Exploring Medical Education Planning & Design

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POINT OF VIEW
DON'T AGREE WITH US; CHALLENGE US!

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“WE ARE MARSHALL”
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COMMUNITY, CONNECTIVITY AND COLLABORATION
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The S/L/A/M Collaborative is a 155-member planning and design firm with offices in Atlanta, Boston, Glastonbury and Syracuse. A fully-integrated, multi-discipline practice, SLAM offers architecture, planning, interior design, landscape architecture and site planning, structural engineering, and construction services. The firm has four decades of experience designing buildings that help our clients fulfill their missions to teach, heal and discover.

Ranked among the top 100 design practices in the United States, SLAM has designed academic and research facilities for some of the country's leading universities and academic medical centers, including Johns Hopkins, Duke, Emory, Cornell, MIT, and Georgia Health Sciences University.

SLAM’s work, while broad and comprehensive, is particularly notable for a depth of expertise in the health sciences and includes some of the most current and diverse medical education and research design experience in the country.

SLAM is Redefining Architecture by designing facilities to be integral components of our clients’ world, conceived to achieve specific future outcomes, and defined by the change they promote.
The pace at which the medical community’s body of knowledge continues to increase is much faster than any of us can conceive. Experts say that medical knowledge is currently doubling every 2.5 years. Questions about what medical practice will look like 20 years from now and what external influences, from national health care and interdisciplinary interaction to life-cycle costs and return-on-investment, relentlessly batter the thoughts of educators, planners and designers alike.

For forty years, The S/L/A/M Collaborative (SLAM) has been in the business of helping its clients to teach, heal and discover. While the metrics for these outcomes have radically changed throughout the years, our commitment to improving the human condition is unwavering. Most recognized for the design of academic and research buildings for college and university settings, SLAM has emerged over the past 15 years as a national leader in the design of facilities for the medical and health science professions. SLAM’s Higher Education Studio, along with dedicated and well-aligned design studios in Science & Technology and Health Care, has enabled the firm to thrive as an “inquiry-based” practice. We are unafraid to ask questions, wonder or attempt to see the future. In the midst of transformative institutional change, SLAM strives to fulfill our responsibilities with wisdom, vision, and intelligence. All members of SLAM’s team are committed to bringing our clients visions to life, fully mindful of the significant societal and economic impact of those facilities on the health of the communities they serve.

SLAM is a pioneer and leader in Outcomes-Based Design and Programming, a planning technique we developed to shape space for positive and predictable outcomes. It engages all stakeholders in the process and encourages them to seek the right design solution, both functionally and aesthetically. Using standard financial and productivity analysis, SLAM works with clients to align new building plans with critical goals and budget. However, it’s not enough that we think it’s the right solution; SLAM focuses on designing buildings that achieve a measurable, positive impact on the way our clients achieve their missions and project their brands. SLAM’s programming, planning and design team approaches the challenge from many directions. It’s at this stage, when the internal function of a building takes shape that design can begin.

A deeper understanding of how adults learn has resulted in dramatic changes to the educational process, and the design of space for that process. Integrating all relevant disciplines from the beginning enables the building to come together organically; it is where function is articulated and turned into data that will then inform the building’s design.

Redefining Architecture

For medical and health science education institutions to keep up with the endless change in healthcare training and paradigms, they must constantly be thinking ahead to the next tool, method of engaging students or teaching approach to stay competitive — continually asking “Are we really getting the most from our resources?”

SLAM strives to Redefine Architecture with every project. We make a point of staying ahead of the curve, to get to the core of what matters, not just for today, but for 20 years from now. We look at school culture, teaching methods, goals, external influences, building design, life-cycle costs, sustainability and everything else that goes into getting to the best solution for your project. We examine where your institution is in the facility development process, what is important to you, and what will further your mission. Creating that state-of-the-art building is not about making things bigger and better than they are now, it’s about leapfrogging over the latest and greatest practices that exist today to get to someplace that strategically positions you for the future.
When it comes to planning and designing your new state-of-the-art medical education or health science facility, we don't want you to agree with everything we say; and don't expect that we will always agree with you — that will get us nowhere fast. It's the dialogue, the push and pull among educators, designers and other stakeholders that spark the "A-ha!" moment. Constantly challenging conventional wisdom is what education is about, and it is that same determination that enables us, SLAM and educators, as a team and partnership, to achieve a design solution that contributes much more to furthering your goals than either group could have achieved alone. So don't agree with us; challenge us!

In This Issue

Our passion is fueled by the possibilities, and what emerges as we guide you through a strategic thought-provoking process is a facility that far exceeds what you initially imagined. Creating a dynamic, functional and flexible facility that responds to an institution’s specific needs is what we continually strive to do. We recently broke ground on a renovation for the new state-of-the-art Western Michigan University School of Medicine — a building with the potential to be one of the best of its kind in the country. In early October, SUNY Buffalo cut the ribbon on their new School of Pharmacy, John and Editha Kapoor Hall, a long-abandoned building transformed into what is now referred to as a campus “jewel.” Currently under construction, is the brand new Trent Semans Center for Health Education for Duke University, a building which will foster new curricula and teaching approaches, while acting as a hub tying the medical campus together. The recently completed Marshall University School of Pharmacy involved turning a windowless old vivarium at a Veteran’s Administration campus into a comfortable and inviting community for students and faculty, despite the building owner’s directive that neither the building shell nor floor heights could be changed, nor windows added.

We can talk about how much we know, how we know it, and how we are going to apply it to advance your mission; but, are you really going to take our word for it? We didn’t think so. The things that set SLAM apart from other programmers, planners and designers is our commitment to immersing ourselves into your world, which includes knowing the right questions to ask, capturing experiential knowledge, and creatively using our knowledge and innovative processes to get the answers that will drive the project forward. But, we’re not going to tell you how we do that; in the pages ahead, we’re going to show you and let our clients tell you.

The projects in this inaugural issue of Teach, Heal, Discover focus on teaching. Each featured project appears to have the same or a similar goal — to create a modern state-of-the-art medical education facility. But, there is no one-fits-all solution. What is ideal for your institution may not matter at all for a competing university or college. Each of these projects illustrates how SLAM was able to work with the institution to help them differentiate themselves and provide the best solution possible.

You will see examples of how SLAM engaged students to learn how they use and value formal and informal learning spaces; how a photograph sparked innovative design for Team-Based Learning lecture halls; and how you don’t have to have a $50 million budget to turn a dilapidated, old concrete-block facility into the building equivalent of Eliza Doolittle.
Graduate students in the health sciences are very clear about the kinds of spaces where they learn best: Well-lit rooms with plenty of table space, and comfortable, moveable furniture, with convenient power sources. And more often than not, they want their classmates there, too.

Collaborative space, also called informal learning space, is becoming ubiquitous at medical educational facilities. The need for it is so great that even formal instructional space is co-opted by students after class, so that it too must be designed for flexibility and collaboration.

"There are a number of really good reasons to collaborate," says Mary Jo Olenick, AIA. "Generational styles and preferences favor collaboration. It promotes innovation and models the Team-Based work environment that our students are going into after graduation."

For students to collaborate, they need to interact, and that occurs naturally in buildings that are more densely populated. Medical schools, however, are among the least densely populated because of the proliferation of lab space and the low utilization of instructional seating. A typical lab building has 650 GSF per person, whereas office buildings contain an average of 250 GSF per person, and the ratio drops to 100 GSF per person in a typical classroom building. A medical education facility could average more than 500 GSF per person, putting significant distance between occupants and diluting the human energy that is so important to community building.

Grad students spend much more time in one facility than undergraduates who have classes in many departments. Undergraduate science buildings typically contain one collaborative seat for every eight to twelve instructional seats, whereas professional schools program as many as one-third of their seats for informal learning.

"One of the challenges in creating collaborative spaces is to bring people together when they are in this kind of a geography," says Olenick.

Graduate students consider their building their "home" and they access it 24 hours a day, so it is critical that the facility contain the right mix of informal learning environments as magnets for students: study spaces where they can work quietly for extended periods of time either alone or in groups, apart from the hubbub of the building; breakout spaces located in the midst of hallways; research labs, and offices sited where they may "touch down" between classes, or work in small groups as part of a class; and social spaces, which are critical to creating a sense of community.

Collaborative learning clearly happens in each type of space, but planners should be aware that multi-purpose spaces will not do the job of these discrete types of collaborative space, says Olenick. Students say they need all of these spaces to be available, convenient, and properly outfitted.
A Transformative Opportunity

August 2014 is the date the inaugural class of medical students will cross the threshold of the new $68 million, 350,000 SF building on the W.E. Upjohn Campus of the Western Michigan University School of Medicine — and, a highly anticipated date it is.

The idea to create a new medical school in Kalamazoo, Michigan germinated in 2007 shortly after John M. Dunn, Ed.D. was elected the President of Western Michigan University (WMU). Its creation is the result of collaboration between WMU and two Kalamazoo teaching hospitals: Borgess Health and Bronson Healthcare. This fall, the new WMU School of Medicine broke ground.

WMU announced the receipt of a $100 million donation from anonymous donors in March 2011 to endow the WMU School of Medicine, which accelerated the project’s momentum. Since then the project has taken an interesting and fortunate path, including the donation of a building in downtown Kalamazoo by MPI Research, a merger with the Kalamazoo Center for Medical Studies, recruitment of a new founding Dean and staff, the help of an army of almost 300 volunteers, including WMU faculty and staff, community physicians, hospital and community leaders, and a dedicated team of architectural, engineering and associated consultants.
Realizing a Dream

“The launch of the WMU School of Medicine and the integration of the Kalamazoo Center for Medical Studies will take us from a two-year clinical medical student program to a four-year medical education program,” Scott Larson, M.D., Bronson Healthcare’s Senior Vice President for Medical Affairs and Chief Medical Officer said, emphasizing the importance of this distinction, “This collaboration means Kalamazoo will now have the full continuum of medical education from medical school and residency training and on into continuing medical education.” The groundbreaking was made especially significant with the announcement that the WMU School of Medicine had been granted preliminary accreditation by the Liaison Committee on Medical Education, the national accrediting body for educational programs leading to the MD degree. The approval enables the WMU School of Medicine to immediately begin recruiting its first class of students.

President Dunn noted that “A new medical school will contribute to meeting the national and local need for physicians and also bring benefits to the state of Michigan and Kalamazoo community. New jobs generate personal income for local residents. Businesses in the wholesale, retail, service, and manufacturing sectors benefit from the direct expenditures of the medical school on goods and services. The $68 million investment to renovate and expand the donated building in downtown Kalamazoo means the WMU School of Medicine will have an immediate impact on the community.”

The S/L/A/M Collaborative (SLAM), in association with the Kalamazoo-based Diekema Hamann Architecture and Engineering, was selected to program and design this project from a field of 25 nationally known design firms. SLAM’s Director of Strategic Planning, Mary Jo Olenick, AIA recalled, “Our first contact with the WMU School of Medicine was when they attended one of our presentations on Collaboration and Team-Based Learning.”

“This project is not about designing a building — it is about developing a new state-of-the-art medical education college with the potential of being one of the best medical education institutions in the country, from scratch,” Olenick a recognized expert on Team-Based Learning environments said. Recalling the team’s initial reaction, she added, “What an exciting opportunity for everyone involved.”

Focused on advancing the art and science of medical education, the new facility will include innovative Team-Based and simulation-based learning environments aligned with an organ-centered curriculum. “Team-Based Learning is rapidly becoming the standard in the design of medical education facilities.” Olenick explained. “In addition to our experience in developing Team-Based Learning facilities, SLAM has an extensive background in both the design of new medical and educational facilities and the repurposing of existing buildings.” According to her, both options were under consideration for the project.

“The explosion of medical knowledge coupled with advances in instructional technology and a deeper understanding of how people learn has placed medical education facilities at the forefront of a revolution in teaching and learning,” Robert F. Pulito, AIA, SLAM’s President explained, adding, “This is a transformative opportunity for the Kalamazoo community, creating a new School of Medicine is a bold and visionary undertaking.”

Creating a Medical School from Scratch

From the first walk-through SLAM knew this project would be an unusual challenge. “The School selected the design team in advance of hiring faculty or defining the curriculum,” Sidney Ward, AIA, LEED AP, SLAM Project Manager, said. “They selected us because our previous experience on similar projects would give them the confidence to define the school on a parallel track to its design.”

“SLAM’s leadership, recognized knowledge of medical education, and benchmark database have been instrumental in resolving the space program/planning approach and rapidly moving the project forward for a highly complex stakeholder group,” Olenick explained.
SECOND FLOOR
- Classrooms
- Information Commons (Library)
- Admissions
- Student and Resident Affairs
- Registrar
- Financial Aid
- Student Learning Communities

FIRST FLOOR
- Two Team-Based Learning Lecture Halls
- Classrooms
- Café
- Fitness Center
- Auditorium

LOWER LEVEL
- Simulation Center
- Building Support
Meeting the Challenge

SLAM’s team began with a fast-paced six-week pre-design phase for scope definition. It involved three week-long workshops occurring on alternating weeks to assure that the project scope was developed and properly vetted by the School. “This process recognized that all of the stakeholders had ‘day jobs’ in addition to their focus on the new WMU School of Medicine,” Olenick said. “To accommodate their schedules and optimize our access to them during those first critical weeks, we set aside blocks of time in Kalamazoo allowing the flexibility for us to meet.”

“This more fluid interaction modifies the pattern of getting information, going away, interpreting input, returning and presenting results,” Olenick said. “One misinterpretation of input can cost weeks of time in the schedule.” These “Design Boot Camps” allowed the team to partner and collaborate more closely with the School as the process developed. “Our goal was to build confidence in our understanding of the issues and data through interaction and collaboration, thus building confidence in the solution,” Olenick explained.

The initial phase required global decisions be made without the benefit of all the answers. To keep the project moving SLAM used several innovative strategic techniques:

- Developing a “straw program” and cost model to review in the initial client meeting.
- Arranging for the WMU School of Medicine team to visit newly developed peer universities to see the latest and greatest advances in pedagogy and technology.
- Introducing a novel “Just-In-Time” decision-making process produced definitive decisions that moved the project forward without burdening the client with less urgent issues that could be decided later.
- Using a “Design Boot Camp” methodology to establish momentum and build a spirit of collaboration.
- Focusing on SLAM’s Outcomes-Based approach to programming and design, including SLAM’s process that allowed comparative evaluation of cost, benefit and total cost of ownership for alternatives during the early design phase.
- Formulating a comparative benchmark analysis with similar institutions/recent projects that was used to help the WMU School of Medicine understand how other academic medical centers allocated space.
- In-house cost estimating enabling SLAM to confidently inform a Guaranteed Maximum Price (GMP) at 50 percent construction documents, so early bid packages for items such as steel could be produced in the context of guaranteed prices.

The SLAM planning team also used the workshop approach to analyze and evaluate the entire Kalamazoo community to find a site that satisfied the varying goals and objectives of the medical school. Ultimately, the owner of one of the preferred sites donated a building to the school. MPI, a Mattawan-based pharmaceutical research firm, donated what is commonly known as Building 267, a 320,000 GSF science and research facility in the heart of downtown Kalamazoo’s commercial district.

From that point, it became a repurposing renovation and addition project. The program for amenities was developed to leverage downtown businesses, and the design of the new campus was coordinated with city revitalization initiatives. Even the street address and arrival points were carefully considered to highlight the city’s attributes. The program includes 190,000 NSF of academic and administration space and 140,000 NSF of biomedical research space; approximately 75,000 NSF of that space is available for future expansion. A regional simulation center is intended to serve the needs of the professional community, collaborating hospitals, and WMU School of Medicine.

To-date the experience has been seamless, kept the project on schedule and enabled the team to break ground and get the vital LCME accreditation necessary to successfully move this highly visible project forward.
New School, New Home, New Possibilities

“The transformation of Acheson Hall into this crystal palace called [John and Editha] Kapoor Hall has been spectacular.”

William J. Jusko, Ph.D.
Chair of SUNY at Buffalo (UB) Pharmaceutical Sciences
The School of Pharmacy and Pharmaceutical Sciences (SoPPS), the only School of Pharmacy in the State of New York, was ranked among the top pharmacy schools in the United States in 2012 by *U.S. News & World Report*. Relocating to South Campus is a homecoming for the pharmacy school, which was founded on that campus in 1886, but spent the past 35 years on the North Campus in Amherst, NY.

The school was moved to what was Acheson Hall, a post-war, modern bar building, which was underutilized for nearly two decades. The former 147,000 GSF chemistry building was laden with hazardous materials, functionally outdated, many years out of use, and in serious disrepair — a painfully familiar situation on most college campuses today.
An Economic Boost and Urban Revitalization

“This is not just a new, state-of-the-art pharmacy school opening on the UB campus; this is a major investment in both the City of Buffalo and the region’s health-care sector,” Lieutenant Governor of New York, Robert J. Duffy said at the dedication. “The reuse of this South Campus building fulfills a part of the UB 2020 plan to revitalize economic development through job creation, training and research, while addressing the state’s commitment to invest in the City of Buffalo and its neighborhoods to fuel Western New York’s economic recovery.”

Fitting It All In

The SoPPS building needed to support a comprehensive, inter-professional curriculum of practice and lecture-based teaching formats focusing on continuity of care, medication therapy management, collaborative drug-therapy management, and patient education. There would also be patient assessment suites, a model pharmacy for student training, meeting spaces, study areas, computer labs, social spaces offices, conference spaces, apothecary museum, and a café.

One critical challenge to address was size. How do we fit the 93,300 NSF SoPPS program into the 87,300 NSF Acheson Hall? According to SLAM Project Manager Rick Polvino, AIA, LEED™ AP in this case, SLAM’s Outcomes-Based Programming process not only helped the university solve its space problem, but went much further than the team thought possible. They were able to retain all program elements and create a highly efficient building.

Mary Jo Olenick, AIA, SLAM Programmer/Planner for the project stated, “Scarcity breeds ingenuity. Rethinking how space is allocated allows us to use it more effectively and efficiently,” adding, “We found that a tight fit may be one key to highly functional space that also sparks creativity.”

SLAM was chosen for its demonstrated ability to ask the right questions, collect the right information, analyze the many subtleties and turn that data into the right solution. In this case, SLAM was charged with externally turning this obsolete building with many physical challenges, including size, into a state-of-the-art, LEED™ certified, beacon of the community. Internally, the goal was to gather the health sciences programs that comprise UB’s Academic Health Center into one location, and establish interdisciplinary study with a research culture and environment.

Collaboration is Key

“This was a true collaboration and partnership,” Rick Polvino explained. “We interviewed deans, associate deans, faculty, staff and students. We met weekly to discuss, dissect and interpret the School’s needs and how to meet them.” The result was innovative, collaborative, user-friendly space that solved many efficiency issues and didn’t lose any program space. SoPPS also took this opportunity to refresh its curriculum and learning environment. The design revolved around the SoPPS core programs – simulated pharmacy, simulated exam room and a compounding lab – and improved academic curriculum to work in concert with each other.

SLAM created hubs with practical adjacencies and collaborative spaces. Students can conveniently go from one hub to another without leaving the area. Previously, students had to go to different buildings for each of their lab classes. The form of the teaching spaces was also reinvented to respond to the flow of students through the teaching labs. The school worked closely with SLAM to test alternative scheduling approaches for the flexible teaching spaces and lecture halls; they ultimately moved to a block schedule that allowed space consolidation and provided students a more integrated learning experience. “This resulted in a novel and memorable ‘wheel’ form, giving SoPPS a distinctive new image,” Polvino said.

The School of Pharmacy is now in an efficient, user-friendly building that fosters interdisciplinary collaboration, with an efficient – 57.5 percent average – net to gross square-footage usage ratio, which is considered to be an excellent result.
"The South Campus now serves as a visual representation of how health sciences teams operate today — as inter-professional teams that include nurses, physicians, research scientists, pharmacists, occupational therapists, social workers, and other health care professionals."

Michael Cain, M.D.
Dean of Medicine
Vice President for Health Sciences

"Since the school began moving in earlier this year, the structure has fostered collaboration, innovation and excellence in research. It is undeniably the go-to location where our students are receiving the best in education and training for improved patient care."

Wayne K. Anderson, Ph.D.
Dean, School of Pharmacy and Pharmaceutical Sciences

"Your school (SoPPS) is UB’s newest ambassador to Buffalo, and we look forward to continuing our partnership with you and transforming the strong University Heights community that surrounds the campus. Reopening your top-rated school within our borders means new opportunities for the residents and businesses of these nearby neighborhoods. It also means new prestige for all of Buffalo, which is fast becoming a sought-after center for pharmacy and health-care expertise in research and industry."

Mayor Byron W. Brown
City of Buffalo
“We are Marshall” – Using Technology and Transparency to Create Community

Marshall University’s new School of Pharmacy opened for business with a Ribbon-Cutting celebration this August. It was the culmination of a two-year fast-track effort to create a warm, welcoming, state-of-the-art pharmacy program within a Veteran’s Administration (VA) 1980s era, underutilized vivarium building. The pharmacy program is located on the first two floors of the four-floor, 85,000 GSF building.

The challenge was to create space that would support the newest teaching methods within a federal building with ironclad limitations: neither the windowless shell nor floor heights could be changed, nor were additions or changes allowed to the building’s footprint. And, if that wasn’t enough of a challenge, the School was simultaneously pursuing accreditation so they could begin recruiting students. This process required additional supporting documentation about the facility. The construction budget was a modest $7 million, which is considered an atypical amount for the level of detail and sophistication required.

The S/L/A/M Collaborative (SLAM) in association with Huntington, WV-based Edward Tucker Architects, provided programming, planning, facility assessment, and design services for the extensive transformation of two floors within the Robert W. Coon Medical Education Building (MEB) into the Doctorate of Pharmacy Program. The MEB is located on the Huntington Veterans Affairs Medical Center (VAMC) campus, six miles from Marshall’s main campus. Additionally, SLAM relocated the School of Medicine’s existing gross anatomy and pathology departments, which were located on separate floors in the MEB.

Filling a Need

“Studies show that more pharmacists are needed in West Virginia, a trend that is expected to continue,” said Marshall President Stephen J. Kopp, Ph.D. at a progress celebration last year. “Our School of Pharmacy will help meet that need, and in doing so help improve the quality of life in our community, region and state.” This will be one of three pharmacy schools in the state.

According to Pharmacy Manpower Project, Inc., now called the Pharmacy Workforce Center*, as of July 2011 West Virginia ranked third in the nation for states with the highest unmet demand for pharmacists. “Pharmacists in a rural community have a bigger impact on residents,” explained SLAM Design Architect, Mark Rhoades, ALA. “Because there are fewer doctors in the rural areas, they see the pharmacist more often and they become a trusted advisor.”

Maintaining Momentum

The first step for developing the new program was to structure the process. To maintain the momentum to get through the process in time to make the opening date of August 2012, a couple of things had to happen: School of Pharmacy decision-makers had to be part of the planning team, and the program/planner and design architect both had to be on-site during the various workshops so they could “design on the fly,” according to Rhoades: This structure enabled the team to hold several week-long workshops where the designer and programmer could make changes in real time, as they were decided. It also provided the designers the opportunity to quickly test-fit multiple configuration options. Because the senior decision-makers were in the room, the turnaround was immediate.

* Per the company’s Web site, The Pharmacy Workforce Center (PWC), is a nonprofit corporation whose mission is to serve the public and the pharmacy profession by developing data regarding the size and demography of the pharmacy workforce and conducting and supporting research in related areas.
The design team was charged with assessing the MEB’s general condition and capacity for continued use. They worked with the School’s representatives to develop planning goals and a detailed space program based on their input. The design team analyzed accepted benchmarks and space requirements to the year 2022, identified planning approaches, design options and order-of-magnitude costs for options addressing short-term needs.

Reinforcing Connectivity and Community

Components of the space program included a pharmacy care/simulation center, classrooms, research labs, faculty offices, information center and student common space. The building only had to accommodate two classes of 90 students each at a time, because the first two years of the Pharmacy program are classroom based, and the last two years are experiential. Students spend their third and fourth years working with health-care providers and community pharmacies throughout West Virginia and its tri-state region.

The lack of windows in this federal building required a solution that gave the appearance of openness, big spaces and a warm welcoming environment. Floors are organized with the primary social/community areas at the heart of the plan. Glass interior walls provide a high level of transparency from the public spaces into classrooms, labs, and skills areas to enhance the sense of community and interaction. High-end finishes and sophisticated design elements using warm colors and wood accents provide comfort and visual interest.

Each floor is configured for flexibility, so spaces can be converted or moved to different floors as the School grows and changes. The strategic use of technology throughout the building is the thread that supports an atmosphere of connectivity and community. In addition to monitors in team-teaching areas and classrooms, the social and common areas throughout the school have a technology-embedded wall, supplementing the educational experience for both students and faculty. This “techno-wall” is a major organizing element present on every floor.

Because of the ceiling height limitations, a tiered Team-Based Learning lecture hall wasn’t possible. The solution, according to Mark Rhoades, was to create two Team-Based Learning studios based on the Student Centered Active Learning Environment (SCALE) model. Each studio can hold an entire class of 90 students. The room is configured with 10 round tables, each with 9 seats. A teacher’s podium is at the center of the room. “This configuration provides multiple types of interaction for instructor and students,” Rhoades explained: “Each table is its own team and is provided a wall-mounted monitor and a writable glass.”

The Pharmacy Care Center (PCC) is a simulation suite for practicing skills and techniques. Co-located compounding lab, community pharmacy and hospital pharmacy functions allow for team teaching and flexibility. The PCC can accommodate 100 students at any one time. This state-of-the-art suite has advanced A/V and IT technology for videotaping and real-time monitoring of student training activities.

The one change made to the exterior was to clearly define the identity of the building and the location of its main entrance. According to Rhoades, since there was no identifiable “front door” to the building, the primary entrance was expanded and reconfigured to be more open, inviting and identifiable as part of Marshall University. During the transformation of the building’s first two floors into the new School of Pharmacy, the School of Medicine also benefitted: as part of the design process the gross anatomy and pathology labs, which were on different floors of the MEB, were both moved to the same floor with added efficiencies and amenities.

“I am extremely pleased with the facility and what it offers our students.”

“From the design of the technology-enhanced classrooms that feature SMART technologies to the common study spaces and patient simulation areas, our students have access to top-of-the-line educational opportunities. They will certainly benefit from a facility that contains areas of learning, research and pharmacy practice all in one building.”

Kevin W. Yingling, R.Ph., M.D.
Founding Dean, School of Pharmacy

Three C’s of Supporting Transformative Change

Culture: What distinguishes great institutions is a clearly communicated identity and focus. Leading professional schools understand the importance of developing facilities that support and enhance the institutional culture and offer a unique user experience. Functionality and aesthetics are essential in “designing the experience.” This is especially important in differentiation among top-tier medical and health science schools vying for those exceptional students who have the potential to translate academic firepower into compassionate medicine.

Connection: Creating a community of scholars is an important part of a professional school’s mission. The physical environment enhances engagement and interaction through scale (human), visibility (eye contact) and density. Formal and informal common and collaborative spaces are essential to effective teaching, and must be conceived as part of the program – not simply carved out of “leftover space.” They need to be planned around defined “beehives” – such as amenity spaces or food and technology hubs – to create the population density and interaction needed for connection among students, faculty and staff that form the core of the academic community.

Cost: Getting the most out of every facility matters. Increasing space utilization; sustainable design strategies that reduce energy consumption and operation costs; delivery systems that accelerate schedules and minimize redundancy – these are just a few trends that maximize overall building efficiency and increase value.
Community, Connectivity and Collaboration

To promote interaction and an innovative team-teaching philosophy, Duke University’s new 105,000 GSF, six-floor Mary Duke Biddle Trent Semans Center for Health Education (TSCH) will be the educational hub for the Duke University Medical Center.

The $35 million glass and limestone building, designed for LEED™ Silver certification by The S/L/A/M Collaborative (SLAM) in association with Durham, NC-based Duda Paine Architects, was to “create a new home and focal point for the Carnegie Tier 1 School’s teaching, administrative and social activities,” Mary Jo Olenick, AIA, SLAM Director of Strategic Planning and project Programmer/Planner explained. “The quality and variety of gathering spaces designed into every floor will encourage interdisciplinary collaboration outside the classroom among students, professors and visiting scholars.”
"There is a wonderful weaving of gathering spaces that drives the purpose of the building — that moment out of the lab to exchange ideas," added Neil Martin, AIA, SLAM’s Design Architect.

According to Martin, "The floor plans are the most powerful aspect of the building. Rather than have the public circulation happen at one point and have all corridors in the interior, this building puts public circulation on the building’s edge. This alone allows folks to see into this new building, and the wonderful learning environment."

A divisible 400-seat meeting room/conference center on the ground level was designed to accommodate larger, unified groups by having an entire wall of upward-acting wood panels fold into the ceiling, exposing the large adjoining atrium and overlooking balconies. "When the space is wide open everyone can see out to the perimeter arcade and beautifully terraced outdoor garden as daylight pours through the large glass walls," Olenick said. "In fact, the window expanses incorporate the natural surroundings into the building design, providing dramatic views of the campus from just about every space in the building."

Team-Based Learning Approach

In addition to the plentiful interaction space, the striking new light-filled building will support the School of Medicine’s new Team-Based Learning (TBL) model, which focuses on students actively working together in groups rather than passively listening to lectures. "There are still appropriate times and places for lectures in medical education, but we have been working hard to move into a pedagogy that reflects the real-life experiences of health-care professionals," said Leonard White, Ph.D., Associate Professor and Director of Education for the Duke Institute for Brain Sciences. "The details that make the opening of the Trent Semans Center so exciting are its flexibility and its ability to support small teams of students thinking and learning together. White’s class will be among the first to meet in the new building.

Olenick explained how Duke’s new Team-Based pedagogical approach would dramatically affect how lecture halls are used and so required specialized instructional environments. "New teaching methods require new design perspective," she said. SLAM’s response to this challenge was to design a new kind of space to address these special requirements—the 140-seat TBL learning hall has unique, extra-wide, stadium-style tiers and is the centerpiece of the second floor. It has numerous design modifications from a standard lecture environment. Unlike standard classrooms and lecture halls, curvilinear walls and seating drive the focal point of the room to the center. Students can focus on
interacting with each other, not on a lecturer standing in front of a white board. Breakout spaces are provided within the room, enabling students to quickly move from lecture to small-group mode, yet benefit from the dynamics of multiple groups working together.

“During our research, we saw photographs of students wrenching themselves around to work together, despite the awkward seating configuration of the lecture hall; that vision is what sparked the idea for the TBL design,” Olenick said. “This is a whole new classroom type that SLAM has invented and is now being used in several other higher education projects.”

“This building gives educators a way to interact at a whole new level that can change the curriculum paradigm in medical schools,” Martin added.

An open monumental staircase rises from the ground floor through to the third floor; oversized landings are designed to encourage spontaneous interactions among students, faculty and staff. The third floor is home to central teaching, with two shared conference rooms, six teaching laboratories, six small-group workrooms and one large classroom. The large classroom juts out from the building and has a large glass wall with a breathtaking view of the campus. All of the flexible teaching labs are complete with moveable tables and chairs and room-dividing walls.

Student life will be centered on the fourth floor, which will provide a bright, comfortable student lounge, quiet spaces, lockers, and kitchenette. A generous rooftop terrace offers outdoor social space for students and faculty. Prospective students will receive their first impression of Duke in the Medical
School Admissions office suite. Advisory deans, who provide one-on-one academic counseling, have their offices on the floor. “While a typical medical student experiences mostly highly technical clinical space; this building is a nurturing warm light-filled environment,” Martin said. “Wood and light – it’s a completely different sensory experience from the surrounding medical school buildings.”

On the fifth floor, a simulation center houses the standardized patient program, where actors provide students with realistic clinical skills practice. The floor is designed with separate entrances so actors and students encounter each other only in the exam room. The sixth floor is unfinished space to accommodate future expansion.

**Interprofessional Study and Real Life Experience**

Each floor of the building is designed to bring together educational spaces that are now spread throughout the medical campus. Before the Trent Semans Center, the brain and behavior course met in an amphitheater in the lower level of Duke Clinic for lectures, in rooms on the fourth floor of another building for small group sessions and in the gross anatomy lab in the lower level of that building to examine brain specimens.

“The Trent Semans Center is all about spaces – big spaces for large groups, medium spaces for labs and demonstrations, and small intimate niches for self-study,” said Edward G. Buckley, M.D., Vice Dean of Medical Education. “The building is configured for adaptation. Walls move, furniture is portable and technology allows for communication from anywhere to anywhere.” Most important, Buckley said, “the building is readily accessible because it is at the very heart of the medical campus.”

Early in the new year, 100 first-year medical students and about a dozen graduate students from other parts of the University taking the brain and behavior course will use the Team-Based Learning environments on the second and third floors of the new building. They will work primarily in teams of six to seven students. Medical students learn with their team throughout their first year.

In addition to medical and other health professions students honing their clinical skills in the robust fifth floor clinical and surgical simulation center, medical residents and faculty will use the center to learn and practice new procedures.

The six-story building is the crossroad of the recently transformed medical campus. Its main entrance is just yards from the new Duke Cancer Center, the Duke Medicine Pavilion and Medical Center Library. Connectors consisting of outdoor arcades and closed in bridges enhance accessibility and draw use from other medical school buildings.
MARY JO  The medical professions have changed dramatically since Duke started its medical school, especially in the past 10 years, and so we need to teach differently. When we first began envisioning your new space, how did you mentally divorce yourself from the existing space?

COLLEEN We had already tried to do innovative things, like interprofessional education, but the current facility didn’t let us do that. There is an increasing call nationally for graduate professional health students to learn together because they are going to work together when they practice. So we are incorporating more interprofessional education into our program. Currently, to get the space we need, we have to rent a local high school or use space all over campus. It will be so exciting to conduct our education programs in our own facility.

MARY JO  When you first started this project did you have an idea of what to expect and how you could best help and impact the design process?

COLLEEN I don’t think I was prepared. I’ve never been involved in a project like this before. The whole process was a very cool learning experience. The opportunity to talk to you about some of the things I wished we could do, then watch you talk to all the stakeholders, the depth of the questions you asked, and how you translated the responses into actual drawings blew me away. I told you that I really wished we had spaces that we could arrange and move to create different types of activities in different parts of the room for 400 learners at a time; and, you did it. I’ve never been part of a process where I spoke my wish and then saw it translated into an actual drawing of space – and then become a building! I didn’t know what to expect this time, but now I will next time. I hope there is a next time!

MARY JO  You could probably counsel colleagues who are about to embark on the same process. Most people in your position may do this once in their lifetime. You were good at the challenges it presented. The students are easy, the hard part is convincing faculty that change is good. You got a lot of push-back in the process, how did you handle that?

COLLEEN I think the key is facilitation. I would talk to them about what is currently working for them, and bring them to the next level. I would ask “If you can wave your magic wand, what would you do?” I continually urged them to think creatively.

MARY JO What excites you about this project?

COLLEEN One of the most exciting things will be the ability to have the white coat ceremony that occurs at the end of the medical students’ first week of orientation in the Trent Semans Center. The ceremony is their unofficial welcome to the medical profession and very symbolic. Until now, we’ve had to have the ceremony on the main campus, because we didn’t have any place large enough to accommodate everyone attending. Now, the students will be able to begin their education in the same building in which they will be trained. I love the idea of the energy that will be created by having the ceremony within those walls.

MARY JO  In terms of where you are today, and your great anticipation for a terrific project, what’s your biggest fear?
COLLEEN That the level of demand will exceed the space. This project is so beautiful and it’s right in the heart of the medical campus. Everybody is really excited about it and I’m already getting calls from people to reserve rooms. My biggest fear is that we’ll have to say no to somebody. The good news is that I anticipate the building will be fully utilized at all times, and there’s going to be constant activity and liveliness in the building.

MARY JO How will the new Trent Semans Center make your job easier?

COLLEEN It’s not about making my life easier, but it certainly will enrich the students’ experience. Ultimately, it’s how well did the students do. And I do believe that the Trent Semans Center will help in our recruiting efforts. It is going to be another big draw for students to want to come here.

MARY JO What are some of the benefits of having everyone in the same building?

COLLEEN All of our learning spaces will be contiguous within the Trent Semans Center. We will have an actual address! As it is now, we have to conduct related classes in different parts of a variety of buildings. Having all learning spaces in one place will help. And, being in the heart of the campus, the building will be more accessible to students beyond their first year. It will be a much richer environment with second, third and forth year students there. I anticipate the students will be happier, they’ll be more engaged, they’ll have more access to resources and information – and each other.

MARY JO What are some of the collaborative innovations that came from the Duke and SLAM partnership?

COLLEEN The most unique thing about the building I credit to Mary Jo and Ed Buckley. They thought a lot about designing for flexibility, and giving us all kinds of opportunities we never would have thought of. For example, our Great Hall on the ground floor seats 400 and has a beautiful gathering area in the lobby. If we need more space, the doors between the Great Hall and lobby rise and fold up into the ceiling, expanding the Great Hall’s size and capacity; that was Mary Jo’s idea. Our labs are four adjoining rooms, like a four-square box. The walls between the lab rooms also fold up into the ceiling or to the side. The result is we can have four labs that seat 25 people, or we can remove one wall and have two labs that seat 50, or remove both walls and have one lab room that seats 100. The simulation space has two of the clinical skills rooms that can be converted into a high-fidelity simulation suite. The amount of flexibility will allow us to do things we haven’t even thought of yet.

MARY JO What other elements of the building strike you as a particular advantage?

COLLEEN One thing that makes this particular building unique is its beauty. It’s the way you all have designed open spaces. Brian [the project manager] helped me realize that only a few floors in this building have a full footprint. Those are the upper floors, the ground floor opens up for two floors; the main floor, which is the second floor, opens to the third floor. And, the whole idea of having the space to accommodate case-based learning comfortably and with easy access to resources is wonderful. For instance, the Team-Based classroom model supports the flipped classroom approach. Being able to have students prepare before they come to class, then come to class and comfortably work in small groups within a larger group setting is an enormous benefit. Mary Jo help me describe it –

MARY JO There’s a lot of vertical connection. It’s not just about each floor, it’s how the floors are interconnected and work together. Also, the stairs don’t line up. You can’t go from the first floor to the third floor without walking through some part of the second floor, it forces people to interact.

COLLEEN It’s that opportunity for spontaneous gathering, spontaneous conversation and connections that’s really going to add to the richness of the whole experience, for both the students and the faculty. Not only do we have beautiful, comfortable spaces for structured learning, but we now have spaces to support the informal learning that is so critical in professional development.