information guide, making critical judgments) and fewer students participate in voluntary civic activities (only 8 percent of young high school graduates not in college engage in any civic activity). Stern also noted that a college education is becoming more important for employment, so there is more emphasis now on ensuring that all students have the option of going to college.

Often, career-oriented programs and courses can help students make this transition. Dr. Stern used the example of Career Academies, which are designed to prepare high school students for both college and careers. Generally, Stern noted that almost all career technical education (CTE) students now complete academic core courses. High Tech High School is another example of a school that prepares students for college, careers, and citizenship.

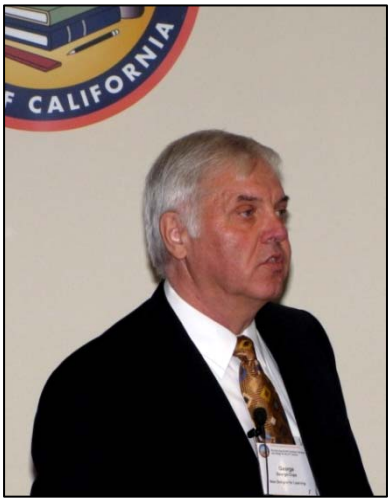
- **The traditional role of schools is to produce well-informed citizens**
- **Schools should focus on career-oriented offerings**
- **Design of schools plays a role in creating self sufficient citizens**

One mechanism for creating more informed citizens might lie in school design, Stern noted. If schools were designed to facilitate educational exchange outside the school, students would have an opportunity to learn about being a part of a community through internships, volunteer programs, and other collaborations. As Stern noted, "Students prepare for adult roles as citizens and producers by practicing those roles."

Stern also explained that we may need to adapt our definitions of "classrooms" to include Internet resources and other emerging technologies. Interconnectivity with the community can be useful in providing opportunities for students to learn about civic roles and potential career paths. In addition, he noted that this could be very helpful for the growing population of students that move frequently by facilitating consistency in their education over time.

Linking Learning and School Design: Responding to Emerging Ideas

George Copa, Ph.D., Director, New Designs for Learning



George Copa researches school design and educational planning, specifically looking at emerging trends in design and education fields. As he mentioned, "The biggest challenge right now is not so much the *what*; we're pretty clear about that from the rhetoric we hear. The

question is *how*." In bridging this gap, Copa focuses on interpreting global trends in education to help inform school design. He began by presenting a number of larger issues that are emerging in the field of education and selected a group of four key educational priorities that pertain most to the planning and design of educational facilities (see box).

Copa's four priorities are central to emerging thought on best practices in teaching and learning. He focused on whether and how these are addressed in school design.

Engagement

Engagement in learning can often be at odds with the typical classroom configuration of rows of desks facing a teacher wall. In environments that are more conducive to project-based learning and collaboration, students can participate more comfortably and learn more actively, if, as Copa put it, "they feel a sense of wonder, they're trusted, they're understood." Copa showed examples of school designs that are more engaging, pointing out that the role of spaces that are more lively, open, and visually interesting.

Personalization

Copa recommended more personalization in design to emphasize the concept of "each and every, one at a time" in learner-centered design. Trends in education are focused on "learner-centric" concepts where the educational approach is more responsive to diversity and allows students to be self-directed. He advocated better design of personal space in schools, where this is often a low priority (e.g., lockers, cubbies, etc.). In addition, personalization can be interpreted on a larger level, addressing a variety of needs for special spaces in school facilities. School facilities, he explained, should have a diverse set of options in terms of activity and space so students can choose where they would like to learn, what they would like to learn, and how they want to learn it. Again, he showed examples of schools where students were provided their own study space, storage space, and options of different learning and working environments.

Copa's priorities for education:

1. **Engagement**
2. **Personalization**
3. **Connectivity**
4. **Authenticity**

Connectivity

Connectivity in education relates to the ability of students to collaborate effectively with each other, with other students in different schools, with the community, and more. "What about a 21st century school that reached out," Copa asked, "that spent as much time focusing out as it focuses in?" In education, it is a priority for students to learn the importance of teamwork, networks, and communities and to understand how they fit into larger local and global contexts. He discussed how many schools are built to

discourage connectivity from the community, closing in on itself and making community connection difficult. However, if schools can reach out to communities and be designed to better facilitate that exchange, students could have more effective learning opportunities to interact with their larger community — locally and globally. He recommended more exchange program opportunities and other educational concepts. He also challenged designers to come up with better ways to incorporate new levels of connectivity into their designs.

Authenticity

Finally, authenticity was discussed as an emerging concept for educational theory. Students want to learn through real experiences and real projects rather than through exercises and hypothetical situations, or, as Copa put it, "We're into construction, not instruction." These can be more engaging and experiential and can also help students prepare for careers through exposure to problems and projects in the real world. Copa advocated more joint-use facilities throughout the community, where students are literally learning in different locations. These spaces can resemble workplaces, promoting collaborative work and interdisciplinary exchange.

Copa concluded by discussing the school-planning and design process, emphasizing the importance of a cohesive educational plan prior to working on a facility plan. He noted that the facility plan is only one plan of a set of key plans that schools should have in place, including notably a learning plan, within a larger systematic approach to school planning.

Linking Learning and School Design: Strategies

C. Kenneth Tanner, Ed.D., Professor, Educational Leadership, University of Georgia

C. Kenneth Tanner discussed the importance of community and educator involvement in school design from the perspective of his experiences as an educational planner and researcher. Tanner noted that individual schools should be designed to meet the needs of the community it will serve rather than on prototype school designs, noting that the latter usually minimizes community involvement. The demographics of a community, the curriculum, and the overall context of a school are the key aspects of school planning.

Different teaching styles often require different classroom designs and configurations, and as Tanner noted, this means that it is crucial to include educators during the early planning process. He showed examples of educators working on preliminary school design schematics and made the case that these stages of design should emphasize the involvement of educators as much as possible.

Finally, Tanner discussed his recent research into patterns and forms as expressed in the book, *A Pattern Language* (Alexander, Ishikawa, and Silverstein 1977). Tanner's research center has been investigating the correlations between certain "patterns" discussed in the book with effects on student comfort and other outcomes and has been finding some promising results. Through this research, he hopes to show that certain forms for school and classroom design are more effective as teaching and learning environments.

- **School design should be specific to community needs.**
- **Educators are essential to the school design process.**
- **Certain "patterns" of school and classroom design can be more effective.**

Above all, Tanner emphasized the importance of an open planning and design process that considers the multiple aspects of each community's needs and concerns.

Research Panel: Large-Group Discussion

To kick off the large-group discussion on the research panel, three California respondents were asked to provide their thoughts. Summaries of their comments and a brief overview of key issues raised by the large-group discussion follows.

Rick Simpson, Deputy Chief of Staff, California State Assembly

Speaking from his role in the state Legislature, Simpson focused much of his comments on California's state funding for local school construction. He first pointed out that Stanford University's recent study on California education, "Getting Down to Facts" identified many issues with school facilities funding adequacy and efficiency but admitted that "California's school facilities finance system works pretty well." He also noted how much funding had gone into school construction in recent years, compared with the past. "For the first time, we have come close to having enough resources to meet the growth needs of the suburbs, as well as to deal with the overcrowding and modernization needs of the urban areas."

Simpson also discussed the changes in structure of the facilities funding program. "We tried to make a paradigm shift in Senate Bill 50 (in 1998) to be much more flexible, giving local communities, school district boards, and administrators a lot more say over what they build. . . However, I fear that we may be slipping back a little bit to more the sort of command-and-control type of thought process in Sacramento."

Finally, Simpson touched on the issue of CTE, which has a variety of facility needs, noting that there are emerging perspectives that argue that combining career technical academies with traditional academics may interfere with more specific vocational training that focuses exclusively on technical skills.

> We are very concerned about how, in California, funding is driving too much of our school facility program.
>
> – *Action Team Report-Out*

Guy Mehula, PE, Chief Facilities Executive, Los Angeles Unified School District

Mehula began by saying that his perspective may be unique because LAUSD has built 74 schools in the past six years (averaging a school a month for a decade). He noted that we are all working with our own set of different constraints based on local context, underscoring Fred Yeager's early description of the variety of contexts found in local school districts. For LAUSD, school siting and community involvement are immense challenges. "We have areas that security is the number one concern. . . [school is] the safest place that those students have."

Community input in school planning and design, he noted, can sometimes work counter to other goals for a school. For example, a community may want football fields when the district's goal is to design a small 500-seat school. He also mentioned his frustrations with getting educator involvement during design because "teachers aren't there as we start to build these schools" because they haven't been hired yet. "So when we look at the designs, the people that are using them are totally different from where we started off."

Finally, he posed a question regarding the relationship between career tech and college prep: "How can these be better managed together?"

Laura Knauss, Architect, Lionakis Beaumont Design Group

Laura Knauss responded from her roles as a mother, and a school architect and her involvement with Sacramento City Unified School District's small schools initiative. What struck her about the roundtable's presentations was how different it is to start from scratch versus reconfiguring existing facilities. "It's more difficult in an existing facility to invite the teachers to look at their education delivery in a new way."

She also noted how much students appreciate project-based learning, community service work, and internships. "I hear almost nothing about their day-to-day classes, I wish I did, but it's really about their experiences. . . What are we doing wrong that I don't get more than a grunt about these amazing AP/IB classes that they're taking — is it the facilities?" She noted that furniture is lacking, as is the technology component, saying "they're all pulling out their cell phones to do Internet research."

Summary

The following are key points raised in the large-group discussion.

- The original intent of **Senate Bill 50**, which established the current **School Facilities Program (SFP)** in 1998, needs revisiting by the Legislature because the program is getting further and further away from the intent. A participant asked, "Can the state be more flexible rather than enforcing strict accountability?"

- It remains unclear what is the best method of **funding school facilities** in California. One participant noted that "perhaps a per pupil grant is better than how we currently fund our school facilities" and "the goal should be to give local districts more freedom to build what they want."

- Retrofitting existing nonschool buildings for use as schools is an interesting opportunity in California but is hampered by cost constraints created by the

Field Act. Charter schools have better opportunities for those types of spaces because they are exempt from the requirements of the Field Act.

- While creativity and flexibility in the design of schools are something participants seem to agree is important, **measuring success** in these elements is difficult. One participant proffered educational commissioning, a process his firm uses, as a way of starting to measure and follow through on some of these aspects of school design that need teacher and student buy-in. The firm provides an "operating manual" for schools, uses Post-Occupancy Evaluation (POE), and visits the school after it has been occupied to ensure that the design is used to its fullest potential.

- The design of classrooms and learning spaces is related to policies on **educational accountability**. One participant noted that "traditional classrooms may be the best design solution for students studying for a test." Others disagreed, noting that test scores were too narrow and stood in the way of more inventive methods of learning and the environments to support them.

- **Participation among different stakeholders** in school planning and design is highly desired. However, as one design participant noted, it is often difficult to involve teachers and community members thoughtfully in school design "because they often do not share the same visions for what a high performing school facility will do for them. How can we share this vision better?" In response, a facility director participant noted that community participation can vary widely from school to school, but it really takes initiative from the community to get this process well organized. A teacher participant said that from a teacher's perspective "we're struggling with more basic problems — students aren't showing up on time, dressing properly, or learning to write a résumé" making it hard for them to focus on how school design may help. Thus, education for teachers and school staff on the relationship between good design and improved school outcomes is needed.

A Framework for School Design Excellence

Ronald E. Bogle, Hon. AIA, President and CEO, American Architectural Foundation

Following the large-group discussion on Day One, Ron Bogle, president and CEO of the American Architectural Foundation (AAF) helped set a broad framework of key principles of school design. In 2005, AAF's Great Schools by Design Initiative hosted the National Summit on School Design, from which the report *Eight Recommendations for School Design Excellence* was created. Bogle summarized these recommendations and provided special insight on AAF's recent work gathering high school students' perspectives. Bogle's presentation was meant to bring a shared understanding of the national conversation on high-quality school design from which participants could critically apply this thinking to California's context and policy.

1. Design Schools to Support a Variety of Learning Styles

A clear theme of AAF's Summit was the importance of designing schools to enhance learning. In designing schools, we must reexamine the notion of the traditional classroom setting and focus on a new learning environment that is designed to support student achievement. Doing so requires greater flexibility in design to accommodate a range of learning scenarios inside and outside the school. Bogle noted, "Students expressed this as, 'offer a variety of formal and informal spaces.'"

2. Enhance Learning by Integrating Technology

Technology must be integrated into the environment of any well-designed school because it both supports learning and helps schools operate more effectively. "Students," Bogle explained, "focused on two key technology issues: green building design and the gap between how students experience technology in their real life and how they experience technology in their school life." Bogle further added, "Students tell us that technology doesn't make schools as we know them obsolete, but rather, they feel the school building is absolutely a fundamental part of their lives, especially as a social gathering space."

3. Foster a Small-School Culture

"While summit participants felt that school size needs to be determined within the framework of a community's needs and vision, academic goals, traditions, and economics," they also held a strong penchant for developing a small-school culture that fosters relationships and attachments, Bogle noted. Students agreed.

4. Support Neighborhood Schools

Neighborhood schools should be preserved whenever possible. Bogle explained, "It's such an integral part of our cultural experience, the relationship between a school and the neighborhood it serves. It's what many argue is part of a healthy community." Bogle

went on to note, “There are challenges to this, particularly around equity issues, but to remove the school from the neighborhood in favor of building a ‘big-box’ school somewhere else is viewed by many to be an unhealthy direction for our cities and for our communities.”

5. Create Schools as Centers of Community

Successful schools are often those with great support and involvement from the community and that are often open to the community. A number of school districts have built schools to serve as the center of the community, so that facilities are used not only as a school but also as a place to house other community services such as recreational centers, resource centers, and performing arts spaces. “This is actually a new building type,” Bogle noted. “We’re just finishing a documentary on the Rosa Parks School in Portland, Oregon, which we feel is one of the best examples of the school as multiuse, joint-use, and the school as the center of the community.” To do this, school districts need more information about how to structure and administer partnerships to maximize the benefit to their schools and communities.

6. Engage the Public in the Planning Process

When a school district wants to embark on design and construction of new or renovated schools, an open public process is essential. A great deal of planning and time is required for a school district and a community planning this process. Bogle noted, “Public engagement takes time, without which, participation is only window dressing.”

7. Make Healthy, Comfortable, and Flexible Learning Spaces

“We must become committed to improving the quality, attractiveness, and health of the learning spaces and communal spaces in our schools,” Bogle explained. Research continues to demonstrate the significance of spatial configurations and design elements, including color, daylighting, and ventilation in student achievement.

8. Consider Nontraditional Options for School Facilities and Classrooms

Today, there are many ways that a school may function, and many places where it may be housed. As an example, Bogle pointed to the nationwide initiative to promote Science, Technology, and Math (STEM) schools, nurturing students to go into STEM-related fields. “This has implications for school design because the vision is that many STEM schools will find themselves *in* the community — the local research lab, the local manufacturing facility, or in a local technology employer.” Bogle pointed out that nice stand-alone STEM schools have been built, such as the Denver School of Science and Math; however, the design challenge of placing those schools out in the community is substantial. Students consistently report that they want to see themselves as part of the community, not isolated or segregated from it.

Keynote: Space for Change: Educational Transformation and Building Schools for the Future

Andrew Harrison, Leader, Learning, Research, and Cultural Environments Team, DEGW

Using the context of work and learning environments in the United Kingdom, Andrew Harrison described how schools and school design must respond to changing culture and employment demands. He noted that from his experiences work and learning spaces support or hinder the activities within them. Harrison's key point was that school design can take solid lessons from recent changes in the operation and design of business environments:

- Space ownership concepts are changing. Workers do not necessarily do their work in offices owned by their employers, nor do they "own" their own cubicle or office in their company's building.
- The work space has become distributed over the private/public spectrum and over the virtual and physical environment.
- The city has become the office, in that more offices are multifunctioning spaces capable of supporting communities of diverse workers.

Those lessons highlight the reality that workers are highly mobile, and this mobility is determined by their task at hand. In essence, work can and does happen anywhere and can be enhanced by certain locations. Harrison asked: "Are schools responding similarly to the changes we see in the needs of the workplace? Are they responding to the changes we see in education trends?" Similar transitions are occurring in a move to collaboration instead of individual work, problem-based learning, virtual learning communities, and community interaction. The design of learning spaces needs to consider these important shifts in the way people and businesses function.

To highlight how a government-funded school construction and renovation program has incorporated these ideas into new learning environments, Harrison focused on the United Kingdom's ambitious Building Schools for the Future (BSF) program. He noted that California's and the UK's needs were not that dissimilar — both have an enormous inventory of schools that need significant modernizations as well as new schools to accommodate growth. With the BSF program, the UK aims to refurbish or replace every secondary school in England over the next 15 years. Harrison and others have been looking at ways to use BSF to "revolutionize" school buildings and the educational process. Thus far, 13 BSF schools have been built with promising results. For example, at

Bristol Brunel Academy 15 percent of students achieved higher grades in English and math in their first year at the new school than in the previous year at the old school.

Harrison described how two key national educational reform efforts — Extended Schools and Personalized Learning — are shaping BSF school designs.

- Extended Schools provide a range of services and activities — such as child care, adult education, parenting support programs, and community-based health and social care services — to meet the needs of children, their families, and the wider community. The result is increased use of the school beyond the normal school day. Ideally, Harrison noted, "The boundaries between the school and the community are dissolving — the locked school gate will be a thing of the past."
- Personalized Learning is a key driver of the UK government's educational agenda. The aim is to create a highly structured and responsive approach to each child's learning, including both customized learning methods and access to necessary services to promote individual health, safety, and achievement.

- **Traditional categories of space are becoming less meaningful as space becomes less specialized, boundaries blur, and operating hours extend toward 24/7**
- **Space types should be designed primarily around patterns of human interaction rather than specific needs of particular departments, disciplines, or technologies**
- **New space models focus on enhancing quality of life as much as on supporting the learning experience**

The BSF has crafted a unique change management strategy:

- Exploring: the program embraces discovery, aiming for "revolutionary rather than evolutionary change."
- Creating: the program embraces the vision by co-creating design solutions with a variety of stakeholders.
- Building: the program embraces the process by taking a systemic approach to change throughout the entire country.
- Investigating: the program embraces the evidence by measuring results at each stage and utilizing controlled experimentation to document results.

In conclusion, Harrison asserted that new space models are needed that foster "transformation, not extinction [of schools]." Harrison identified some key thoughts to achieve this new space model:

- Traditional categories of space are becoming less meaningful as space becomes less specialized, boundaries blur, and operating hours extend toward 24/7.

- Space types should be designed primarily around patterns of human interaction rather than specific needs of particular departments, disciplines, or technologies.
- New space models focus on enhancing quality of life as much as on supporting the learning experience.

California Local School District Perspective

Bill Savidge, AIA, Engineering Officer, West Contra Costa Unified School District

As an active supporter of sustainability in schools, Bill Savidge presented on the issues he faces as a representative from the local district level, as he is working to build high-performing, innovative schools in his district. Savidge introduced his remarks by reminding the roundtable participants that his school district (and indeed many districts) is still working on getting its existing schools up to current standards. He raised the issue that much of our discussion has focused on new school construction when, in fact, a great deal of money and resources are going into existing schools and modernizations in just keeping students and staff safe, warm, and dry.

Existing schools in California:

- **serve the vast majority of students**
- **are in need of major repair and modernization or replacement**
- **local school districts struggle to cover these costs**

Primarily, Savidge suggested that the state make greater investments in existing facilities because there is a "backlog of facilities that need to be modernized, and many of them need to be knocked down and built over again." He noted that, in his experience, state grants cover about 12 to 15 percent of the cost of doing a reconstruction or renovation project, and that is what his district needs most, and what is more cost-effective for them than other options. Largely, local districts are doing this work with their own resources "passing bond measures at historical proportions."

Savidge concluded by noting that other issues, such as race, ethnicity, language barriers, teacher effectiveness, and family stability matter more than facilities. "But, facilities do matter" in the student achievement equation. He ended by showing images of the newly rebuilt El Cerrito High School, which features his district's first photovoltaic array. "We are making progress getting out of the 20th century toward a greater vision."

Best Practices Panel: Redefining Learning Spaces: Innovations from the Field

The Best Practices Panel discussed new perspectives and developments on a variety of timely topics relating to school design. Panelists represented a broad range of expertise areas and focuses, but all discussed their views on the key issues surrounding school design today.

Chair: **Mary Filardo**, Executive Director, 21st Century School Fund

Schools as Centers of Community: Concepts and Strategies. **Steven Bingler**, AIA, REFP, NCARB, Founder, Concordia, LLC

Sustainability, Design, and Education. **Panama Bartholomy**, Adviser, California Energy Commission

Technology in Schools. **Jeremy Roschelle**, Ph.D., Director, Center for Technology in Learning, SRI International

*Learning Transformation in Action***. Larry Rosenstock**, Founding Principal, High Tech High School

Safe, Healthy, and Positive Environmental Design. **Tod Schneider**, Consultant, Member, Crime Prevention Through Environmental Design

Schools as Centers of Community: Concepts and Strategies

Steven Bingler, AIA, REFP, NCARB, Founder, Concordia, LLC

Steven Bingler has worked extensively in the redevelopment of New Orleans following Hurricanes Katrina and Rita and has learned important lessons that he shared with the group about school facilities and community connectivity within a context of renewal. "Katrina did amazing things for us in that it gave us the opportunity to understand how we can deal with catharsis by breaking down silos," Bingler noted. His firm was responsible for coordinating the Unified New Orleans Plan (UNOP) in a very short time frame with a very large stakeholder group. In sharing his experiences with the planning process in New Orleans, Bingler presented a number of concepts and practices that could be universally applied to school design.

Transparency and inclusivity were top priorities in the development of the UNOP because of the distrust that had built up over time in the city's population. Therefore, a considerable portion of the work was in coordinating community input and ensuring that all voices were heard. In one public meeting, more than 1,500 people were involved. Live television broadcasts to Houston, Dallas, Atlanta, and Baton Rouge were made for those citizens who had not yet been able to afford to move back. Using this

example and others, Bingler emphasized that it is important to plan carefully for the most disadvantaged people in a community, because they are often the ones who will be most affected by the designs. In this discussion, he also noted the importance of making decisions based on data analysis, getting the best expertise available (the UNOP involved a dozen of the nation's leading urban design firms in the process), and using technology to help the process of collecting input in useful ways.

From the process, three form types for schools and learning were created, which came from concepts of flexibility and technical innovation:

- The *community use form*, which Bingler described as a sort of joint-use model where the community is invited to use the facilities of the site.
- The *extended learning form*, where students are going out into the community, to other facilities such as zoos, art museums, and the like.
- *Integrated learning centers*, where learning is fully integrated with another type of space. Bingler noted an example: "The Henry Ford Academy where we literally put 400 students into a museum in Dearborn, Michigan, and that's where they've been going to school for ten years."

Bingler explained that a key strength of these form types is that they create economic efficiencies through space sharing. Estimating the typical cost of a classroom today, he noted, "every time you put a classroom out in the community, you save $300,000." He also speculated that these types of learning environments may be even more important to low-income, urban students. He told a story of talking to a student a number of years ago who was in a gang who said, "if you want me to come back to school, you just gotta make it real."

Bingler ended with one final point of caution, regarding schools as centers of community learned from the New Orleans experience. "When we have principals who are responsible now for running community programs, they can't spend as much time running the school." So instead, he advocated less inward focus on school facilities and a focus on more holistically planned solutions using urban design and community involvement.

- **New Orleans offers a laboratory for school facilities planning and community connectivity**
- **Transparency and inclusivity are hallmarks of good school facilities planning**
- **Schools benefit from holistically planned solutions using urban design and community involvement**

Sustainability, Design, and Education

Panama Bartholomy, Adviser, California Energy Commission

Panama Bartholomy works on climate issues for the state of California and shared a view of the current status of sustainability and school design in California. The Governor has made it clear that the state has to meet its climate change goals and return to 1990 levels of greenhouse gas emissions by 2020. The Climate Change Scoping Plan, released in October 2008 by the California Air Resources Board, lays out the steps that the state will be taking to reduce emissions, and schools are a major component in it. The plan has called for all new schools and major renovations to be built to the Collaborative for High Performance Schools (CHPS) standard and for other schools to at least benchmark their energy and water use and make some improvements by the year 2020. He also noted that the Division of the State Architect has called for grid-neutral schools by 2010, an ambitious goal.

- **Schools will need to play a major part in meeting state climate change goals**
- **Green school design and grid neutrality are part of the solution**
- **School siting has significant impact on land use patterns in California**

However, Bartholomy explained, there are other less direct ways that schools are affecting greenhouse gas emissions in California, that will begin to be addressed in coming years. In particular, school siting has a significant impact on land use patterns in California. Schools are often one of the top factors that families consider when deciding where to move and settle. Today, the better-funded schools tend to be located in less dense areas. This encourages suburban sprawl, lower density, and higher car emissions. Therefore, he encouraged more consideration of how urban schools can be revitalized and urban centers be made more appealing for families with children. Bartholomy also noted that the State Attorney General has begun sending comment letters, and in one case, filed a lawsuit calling for local planning agencies to take responsibility for their climate impacts. It is possible that this could spread to school districts in the future, so Bartholomy encouraged the group to consider how this could best be addressed now. He suggested giving greater consideration to walking and biking as modes of transport to and from schools in California. Although part of this issue is out of the control of school districts, he noted that there are still things that can be done.

A number of funding strategies are being implemented to help schools attain sustainability goals, not all of which are being utilized well. The first example was Proposition 1D, which made $100 million available for green school facilities, of which only 10 percent is now encumbered. In addition, the Energy Commission has a program that provides funds to school districts for installing solar panels. This program is funded by an Attorney General settlement with energy companies after the energy crisis in

2001. Last year, much of this funding was left unused and had to be returned to the Attorney General. Finally, the Energy Commission has a retrofit program that funds energy efficiency and renewable energy in existing schools, which is not used frequently. As Bartholomy noted, "School districts are leaving money on the barrel head here in California."

Bartholomy ended by pointing out the critical importance of designing schools appropriately because they will outlive us and continue to impact society and the environment. He encouraged the group to consider the hard questions, change the status quo process, and resolve what he referred to as "intergenerational inequality and injustice", to produce schools that respect the needs of future generations.

Technology in Schools

Jeremy Roschelle, Ph.D., Director, Center for Technology in Learning, SRI International

Dr. Roschelle presented to the group from the perspective of someone on the forefront of technological innovation in learning, which he has researched for years. He spoke primarily about current trends in learning technology that he believed designers should be aware of, showing the research and conceptual work that is taking place.

The first trend he discussed was related to networks, in particular, networks of two kinds: those, connecting students to a larger distance-learning network and those enhancing the network inside the classroom to make learning more interactive and interesting to students.

- **Networks are redefining learning environments**
- **Handheld devices are redefining educational opportunities**
- **Better integration with technology requires a new learning model where students are self-motivating and collaborative**

Handheld devices are the second trend Dr. Roschelle noted, showing examples of how they are being used in classrooms today. He also noted, "When people think of technology, for some reason, they think of desktops or laptops, and it's not going to be desktops or laptops." Rather, researchers are working on ways to take advantage of graphing calculators and cell phones. As he noted, "we have to think about what we are going to do to leverage the technologies that kids already have in their homes." He also noted how students are using digital cameras, drawing at smartboards, and using other digital display surfaces, interacting in ways beyond the typical computer screen and keyboard set-up. As these strategies become more expressive, he stated, they also become easier to use in accommodating different learning styles and techniques.

Dr. Roschelle's research focuses on understanding how these systems are being used in classrooms, and testing to assess whether students ultimately perform better using these methods. In one study of more than 100 schools in Texas, students are using a program that allows them to interact with math problems through technology. The study showed that the students using the new technology were getting into much more complex math earlier in their education. In another study, Dr. Roschelle is working with Bay Area schools in using handheld technologies to support collaborative learning processes.

Dr. Roschelle then posed a question: What do classrooms look like when they become places for knowledge work? In discussing this, he posed some of the challenges for implementing technological solutions in classrooms. First, he noted that electrical power can still be an issue, given that these devices need to be readily available at all times if they are to be practical for teachers. In addition, safety can be an issue when students are interacting with a larger virtual network, and this must be addressed proactively. He noted that there are solutions to these issues, but they continue to be barriers to large-scale implementation of newer technologies. Technology can create new paradigms in learning, Dr. Roschelle noted. "All the good uses of technology really move the teacher away from being the deliverer of authoritative knowledge." In moving toward better integration with technology, we can develop a new learning model where students are self-motivating and collaborative and are better able to be involved with and learn from the world around them.

Learning Transformations in Action

Larry Rosenstock, Founding Principal, High Tech High School

Larry Rosenstock talked with the group about his experiences working with public schools of various kinds and the concepts that he has used to develop High Tech High. This public charter school near San Diego recently gained significant attention for its innovative educational techniques while working within a public school system and typical constraints. He presented four "integrations" that he has focused on at High Tech High:

- Integration of social class
- Integration of head and hand
- Integration of school and community
- Integration of secondary and postsecondary education.

He introduced these concepts by quoting Thomas Jefferson, who said "the purpose of public education isn't to serve the public; the purpose of public education is to create a public."

The integration of social class has been a major focus at High Tech High, and Rosenstock laid out the processes that the school has used to ensure social class integration. A blind lottery system by zip code, is used to determine the student population coming to the school every year. Rosenstock also pointed out the difference between diversity and integration: a school may be diverse but lack integration in that often "kids of different backgrounds are not in classes with each other."

Four "integrations:"

- **Integration of social class**
- **Integration of head and hand**
- **Integration of school and community**
- **Integration of secondary and post-secondary education**

One approach to getting students from different backgrounds in classes together is High Tech High's unique approach to an honors system. Honors students and nonhonors students are in classes together, with honors students taking on an extra element to the syllabus to earn honors credit. The honors system is made more accessible and inviting to the student body, Rosenstock noted. He also addressed the importance of this type of success, noting that this is a component of High Tech High's strategy of pushing students to apply to college. Rosenstock noted that 100 percent of the schools' students have gone to college, a priority for the school because of the growing importance of college degrees in today's economy. In this system, "our hypothesis is that those students who one would predict would *not* be going to college are better served in a program that expects that they *will* be going and are in school with students who know that they will be going."

In regard to school facilities, Rosenstock noted that their philosophy toward school buildings was to create simple structures. The logic is that complex structures beget simple behaviors, while simple structures beget complex behaviors. He discussed the importance of smaller-school culture as a part of this as well. He concluded by again stressing a greater consideration of integration in schools, in particular that of social integration.

Safe, Healthy, and Positive Environmental Design

Tod Schneider, Consultant, Member, Crime Prevention through Environmental Design

Tod Schneider, an expert in school safety issues, began his talk with a cautionary statement about security being taken too far, noting that "prisons make lousy schools." Crime Prevention through Environmental Design (CPTED) is a different approach to safety. It encourages better design of schools that makes them safe without having to "wrap barbed wire around the place." Schneider presented his concept of safety in schools by affirming that health, positive reinforcement, and sustainability should also be issues included in this topic.

Starting with specific ways to address safety, Schneider presented a few concepts that create a more genuinely safe environment through environmental design, including:

- Natural surveillance
- Territoriality and maintenance
- Signage and visual cues
- School planning issues: fortress versus sprawl

First, Schneider discussed the importance of natural surveillance in schools as a method of security. More centralized access and movement through the space makes the space easier to monitor. He explained the value of considering access points to the school, minimizing the areas that need staff supervision, and placing the main office in a visible location near the entrance to allow more natural surveillance by office staff members, who are usually more attuned to those coming in and out of the school.

Encouraging feelings of ownership over spaces in schools can be another effective way of creating safer environments. "The more you're able to establish territoriality," Schneider proposed, "the more people are going to respect that." He showed one example of a wall that students had painted themselves, arguing that these types of projects can get students invested in their school space and therefore make them more willing to maintain them. Schneider made the pitch for more personalization of space in schools to encourage this type of ownership both for groups of people and for individuals.

Four key design concepts to enhance safety:

- **Natural surveillance**
- **Territoriality and maintenance**
- **Signage and visual cues**
- **School planning issues: fortress versus sprawl**

Next, Schneider showed examples of both helpful and inadequate signage, noting that this can often lead to safety issues when it is unclear how visitors are to be handled. Not

only should the school be laid out in a way that makes the office easily and quickly accessible from the entrance, but in addition, signage should help to make the route as clear as possible so that unfamiliar visitors are easily identified. He also showed how signage and visual cues can help students who speak languages other than English and students who have not yet learned to read.

Schneider also discussed the philosophical approaches to school design, identifying two primary typologies: fortress and sprawl. Fortresses are easier to keep secure; fortress schools are those that are built with security as a high priority. Sprawling schools can be quite difficult to navigate and typically require more resources to keep them monitored and safe.

While he was not able to cover some of the health and environmental issues, he wanted to emphasize that they were important not only for their obvious advantages, but also for how they can make a building safer through that larger sense of ownership.

Best Practices Panel: Large-Group Discussion

To start the large-group discussion on the best practices panel, three California respondents were asked to provide their thoughts. Summaries of their comments and an overview of key issues raised by the large-group discussion follow.

Steve Looper, Principal, James McKee Elementary School, Elk Grove Unified School District

Steve Looper pointed out that decisions about classroom size are a complex issue. When the state allowed schools to reduce class size for K-3 to 20 students per classroom, his district chose to do that. Looper described how they implemented "learning rooms and a lot of the things we're talking about where students have interactive spaces." Funding for smaller classes remains a huge issue for Elk Grove. "We all know that smaller schools are better, but we implemented a class size reduction program so that we could achieve that individuality that students need, but the funding system encourages you to build larger schools so it will pencil out."

Looper also noted that it is not just the amount of funding that is difficult, but also the logistics of funding, noting that in one case, "we have an elementary school, where we're dealing with 34 outside agencies, about 28 or 29 of them are state accounting agencies or subsections thereof. This is one project." He pointed out that his district is very interested in energy efficiency and solar power, but that "it's all a balance of resources," and often more basic modernization efforts must take priority. He commended the group for such a wonderful vision and concluded by saying , "I hope as we look at the new vision that we just look at ways that we can incorporate adequate funding into it, or our vision will probably languish."

Kathleen Chavira, Principal Consultant, Senate Education Committee

Kathleen Chavira began her remarks by saying she found the conversation fascinating. "It's heartening to me to hear professionals in this field share these ideas and to think about the various possibilities of what can go on in our school districts." She then noted that she related to Bill Savidge's comments on the desire to look to the twenty-first century, but "really working in a world that's trying to catch up with the twentieth century." Chavira also underscored the various remarks made about how important diversity, standards and achievement, and social equity are in school facility policy.

Chavira said she believes that legislative work has been attempting to create more flexibility for local districts, but that "we're now realizing that it's not really answering or resolving all the problems that districts might be facing in terms of facilities." She ended by noting that, due to the fiscal environment, it's unlikely that new legislation will go through to support school construction soon. So, we should take this opportunity now, to "pull together to craft a model that better meets the needs of the state going forward."

Tom Blurock, FAIA, Principal, IBI/Blurock Architects

As a designer, Tom Blurock has worked for many years at trying to find the most state-of-the-art trends in school design across the country and the globe. "Unfortunately, I see very, very few Californians represented in most cases [because] we have a culture of school building that's too dependent on the state and too determined by our funding system." Blurock described the key problems with current California policy. First, current policy works against community connections. "We need to have a *Uniform Building Code* and a Field Act that can accommodate some of those options because today it doesn't." Second, "how we deal with existing buildings needs change — most of our kids today live in existing buildings." Third, the 960-square foot classroom requirement needs to change. "We need a way for the [state] program to accommodate that change, embrace it and encourage it, not just control it."

Summary of Large-Group Discussion

The following are key points raised in the large group discussion in response to the best practices panel.

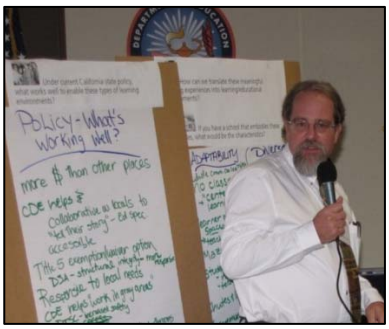
- The issue of **school choice** was identified as having an important relationship to ideas around school and community connections that had been repeatedly mentioned. One participant noted, "We have a system of tremendous choice and . . . the children and the parents of the schools that are in these communities may not actually be from these communities." Although school choice is intended to maximize educational options for families, it may also work against goals of school and community connections. Bingler noted that this issue is being addressed in New Orleans by ensuring more schools across the city are creating the same advantage for students — a move that might lead to more families choosing their local school. The quality of facilities may play a role in where families choose to send their children to school.

- **Green school designs, standards, and energy performance** were further discussed as being central to current and future school design in California. One participant noted that the State Architect's Grid-Neutral plan is ambitious and presents a unique opportunity for forward-thinking districts. "Districts that are

> The idea of grid-neutral schools is not just about becoming more energy efficient, but actually creating clean air and water.
> *- Action Team Report Out*

reaping the benefits of these incentives up front are going to be much better able to handle [the eventual] regulatory phase than those that are ignoring it at this point." Another participant noted that there has been movement in federal regulation to fund school construction that will prioritize green standards and energy performance, although it remains to be seen what will materialize.

- The energy discussion also focused on the problem of **capital budgets being separate from operating budgets**, which does not incentivize paying a bit more up front for more long-term energy efficient design solutions. The added cost simply makes the project seem more expensive without a more full-cost accounting method. As one participant noted, "When you go buy a car, you don't go out there and say "Cheapest one! Period! What if the cheapest one gets 4 miles per gallon?. . . I just think it's a terrible injustice to be building schools using that mindset."



- Participants pointed to **safety as a major concern**, one in which design choices play an important role. There was a conversation about the issue of lockers, which raised larger questions about the balance between personalization and safety. Tod Schneider elaborated on locker safety strategies, including a system where the school owns the locks and has the right to look into lockers periodically. He also discussed larger issues with hallway safety, noting that overcrowding is often the source of fighting between students. Other safety issues were discussed related to joint-use and children getting out into the community, with participants noting that there are many successful models of this. Schneider also mentioned that there are numerous strategies to make children safer as they go out into the community, but education around these is needed to quell fears.

> The biggest single challenge [for technology], is to accommodate for the tools we don't know about yet.
> — *James Dyck*

- Participants felt that **technology was a major issue** for school design. Dr. Roschelle noted that technology cannot just be dropped into a classroom; it only works well when it is thoughtfully integrated into the curriculum, complete with teacher training. Participants noted that technology costs, then, must include hardware and full support for integration, including teacher training, curriculum development, and maintenance.

Findings and Recommendations

The roundtable was structured as a "public research" endeavor to generate findings and policy recommendations put forth by the diverse group of participants. Participants were given "Public Research Workbooks" to record their personal thoughts throughout the roundtable; the presentations and large-group discussions were all recorded; and the action teams and their facilitators documented their ideas and recommendations on poster boards for presentation. The following findings and recommendations reflect a systematic analysis of the ideas put forth by roundtable participants through the mix of public research methodologies.

First, findings on the discussions of nationally recognized school design principles are presented. The discussion on school design principles was meant to inspire, prompt, and guide participants in crafting their policy recommendations. Then the key policy recommendations put forth at the roundtable are detailed.

Using Principles of High-Quality School Design to Inspire and Inform Policy

To foster in-depth and critical dialogue on high-quality learning environments and work toward policy recommendations for the CDE, the action teams discussed their own learning experiences in relation to school design principles. Team members were first asked to share their most powerful learning experience. Responses varied widely, from having a unique individual teacher and visiting a major art museum to working on a large-group project and acting in a play. All teams noted that a common theme within their discussion was that powerful learning experiences can happen anywhere, not necessarily in traditional classrooms. The discussion was meant to get participants thinking about the variety of learning styles and the various opportunities for meaningful learning experiences. This dialogue strategically happened before the group began talking about school design and facilities to set the frame that education should drive design.

The action teams then turned to the question: *How can we translate these meaningful learning experiences into educational environments*? The CDE and Center for Cities & Schools conducted a review of the literature on school design and identified nine principles that should drive high-quality school design. These nine principles reflect a summary

COMMON PRINCIPLES OF HIGH-QUALITY SCHOOL DESIGN COMPILED FOR ROUNDTABLE DIALOGUE

1. Design for the educational program
2. Design for adaptability
3. Integrate technology
4. Promote health and sustainability
5. Enhance safety and security
6. Connect to community
7. Support a small school culture
8. Accommodate student diversity
9. Support the teacher as professional

Source: List adapted by Center for Cities & Schools from a review of school design literature, including the work of the American Architectural Foundation (AAF).

distillation of the recommendations, or best practices, across the literature, including the work of the American Architectural Foundation, as described by Bogle. Each action team chose two principles for focused discussion. The italicized text accompanying each principle below was the description provided to participants.

Design for the Educational Program

Form follows function. The school design process should begin with and be driven by the educational program goals of the school/district. Stakeholders should create and work from the educational specifications (or like document) that articulate the program goals and the facilities/spaces needed to support them. This includes designing to accommodate the changing nature of school organizational structure, such as K-8 configurations or increased pre-K enrollment.

There was overwhelming agreement among participants that education goals should be the fundamental driver of school design choices, not funding or rigid policy prescriptions. How that happens, from a policy perspective, however, was highly debated. In part, many pointed out, better information is needed on the relationship between different educational practices and the school designs that have been shown to best support them. Some participants proposed that the old architectural adage — that "form follows function" — should be turned on its head. Because form so often dictates function, as Copa noted in his presentation, inventive school designs ("forms") should be built to shape teaching and learning practices ("function") in desired ways. Two specific examples that reflect current educational trends in more learner-centered pedagogies were provided by the group:

- School design can support more small-group learning activities. Many classrooms and learning spaces, other than the traditional square "box" with four walls, better foster small-group interactions by providing visual and aural privacy and intimacy to promote greater focused attention within the group. Although traditional classroom spaces designed for teacher lectures may always play a role, schools today need a variety of diverse spaces for different types of activities.

- School design can support project-based learning activities. Many schools and educators are focusing more on project-based learning, where learning takes place through a defined project, often with a real-world context, rather than following a textbook or "teacher-centric" instruction. This approach to learning seeks to integrate learning into students' everyday lives and allows students to think about a problem more thoroughly. Facility design can plan an important role in supporting project-based learning, including spaces for work in a more

> Let's ask, 'how do children learn?' The research on this exists. The disconnect is between what we know, how we're teaching, and how we're designing.
> — *James Dyck*

studio-like setting with larger, movable tables or floor space rather than individual student desks in rows. This can have a profound effect on how school facilities and individual classrooms can look in the future if we are able to expand to teaching and learning in a more project-based environment.

In this sense, "form ought to provide *options* for function," as one participant noted.

> What and how we teach changes frequently, but schools are there for decades, so there must be flexibility in the design and construction of school facilities to adapt to changing curricula.
>
> *—Duwayne Brooks*

Design for Adaptability

Schools should be designed to support many and varied pedagogies and learning styles. Educators know that there are multiple ways of teaching and learning, and schools should be designed with the appropriate adaptability/flexibility/agility to support the changing nature of educational and learning. For example, some activities are best situated for large-group discussions; others are fostered by small-groups; there are also times when solo independent study is most appropriate.

Participants frequently used the words "adaptable" and "flexible" to describe ideal school designs. In stressing the need for learning spaces to accommodate and serve different learning styles, abilities, and individuals, this principle very much relates to the principle above — design for the educational program — that form ought to provide options for function and these designs should foster "integration and connectivity." This adaptability, or flexibility, applies to classroom configuration as well as leaving the traditional classroom and learning in a variety of different surroundings (outdoor classrooms, in the community, etc.). This principle was also discussed as it relates to the ability of teachers to adjust their environmental conditions such as lighting and heating/cooling to facilitate more comfortable learning environments. Participants pointed out that a tension exists between smart "green" building techniques and user desire for more personalized control of things such as windows, heating, ventilation, air conditioning, and so forth.

Integrate Technology

Because technology increasingly becomes central in the everyday life of schools, (for research, project production, communication, and school building efficiency), design should foster current use and future use of changing technology. As various technological and media tools become more personal and collaborative, their use as tools for learning also increases: from the enormous library of information to be found on the Internet and the ability to communicate with teachers or other students from all over the globe, to user-friendly software used for video/audio creation, project management, or gaming/simulation. Technology also helps schools operate more effectively. Further, while school buildings need to incorporate changing technological needs, the ultimate integration of new technologies actually may make schools as we know them unnecessary; that is, you can now "learn" from anywhere.

Participants agreed that technological advances play a key role in education and should be better harnessed in learning environments. These range from the classroom interactivity found in smartboards to the ways in which the growing availability of personal, portable computer devices can enable more flexible and mobile learning experiences, as Roschelle noted and Rosenstock described at High Tech High. The trick, as many pointed out, is how do you plan and design for something that is changing as rapidly as technology? Additionally, as some posit that increased technology can make the "place" of school unnecessary in some circumstances, others believe school becomes even more important as a location for social interaction that includes learning and socializing. Participants also raised the important funding responsibility that comes with effective technology use — technology costs must include not just hardware, but also teacher training, curriculum development, and maintenance.

> We need to create a pervasive infrastructure to support the changing technologies and allow for future opportunities. We want rich technology landscapes that provide for individual work, collaboration, and integration of the various forms of media.
>
> *– Action Team Report-Out*

Emerging technology should be considered during modernization and design of new schools. Handheld devices, projection systems, and other technologies can support learning in exciting ways, but standard classroom configurations are not always best for these systems. By staying abreast of emerging technologies, school designers can provide the most effective classroom environments for these new styles of learning. Finally, Web-based technology may be able to facilitate greater community involvement in school planning and design.

Promote Health and Sustainability

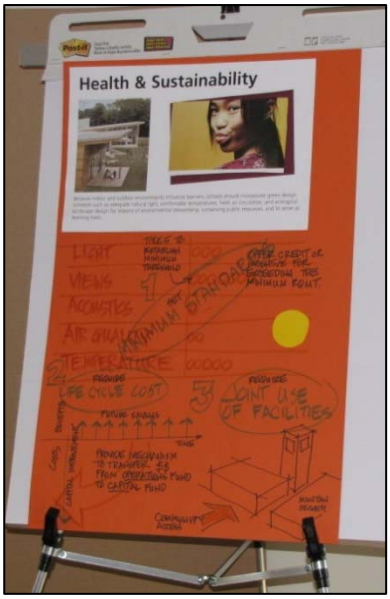
Because indoor and outdoor environments influence learners, schools should incorporate green design concepts, such as adequate natural light, comfortable temperatures, fresh air circulation, and ecological landscape design for environmental stewardship and conservation of public resources. The concepts also serve as learning tools.

Participants overwhelmingly agreed that designing to promote health and sustainability is not an option — it is mandatory. Two specific examples were put forth:

- Green Design and Energy Use Reduction. Green building, design techniques, and products have exploded in number in recent years. California school districts have made important strides in utilizing these new opportunities with the help of programs such as CHPS (Collaborative for High Performance Schools) and LEED (Leadership in Energy and Environmental Design). Participants felt that steps to "mainstream" these programs throughout the state were necessary and that the DSA's Grid-Neutral program was a step in the right direction. The energy used to operate schools is a big expense for LEAs (Bartholomy noted that some school districts spend more on energy than they spend on textbooks). Participants suggested design solutions and other strategies such as educating

staff and students on how best to use their school buildings to maximize energy efficiency.

- Nutrition and Food Systems: The goal of having healthy children ready to learn is widely seen as essential for academic success. School designs play an important role in promoting nutrition and access to healthy food through, for example, incorporating full-service kitchens, student learning kitchens, and/or edible gardens (either indoors or outdoors).



Enhance Safety and Security

Design choices should strategically enhance the safety and security of students and teachers. For example, more "eyes" on spaces typically dissuade unacceptable behavior. Fences can be built to keep people out and be protective yet also be designed as gateways to welcome users.

Participants identified maximizing safety and security as paramount for schools. All other successes hinge on it. Safety is an immense focus by school administrators and partners — and rightly so — but often perceptions stand in the way of outside-the-box school designs that can enhance learning and safety in new ways. Participants noted that safety can be increased by promoting community. A few specific strategies include encouraging more "eyes on the street" in open spaces, by using glass walls, to increase visibility and a sense of community.

Connect to Community

Schools should foster greater connections to their local communities to improve social relationships both within and around schools. Often, schools are "centers of community" and serve important and multiple civic and social purposes. Schools should be located and designed to facilitate community connections, including incorporating shared or "joint-use" spaces, access to community and public amenities nearby, and indoor and outdoor spaces for community use, particularly during nonschool hours. Most important is that school planning and design processes should intimately involve community members.

School design can help foster increased community connection. In education circles much lip service is paid to creating "community" — both within schools and among schools, parents, and neighborhoods. School design options can create or prohibit these opportunities in a variety of ways. Spaces for socializing and small group/project work by students foster community within schools. School designs should also allow for community use of facilities. Similarly, school designs should also consider ways to get students out of their classrooms — and even off the school campus — for hands-on learning.

> Community involvement is critical in the design of schools that support the crucial link between school and community.
> *– Action Team Report-Out*

Significant efforts are being made every day in California to engage the larger community in local public school activities. Getting communities involved with the local schools can help the school planning process and also help students learn real-life skills, create a more engaged school community, and allow for more creative integration of school and community life. Roundtable participants also noted the importance of fostering good community relations in order to better accommodate student body diversity.

Support a Small-School Culture

Schools should foster smaller, more intimate learning experiences to foster improved social relationships within schools and classrooms. A variety of strategies are being utilized, from small schools, smaller class sizes, and small learning communities (or schools within schools). An example is themed career academies. All of these configurations need facilities that accommodate changes in school and/or class sizes.

Participants generally agreed that a small-school culture should be encouraged, even in larger schools. School design strategies can play an important role in fostering this feeling within schools. While building new small schools is not always an option, design strategies that divide existing schools into small learning communities to foster a tight-knit learning culture should be explored. The tension between wanting small schools and/or class size and the ability to pay for them was repeatedly pointed out because larger schools benefit from economies of scale.

Accommodate Student Diversity

Schools should accommodate increasing student diversity, including language and socio-economic differences. These changes often mean more English language classes and special education classes, which require specialized facilities.

California public education is synonymous with student diversity, which is increasing. Ethnic and/or racial differences are only one dimension of this diversity. Because the diversity creates so many varied individual and school-level needs and experiences that foster success for students, more creative and nontraditional school spaces are required. Many of these are incorporated in the other principles, from small-group workspaces and community use of schools to clean, fresh air, and appropriate technology. Thus, school design strategies that meet the other principles will likely also benefit diverse student bodies throughout California. Thoughtful designs aimed at specific student, family, and community dimensions will be required.

Support the Teacher as a Professional

The work environment affects teachers — their motivation, their ability to teach effectively — and influences whether they will leave their school or the profession altogether. School designs should support the variety of activities teachers do in schools, including teaching and nonteaching time.

Participants agreed that supporting teachers is essential to student success, and facilities play an important role. Lousy working environments — including bad acoustics, uncomfortable temperatures, and crowded conditions — encourage teachers to lose enthusiasm or switch schools altogether. Teachers are professionals and need more support spaces, including those for private individual and group work and lounge areas. These design strategies can help teachers strengthen their own peer communities as well as allow them to have space for professional development outside the classroom.

> We need spaces within the school that would be important for teachers and business partners, for example, to collaborate and learn from one another.
>
> *– Action Team Report-Out*

Participants also discussed the importance of professional training and continuing education for teachers on innovations in teaching strategies, emerging technologies, and in the proper functioning and use of their classroom environments. Space for professional development was noted as a key element in any truly adaptable school environment, because flexibility in classrooms must be accompanied by teacher knowledge on how to use their learning spaces to the highest potential.

Policy Recommendations to Improve California School Design

From discussions of school design principles in support of high-quality education, the action teams each crafted three policy recommendations for the CDE to improve school planning and design. The teams were encouraged to focus on the role that the CDE, specifically the School Facilities Planning Division (SFPD), plays — or could play. There was much overlap in team recommendations; what follows are the five key recommendations distilled from the eight action teams.

Recommendation 1: Establish a state vision and guiding principles on the role of school facilities in supporting student achievement and closing the achievement gap.

Roundtable participants believed that the CDE should assume leadership in the state and craft a vision for schools as high-quality environments that support and enhance teaching, learning, and communities. This vision would set the context for revisiting the regulations and minimum requirements outlined in Title 5. Doing so could serve multiple purposes:

- Help school districts understand the context of Title 5
- Guide school districts in school design choices
- Assist districts in pursuing alternative strategies for innovative school design while staying within the overall goals of Title 5
- Establish a solid foundation to guide current and future Title 5 revisions and adjustments

Although different opinions emerged from the varied stakeholders at the roundtable, there was broad-based agreement on many philosophical issues that pertain to school facilities. In particular, school facility design should support evolving, innovative learner-centered pedagogies. The group discovered a great deal of overlap and interconnection among the various principles of high-quality school design. Thus, design strategies should seek to encompass simultaneously as many of the principles as possible.

Participants emphasized the interdependency of schools and the larger community in the areas of joint-use and land use planning and these joint efforts will meet the state's environmental goals expressed in Assembly Bill 32 of 2006 and Senate Bill 375 of 2008.. These common threads highlight the need for LEAs and the CDE to be involved early in the planning process with other stakeholders such as cities and counties, land use planners, and environmental advocates. A vision statement will aid in the common understanding of the school design goals and principles.

> The vision statement becomes a touchstone, followed by guiding principles, which become the groundwork for a new learner-centered approach to school design.
> —*James Dyck*

With this vision, the CDE should play an increased advisory role, in addition to the regulatory role, to local LEAs in support of the principles in the future design and development of schools. In this increased advisory role, the SFPD will likely be most effective when brought into the design process by local districts early on when it can provide bigger-picture guidance and resources. Participants suggested that the CDE staff could better support good planning processes and introduce innovative design ideas if they were more involved in the preplanning, educational specifications phase of development. Currently, the CDE staff has little communication with LEAs until draft school plans have been created. A key opportunity for early collaboration is missed. Early involvement would not only help local districts in getting school buildings that best fit their needs, but would also assist in the CDE approval process. CDE representatives could be involved earlier in the process, and the later approval stages may go more smoothly. This earlier and deeper relationship with school design projects would also allow SFPD staff and consultants to gain more insight into the issues facing local school districts in California, which could help them prioritize new tools and resources that would be of assistance to LEAs.

Participants acknowledged that implementing this recommendation requires bold action from the CDE and will require significant time and resources from SFPD staff. In the short term, crafting meaningful vision statements requires a facilitated, participatory process. In the long term, earlier involvement of CDE staff on local school design projects will also require more staff time.

Recommendation 2: Incorporate the new vision and principles into the *California Code of Regulations, Title 5*.

Improve the process of state and local collaboration with early [CDE] engagement so that adaptability and [design] diversity can become part of the process.
— *Action Team Report-Out*

Participants largely felt that both changes to Title 5 and increased articulation of the flexibility already existing in Title 5 language are needed. With the vision and principles as the guide, the CDE should reevaluate existing policies and regulations on California school design. The California regulatory process ensures that this will be an open and public discussion with ample opportunity for stakeholder input.

Central to this recommendation is evaluating Title 5. Participants suggested three specific actions to improve Title 5 and its school design standards to support and encourage better school design in California.

- *Move the exemption clause of Title 5 from the end of Section 14030 to the beginning.* For most school districts in California, Title 5 standards (and the recommended minimum standards) are followed very closely to ensure smooth state project approval, even though Title 5 is, in fact, relatively flexible. Moving

the exemption clause would provide LEAs and school designers an immediate understanding of the inherent flexibility in Title 5.

- *Change Title 5 language to specify that performance-based measures are preferred over prescriptive measures (in most cases).* This language should be changed in Section 14001 (and aligned with the vision crafted in Recommendation 1), which encourages LEAs to seek exemptions to a standard based on a well-reasoned and research-based argument and an appropriate public input process. For example, an LEA could request an exemption to the 960-square-foot classroom based on a description of the activities to be taken in the classroom and a schematic layout of where those actives would be conducted. Site size standards could be based on a detailed description of the space needed for fields, building pad, and parking. An early schematic of the campus layout would provide CDE assurances that the project could be developed with the proposed exemptions. A public process will ensure that all involved stakeholders have an opportunity for input.

- *Improve policy documents and best practices resources.* An updated and expanded library of guidance documents and best practices would provide practical application of approaches to Title 5 compliance. These resources should illustrate clearly how California LEAs had developed unique and innovative school designs within Title 5. The case studies should be written for a variety of circumstances, paying special attention to the procedures that were followed for each instance. Numerous participants suggested that the CDE's documents, including the *Guide to School Site Analysis and Development*, *School Site Selection and Approval Guide*, and *Educational Specifications: Linking Facility Design to Educational Programs*, should be revised into "inspiring guides," as suggested by one action team. Recent documents, such as *Healthy Children Ready to Learn* and the physical education planning guides, should also be routinely reviewed and updated to remain relevant to current educational trends.

Roundtable participants clearly agreed that the SFPD should play a more strategic, innovation-focused advisory role in assisting California's school districts on school planning and design. To do so, the SFPD will need to adjust its staffing accordingly. As the state has transitioned over time to giving local districts more jurisdiction over decisions involving educational specifications and school design, many believe that an unintended outcome of this has been a decline in resources and information to guide local districts on school design. Participants felt that the SFPD was in the best position to conduct and/or collect and disseminate research and best practices to local districts, in essence, strengthening its role as a repository of information.

Similarly, current Title 5 standards do not mandate any public involvement in the design process. LEA boards are required to adopt an educational specification for a project but Title 5 does not specify how that is to be done and leaves the specific steps to the discretion of the LEA. Although participants supported the need to retain and, in some cases, expand local flexibility in all stages of school planning and design, it remains unclear what role — if any — state policies can play in supporting good community involvement practices locally.

Develop a performance standard for community engagement so that all of the diverse voices can become part of the process early on.
–Action Team Report-Out

Recommendation 3: Increase collaboration among state agencies to aid LEAs in the design of 21st century learning environments.

Participants noted that the goals of the three agencies governing school design, construction, and funding often conflict, leaving LEAs with uncertainty. Time and costs are added to projects and can stifle design creativity. To remedy this, participants suggested that legislation may be required to make significant changes to the state policy structure. However, participants strongly believed that the goal of high-quality educational facilities that support teaching and learning should be the driving force of any change in the state's fiscal role. Thus, participants articulated the CDE vision statement noted in Recommendation 1 as a critical, early step in creating this new governance structure.

Even without significant policy change, participants noted that improved state agency collaboration within the current system could greatly assist LEAs. For example, early partnering with CDE may reduce much of the interagency conflict later in the process. With more frequent, comprehensive cooperation, state agencies will be better able to sort out the balance among state standards of equity, local school district control, and the desired outcomes of the guiding principles.

Two specific examples were given to illustrate state policy conflicts across agencies. First, it was stated the state's funding model that is based on the number of classrooms in a project ultimately makes it difficult to design innovative schools that have a variety of differently-sized and utilized learning spaces that define the 21st century learning environment. In other words, the classroom funding formula, as described by Fred Yeager, encourages designing traditional classrooms over other learning spaces. Second, numerous participants noted that the provisions of the Field Act limit innovative design approaches, particularly in using non-school buildings for learning spaces, which may allow schools to be better located within communities and/or utilize innovative pedagogical techniques. It was noted that current building codes for non-school buildings and the Field Act becoming increasingly similar and this may present an opportunity to better include other community resources for school use. For example, specialized classrooms and laboratories on a college campus and in city libraries, if

meeting appropriate safety standards, may strengthen the school and community relationships.

This recommendation involves actions that are outside of CDE's direct scope and requires collaboration with other key state agencies. All of these agencies play a particular function within the larger, complex process of planning, designing, and funding public school facilities in California. Yet, they are separate agencies, driven by different goals and mandates.

Recommendation 4: Increase state focus on standards and policy governing the modernization of existing schools to provide 21st century learning environments to the greatest number of students.

> The focus needs to be on existing schools: repairing, revitalizing, rebuilding.
> *– Jorge Ronquillo*

To better utilize existing resources and reach sustainability goals, many participants felt more focus should be given to school modernization standards and policy at the state level. Modernizing existing schools affects many more students than new construction projects; thus, more resources and guidance should be available to support LEAs in making smart modernization choices. In particular, under the current state funding model, state grants often get eaten up by ADA (Americans with Disabilities Act) upgrades, fire safety improvements, and small cosmetic changes, leaving less support for solid educational enhancement projects that are often desperately needed in older school facilities. Participants agreed that the state needs to pursue ways to increase its financial and technical assistance for modernizing existing schools. The driving question of participants was as follows: how can we provide incentives for, and encourage, creative — and education-enhancing — revitalization and renovation of existing school buildings? While we know that in many cases these issues return to compliance with specific Field Act and/or ADA policies, it is also true that the CDE may be able to influence this process.

This recommendation requires an expansion of focus and expertise among CDE staff. Resources will be required to build staff capacity to provide more in-depth assistance on modernization projects.

Recommendation 5: Review and restructure the linkage between school facility finance and design.

The adverse outcomes associated with the complex policy relationship between school design and finance in California was a common barrier to improved school facility design. Participants called for a return to the local flexibility envisioned by the passage

of Senate Bill 50 in 1998 as a way for LEAs to design high-quality 21st century learning environments.

Participants noted a concern over the state's current funding model,[3] as described in Yeager's presentation: being too tied to classroom "boxes," hindering unique and creative school designs. Distance learning, independent study, project-based learning, and cooperative joint-use opportunities are among many of the factors 21st century schools must embrace, but participants felt such creativity is constrained by California's funding model, which largely incentivizes traditional classroom spaces. Concern was also noted that the funding model's emphasis on classrooms ignores the necessity of providing critical support facilities such as libraries and administration buildings.

> We need to really look at the process, streamline it, and get the facility dollars flowing so they are doing good things for our children.
> *– Patrick Ainsworth*

Although the funding structure is largely outside the control of the CDE participants' concerns revealed how school designs are recognized as often being determined by funding requirements rather than educational goals. Decision makers need to see how such funding policies are influencing design. Many participants voiced a strong note of caution on this issue: any meaningful effort to encourage more innovative and flexible school design by revising Title 5 standards would likely only be minimally effective without concurrent changes to the state's funding model.

Like Recommendation 3, this recommendation involves working across separate state agencies, a process that in the past has proven to be layered with political and regulatory complexities.

[3] With SB 50 in 1998, California's public school facility funding structure was changed to a per-pupil funding formula, with the idea of giving more flexibility to local districts.

Conclusion

Roundtable participants put forth bold and specific recommendations for state policy and the CDE to best support the design of high-quality learning environments in California. At the heart was establishing a clear vision and a robust set of guiding principles on school design. Overall, there was much enthusiasm for continuing this public conversation.

In the charge forward, participants raised three key issues for future policy change discussions:

1. As California leads the nation as the most ethnically and economically diverse student population, equity must be ensured and at the forefront of all policy discussions about public education, including those about facilities. In crafting the vision and principles of school design, participants insisted on equity as a guiding value.

2. The users of learning environments — especially teachers and students — need to be active participants in vision creation and policy revision.

3. Investigation of the ways in which school facility design and community planning can support one another for mutually beneficial outcomes is needed. Questions were raised on this issue: How do school facilities become more integral to urban redevelopment? How can state policy support school and community planning as a collaborative enterprise?

As the CDE moves ahead with its review of state policy, the roundtable findings and recommendations documented in this report, along with the elements noted above, will play a key role in ensuring that school design policy supports success for all of California's students.

Equity is not always interpreted the same way; it may be different in urban, suburban, and rural school districts.
– Rene Castro

I am optimistic that schools can be a key force in community and urban renewal.
– Patrick Ainsworth

Appendix

Agenda

Wednesday, October 15
Building a Foundation of Knowledge

8:30 **Breakfast**

9:00 **Welcome**, Jack O'Connell, State Superintendent of Public Instruction, California Department of Education

Opening Remarks, William Ellerbee, Jr., Ed.D., Deputy Superintendent, School and District Operations Branch, California Department of Education

Roundtable Purpose, Kathleen J. Moore, Director, School Facilities Planning Division, California Department of Education

Roundtable Design, Deborah McKoy, Ph.D., Executive Director, Center for Cities & Schools, University of California, Berkeley

9:30 **Research Panel: Creating Powerful Learning Experiences**

Chair: William Ellerbee, Jr., Ed.D., Deputy Superintendent, School and District Operations Branch, California Department of Education

- School Organization: Yesterday, Today, and Tomorrow
  Bruce Fuller, Ph.D., Professor of Education and Public Policy, University of California-Berkeley
- Preparing Our Future Workforce and Citizenry
  David Stern, Ph.D., Professor Emeritus of Education, University of California-Berkeley
- Linking Learning and School Design: Responding to Emerging Ideas
  George Copa, Ph.D., Director, New Designs for Learning
- Linking Learning and School Design: Strategies
  C. Kenneth Tanner, Ed.D., Professor, Educational Leadership, University of Georgia

10:45 **Break**

11:00 **Large-Group Discussion**

Lead Discussants: Guy Mehula, PE, Chief Facilities Executive, Los Angeles Unified School District; Laura Knauss, Architect, Lionakis Design Group; Rick Simpson, Deputy Chief of Staff, California State Assembly

12:00 **Lunch**

1:30 **Small-Group Discussions**: Envisioning Optimal Learning Environments from Multiple Perspectives
Facilitator: Jeff Vincent, Ph.D., Deputy Director, Center for Cities & Schools, University of California, Berkeley

- A Framework for School Design Excellence
  Ronald E. Bogle, President and CEO, American Architectural Foundation
- Small group discussion goals are to identify (a) the importance and unique perspective of diverse stakeholders in the school design process; (b) the key components in designing optimal learning environments; and (c) how state policy can best support and inspire this work.

3:45 **Break**

4:00 **Small-Group Reports**

4:30 **Closing Comments**: Kathleen J. Moore, Director, Schools Facilities Planning Division, California Department of Education

6:00 **Reception and Dinner**: Lucca Restaurant, 1615 J Street, Sacramento
Keynote: Space for Change: Educational Transformation and Building Schools for the Future
Andrew Harrison, Leader, Learning, Research, and Cultural Environments Team, DEGW

Thursday, October 16
Identifying Policy Priorities

8:30 **Breakfast**

9:00 **Reflections and Looking Ahead**

- School District Perspective
  Bill Savidge, AIA, Engineering Officer, West Contra Costa Unified School District
- State Perspective: California's Legal, Regulatory, and Policy Framework
  Fred Yeager, Assistant Division Director, School Facilities Planning Division, California Department of Education

9:30 **Best Practices Panel**: Redefining Learning Spaces: Innovations from the Field
Chair: Mary Filardo, Executive Director, 21st Century School Fund

- Schools as Centers of Community: Concepts and Strategies
  Steven Bingler, AIA, REFP, NCARB, Founder, Concordia, LLC
- Sustainability, Design, and Education
  Panama Bartholomy, Adviser, California Energy Commission
- Technology in Schools
  Jeremy Roschelle, Ph.D., Director, Center for Technology in Learning, SRI International
- Learning Transformation in Action

Larry Rosenstock, Founding Principal, High Tech High School

- Safe, Healthy, and Positive Environmental Design
  Tod Schneider, Consultant, Member, Crime Prevention through Environmental Design

10:45 **Break**

11:00 **Large-Group Discussion**
Lead Discussants: Steven Looper, Principal, McGee Elementary School, Elk Grove Unified School District; Tom Blurock, FAIA, Principal, IBI/Blurock; Kathleen Chavira, Consultant, Senate Education Committee

12:00 **Lunch**

12:45 **Action Team Discussions**: Crafting Recommendations for Optimal Learning Environments in California
Facilitator: Shirl Buss, Ph.D., Design Consultant, Center for Cities & Schools, University of California, Berkeley
Small-group discussion goals are to (a) review key priorities for re-visioning state policy generated on Oct. 15 and (b) develop three to five recommendations for the CDE to implement such priorities.

2:00 **Presentation of Recommendations by Action Teams**

3:00 **Concluding Remarks**: Kathleen J. Moore, Director, School Facilities Planning Division, California Department of Education

Center for Cities & Schools Development and Facilitation Team

The Center for Cities and Schools developed the action teams and comprises the following individuals:

Deborah McKoy, Ph.D., Executive Director

Jeffrey M. Vincent, Ph.D., Deputy Director

Ariel Bierbaum, MCP, Program Director

Shirl Buss, Ph.D., Design Consultant

The facilitation team consisted of the following members:

Lindsay Baker, Doctoral Student, Department of Architecture, University of California, Berkeley

Nina D'Amato, History Teacher, San Francisco Unified School District

Georgia Lindsay, Doctoral Student, Department of Architecture, University of California, Berkeley

Janine Y. Saunders, Doctoral Student, Leadership for Educational Equity, University of California, Berkeley

John Russell Simard, Fifth-Grade Teacher, San Jose Unified School District

Resources Provided for Participants

Building Schools, Building Communities: The Role of State Policy in California. Center for Cities & Schools and American Architectural Foundation, 2007. http://citiesandschools.berkeley.edu/reports/Building-Schools-Building-Communities-CA.pdf

California Code of Regulations, Title 5, sections 14001–14036 on school facilities construction. http://www.cde.ca.gov/ls/fa/sf/title5regs.asp

Closing the Achievement Gap: The Report of Superintendent Jack O'Connell's California P-16 Council. http://www.cpec.ca.gov/FederalPrograms/P-16CouncilReport.pdf

Design for Learning Forum: School Design and Student Learning in the 21st Century, A Report of Findings. American Architectural Foundation, Washington, DC. http://www.archfoundation.org/category/design-for-learning/

Education Code. http://www.cde.ca.gov/ls/fa/sf/edcoderef.asp

Lackney, Jeffery. *33 Principles of Educational Design.* http://schoolstudio.typepad.com/school_design_studio/33-educational-design-pri.html

Map of Future Forces Affecting Education: 2006-2016. KnowledgeWorks Foundation and The Institute for the Future. http://www.rtuni.org/uploads/docs/Map%20of%20Future%20Forces%202006-2016.pdf

Model Policies in Support of High Performance School Buildings for All Children. October 2006, Building Educational Success Together (BEST). http://citiesandschools.berkeley.edu/reports/BEST_2007_Model_Policies.pdf

Report from the National Summit on School Design: A Resource for Educators and Designers. Convened by the American Architectural Foundation and KnowledgeWorks Foundation. http://www.archfoundation.org/2005/12/national-summit-on-school-design-report/

Stevenson, Kenneth R. *Educational Facilities within the Context of a Changing 21st Century America.* 2006. National Clearinghouse for Educational Facilities. http://files.eric.ed.gov/fulltext/ED491306.pdf

Stevenson, Kenneth R. *Educational Trends Shaping School Planning and Design.* 2007. National Clearinghouse for Educational Facilities. http://files.eric.ed.gov/fulltext/ED539457.pdf

Opening Remarks

Jack O'Connell, State Superintendent of Public Instruction
California Department of Education

I would like to thank all of our participants who have come from both near and far to be here for their generous donation of time and expertise.

Improving school facilities goes hand in hand with improving student achievement, because the environment in which our children learn matters. That is why I am pleased to serve on the State Allocation Board, which provides state funding for school facilities. And as a state senator, I led the charge to pass Proposition 39, which reduced the vote threshold needed to pass local school bond proposals from two-thirds to 55 percent. Since 2000, when the measure passed, voters in California have approved $29 billion in state general obligation bonds for the construction or modernization of school facilities.

Today's roundtable gives us the opportunity to examine where we have been and what our vision is for the future, as well as to consider the best way to achieve that vision. The California Department of Education's core purpose is to lead and support the continuous improvement of student achievement, with a specific focus on closing the achievement gap. In this process, it is absolutely vital that our efforts in the classroom match our efforts to identify ways in which school design can aid student achievement. And when we achieve success, it is important for all of us to share our successes and challenge each other because there is still more to do. Today, let me be clear: your input can help create a better future for all California students.

The achievement gap has taught us that all students learn in different ways, and that makes it imperative for us to reach all students and understand their varied learning styles. A key component in doing this is gaining an understanding of how facility decisions affect student performance and support teachers. This includes creating and maintaining clean, safe, and healthy school facilities. It also calls for ensuring that schools are not overcrowded, food services are of the highest order, and that physical fitness is emphasized.

While proven strategies like small schools, charters, and alternative schools are all needed to increase high school graduation, these are not the only solutions to rely on. We must also evaluate the benefit of pre-school facilities, before and after school programs, and career technical education.

Schools must also foster strong positive relationships among students, among school staff, and between the school and home, as well as the community. In this light, the importance of the link between high-quality school facilities and community viability cannot be overlooked.

The issue of equity also plays heavily into this discussion, but equity is not a measure of equal input but of equal opportunity. We know that students have different needs, and with these different needs, some

students will require additional or different facilities to improve outcomes. There is no question that we must accommodate these students and fulfill their needs.

And as we move further into the 21st century and the demands of the hyper-competitive global economy continue to grow, it is essential that we transition beyond industrial models of our high schools and to the information age — an age in which our students live today — and are able to access the global community instantly. Our schools must be adaptable to our changing world, technology-rich, learner-centered, personalized, sustainable, and integrated into the community.

California has always been a trendsetter for the nation and the world, so let's continue to blaze a trail of innovation by creating the best learning environments possible. Our success in the 21st century depends on it.

Kathleen J. Moore, Director
School Facilities Planning Division
California Department of Education

We are thrilled and honored that you have accepted our invitation to join us in a two-day discussion about the future of school facilities planning and educational design in California.

Each of you in the room is a leader in your area of expertise, and we are humbled by your willingness to help the California Department of Education (CDE) support high-quality learning environments for all students.

I especially want to thank Superintendent O'Connell for his leadership in education and interest in school facilities as well as my Deputy Superintendent, William Ellerbee, who always puts students first.

I also want to thank the Office of School Transportation (OST), whose facility we are occupying the next two days. This office is part of my division, and I am so proud of the work they do to train bus drivers and to ensure our bus safety record in California continues.

We thought it important to hold this convening in a public space — and what better space than an adult learning environment opened this year after being housed for 40 years on the California Highway Patrol campus in a portable across the road. The OST staff members have been fantastic in their collaboration with the facilities staff.

I want to thank the Roundtable Committee without which we would not be here today. As everyone knows, a lot of work goes into these types of events, and I am deeply indebted and appreciative of all the staff's work to put on this event.

I would like to have all members of my staff stand. These are the consultants and the staff that do the day-to-day work in our office of approving sites and plans and working with the public. We are here to contribute, to listen, and to be open to your input.

I wish to thank the Center for Cities & Schools, who are partners in this endeavor and without whom this event would not have been possible.

I would also like to recognize all the different sectors represented here. Please raise your hand — students, teachers, facility professionals, administrators, policymakers and legislative staff, state agency staff, associations, advocates, architects and design professionals, and researchers. We are so pleased to have such a diverse array of voices represented.

And finally, I'd like to thank the Stuart Foundation whose generous grant made this day possible, especially the food!

We are now eight years into the 21st century. Most in this room will not see the dawn of the 22nd century, but many of the buildings that we have planned, constructed, and renovated will stand that test of time. That is why it is so important to take this pause as our country swirls in a bit of economic uncertainty and housing construction has slowed, if not halted, across the state, and declining enrollment has impacted many of our districts. This moment is important to assess where we've been and where we need to be headed in the future.

I truly believe we are at a crossroads in school facilities. We know the focus must shift away from the industrial models of our past. We must position our facilities to be beacons of the information age where learning is personal, project-based, interdisciplinary, relevant, and connected to the local and the global community.

The voters have passed in excess of $78 billion in state and local bonds in the last ten years. Much of that authorization has been spent, and yet much of it still remains. Although financing school facilities will undoubtedly be part of the discussion over the next few days, I would like to steer the discussion away from simply dollars to a broader conversation of educational leadership and outcomes as we collectively work to make far more visible the importance of the built environment's impact on educational quality for all students.

We all need to come together around our work and passion for positive educational outcomes and opportunities for all students and translate that into the built environment. Schools should be a place where students feel welcome, respected, and safe; teachers and staff have the space and the equipment to excel at their craft; and learning takes place all across the campus and into the community and not just those spaces we currently define as classrooms.

Our work over the next two days will be built upon the foundations of the work of many organizations — the Council for Educational Facilities Planners International (CEFPI), the American Architectural Foundation

(AAF), the American Institute of Architects (AIA), and the researchers and practitioners we have invited to present and to provoke us as we work.

The Superintendent has challenged each of us at the California Department of Education to contribute to solving the achievement gap and the dropout rate that relegates too many young peoples' futures to economic uncertainty and reduced opportunity.

During the next two days you will be with us in that challenge as we set about the core three purposes for this roundtable:

1. To gain insight into the design of 21st century learning environments
2. To identify the best practices that strengthen the relationship between schools and communities in an effort to close the achievement gap
3. To develop a report to assist with the review and update of standards for school design in the *California Code of Regulations*, *Title 5*

I'd like to take a moment to review the context of our role within the system here in California.

There are four agencies with the following primary responsibilities:

1. The California Department of Education - responsible for site and plan approval
2. The Division of the State Architect - responsible for fire and life safety, access, and structural safety issues. It is led by David Thorman, the State Architect here today.
3. Office of Public School Construction - administrator of state bond funds, staff to the State Allocation Board, represented here today by Lori Morgan
4. Department of Toxic Substance Control - ensuring school sites are clean and environmental hazards are mitigated. It is represented here today by Sharon Fair.

There may be times where issues arise or the discussion involves these agencies, and we will “bike rack” (the new, sustainable metaphor for the old “parking lot”) those issues to later share with our fellow agencies, but we would like to concentrate our efforts around educational leadership in the areas where the California Department of Education can make an impact and a difference.

In closing, I would like to reiterate the words of the Superintendent's written welcoming remarks that we are asking each of you to speak out openly and courageously and to discuss how you can help the California Department of Education and the students of California by improving school design. It's time to examine our beliefs, reevaluate how we have been doing business, and commit ourselves to getting even better results.

Again, we are honored that you have joined us and we look forward to a productive two days and the beginning of a process that will last over the next year as we vet the outcomes of this meeting with a report that the Center for Cities & Schools will prepare for us.