Planning for Change:
Flexible Design Solutions

By Craig Mason, AIA

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The intersection of technology and the 21st Century learner has challenged many school districts to rethink their approach to the design of school facilities and the definition of “classroom.” To strategically plan for the future, districts must not only consider facilities and curriculum, but understand a process of change that is continually redefining the educational experience of students and teachers.

For the past 100 years, school designs have evolved along with educational programs and instructional theory. The design approach to facilities was reactive. Renovate and remodel, or in extreme cases demolish and rebuild, every 10 to 20 years as a response to changes in educational theory, population, and technology. This has proved to be an unsustainable approach. We cannot financially afford to tear down and build new. We cannot environmentally afford to claim greenspace for new construction.

Our design approach must change. The solution is a new kind of school that can evolve with, and
quickly adapt to changing educational models, technological advancements, teacher skills, student needs and community expectations.

The challenge is a stereotype: the classroom. It has four solid walls, a door, rows of desks to hold 10/20/30/40 students and a teacher instructing in front of a board. But what if we have 60 students next year? What if lower grades show there will be 120 students in three years? What if a teacher needs to talk to another teacher in the middle of class? What if every student has a laptop but no Wi-Fi connectivity? The solution used to be tear it down and start over.

**Flexibility in Federal Way, Washington**

The Federal Way School District, located between Seattle and Tacoma, Washington, faced such issues. Like many school districts, it resorted to a tear down and renovation process in response to enrollment pressures, evolving educational programs and students’ needs. Endless construction costs and seemingly endless delays in implementing improved teaching and learning strategies for its students and teachers prompted Federal Way to rethink its space programming approach.

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In Federal Way, the district and DLR Group collaborated to design
multiple elementary schools using this flexible approach to plan for and accommodate changes needed to support the learning needs of all students. Together, Federal Way and DLR Group are witness to the success this new model can offer to districts, students and communities across the nation.

DLR Group’s design for a series of Federal Way elementary schools creates flexible, easily adaptable interior spaces. This non-specific approach shatters the stereotype of the classroom, producing a facility with unparalleled capability of evolving to meet the changing demands of educational programs and curriculums.

**Panther Lake Elementary School**

In September 2009, Panther Lake Elementary School was the first of the DLR Group designed schools to open its doors to students and staff.

The design team adhered to Federal Way’s Guiding Principles during the design and construction of each school project within the district:

- Teaching and learning needs will change in the next 10 years
- The building is not the change
- The building allows the change
- Flexibility and convertibility is the key to our success

The Panther Lake design is grounded in the Federal Way Guiding Principles. Traditional specific program requirements were reorganized into groupings defined by spatial similarities, i.e. per general size, functions and features.

From these groupings the design team was able to distill the program down to six fundamental types of spaces which make up the basic building blocks of a flexible spatial program:

1. Network
2. Spaces
   a. unique space of each school that reflects that school’s individual character, focus and identity
   b. organic and connective, these spaces are intended for social development and academic achievement (especially literacy)
3. 30s – specialized learning spaces that can accommodate larger groups and equipment
4. 25s – core learning spaces that accommodate typical class groupings
5. 5s – smaller group spaces that can alternatively be used for administrative support
6. Gym – large group assemble for multiple uses including community
7. Support – everything else

Panther Lake Elementary School is designed with a series of bars and lanterns. The school’s fingers are composed of program spaces connected by hallway lanterns. Clerestory glazing in the lanterns, coupled with windows in the classrooms, provides natural daylighting in every single classroom in the school. Nodes in the hallway walls bring daylight into the commons spaces as well.

Although the final plan looks surprisingly like a traditional doubled-loaded corridor, it is far more complex. The school’s transecting commons is anything but a corridor. Kinetic shapes and colors define spaces for key shared-use functions, creating spatial movement east-west through the school, as well as providing an interior ramp that descends four feet to the east within the site. Wall and ceiling forms define distinct “spaces,” each opening to the next, with windows looking out over the site.

This non-specific approach to school design not only accommo-
dates students and staff now, but well into the future, and allows the district to quickly make building modifications over time with minimal construction and associated waste.

Designing sets of rooms with similar sizes and similar technology systems allows their use to flex and respond to various demands based upon the needs of the school and curriculum. For example, every classroom-sized space is wired for data and ready for wireless connectivity, each has a sink, all furniture including most classroom storage is portable and no space is overly supplied with specific built-in amenities. Over the course of a few years, the same room could potentially serve as a classroom, a staff lounge, or a computer lab.

More unique areas, such as the commons, are designed to promote interaction amongst students in an open, less rigid environment. These specific areas are designed for the long-term, and typically serve a variety of both educational and community-use functions.

The design employs a shell-and-core system comprising a set of rated walls from daily change to 50-year permanence. Building systems – mechanical, electrical and plumbing – run only through floors and permanent walls. Radiant-floor heating leaves the school free to adapt to future needs with minimal expense of resources or waste. With this approach, the school will be able to support whatever curriculum, teaching style and/or educational strategy is preferred or relevant at any given time.

To further conserve resources, the Panther Lake design uses an absolute minimum amount of finishes, bare concrete flooring, bold painted walls and recycled cotton treatments over more conventional materials.

An Exercise in Flexible Design


After a brief presentation, the audience broke into small groups for a scenario planning exercise, which stimulated great dialogue about approaches to flexible design. Each of the six groups was given a generic floor plan and was charged with creating a unique design solution to accommodate future educational models with minimal disruption to the existing structure.

This exercise encouraged attendees to think outside a typical school design and realize how a unique approach to temporary design could actually meet the needs of a school building for many decades.

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Craig Mason is an architect and educational planner of uncommon talent. As a Principal at the DLR Group and the Education Studio leader for the firm’s Northwest region of the United States, Craig is responsible for all education facilities planned and designed by the firm’s Seattle office. Additionally, Craig is a member of DLR Group’s national K-12 Education Forum, and has served as a senior design team member for a number of award-winning educational projects. Craig’s outstanding and innovative work with educational facilities has established him as one of the most creative educational architects practicing today.