Going Back to the Sandbox for INNOVATIVE CLASSROOM DESIGN

By Carolyn Glime, AIA

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At a time when the means to achieving goals for most organizations includes flexibility and collaboration, wouldn't a single word, even if slang, get right to the point? If so, how do we define and address it in the creation of exemplary environments?

Allow me to offer a couple of suggestions. First and foremost, let us not butcher the English language; however, let's seriously consider how to address the need for flexibility and collaboration in what we do as architects, designers, specifiers, and manufacturers. As an architect who has spent my entire career in the higher education marketplace, I have witnessed the changes in teaching and learning that have impacted the way we design space over the past 25 years. Most recently, the application of flipped classrooms has compelled me to contemplate innovative approaches that address the need for flexibility in classroom environments.

A flipped classroom refers to a teaching pedagogy where the lecture portion of the instruction is provided to students via video recording prior to in-class experiences. Students are expected to watch lectures, and potentially even answer a number of questions online to ensure comprehension, prior to coming to class to engage in discussions and activities that enforce the topic or concepts being taught. The discussions and activities may be in large groups, small groups or even independent study or activity.

Flipped classrooms are a self-directed form of learning with greater student participation and responsibility for their education. Research

Krause Innovation Studio at the Penn State School of Education

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indicates this creates higher student learning outcomes. With this model, the instructor is truly the facilitator of learning rather than the disseminator of information. Therefore, the instructional space does not focus on the front of the room toward the instructor, but is much more flexible to include multiple types of instruction, discussion, and activities.

For years, perhaps even centuries, educators have understood the need for this type of teaching and learning in certain disciplines, including architecture and design. I recall my experience in architecture school being one where almost everything I learned happened in a studio environment, making it a classic example of where multiple types of teaching and learning take place:

- lecture with Q&A;
- guest speakers;
- large and small group discussion;
- individual and collaborative project development, assessment/critique, and display; and
- one on one learning with the instructor.

The studio spaces themselves are relatively simple: typically large open areas with movable furniture, tackable vertical surfaces that are also mobile or portable in many cases, and significant storage space to keep materials and equipment used in the studio.

These types of spaces serve as good examples of highly collaborative spaces with great flexibility that could be emulated for other disciplines and collaborative learning models such as flipped classrooms.

In the past 15-20 years, design in the higher education marketplace has relied upon research, (commonly referred to as evidence-based design), which links measurable design features to outcomes assessments (like improvement in grades), to conclude that design truly has an influence on learning. Recently, a study of original research published in the journal *Building and Environment* titled "A holistic, multi-level analysis identifying the impact of classroom design on pupils' learning" explored ways to measure the impact of design on the learning rates of pupils in primary schools (K-12). The researchers developed hypotheses under three design principles:

- appropriate levels of stimulation for students,
- the naturalness of the environment, and
- individualization.

Researchers investigated 10 design parameters under these broad categories using data collected from 751 students from 34 varied classrooms in the U.K. over a one-year period.

The research indicated a strong connection between classroom experiences and six particular design parameters: color, complexity, light, connection, flexibility, and choice. It is estimated the impact these variables had on improved learning was approximately 25 percent.

When designing for flexibility, spaces that allow students and teachers to reconfigure for various learning activities into zones within a single room are considered to be ideal and are being frequently implemented. Furniture manufacturers have been at the forefront of design for flexibility, creating lightweight, modular, and portable furniture and systems in order to create various configurations within a space. However, the main architectural components of a room are the vertical planes, or walls, the horizontal planes of the floor and ceiling, and openings to allow light, views, people, and materials in and out of the space.

Although wall systems have become more mobile, and retractable floors and ceilings are available, and not applicable to most situations, I am not certain that doors have reached the full potential or their role in helping create flexibility in the use of space.

Although sliding doors may not be adequate for complete sound isolation, which is typically necessary when two dissimilar activities are occurring at the same time, it may be completely appropriate when the goal is to divide visually more so than to isolate acoustically.

Most people are familiar with HGTV and Houzz, two forums for residential design and construction, where shiplap and quartz counters are the norm and satin brass finishes are making a comeback. It is okay to laugh, but I think we could learn something from the ingenuity that has surfaced from an industry where reclaimed materials are used in a unique and effective way. Take barn doors, for example. What was originally designed for a singular purpose on farms has become a staple in many homes to divide or open up spaces as needed. They have become aesthetic centerpieces, space savers, and often a symbol of environmental consciousness. They are, in a sense, the epitome of flexibility.

During my time as an architecture student, Homosote panels were used as vertical surface material in order to provide tackable surfaces to display material or to divide space for discussion, collaboration, critique or exhibition. Similarly, it may be possible that sliding doors have an application in collaborative classroom spaces. Perhaps they would work well to divide or open space, provide surfaces to tack up projects, and write on for group discussions.

Although sliding doors may not be adequate for complete sound isolation, which is typically necessary when two dissimilar activities are occurring at the same time, it may be completely appropriate when the goal is to divide visually more so than to isolate acoustically. On the other hand, what if it could do both? What if we asked ourselves:

- What materials could be used to effectively allow the door panel to be transparent, translucent or opaque; tackable and writable; easily movable, yet sturdy, and sound absorbing?
- What hardware systems should be used to allow mobility, save space, and reduce sound transmission?
- How could this be done at a fraction of the cost of expensive movable wall systems?

I often discuss the topic of innovation with my higher education clients and use the term "sandbox" to describe the visible presence of innovation on campus. A sandbox, as we may recall from our youth, is one of the best places to find innovation in action at the most basic level—uninhibited minds working in collaboration or alongside one another in the sensory exploration of an individual or common goal. I believe all organizations should consider the presence of a sandbox to ensure that innovation has a venue to thrive.

Flipped classrooms are the latest innovation to emerge from the higher education sandbox. Addressing this teaching pedagogy with flexible space while taking into account all aspects of its design should be one of the products of the architecture and design sandbox. Architects, designers, and manufacturers have the responsibility to respond to this need, and developing innovative solutions often takes collaboration and flexibility in the approach to the problem. I, for one, am interested in playing in THAT sandbox. Would anyone like to join me? ■

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