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## Flexible School Facilities

By Frank M. Locker PhD, AIA, REFP with Steven Olson, AIA

### WHY FLEXIBILITY?

School facilities have always had changing needs. Enrollments fluctuate. New program initiatives are regularly conceived. The relationship between schools and their communities is constantly evolving. Technology has altered the potential and, in some cases, the delivery of education. It would be difficult to find any school building over five years old with every space utilized as originally intended. For buildings over forty years old, it would be impossible.

The challenge to educators and educational planners is simply this: facilities are expected to last forty years without major retrofit, but the programs they serve may change several times in that time period. Once a new building is built, nobody (not the taxpayers, not the politicians) wants to hear about revised facility needs for the life of the building. We must create school buildings poised for change.

Unfortunately, we tend to think of educational needs as cast in a single slice of time. Most taxpaying adults are "experts" on schools because they attended school once; their thoughts of school facilities are highly conditioned by their experiences as students. Most teachers, when interviewed about their vision of ideal school needs, create lists of all the things they haven't had for the last twenty years. Most architects, and even educational planners, focus attention in their planning processes on current practices and needs. All of this is historic thinking. We need futurist thinking. The biggest challenge is to anticipate needs of the future.

### DO WE REALLY KNOW THE FUTURE?

Planning for the long-term success of a new building requires a certain faith that current trends will endure. While we cannot believe absolutely in current trends, there are two truths that we must accept:

- The long-term future will not be like it is today. Education will continue to evolve and may make facilities as we know them obsolete.
- Schools will continue to be under-resourced.

The first point may be debatable, but the second is a truism in education. The combination of the two demands a search for legitimate flexibility.

### FACTORS AFFECTING CHANGE

The future of education will be defined by the interaction of the following factors. A well-planned building will anticipate these factors and facilitate them.

### Generic Functions

School planning practice has identified needs in terms of isolated functions, which we then seek to optimize in facility design. This approach tends to identify differences among functions rather than similarities, and can result in buildings that become resistant to change.

### Old Thinking



A futurist-oriented planning approach would identify similarities of size, location, and environmental conditioning, and seek to make them as interchangeable and reinterpretable as possible. Generic spaces would be sought rather than highly specific spaces. While a "state of the art" Home Economics lab may be needed now, the bigger issue is "Will Home Economics be taught in thirty years, and if so, how?" The space may have more prospects for the future if it can become a science lab or art lab, as program needs change.

### Educational Delivery

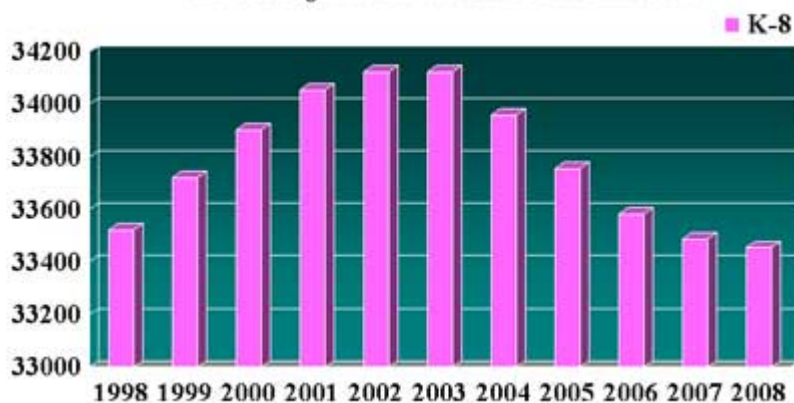
The last fifteen years have been exciting times in education and educational planning, as the traditional industrial model of education has been challenged by numerous restructuring concepts. Many of these initiatives are very provocative: small schools, schools within schools, team teaching, teacher-as-guide. They show great promise through outcomes such as increased graduation rates, greater student participation, increased staff satisfaction, more meaningful connections between staff and students, stronger relationships to neighborhoods and business communities, and more relevant modeling of the world outside school.

Yet these restructuring initiatives, as provocative and promising as they are, currently represent only a tiny percentage of our K-12 schools. If their impact lives up to their initial promise, these concepts will pervade existing school curriculums over the next several decades, placing significant stress on our stock of older, industrial-model school facilities. This stress will also apply to many buildings designed today but not yet built since many are tailor-made to serve practices that may soon change.

### Enrollments

School buildings generally outlast enrollment cycles. After two decades of slow growth to an all-time high, national pre-high school enrollments will drop slowly over the next decade. High school enrollments will follow this same pattern, trailing by several years. Planning buildings to anticipate enrollment drops may create new opportunities to meet school program or community needs. Not planning for enrollment drops may simply result in underutilized buildings.

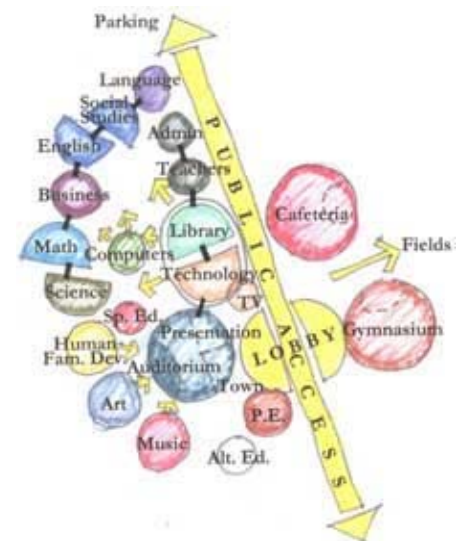
**K-8 Projected National Enrollments**



### Strategic Locations

In new schools, planning must be based on communication and flow among functions. The strategic positioning of functions enhances student identity, sharing of limited supplies and resources, teacher communication, team teaching, community use, and orderliness within the building. The correct location of a function can position it for a viable long-term future as part of a constellation of spaces serving changing needs.

### New Thinking



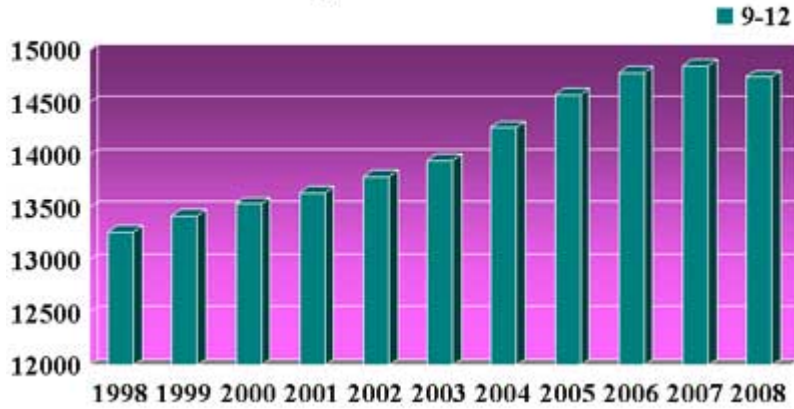
### Technology

Technology integration in school buildings has only been an issue for fifteen to twenty years. It has evolved from isolated desktops, to networked desktops, and finally to wireless laptops. The future will include tablets, personal digital assistants, and digital phones as technology evolves from a limited resource to a pervasive communications and analysis tool. Just as we would never think of putting all the pencils in one room, we will no longer think of building computer labs. The nature of libraries will change. Educational delivery methods and the basics of student-teacher contact may change as well.

### School-Community Relations

Connection and relevancy to the community it serves is the heart and

### 9 - 12 Projected National Enrollments



Numbers above in millions

### ATTITUDES TOWARD FLEXIBILITY

Planning for a long-term, and somewhat unknown future, requires an adjustment in thinking. Schools planned today nationally exhibit a progression of school development. This progression may be used to characterize degrees of change from traditional practices. The progression identifies five stages of restructuring, from the most traditional (#1) to the most radical (#5), which may result in no need for a building at all. The sequential diagram below expresses the way that any school can be seen as a point on a continuum, and that, over time, it may evolve from one point to another. Some aspects of the progression may be highly controversial (virtual learning), but others, such as project learning and teacher planning centers, are likely for most schools at some future point. Even if these were not imbedded in the teaching practices today, the prudent planner would do well to anticipate their integration in the near future. Preparing for such a possibility requires "futurist thinking."

### Image Credits:

- 1 & 2. K-8, K-12 Enrollment Charts: US Dept Education
- 2. Progression diagram: DeJong & Associates
- 3. Old & New Thinking: PDT Architects



1  
Traditional School  
Departmental  
Repeated Classrooms

2  
Schools Within a School  
Project Learning  
Teacher Planning Centers  
Interdisciplinary

3  
Virtual School  
Service Learning  
Home schooling  
School to Work  
School is not a Building

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soul of any school. Community use of isolated building functions such as gymnasiums has been a standard in school planning since World War II, but in recent years expectations, programs, and access have increased significantly. Schools now need spaces for parent volunteers, mentors and tutors. Schools now view student placements in community service and job-oriented, hands-on learning initiatives as critical to their curriculums. The potential of new and educationally sound school-community relations is now clearly understood. Each step of enhancement results in new facility needs.



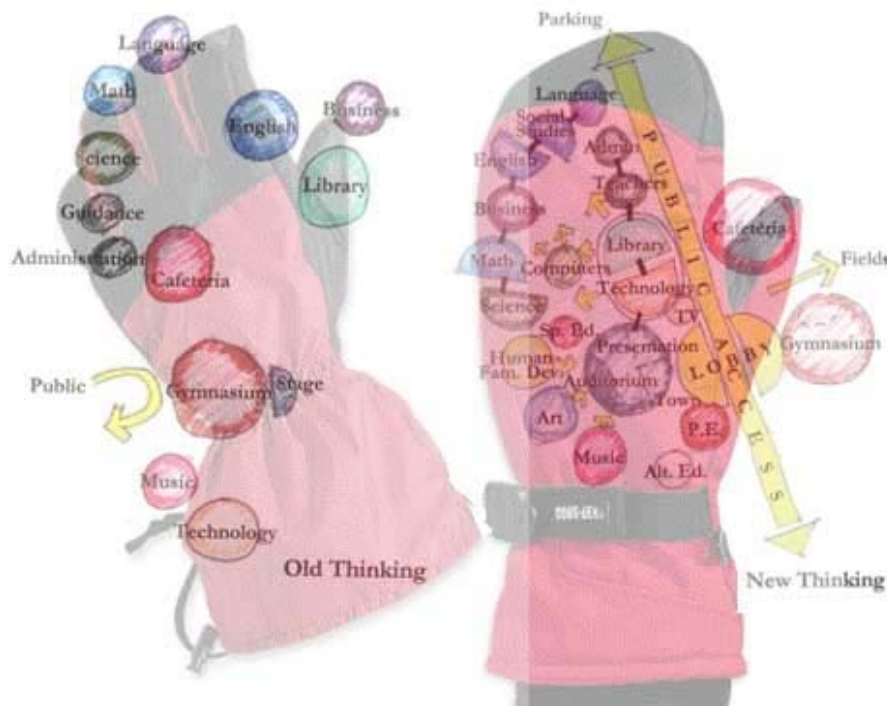
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## Flexible School Facilities

### Section 2

#### Make a Mitten, Not a Glove

The long-term viability of facilities depends upon their ability to be reinterpreted, and adjusted with minimal disruption, cost, or compromise of educational programs. While a "glove fit" between programs and facilities is often a design goal, flexibility for the future is better served by the metaphor of a mitten.



The long-term test of our facilities planning process is this: did we meet the needs of the successors of everybody involved in the project today?

#### FLEXIBILITY STRATEGIES

Planning to anticipate change in an unclear future is facilitated by several strategies. Some of these have been evident in schools for decades, but must be augmented. Others challenge the basics of how planners think about buildings.

#### Time-Share Spaces

For decades, this strategy has been routinely employed in school planning for programs such as after-school community use of gymnasiums. As we ask more of our schools, we need to apply the concept to more program areas and other times of day. Time-share allows different user-groups

#### Reassignment and Remapping

This most basic method of accommodating change is the most basic tool of school users, but is relatively unpracticed by school planners. Reassignment of spaces is a simple change of use without any physical building changes. Remapping of a school or a section of a school occurs when a number of spaces has been reassigned. School users reassign spaces all the time, often despite what they were given by the school planners.

A middle school science lab could become an art lab, a home and career lab, or a regular classroom. Storage rooms, offices, and student small group rooms all have approximately the same size and environmental needs. A classroom is about the same size as a teacher planning center.

One of the more sophisticated large-scale examples of futures-oriented reassignment and remapping is Dublin-Scioto High School, Dublin, Ohio. Planned by DeJong & Associates and designed by Fanning/Howey & Associates, Inc., this 1600-student school can be interpreted as a traditional departmental high school without moving one wall. The key in the planning is the strategic location of science labs that, without physical change, can be reinterpreted as linked to interdisciplinary classrooms, or as a separate department.

#### Departmental

Dublin Scioto High School

access to the same spaces. Today auditoriums can double as lecture halls, cafeterias have become conferencing centers, other cafeterias act as lobbies for events or as the place for the performance, and a distance learning lab can be a sophisticated conference room. Time-share concepts create greater utilization of spaces and bring more value to users and taxpayers.

**Multi-Functioning Spaces**

User groups often need functions for only a portion of the day or week, or have needs that change over time, or run simultaneously. Creation of multi-functioning spaces often serves these needs most economically and efficiently. The West Linn High School, West Lin, Oregon, designed by Dull Olsen Weeks Architects, expresses this concept eloquently. Clusters of six classrooms are arranged around "porches" that overlook a large, open Media Center. The "porches," titled specifically to embrace multiple functions, can be used as computer labs, breakout spaces, presentation spaces, tutorial areas, student work display areas, and for small gatherings.

Furnishings enhance multi-functioning spaces. Manufacturers are only just beginning to explore the possibilities. New products from Steelcase allow for clustering of tables around computer towers and depend on the mobility of wheels.

**Moveable Components**

An even greater level of flexibility can be created by moveable components. The movable wall is probably the most ubiquitous example. New planning concepts have expanded the potential of this and other moveable components. Alpha High School, Gresham, Oregon, by Dull Olson Weekes Architects, exhibits two creative concepts. This small, alternative school utilizes the same space for science and auto technology. Students make the conversion by rotating large sections of stainless steel casework on wheels. A unique variation on the movable wall (known as the DOWall) allows a single space to act as a classroom, multiple conference rooms, or a large meeting space.



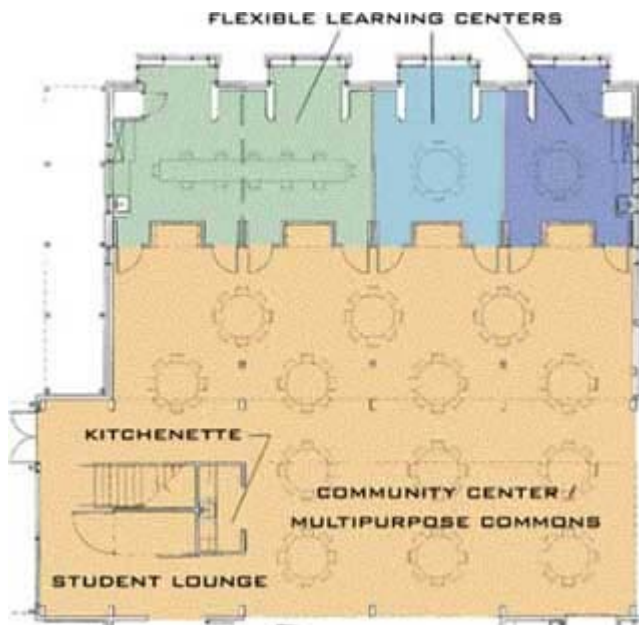
West Linn High School



SteelCase Furniture



Alpha High School Casework on Wheels



**Elements Reasonably Changed**

At times, the degree of change exhibited by Alpha isn't necessary, but reasonable change on a seasonal, annual, or evolutionary basis is. The integrated classrooms at Oxford Hills Comprehensive High School, South Paris, ME, designed by PDT Architects, have office technology

demountable partitions to create subdivisions within the team teaching classrooms. The concept easily allows a conference room/classroom/breakout space plan to be converted to an open space or

two classrooms by a janitor over a school break to facilitate scheduling or program changes.

**Renovation**

This flexibility concept costs the most and requires considerable local reinvestment to accomplish. Nevertheless, it is often the only appropriate solution to change. Planners would do well to create capability for renovation through selection of materials and systems. Concrete block has long been the material of choice for schools, but is the most difficult partitioning system to remodel. Gypsum board is more "renovatable," and if protected from abuse, can be more appealing. Ipswich Middle/High School, designed by Flansburgh Associates, illustrates. Unit ventilators are more problematic than central systems. Potential for change should be a consideration in all school material and system selections.



Ipswich Middle/High School

**Conversions**

Demographic trends suggest we may have too many schools in the upcoming decades. Planning schools today for future conversions is simply good planning. Consideration could be given to floor depths for conversion to housing, or bay sizes for conversion to offices or commercial. A school building conceived as a campus of smaller buildings would allow partial conversion to community or other use without violating the integrity of components needed for continued use as a school.



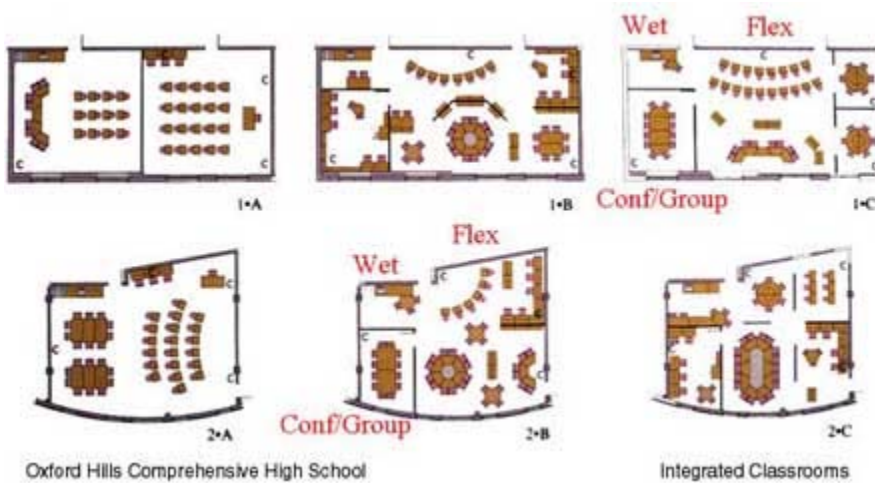
**THE ONE CONSTANT IS CHANGE**

Planning flexible school facilities may require all of the concepts outlined here, as well as others to be developed. More important than the concepts is the attitude we as planners need to hold: embrace and facilitate inevitable change through careful planning and a willingness to speculate on the future of teaching and learning.



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