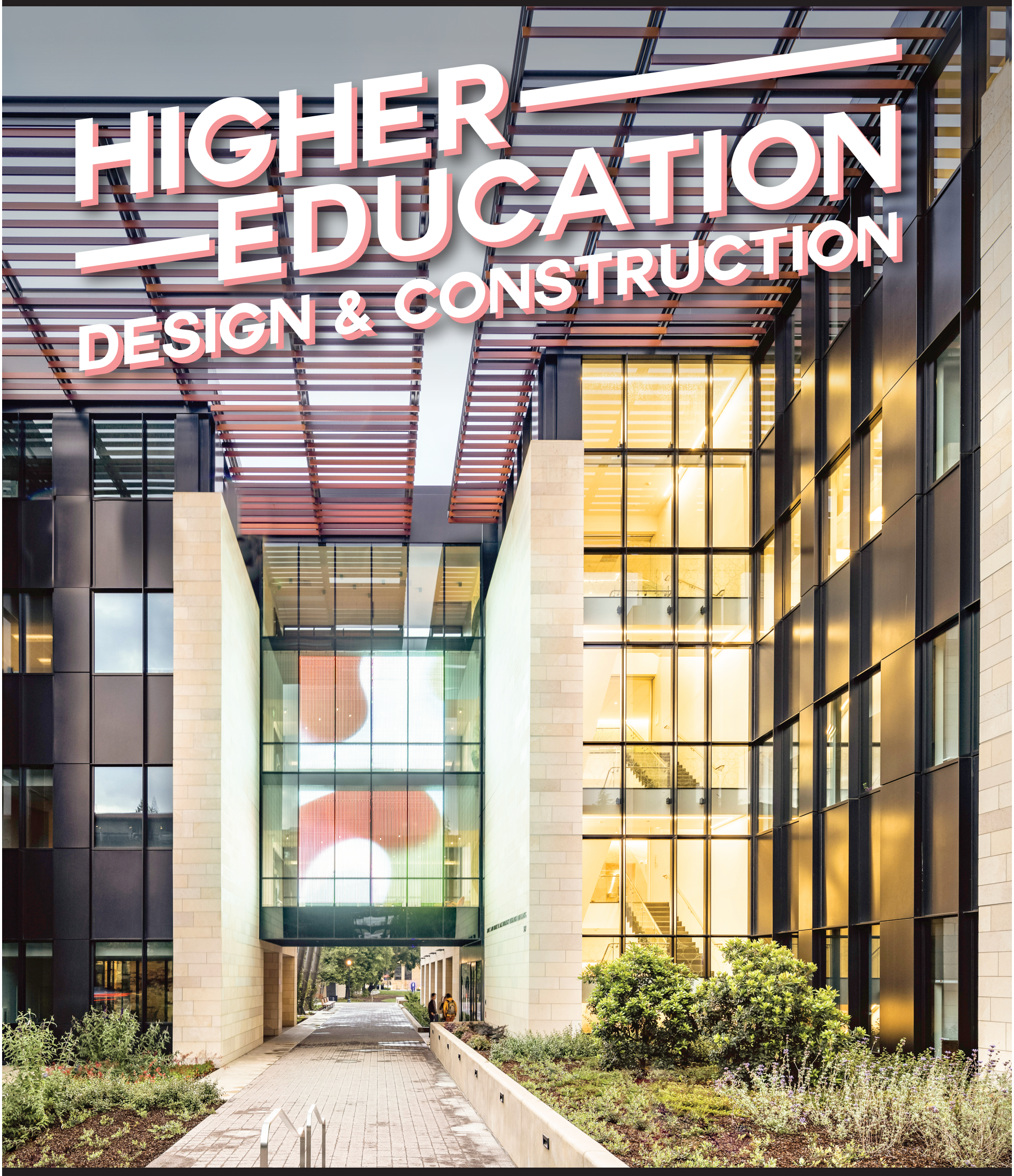
Seattle Daily Journal of Commerce



# HIGHER EDUCATION DESIGN & CONSTRUCTION

November 21, 2019

# MAKE YOUR TRANSITION TO A NEW BUILDING A SMOOTH ONE

## Getting the first year of a building's operation right is key to saving energy over the life of the building.

BY RIC COCHRANE & MIKE KOWALICK
MCKINSTRY

As buildings and systems become more and more complex, owners and operators are increasingly realizing that they can no longer easily pick up where construction leaves off.

Building-transition issues are a symptom for a much larger industry need and, as a result, buildings often do not operate as intended. So, how can we ensure that our buildings are meeting or exceeding performance expectations?

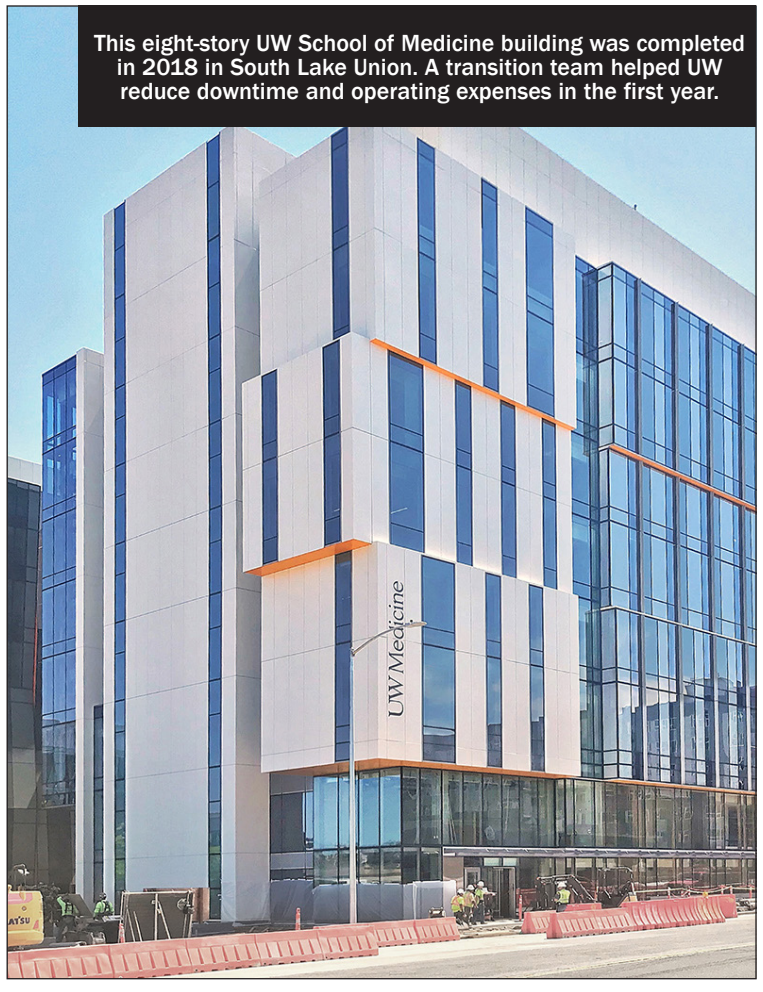
Enter the University of Washington School of Medicine (UWSOM), which in 2018 added the sixth building to its growing South Lake Union campus, bringing its total campus footprint to nearly 530,000 square feet. This sixth building is an eight-story, 165,000-square-foot facility. Like the rest of the campus, it supports a wide variety of uses: lab space, administrative offices and mixed-use space.

With such a diversity of uses, the building's systems must also be complex — and efficient.

As with many sophisticated new facilities, ensuring that the building meets its functional design goals requires building operators to factor in its unique features and develop a procedural framework for monitoring and maintaining building systems. Since this building is a 24/7 critical environment, it required increased floor strength, higher ceilings for mechanical equipment and increased demands for electricity and water compared with an ordinary office building. The building also necessitated advanced vibration resistance since the lab space contains sensitive instruments.

UWSOM sought a partner who could meet its needs while allowing staff to focus on their core competency — research

TRANSITION — PAGE 12




This eight-story UW School of Medicine building was completed in 2018 in South Lake Union. A transition team helped UW reduce downtime and operating expenses in the first year.

PHOTO BY BENJAMIN BENSCHNEIDER

# HOW MAKER LABS CAN OPEN DOORS TO STEM CAREERS

## These hands-on collaboration spaces introduce opportunities in science, technology, engineering and math to new audiences that might not otherwise consider them.


Seattle University's new Center for Science and Innovation has a ground-floor maker lab that's on view to passersby.

IMAGE COURTESY OF BLUEPOST

The Pacific Northwest has a legacy of leadership in technology, with a strong economy driven by a growing number of innovative employers in aerospace, technology, biotech and related industries.

National rankings place Washington No. 2 in the concentration of science, technology, engineering and math (STEM) employment opportunities, but the percentage of our state's graduates earning degrees in STEM fields is too low to meet this workforce demand.

BY BRENDAN CONNOLLY
MITHUN

The shortfall in STEM workforce candidates is compounded by underrepresentation of minority students earning postsecondary science, technology or math degrees. Although more first-generation and underserved minority students are entering colleges and pursuing STEM majors, recent statistics indicate that only 29 percent of Latinx students, 25 percent of Native American students and 22 percent of African American students complete a STEM degree within six years.

In 2017, women represented only 22 percent of students earning associate or bachelor's degrees in computer science. How can we better support the success of these trailblazing students who are essential to the economic vitality of our region?

West Coast colleges and universities are finding promising strategies to make STEM learning appeal to a wider spectrum of students and achieve improving rates of degree and certificate completions. A key element is the linkage of programs across academic departments and student affairs to cultivate a robust and holistic support network that students can rely on as they encounter challenges. In addition, expanding connections between faculty and students outside the classroom helps activate mentorship opportunities, cultivate a sense of belonging and open the door to non-traditional degree paths.

Real magic happens when this stronger cooperation between academic and student affairs is coupled together with flexible environments for interdisciplinary exploration.

One highly visible example is the explosion of new maker and innovation spaces on campus, both as part of academic departments and within student life centers. These hands-on creation and collaboration spaces offer physical and digital design tools that introduce STEM learning to new audiences that might not otherwise consider traditional STEM degree paths. When co-located with casual group study spaces and tutoring or student affairs programming, these innovation spaces open the door to STEM careers and catalyze out-of-the-box thinking.

### Student-centered hub

This strategy is fundamental to Seattle University's new Center for Science and Innovation (CSI), which not only provides exceptional teaching and research laboratory spaces that connect science faculty with their students, but also creates a new student life center on the campus.

Situated on a key gateway site at the east edge of campus, the new CSI facility co-locates teaching, research and administrative program space with community gathering spaces, a new café, the campus radio station and, centrally, a maker innovation laboratory on the ground floor that has full transparency to the campus and city.

This new landmark facility seeks to break down academic silos in sciences and engineering, and to make STEM relevant to the entire student population by placing the disciplines within a welcoming, student-centered hub for social gathering and events. The staffed innovation lab is an interdisciplinary and inclusive environment that encourages curiosity and exploration among all students, with the expressed goal to activate more diverse student engagement with the sciences.

The new CSI also will host events and create opportunities for regional technology partners to engage with faculty and students as they explore career pathways. This symbiotic relationship between institution and industry benefits the university and its students and is a vital connection between industry leaders and the next generation's innovators.

### Learning and living

This thread of interconnected program use linking academic and social communities is also expanding in student life facilities. Colleges and universities have long recognized the direct correlation of on-campus residential life with academic success. A more recent trend is the direct infusion of academic and academic support spaces into residential living and learning facilities.

The University of Washington's recent West Campus and North Campus student life facilities have been coupled with new maker spaces that complement more traditional student amenity spaces. Area 01, for example, has recorded an average of 180,000 annual users, and its Dabble Lab maker space has increased the number of 3D printers from two to 15 in recent years to keep up with burgeoning

MAKER LABS — PAGE 10

## INSIDE



## ON THE COVER

**"Morphogenesis" is a two-story interactive art piece in Stanford's Bass Biology Research Building. The building was designed by Flad Architects and Ennead Architects. Knot contributed technological and material mediums for the art piece.**

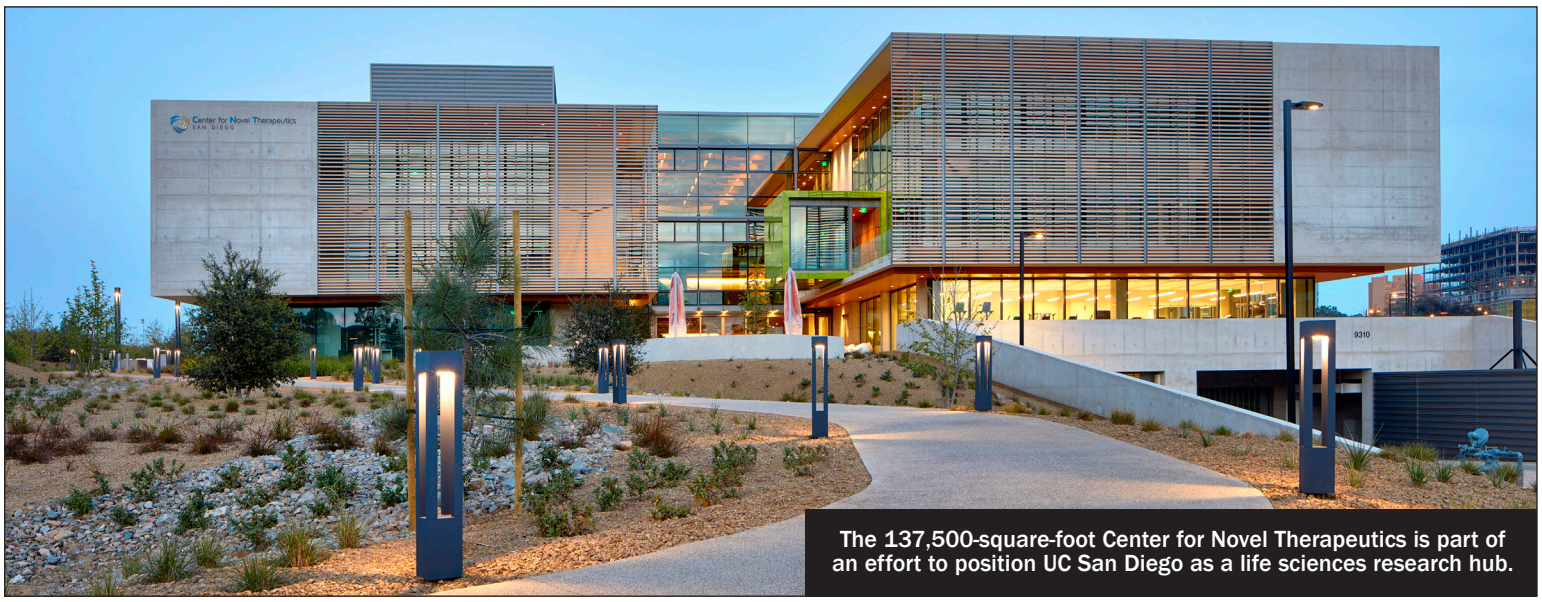
PHOTO PROVIDED BY KNOT

## SPECIAL SECTION TEAM

SECTION EDITOR: SAM BENNETT • SECTION DESIGN: JEFFREY MILLER
WEB DESIGN: LISA LANNIGAN • ADVERTISING: MATT BROWN

# NEW LAB BUILDING ANCHORS UC SAN DIEGO RESEARCH PARK

## The private-public project offers adaptable spaces where academic and industry researchers can collaborate and innovate.




The 137,500-square-foot Center for Novel Therapeutics is part of an effort to position UC San Diego as a life sciences research hub.

PHOTOS COURTESY OF BIOMED REALTY

Universities always have a bottom-line question at hand: how do they remain relevant and competitive?

Whether enhancing and expanding course offerings, campus programming or research initiatives to attract top talent, adaptation is key.

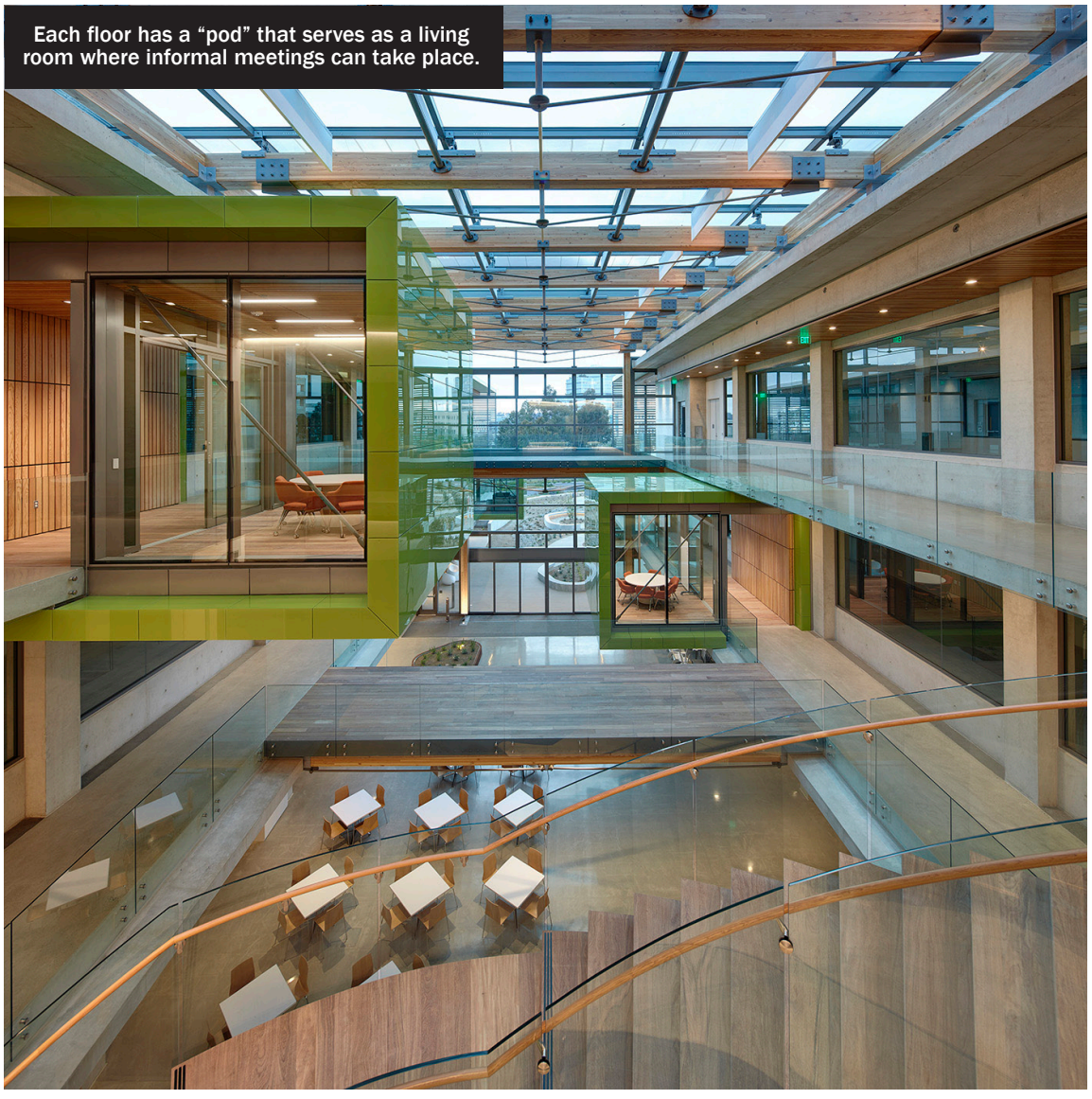
RYAN BUSSARD
PERKINS AND WILL

For research universities, however, adaptation is even more critical. Research runs on novel thinking, so these universities have a different bottom line: how do they creatively drive forward innovation and discovery?

For all this adaptation, what doesn't always adapt quickly is architecture and building design. Their roles in positioning universities at the forefront of the next era of research and learning must not be overlooked, though.

This means moving beyond labs as traditional pinnacles of research and considering how to program spaces to convey research-oriented values — how they might spark ideas or yield breakthroughs.

By integrating innovation and discovery throughout buildings and its built environment, a university can leverage architecture and design for effective placemaking that guides the entire campus in its vision for the future.



Each floor has a "pod" that serves as a living room where informal meetings can take place.

### Placemaking at UCSD

In 2019, when it was time for University of California San Diego to usher in a new era of engagement and refresh the public image for its campus, it was also time to change how the university approached placemaking through thoughtful building design and architecture.

Historically a commuter school, UCSD's enrollment has grown rapidly, now nearing 40,000 students interested in its research-centered mission. Receiving more than $1.1 billion in government research grants, UCSD attracts researchers seeking support to solve long-term problems. Providing the right spaces to continue fueling scientific research and breakthroughs is a challenge for the university's flourishing research arm.

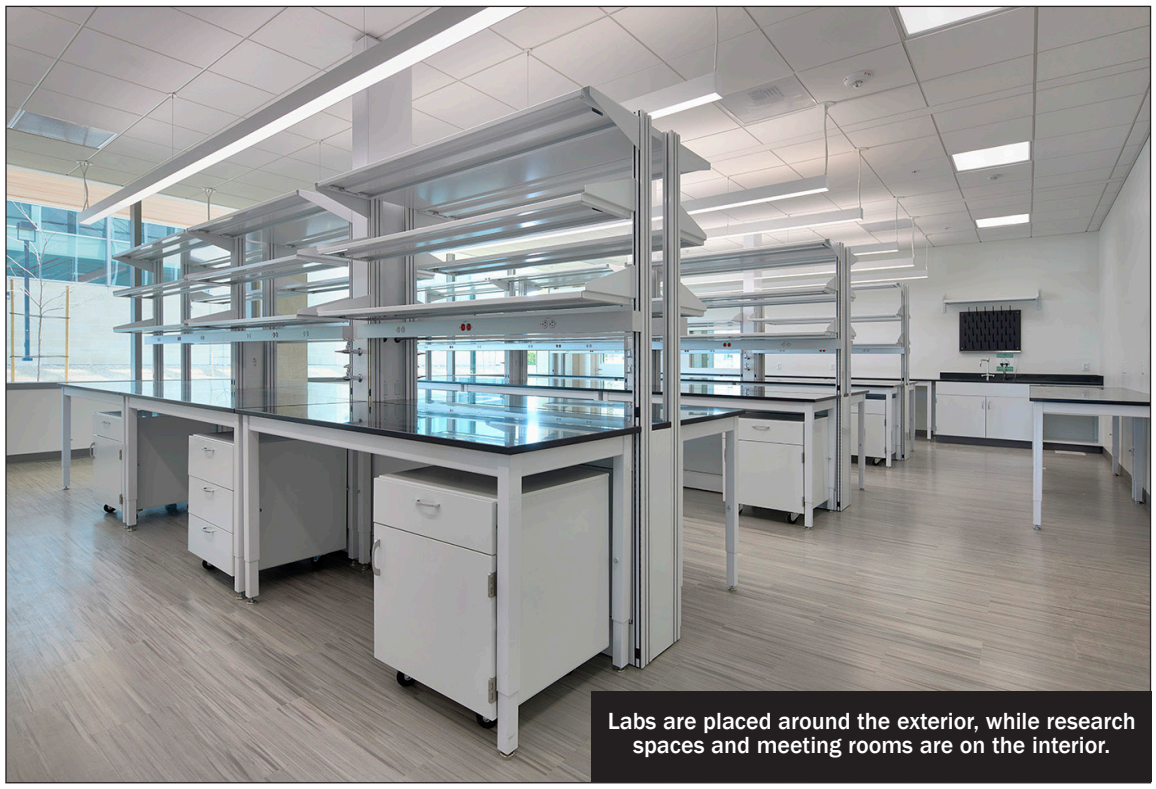
Due to UCSD's emphasis on cross-disciplinary academics and research, a partnership across design teams and projects made sense. From years of experience delivering higher education and life science projects for Pacific Northwest research universities like the University of Washington, Perkins and Will had the ability to navigate the specific needs of higher education clients to develop versatile campus facilities that serve as beacons of change and placemaking on campus.

### A research accelerator

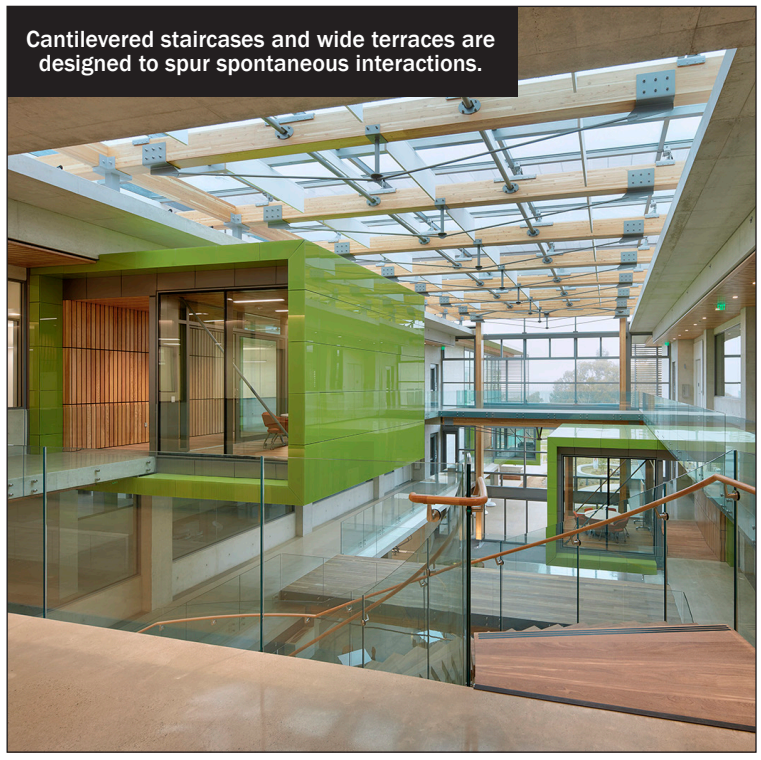
As part of a master plan to foster a welcoming tone with the public and community around campus, UCSD is reshaping the gateway of its campus. Supplementing this work is an extension of the campus across the San Diego Freeway, known as Science Research Park. Through partnerships in this district, university developments will transform the university beyond its campus, positioning it as a hub of innovative research among San Diego's thriving life sciences industry.

Anchoring this transformation is a new initiative between UCSD and BioMed Realty: a new building called the Center for Novel Therapeutics, a 137,500-square-foot, research accelerator facility. Located within UCSD's Science Research Park, the Center for Novel Therapeutics is surrounded by academic researchers, health care institutions and life science and technology companies, including the world-renowned Moores Cancer Center and private-sector companies translating research into real-world applications for cancer patients.

Building design and structure were critical elements for this hallmark development at the heart of a university-wide transformation to succeed. Perkins and Will Seattle relied on three pillars to leverage architecture and design, and establish a sense of place.



Labs are placed around the exterior, while research spaces and meeting rooms are on the interior.



Cantilevered staircases and wide terraces are designed to spur spontaneous interactions.

## Collaboration is key

Collaboration outside traditional university structures is the future of scientific advancement. With organic interactions and flexible work environments encouraged through design choices, researchers and scientists are galvanized around a space centering learning and collaboration.

Conceptualized as a research accelerator, the Center for Novel Therapeutics' floors are stacked to encourage junior researchers and senior scientists to converge to solve problems.

Research pods prevent silos, furthering spontaneous collaboration between researchers of all levels. These pods, programmed with varying layouts, act as a "living room," allowing for informal meetings and connections at every floor level. These meetings often ignite groundbreaking ideas, and the building's interconnectivity allows for a smooth transition from collective brainstorming to putting those ideas into practice, establishing a space for breakthroughs and new ideas to unite and build off each other.

## Flow of information

Design choices around information flow further fuel the collaborative processes. Not only do cantilevered staircases inside the building allow for casual interactions on wide terraces, but the visual connection as people are able to see across, horizontally and vertically in the building emphasizes intermingling ideas, underpinning cooperative work and cross-disciplinary research.

The Center for Novel Therapeutics' proximity to research centers and health care institutions, along with a connection to the city, facilitate an external flow of information. In such a strategic location, CNT's researchers can leverage resources and information from other research companies, government and health care institutions just beyond their walls. As information flows in all directions internally and externally, the building will facilitate the transition of research from laboratories into clinics and from the campus to the marketplace.

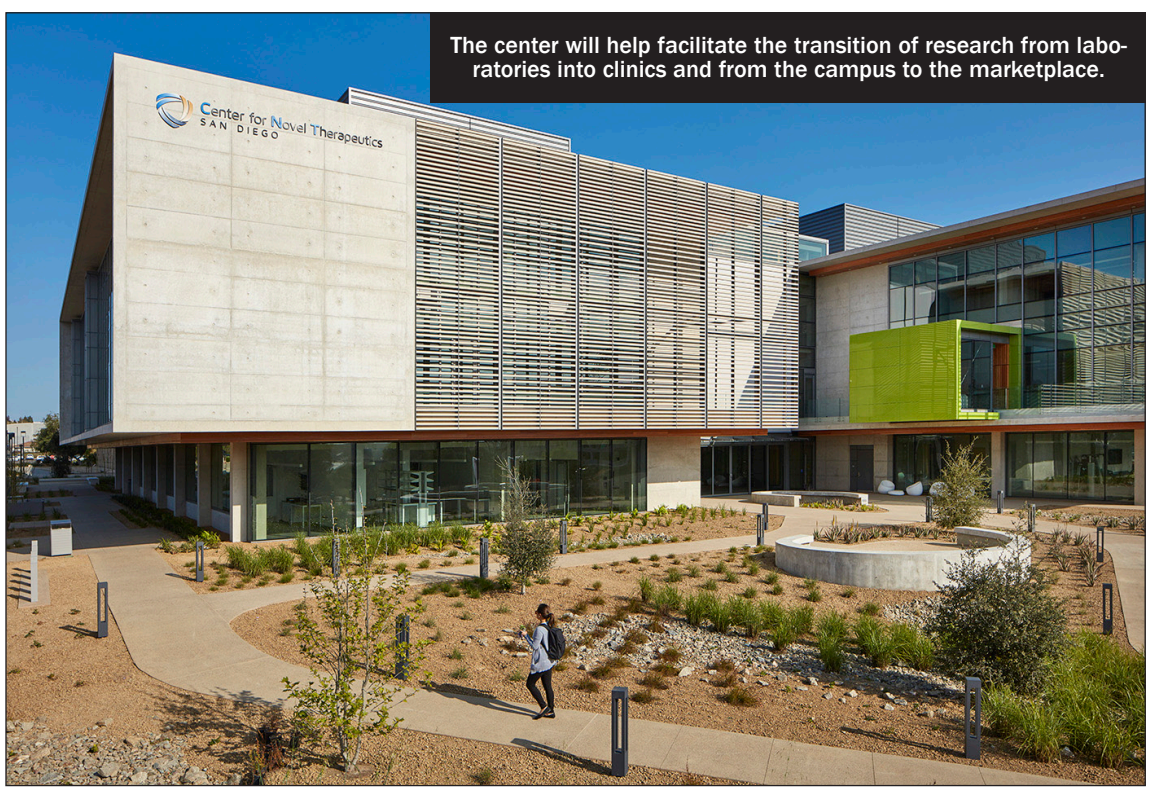
## Adaptability and innovation

With an adaptive space, CNT upends rigid ideas of lab and research centers. Whereas at traditional research facilities labs are often at the core of a building, CNT's labs are around the exterior, while research spaces and meeting rooms are on the interior. This adjustment inspires unconventional thinking and supplies researchers with views of San Diego's prosperous life sciences industry. To further emphasize location, CNT has first-floor glass doors that deliver views of nearby research institutions and nature, stimulating thought and offering space for public engagement with research through events and conversations.

Emphasizing collaboration, flow and adaptability in architecture and design choices helps campus research facilities embody the values of research, including open exchanges of ideas and constant adaptation and discovery.

By embracing this approach, facilities help convey universities' forward-thinking visions for the next generation of researchers, creating a space that highlights the innovation needed to realize that vision. Intentional design and construction of research facilities to create opportunities for learning, discovery and collaboration is a model that helps us consider the true placemaking potential of our built environment.

*Ryan Bussard is a design principal at Perkins and Will in Seattle.*



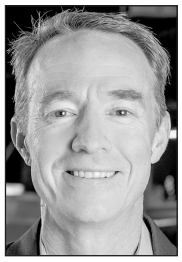

The center will help facilitate the transition of research from laboratories into clinics and from the campus to the marketplace.

# WHY IT'S A GOOD IDEA TO USE MECHANICAL DESIGN-BUILD FOR YOUR SCHOOL PROJECT

**Mechanical work can account for 20 percent of a facility's overall budget. A design-build team can reduce design time and lock in budgets sooner.**

As colleges and universities jockey to attract the best and brightest students, providing an environment that emphasizes sustainability and the health and well-being of the students provides a competitive advantage.

Building trends are focused on meeting the demands of creating flexible learning spaces, improved student housing options and greater campus amenities that meet sustainability goals while still fitting within capitalization budgets. This is particularly true within the mechanical scope of work (plumbing, heating and cooling) which can account for around 20 percent of a facility's overall budget.



BY KEN DYCKMAN
HERMANSON CO.

Trends in higher education have created the need for a shift away from traditional construction methods and mechanical/plumbing design approaches. A movement toward design-build or progressive design-build delivery approach helps ensure the lowest total installed project costs at many of our state universities and colleges.

With these approaches, mechanical and plumbing contractors collaborate with architects, engineers and owners from the early design stage to provide value engineering through a best-value scoring system.

Through project completion, the mechanical design-build team works in partnership with the general contractor and owner toward common goals for the project. In this method, competing interests are minimized, decisions can be made faster to reduce design time and an accurate budget can be locked in much earlier, which is important in this volatile time of labor and material escalation risks.

Being involved in the early design stages of a project allows mechanical and plumbing contractors input into each space's heating, cooling, ventilation and plumbing needs while providing live cost estimates to validate the design direction decisions. Based on occupancy and other factors in a higher education facility, a mechanical design-builder may recommend several solutions.

## Chilled beams

Chilled beams have become popular for reasons of flexibility, comfort and energy use. With a chilled beam system, large "beams" or panels in the ceiling provide radiant cooling using cool water provided from a remote chiller plant. The water temperature is adjusted to stay above the room's dew point temperature to ensure no condensation and dripping occurs. Heating can also be accomplished through a similar panel system with heating hot water.

Ventilation air is independent of temperature needs and can be controlled by the amount of CO2 detected in a space (based on the number of occupants and their activity level) and can be provided through the chilled beams themselves. In fact, buildings in higher education that have high ventilation air needs pair well with active chilled beams that require very high primary airflows.

Compared with a traditional ducted system with ceiling diffusers, this provides a more comfortable space with uniform temperatures across the room volume. Benefits include fewer drafty or stagnant areas that are a distraction to learning, flexibility to accommodate changes in seating arrangements and a much quieter system that enhances the learning environment. A lowered operating cost can also result and help offset capital costs in the long run.

## VRF systems

VRF systems have also become very popular because of low installation costs and reliable comfort. This is a refrigeration-based system, so it could be popular for facilities without central mechanical equipment plants (which are needed for chilled beams).

This system relies purely on airflow to distribute the heating and cooling, though, so care needs to be taken in the design to avoid objectionable mechanical noise and stagnant or drafty areas. The system requires more periodic maintenance directly within the learning environment, which could be inconvenient if service is needed during the occupied times of the day. Redundancy is also not as convenient to implement as in the chilled beam system.

VRF systems also employ a separate decoupled ventilation system affording similar benefits to the chilled beams design. The smaller fan systems result in improved energy savings over larger central type systems and are comparable to chilled beams in overall energy performance. The biggest advantage of VRF systems in higher education facilities without central plants is a much lower installed cost than most all other systems.

VRF systems can also deliver air through floor or low-wall grilles in a "displacement" approach, which is a popular option for large spaces such as lecture halls. This approach allows for excellent temperature control and air quality in the occupied volume of the room, quiet air distribution and a draft-free environment.

## Gender-neutral bathrooms

On the "wet side" of mechanical considerations, a trend in modern public higher education facilities is gender-neutral restrooms. These can create a challenge with respect to plumbing and exhaust, since there are many more enclosed stalls (much like the European WC model).

An economical way to accommodate floor drains is to slightly slope each room out to a common area with minimal floor drains, versus a dedicated floor drain for every stall.

Exhaust can present challenges as well. A single exhaust fan for all stalls is economical for first cost, whereas using occupant sensing at each stall and only exhausting ones that are in use could save energy but only over a very long timespan. Undercutting each door slightly can allow for make-up air while simultaneously accommodating water from a plugged toilet to flow out of the stall.

In general, recognizing popular higher education trends and involving a mechanical design-builder early in the project design stage along with the general contractors and design teams in a design-build or progressive design-build delivery approach will greatly enhance the learning environment, minimize operating costs, and maximize the overall value delivered to owners.

*Author Ken Dyckman has worked for Hermanson Co. for 20 years and is currently heading up Hermanson's expansion into the Portland market.*

# HOW HIGHER ED PROJECTS CAN BENEFIT FROM P3 DELIVERY

## Public-private partnerships bring together design-build, financing and maintenance under one umbrella, lowering long-term costs.

BY GEOFF STRICKER & BRETT EARNEST

There is a nationwide demand for new facilities across the higher education spectrum, and the Pacific Northwest is no exception.

The academic arms race to attract the best and brightest talent, including students, faculty and staff — all of whom are seeking well respected institutions with state-of-the-art facilities in which to learn, research, teach, study and live — has colleges and universities searching for effective strategies to help them bring world-class structures to life faster and gain a competitive edge.

Enter public-private partnerships.

Public-private partnerships (P3s) can be thought of as another arrow in the quiver of procurement. P3s allow the public sector to deliver much-needed facilities more efficiently than traditional methods and can include integrated development, financing, design-build, and operations and maintenance — all offered under the responsibility of one partner.

Under P3 delivery, the private partner considers the project's whole life cost, including financing, long-term maintenance and refurbishment costs — not just the upfront cost of delivering the facility. By integrating design-build, financing and maintenance all under one umbrella, the actual cost stream over time is lower than if the public entity undertook those efforts on their own.

As one example, it would be a greater first-cost investment to install terrazzo flooring than it would to install carpet. But when you consider that carpet needs to be replaced every five years, the terrazzo becomes more cost effective in terms of the 40-year investment.

## Advantages

P3s are often used for large-scale public projects, such as transit, infrastructure and hospitals, and can also be particularly advantageous for universities. Here's why:

- **Cost control:** Under P3 delivery, the price for the building is guaranteed upfront, including forecasted life-cycle costs. Each agreement is different and may involve different partners, but at a minimum the developer will deliver a turnkey facility with a long-range plan for maintenance.
- **Maintenance risk transfer:** Under a popular P3 model, the private partner accepts the burden of long-term maintenance of the building. Everything from capital improvements to window washing and filter changes can be covered under a P3 operations and maintenance contract.

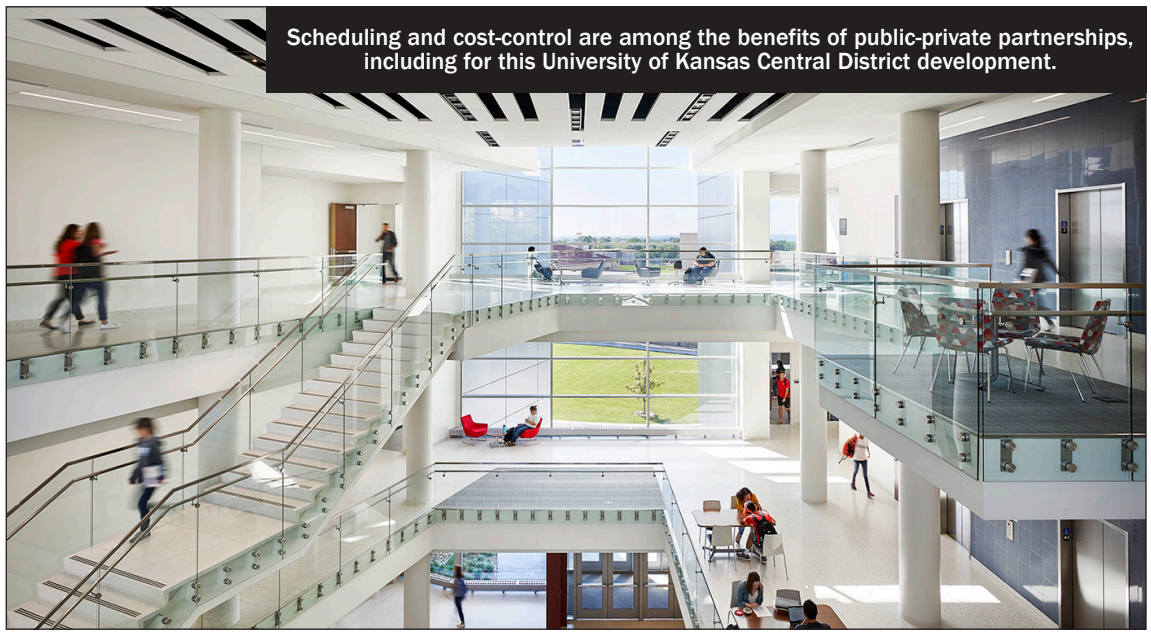
Oftentimes, higher education institutions have binders filled with a list of deferred maintenance projects waiting for capital allocation. Those binders tend to collect dust as projects wait for funding. In contrast, in a P3 project, the university is contractually committed to pay the private partner to maintain the facility. This solution ensures that the building will be maintained and handed back to the university in a high-performing manner.

- **Variable financing options:** The private developer may offer to privately finance the project in order to mitigate other financial obligations on the books for the university or free them up to make other investments. Nonprofits are often involved in P3 financing and can serve a variety of roles, including being a financing conduit for bonds or as a partner to the university's real estate foundation.
- **Guaranteed schedule:** Under P3 delivery, the developer guarantees the delivery date of the facility or they are obligated to make the investments needed to keep it on track. Universities are driven by their academic calendars and need to ensure their facilities are delivered with date certainty.
- **Risk allocation:** On a P3 project, risks are allocated to the partner — public or private — that is best able to price and manage those risks. The opportunity to negotiate risks efficiently drives better value for the university over the long term.

## Best practices

Every state has its own set of regulations for P3, which poses a challenge from a developer's

P3 DELIVERY — PAGE 10



Scheduling and cost-control are among the benefits of public-private partnerships, including for this University of Kansas Central District development.

PHOTO PROVIDED BY CLARK CONSTRUCTION GROUP

# 3 STEM PROJECTS THAT AIM TO BREAK DOWN LEARNING SILOS

## New spaces at Montana State, Santa Clara and WSU Tri-Cities are designed to inspire a culture of cross-pollination, innovation and exploration.

BY SARA HOWELL & AMANDA HILLS
ZGF

As colleges and universities shed traditional silos to promote advancements in instruction, learning and research, campus buildings are adopting new roles: as conduits for incidental and intentional engagement and collaboration.

This trend is most visible in the growing number of interdisciplinary campus buildings, where proximity and transparency are bringing disparate departments together — often for the first time.

It's no wonder the trend is gaining momentum. In today's competitive higher education landscape, students increasingly seek colleges and universities that support workplace readiness. In turn, employers seek graduates with disciplinary knowledge in at least one field and the fluidity to work across others.

And, there's a growing recognition that introducing crossover between departments increases the number of creative collisions, fueling new ideas and discoveries that may not have come about otherwise.

### A living laboratory

Time and time again, students and faculty stakeholders shared the same refrain with designers at ZGF Architects and architecture and engineering professionals during the planning stages of the new Norm Asbjornson Hall at Montana State University, home of the College of Engineering and the Honors College.

If prospective students could see firsthand the type of innovative problem-solving done by engineers, they would be more likely to become interested in the field.

The resulting building, which opened in late 2018, embodies donor Norm Asbjornson's vision of creating a cross-disciplinary environment that brings students and faculty together in unexpected ways and to "change the way engineering is taught."

Unlike a traditional college building, much of the active program of engineering education and collaboration spills out of the laboratories and into the central commons, exposing the engineering design process to students of other disciplines utilizing the wide range of classrooms, the cafe, or the Inspiration Hall multipurpose space.

Transparency into and through the laboratories reinforces the strategy, and the broad array of functional spaces within the commons inspires interdisciplinary idea-sharing.

The tapered commons, with abundant access to daylight and views out to the Montana mountains, encourages random encounters and social interaction. It starts as a narrow "street" beginning with quiet spaces on the west end and living-room type seating interspersed with areas to plug in and quiet corners to study. It becomes increasingly social with the large seating stair and Inspiration Hall anchoring the east end. An open connecting stair at the central "crossroads" lets students easily move between levels.

The building is designed as a living laboratory. The floor-by-floor HVAC systems are celebrated in glazed mechanical rooms facing the commons, rather than being relegated to ceilings and utility closets. Graphics on the glass will explain the mechanical systems and components, underscoring their functions and benefits, and enabling instructors to integrate them into lesson plans. Built-in data-gathering systems allow students to analyze the building's energy performance. The project is LEED Platinum certified and net-zero energy ready.

### Flexible spaces

At the ZGF-designed Sobrato Campus for Discovery and Innovation at Santa Clara University, the campus is co-locating 13 previously disparate STEM programs into one building.

Departments that previously functioned independently will be physically sharing teaching and research labs, project spaces, classrooms and support space. A diversity of learning spaces located throughout the building are designed with baseline flexibility in mind.

Given the number of programs sharing teaching space in the building, each student who graduates from Santa Clara will have taken at least one class in this building. The intentional lack of program definition in the student-driven project spaces, in particular, will encourage students to make them their own and break down historical barriers between departments.

The layout will establish learning neighborhoods for cross-discipline inquiry that extend horizontally and connect vertically. Significant attention is paid to the placement of classrooms and collaboration spaces with the intent to pull students of all fields of study through the various floors of science, engineering and technology labs, offering visual and physical engagement in the broad range of STEM disciplines and activities. Collaborative spaces are deliberately located at key intersections on each floor with direct access to vertical circulation, daylight and views.

Shared buildings are not without their challenges. Teaching spaces still require some level of specificity, particularly in the sciences and engineering curricula taught in their shared spaces. The result is very careful and deliberate teaching lab designs and program pairings that will maximize flexibility without compromising productivity.

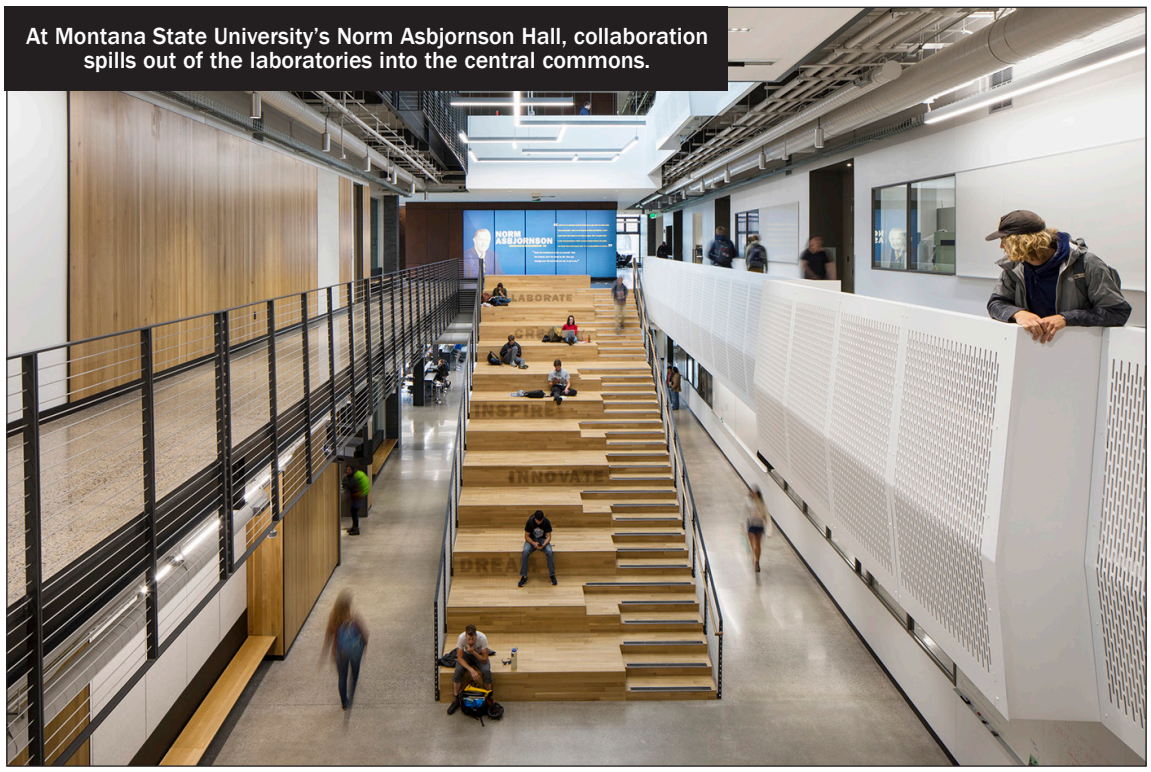
Biology and bioengineering, for example, are co-located in one shared lab with shared equipment. Unique but less frequently used program-specific equipment is located in nearby support or instrument rooms, in some cases shared by additional programs.

A unique double-height maker space will face the courtyard, creating a window into the work of students as they ideate and fabricate projects and prototypes. Transparent glass partitions are used throughout the building to encourage connectivity and put student explorations and work on display.

### An inclusive environment

Just as there has been recent backlash against complete open-office environments, the same lessons apply to education. Open and collaborative user spaces need to be balanced with an appropriate mix of small group collaboration niches, individual focus spaces and breakout solution (or problem solving) rooms for more concentrated, undisturbed learning. Brain science confirms that breaks are required for deep learning and physical space should support that by providing opportunities for introspection and reflection.

At Washington State University Tri-Cities' future 40,000-square-foot academic building, a range of informal learning spaces including nooks and niches will be located on both levels one




At Montana State University's Norm Asbjornson Hall, collaboration spills out of the laboratories into the central commons.

PHOTOS BY LARA SWIMMER

Views into the labs reinforce the cross-disciplinary environment at Norm Asbjornson Hall.

and two. The design team likens one of them to a treehouse, as it will allow students to study and work from a perch directly above the entry with views to a grove of trees. Spaces like these are the direct result of a proactive student engagement process that revealed a strong desire for a variety of informal spaces with direct access to daylight and views.

Eight- to 12-foot-wide corridors lined with a mix of flexible seating and writable surfaces are designed to encourage spillover and breakout collaboration from the two large adjacent active-learning classrooms. The added width will let the sunlight of southern Washington more easily filter through and into the heart of the building (a key consideration for the project's stakeholders), aiding in directional wayfinding by providing visibility to each cardinal side. These areas complement the livelier atrium-like collaboration zone and central grandstand stair, which can further support informal learning and more formal campus community gatherings.

The outboard side of the eight planned lab classrooms will offer recessed niches with plenty of whiteboards and display boards for sharing student work and generating interest and excitement about what is happening within the labs. A highly flexible and reconfigurable space called the Creative Design Lab will accommodate a broad range of independent and group work that goes even beyond STEM to include the liberal arts. Large windows to the corridor will put these activities on display to passersby.

Design workshops with the campus building committee and student representatives have informed the vision for the project as well as numerous design elements. The overarching aim is to create an environment that is welcoming and inclusive to students of varying backgrounds and ages. Although campus housing is being added nearby, the majority of students will continue to commute to campus, which necessitates that the building provides a comfortable home away from home and campus heart where students want to stay.

Proposed interior materials are clean, modern and honest, and draw on the surrounding natural regional context for its inspirational earth tones and textures. Along with thoughtful use of color, carefully selected furnishings will inject a clear WSU brand, but it's the students that will bring the vibrancy and life into the building.

The project is slated to open in spring 2021.

## Meeting needs

As the role of the modern university campus evolves, project- and team-based work are coming to the forefront, all of which can benefit from an assortment of spaces tailored to meet the needs of students and faculty. In response, designers need to provide a thoughtful balance between specificity in teaching spaces and diversity in engagement spaces to allow for optimal space utilization and student performance.

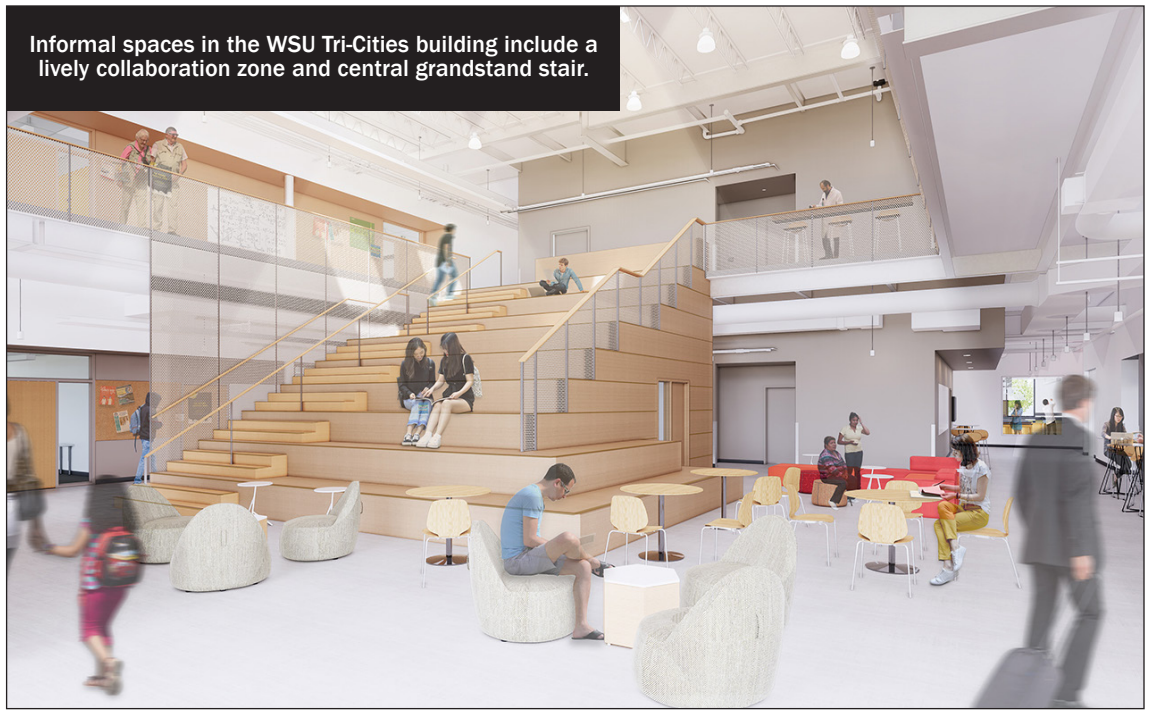
As is the case with the kind of learning and research that interdisciplinary buildings are meant to encourage, their design ought to offer a similarly broad range of inspiring environments.

*Sara Howell, a principal in ZGF's Seattle office, collaborates with and leads project teams, including consultants and clients, throughout all project phases. Amanda Hills is an associate principal in ZGF's Portland office.*

This 40,000-square-foot STEM building at WSU Tri-Cities is slated to open in spring 2021.

RENDERINGS PROVIDED BY ZGF

Informal spaces in the WSU Tri-Cities building include a lively collaboration zone and central grandstand stair.





The Sobrato Campus for Discovery and Innovation at Santa Clara University will co-locate 13 STEM programs into one building.

# P3 DELIVERY

CONTINUED FROM PAGE 7

perspective. In Washington state, the current guidelines cover only transit infrastructure projects through the state Department of Transportation. Higher education institutions often develop their own P3 guidelines in their procurement process.

Having successfully delivered a number of P3 projects for university clients across the country, Edgemoor has identified several best practices that university leaders should consider ensure success:

• Ensure total buy-in and approval from your board and senior administration prior to starting the P3 procurement process.

• Hire third-party advisors who have experience in public-private partnerships. These firms can assist in the procurement, contract negotiation, and project oversight and help a University navigate the P3 process smoothly.

• Dedicate the proper internal personnel to manage the P3 process.

• Identify funding sources to ensure you are able to make payments on the asset once it is delivered.

• Create a two-stage procurement process to identify the best partner. This benefits the university because short-listing at the RFQ stage ensures that technically qualified teams will be responding to the full RFP criteria.

• Conduct proprietary, one-on-one meetings during the RFP process with each individual proposer to further communicate critical project elements. That provides an opportunity to hear from the proposer how they would address what is most important to your university.

•Select a partner based on best value, not lowest bid. The university is committing to a 30- to 40-year relationship and should base its selection criteria on a variety of factors, including design, price, schedule, minority- and women-owned business participation, maintenance approach and financing.

Increasingly, higher education institutions are looking to partner with private developers to realize greater certainty in the delivery and long-term performance and value of their assets on campus.

Public-private partnership solutions fosters collaborative and much-needed relationships between academic and private institutions, creating a winning solution for all.

*Geoff Stricker is senior vice president and senior managing director at Edgemoor Infrastructure & Real Estate. Brett Earnest is vice president at Clark Construction Group, Seattle.*

# MAKER LABS

CONTINUED FROM PAGE 3

student demand. The success of this space has led to expanded programming for maker laboratories in other areas of main campus.

## Center of gravity

UCLA is creating a dynamic three-story, 10,000-square-foot study commons and maker laboratory as the nucleus of a new 1,800-student residential complex at Lot 15 on the campus's west edge.

This transparent maker lab is showcased at the most public level of the project to invite and inspire student and faculty collaboration. Lot 15 also features a new multipurpose incubator space that enables regional tech industries to come on campus and work directly with students as a part of the innovation lab program.

This purposeful integration makes Lot 15 a new center of gravity on UCLA's dense urban campus despite its remote location along a campus edge with difficult topography. The STEM-focused maker lab will draw thousands of students to this distant precinct of campus and help ensure that Lot 15 is an active destination, not an outpost. This synergy between living and learning repeats itself on many campuses in different combinations and consistently yields high levels of student demand and use.

The future success and prosperity of our region is dependent on integrated solutions borne from diverse backgrounds and disciplines working together. STEM-focused maker and innovation resources on higher education campuses play a crucial role in setting the stage for this collaboration and innovation mindset.

These maker spaces are accessible to increasingly diverse student populations and offer non-threatening, inclusive environments where engagement with STEM thinking can advance different styles of learning and directly translate to social connection and academic success. When curiosity is paired with the right tools and support, new pathways emerge.

*Brendan Connolly is a partner at Mithun.*

**FOR LEASE**

# JOURNAL OF COMMERCE BUILDING

83 Columbia Street, Seattle, WA 98104

Colliers INTERNATIONAL


## Property Details:

- :: Approximately 9,630 SF available
- :: Rental rate: $39.00/SF/Yr, full service
- :: Entire 4th floor with air conditioning
- :: Abundant natural light
- :: One block away from Seattle waterfront & Ferry Terminals
- :: Quiet open tech space
- :: High ceilings with exposed brick and wood beams

## CONTACT

STEVE PELLUER
+1 425 453 3149
steve.pelluer@colliers.com

COLLIERS INTERNATIONAL
+1 425 453 4545
www.colliers.com/bellevue

Colliers INTERNATIONAL

# TRANSITION

CONTINUED FROM PAGE 2

and medicine. Absorbing the new facility into regular operations presented challenges — including the development of a maintenance plan aligned with existing practices, migration of operations and maintenance processes into a work order management system, and the creation of an operating budget and long-term capital plan.

McKinstry helps customers like UWSOM create a foundation for successful facility operations by developing a unique facility transition process. The transition to sustainable operations (TSO) team at McKinstry leverages the company's position as a national leader in designing, constructing, operating and maintaining high-performing buildings to deliver a re-engineered project close-out — focused on preparing the owner for successful, sustainable building operations.

## Sustainable operations

TSO reduces downtime and operating expenses in the first year of occupancy and helps facility teams minimize risk and operating cost for the life of the building. By approaching project close-out from the operator's perspective and aligning with the commissioning scope, TSO fills gaps in the turnover process and aligns construction output with operation team needs.

To ensure continuity of this knowledge and the operations that result from a smooth transition, McKinstry provides the systems and additional staff required to operate the facility during that critical first year.

The following scope was developed for this project:

- O&M manuals, commissioning/test and balance reports and submittals: Relevant construction documentation incorporated within work order management system.
- Expected life, replacement costs and warranty information: All asset data, along with estimated life, replacement costs and warranty information incorporated into the work order management system.
- Annual maintenance plan with budget: Frequency and hours-required information compiled for each building asset — organized in a planning tool to prioritize preventive maintenance and align with available resources.
- Equipment life-cycle planning: 30-year capital plan created for replacing aging equipment with inflation-adjusted annual capital budget forecasts. Plan delivered in a dynamic capital planning tool.
- System and energy performance optimization: Monitoring-based commissioning (aligned with design intent) delivered with monthly recommendations to maintain comfort, extend equipment life and reduce energy consumption.

McKinstry's TSO services team helped the University of Washington transition the facility from construction to operations, with a focus on creating standards and procedures for how to best manage this critical facility. The team's emphasis on taking a life-cycle analysis approach — studying the total cost of ownership over the life of the building — reduces the cost of operations over time.

## First-year benefits

While TSO's greatest impacts are realized over the life of the building, measurable benefits occur in the first year of operations. The result for University of Washington School of Medicine was a seamless transition from the construction phase to a highly stabilized, ongoing operations phase. Buildings often don't operate the way in which their designers intended, and TSO is a solution to the problem.

With UWSOM, McKinstry:

- Identified more than $90,000 of operational energy savings improvements, including a faulty air-handler controller that overventilated the building by 25 percent above baseline.
- Identified more than $25,000 in warranty services and ensured there were no critical equipment failures or interruptions to regular operations in the first year.
- The team improved month-over-month operations by offering a half-dozen recommended changes to the system to ensure the facility operated as designed. This resulted in successfully maintaining comfort levels between 68 to 74 degrees during more than 95 percent of occupied hours.
- Migrated all relevant documentation into a work order management system, which allows maintenance technicians to review work history and troubleshooting guides for every piece of equipment in the facility.
- Developed a 30-year capital plan with expected equipment life and replacement costs.
- Created a corresponding preventive maintenance plan aligned with existing practices, ensuring operators can more efficiently resolve issues and maintain equipment to the satisfaction of the facility's occupants.

The efficient preventive maintenance provided by McKinstry's TSO team aligned with the existing University of Washington School of Medicine facilities team practices and eliminated the deferred maintenance backlog. What's more, with more than 50 percent of the total cost of building ownership spent on operations, these benefits also grow over the life of the building.

All buildings, no matter how efficient or high-tech, require some time for operators and systems to adjust for actual building operations. Getting the first year of a building's operations right is key to saving energy for the life of the building, and TSO is the key to getting that first year right.

*Ric Cochrane is an account executive and Mike Kowalick is a senior program manager, both at McKinstry.*

# CREATING A SENSE OF PLACE FOR STUDENTS IN RURAL WASHINGTON

**Until recently, Heritage University provided basic space for classrooms, administration and student services, but little else for students seeking to gather and study.**

Since its founding in 1982, Heritage University has ensured equitable access to a student population historically underserved by institutions of higher learning.

BY CATE O'TOOLE
OLSON KUNDIG

A strategic master plan and new campus buildings designed by Olson Kundig ensure the university can continue this important work far into the future.

Heritage University is home to 708 undergraduate and 202 graduate students with an average age of 24. More than two-thirds of Heritage students are Hispanic, including students from migrant and seasonal farmworker families. Most are the first in their families to attend college and almost all students receive financial aid. Evening and online courses further support students who work full-time.

"This is a population that is hungry for education but has been historically denied that opportunity," said Tom Kundig, principal and owner of Olson Kundig. "These projects presented a humbling opportunity to give back to this community and genuinely impact current and future students."

## Vision for the future

For its campus in rural Toppenish, Yakima County, Heritage University made use of a few existing buildings and began adding temporary modular struc-

SENSE OF PLACE — PAGE 19

Five new Olson Kundig-designed buildings have been built for the campus, with additional phases planned.

RENDERING BY OLSON KUNDIG

# COMMUNITY COLLEGE COMPLEX WILL BE A HUB FOR AGRICULTURE

## The Salem, Oregon, project will help meet the training needs of farms and nurseries in the region, and address problems such as food insecurity.

Chemeketa Community College's agriculture complex broke ground in June. A central amphitheater will host events such as farmers markets, trade shows and performances.

RENDERINGS PROVIDED BY FFA ARCHITECTURE AND INTERIORS

From time to time, the building community is handed a new reality that changes our perception — a reality that shows we are not holistically helping the people we're trying to serve.

The adoption of the Americans with Disabilities Act was one of those moments. Since then, we've learned that simply following the code to comply is not enough if we're serving society in the spirit of a universally accessible public realm.

BY EDWARD RUNNING
FFA ARCHITECTURE AND INTERIORS

The design community is reaching a tipping point to address the diversity, equity and inclusion (DEI) awakening that has taken hold in all areas of our society. There are many challenges that can be traced back to issues related to DEI, one of which is food insecurity.

When one tries to understand the depth of food insecurity in our society, one is quickly met with shocking statistics.

A report on this issue by Temple University's Hope Center for College, Community and Justice estimates 48 percent of community college students and 41 percent of four-year university students who responded to the center's survey are food insecure. The survey was sent to nearly 1.5 million students at 123 colleges and universities.

Food and our connections to it are critical components to our existence. Beyond health and well-being, food has deep connections to all cultures. Yet there are barriers to food access that can begin to be understood and possibly removed using inclusive design strategies.

### A welcoming place

Chemeketa Community College's mission supports creating food security through inclusion with initiatives like their horticulture program's organic vegetable garden, which supplies the student food bank with fresh, healthy food.

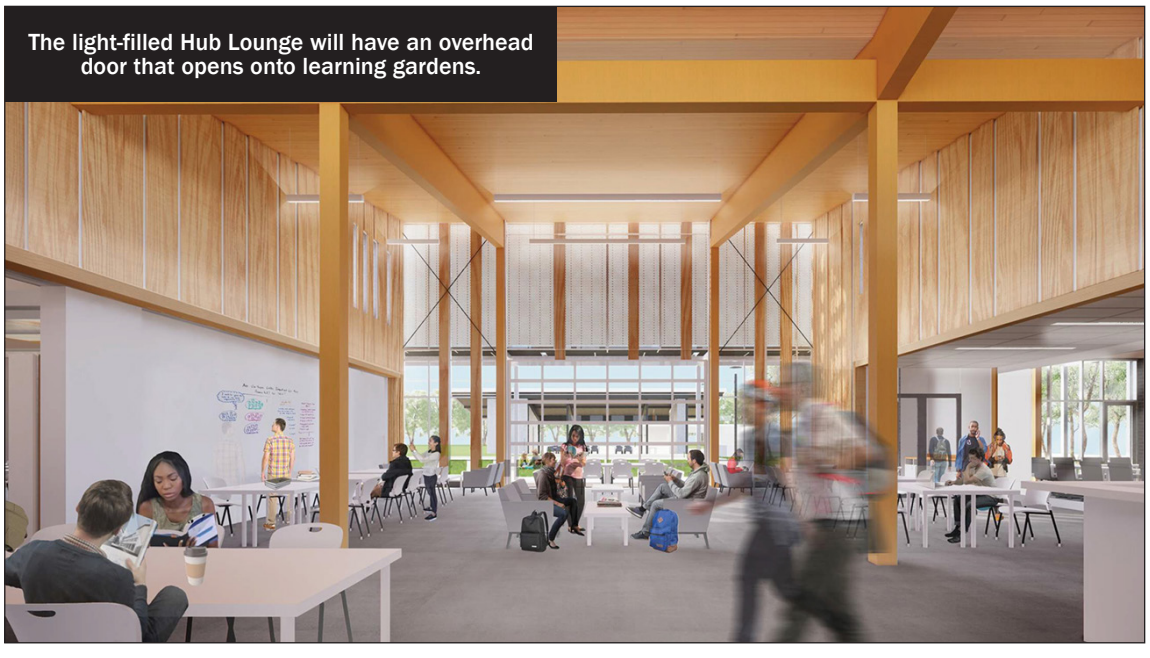
The new Agricultural and Horticultural Complex at their Salem, Oregon, campus will offer even more educational opportunities such as gardening, food preparation and food preservation along with expanded community education programs. The college envisions the space to be a hub for all activities related to agriculture, a place for all people with a diverse set of interactive touchstones.

FFA Architecture and Interiors is designing the new agricultural complex to align with the college's mission of creating a welcoming, inclusive place for the surrounding community. At the beginning of our process, we set overarching goals with the college to inform our design solutions:

- This should be a welcoming and approachable place, with a feeling of safety for all.
- The design will establish a collaborative and inclusive learning environment.
- A hub for those throughout the community will be established, centered on local and regional partners of Marion, Polk and Yamhill counties.
- This facility will have a direct connection to nature and daylight.
- Durability and flexibility will be key to our success as a place of innovation.
- This community resource should be an engaging and rewarding environment that will reflect this cultural identity.

Our team wove the design goals through all elements of the project, looking at how the site plan, landscape, organization of education spaces and surrounding geography inform the design.

The site is located on the edge of campus, not centered in a group of existing buildings beyond a parking lot. Being on the college's boundary creates a gateway to campus that also provides an opportunity to greet those throughout the community.



The light-filled Hub Lounge will have an overhead door that opens onto learning gardens.

The landscape design is not simply a decorative composition but is defined as a set of functional learning environments. The main entry to the academic building is at the edge of a gracious plaza.

All the structures are sited around a central amphitheater, specifically composed to go beyond the needs of the curriculum to support the community through farmers markets, trade shows, performances, informal learning and harvest day events.

### Regional context

As we crafted the layout of the space, we focused on flexible and inclusive design that supports the functional needs of a wider population. Key public spaces are oriented to be inviting and accessible near the main entry.

Flanking the entry are two large conference rooms which can be used as classrooms or as convenient resources for the community and public partners. The public spaces are filled with a wide variety of furniture options to accommodate different needs and preferences.

The design team formed solutions based on the unique features and history of the place. We leveraged ideas of placemaking that capitalize on regional and local assets and are inspired by ideas related to the natural environment, agriculture, cultivation of the earth, and utilizing natural and regional materials.

For example, FFA looked to the Willamette Valley to inform our process. The great Missoula Flood that helped to shape much of the rich geology of this region left behind singular stones called erratic rocks served as a form generator for the main academic building.

The main interior gathering space is defined by a large undulating form clad in standing seam metal reminiscent of farm

AGRICULTURE — PAGE 19

# UW BUILDING TAKES FAST TRACK WITH INTEGRATED DESIGN-BUILD

## The team-oriented delivery method is estimated to have cut nearly a year off the schedule of the Population Health building.

The Hans Rosling Center for Population Health is a 300,000-square-foot research, teaching and innovation space currently under construction on the University of Washington's Seattle campus.

The building, funded by a sizable grant from the Bill and Melinda Gates Foundation and the state Legislature, will create space for interdisciplinary collaboration and innovation to better understand and improve health across the globe.

BY BRIAN ASKE
LEASE CRUTCHER LEWIS

It is the first and largest integrated design-build project the UW has executed and stands as an example for what design-build projects could look like in the future.

The goal is to get the right expertise involved and aligned with the project early, so they can help make decisions in the best interest of the overall project rather than based only on their own discipline or firm.

The result is a building that is better designed to fit the needs of the end users, can be completed on a shorter schedule, makes the most of the allotted budget, and is designed and built with an integrated and high-functioning team.

The 300,000-square-foot Population Health building is UW's first integrated design-build project. It's expected to open next summer.

RENDERING COURTESY OF THE MILLER HULL PARTNERSHIP

### Reorienting the team

Over the past two years, the design-build team of the Miller Hull Partnership, Lease Crutcher Lewis and the University of Washington have created a cohesive team that functions as a single entity.

Team members from all the key project partners are sitting together in the jobsite office — we see and hear each other's challenges and in many cases, we work together in our problem-solving efforts. It takes a deep level of trust to know that we are all working towards the same goal. Many of the members of the project team had never worked in a deeply integrated format, so breaking the barriers of the traditional owner, architect and contractor relationship took intentional actions and practice.

At the onset, the design-build team created a project charter to set expectations and project goals. When selecting additional design and trade partners, a key selection criterion was their ability to embrace a team approach and to integrate their specialty into the development of the project.

The challenge was aligning an entire project team around a single set of goals, breaking down the usual barriers and pushing each discipline to produce work as a team. Our focus had to be team culture, not just the standard design-build methods.

### Team mentality

**Co-location:** We created a co-location approach for all key project stakeholders, grouping the team based on project element and building system so everyone had access to the right expertise and could problem-solve in real time. It changed each work group from being discipline-centric to project-centric. This sounds simple but creating work groups based on project elements rather than discipline or firm was a key factor in eliminating wasted time, developing relationships and breaking the boundaries of standard delivery methods.

**Project definition:** Before the start of design, Lewis, Miller Hull, the UW and other key project team members aligned the program, scope and schedule with the budget to gain consensus across the team, to set expectations and to decide how to implement the funding in the most impactful way, before starting design. This process ensured each discipline had a clear understanding of project goals from the start.

**Target value delivery:** Once the definition phase sorted out the program and budget allocation, the project team was empowered to design to the target budgets of each building component and system, making the scope the variable rather than the budget. Together, we created a building that delivers the best design and construction within the UW budget.

**Risk-reward partnerships and shared contingency:** To further cement a team mentality into the culture, we asked many of the critical project partners to join us in putting our markup at risk for the opportunity to earn a proportionate share of an incentive. The idea is that the team is collectively incentivized to add value, because we all will benefit from the buy-in. Putting your firm's markup at risk and relying on partners from other disciplines or trades was a big factor in building trust in the rest of the team.

Similarly, the contingency was consolidated in a single place, so the team could work together to identify and mitigate risks together. Thus far, the team has successfully mitigated 74 percent of the projects' potential risks, which saved the UW $14.7 million that could be reinvested into the building or other project priorities.

### The benefits

The Hans Rosling Center will be complete next summer, with just three years from site selection to occupancy. We estimate that we cut nearly a year out of the project schedule and avoided nearly $11.5 million in escalation and project costs.

Those savings are a direct result of transparency, team buy-in and collaboration that set the team up to perform design and construction on the right trajectory. When complete, the UW will get a building that was delivered with a shorter schedule, made more efficient use of the budget and meets higher standards of design.

While design progression and cost and schedule savings have been instrumental for the project team, the element that really sets the Hans Rosling Center apart for the team has been fulfillment.

Each member of the design-build team has built meaningful relationships with their counterparts in other disciplines and now have a better understanding of the industry overall. They make decisions looking at the entire project, not just their own scope and go home each night feeling empowered and challenged. That is what inspires our teams to design and build better facilities and ultimately, it's what progresses the industry.

*Brian Aske is the education market director at Lease Crutcher Lewis and president of the Design-Build Institute of America Northwest region.*

# 3 PROJECTS THAT SHOW HOW UNIQUE CONTEXT CAN INSPIRE UNIQUE DESIGN

## New artworks and graphics at Gonzaga, Stanford and the University of Idaho respond to each school's specific characteristics and built environments.


Stairway walls in Hemmingson Center have graphics with unique typefaces for Gonzaga-inspired words such as "spirituality" and "creativity."

PHOTOS PROVIDED BY KNOT

At Knot, we take an informed approach to every design — responding with extreme sensitivity to environmental contexts.

This is particularly true in our college and university projects, where designers are presented with a unique opportunity to respond to a higher calling.

What drives our designs for colleges and universities are careful considerations of not only the institution's brand, but also the role the designs will play in fostering collaborations between students, educators, staff and visitors.

BY MARILEE HANKS
KNOT

Knot's core offerings, in addition to landscape architecture, include experiential graphic design and wayfinding. Within each discipline, we work at the intersection of science, art and technology.

Our designs are shaped through an anti-disciplinary approach, in which the Knot problem-solvers encourage the co-mingling of ideas across disciplines. We call this the entanglement of ideas.

The result of this collaboration can be found in a variety of higher education projects Knot has been involved in, such as the Bass Biology Research Building at Stanford, the John J. Hemmingson Center at Gonzaga University, and University of Idaho's Kibbie Dome.

### 'Morphogenesis'

At the heart of Stanford's new science quad, the Bass Biology Research Building is designed to encourage a new level of cooperation and research between scientific disciplines. The 133,000-sqaure-foot building joins faculty and biology labs under one roof — uniting faculty and students who previously were spread out over several buildings on campus.

The building, designed by Flad Architects and Ennead Architects, features "Morphogenesis," an interactive art piece for which Knot contributed technological and material mediums such as custom software applications.

"Morphogenesis" is a first-of-its kind interactive art piece hovering over the entrance to the building — a two-story media mesh screen that digitally translates touch-screen interactions by visitors into a larger-than-life display. The storytelling within "Morphogenesis" is based on a model by Alan Turing, describing how spots and stripes are developed through biological systems.

We sought a non-literal media to display the inner workings of molecular and cellular biologists. The end result is a display that serves as a beacon on campus, promoting intellectual and social interactions in an abstract way. Our goal was to engage the client from day one, and through a series of workshops that included faculty and students,



Murals in Gonzaga's Hemmingson Center highlight concepts of spirituality and international travel.


Large-scale wall graphics add team spirit in University of Idaho's Kibbie Dome.

an experimental idea became an experiential component of the Stanford campus.

## Gonzaga placemaking

The institutional mission of educating the "body, mind and spirit" of all Gonzaga University students drove Knot's placemaking, wayfinding and donor recognition program at the John J. Hemmingson Center.

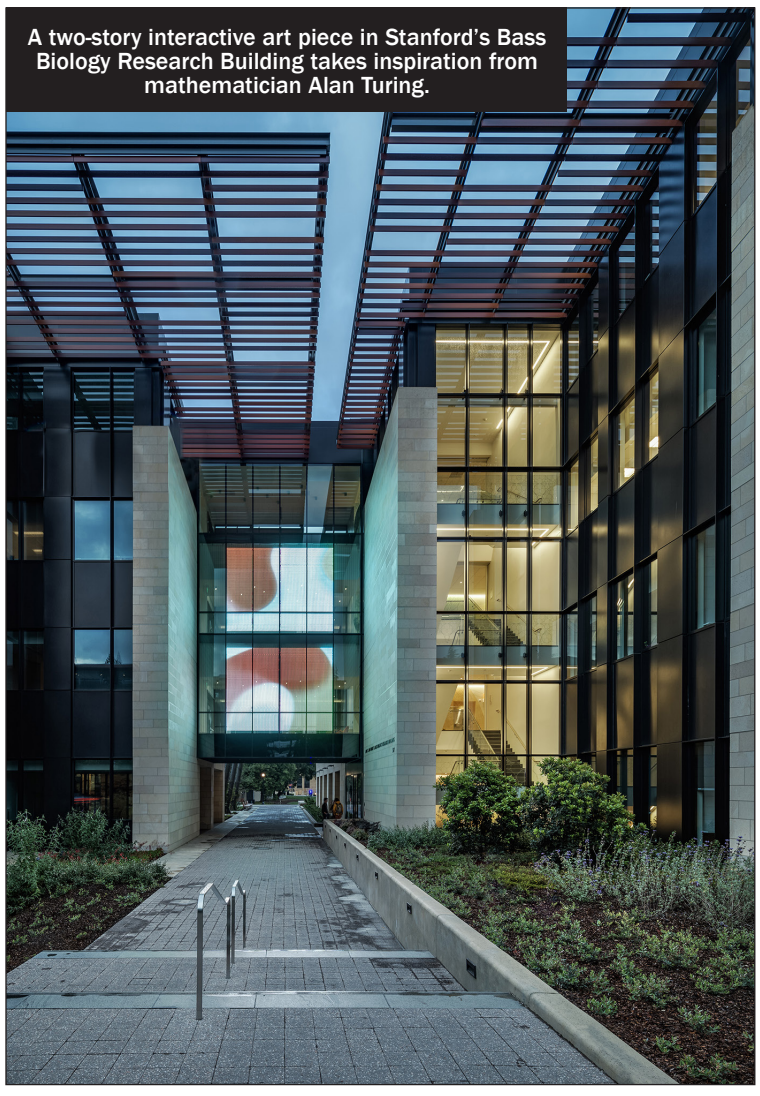
The Hemmingson Center is a central gathering spot for students and faculty at Gonzaga — allowing Knot the privilege of showcasing the Gonzaga experience. The literal interpretation of that experience emerges with Knot-designed placemaking graphics that cover four levels of stairway walls — employing unique typefaces for the Gonzaga-inspired words "spirituality" and "creativity."

A donor wall reflecting a hierarchy of giving employs the use of metal and acrylic to reflect the importance of donations to institutional advancement. Another wall in the Hemmingson Center uses photos and lettering on a bronze background with Gonzaga-inspired phrases such as "Educating the whole person."

## Team spirit

The University of Idaho's Kibbie Dome project called upon our designers to further UI team spirit through large-scale wall graphics and donor messages. Respect of place shaped our drive toward the client's desire for adding visual energy — a component important for any sports-related center.

CONTEXT — PAGE 19

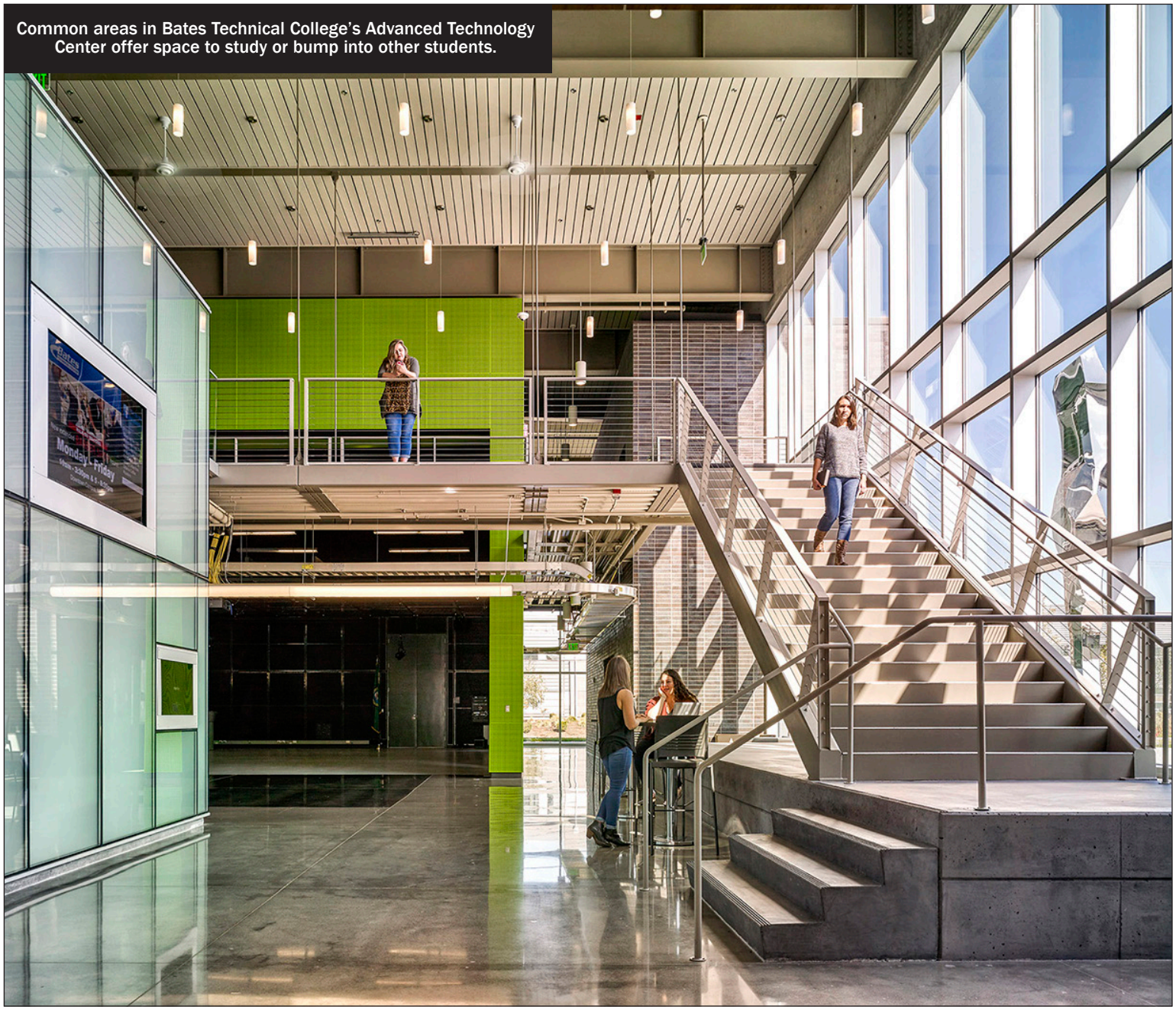


A two-story interactive art piece in Stanford's Bass Biology Research Building takes inspiration from mathematician Alan Turing.

# DESIGNING CLASSROOMS THAT MEET THE NEEDS OF TOMORROW'S JOBS

## STEAM students require spaces where they can gain useful knowledge as well as practical skills.

BY RORY STEVENS & GLENN MYLES
MCGRANAHAN ARCHITECTS



Common areas in Bates Technical College's Advanced Technology Center offer space to study or bump into other students.

PHOTO PROVIDED BY MCGRANAHAN ARCHITECTS

The workplace is changing. The rapid pace of progress in technologically driven careers, known as the fourth industrial revolution, requires today's college and university students to prepare for jobs that don't even exist yet.

The skill set required to deploy oneself in the professional unknown means that schools must find a balance between teaching practical skills and imparting adaptable knowledge.

STEAM (science, technology, engineering, art and math) pedagogies draw from either end of this educational spectrum to bring together the conceptual critical aspects of abstract thinking and solidify them with concrete examples and real-world applications.

When designing a STEAM learning environment, an architect should also pull from diverse architectural settings, to be able to weave the opaque + fixed with the transformable + agile to break down traditional environmental barriers and reveal the collaborative power of both working and learning. Ultimately, the best workplaces capture the essence of a learning environment, and the best schools capture the essence of work in return.

The classroom is changing to meet the needs of this new work environment. In fact, the term classroom is so foreign to the needs of today's college students we seek to escape using it. We default to relabeling the classroom with fashionable terms, some of which fail to ask what it is about the newly termed setting that is vital to the activity within. Can the label alone ever meet the needs of students that are expected to use knowledge from one aspect of academia to solve problems in another in real time?

Overlap in skills and knowledge is becoming a focus for educators. This balance between the practical and the theoretical is exactly the foundation for what makes a STEAM pedagogy the driving force in the educational revolution.

It has led a wave of emerging pedagogies and project-based curriculums founded on uncovering the natural ways the often-separated buckets of knowledge build off one another. The one common thread amongst all the different teaching theories is the oscillation between abstract thought and real-world application.

### A playground and retreat

As education changes, the learning environment must also change to afford students space and place that supports a process of putting ideas on display to test and discover meaning. How do architects adapt to these changes? How do we design a higher education environment that provides both a practical playground and a theoretical retreat?

As the pedagogy changes, it breaks self-fulfilling cycles and feedback loops. Architects must ask where we can reinforce the breakdown of silos and build overlapping transparencies into a learning environment. How can we set the table for interaction and exchange (the foundation of collaboration) and allow the appropriate learning setting to emerge?

The application of fashionable terminology alone falls short of uncovering the potential held within the new name. Any list of alternative names implies there is something about a "classroom" that fails to mirror the advancements in the educational models they support. They reveal there are edges we must fold down to allow interchange and ideological commerce to happen.

In other words, we must ask ourselves why we need alternative labels to give ourselves license to innovate when the elements are fundamental and already familiar:

**The opaque:** Quiet, inward-focused, moments of pause, a place to sit and look, the place for the single — the ordered, rigid and fixed elements, service and core. The stacks, the stairs, the lines of progression.

**The transparent:** Agile space — a studio — a place to experiment on desks, computers, paper and media. A place to make. These properties we give to the practical spaces — the hands-on spaces, spaces for demonstration, to be on view and to view.

### STEAM case study

The Bates Technical College Advanced Technology Center is a case study for how designed spaces allow for education and workplace to merge. It is built

DESIGNING CLASSROOMS — PAGE 20

## AGRICULTURE

CONTINUED FROM PAGE 14

buildings. Known as the Hub Lounge, this light-filled, double-height space will be the center of the building with outward views through a large glass wall and overhead door that will open onto learning gardens. This space is defined by two large glue-laminated structures supporting a mass plywood panel roof.

Creating a timeless character built upon regional context is an effort to bring in the surrounding community without exception.

As a strategy, FFA planned for broader flexibility and functionality and used regional metaphors to define design solutions to help welcome a wider set of users.

By designing a place to embrace and involve the community, FFA supports Chemeketa Community College in their mission to be a catalyst for individuals, businesses and communities to excel and address problems such as food insecurity.

We know this does not solve all the concerns raised by those marginalized by the challenges of today, but they may be a start to shaping our public realm to be more welcoming to all people.

*Edward Running is a senior associate with FFA Architecture and Interiors.*

## CONTEXT

CONTINUED FROM PAGE 17

We highlighted past and present team success and marked the return of sports to the multipurpose facility after a several-year renovation. The UI Vandals team spirit was a central theme spelled out with large-scale graphics, in addition to a donor wall and visual celebrations of the many teams who have celebrated victories in the dome.

In each project, design-driven solutions reflect the critical connections between built environments and unique campus characteristics. Solutions varied from the more abstract, interactive "Morphogenesis" installation, controlled by visitors at kiosks at Stanford, to placemaking work reflecting the Jesuit-inspired vision of Gonzaga University's founders.

All designs require careful consideration and a high level of dedication to the development of a shared language with clients discovered through meaningful feedback. The uniquely aspirational principles and goals of colleges and universities demand our designers' deep understanding and respect of place — the key drivers behind our design philosophy.

This engagement with higher education stakeholders inspires Knot's entanglement of ideas, giving rise to conscientious, designed experiences that are more than the sum of their parts.

*Marilee Hanks, owner and principal at the Portland landscape architecture/experiential graphic design firm Knot, is passionate about shaping the human experience of place and reinforcing the natural systems that sustain us.*

## SENSE OF PLACE

CONTINUED FROM PAGE 13

tures in response to growing student enrollment, but lacked a long-term plan to address future growth. Existing facilities provided basic space for classrooms, administration and student services, but minimal space for gathering and study. Moreover, buildings didn't relate to each other cohesively or establish a sense of place on campus.

"The university wanted students to feel really welcome and comfortable on campus, but hadn't been able to strategically foster those kinds of spaces," said Kundig.

After Petrie Hall, a historic schoolhouse building, burned down in 2012, the university saw an opportunity to thoughtfully plan for the future.

Olson Kundig was hired to develop a new master plan outlining campus development through 2025. Kundig and fellow principal and owner Kirsten Murray worked closely with university administrators and students to develop a plan that would address both aspirational and programmatic components.

The plan integrated new buildings with existing facilities to create a welcoming environment for students, faculty, staff and visitors. A road map for incremental growth over time enables the university to take on future construction projects as funding allows, informed by an overarching campus vision.

The master plan emphasizes core themes of accessibility, diversity, community engagement and equity. Planned buildings clarify circulation routes, strengthening edges to provide well-defined gathering spaces. Communal buildings, such as the dining commons and student services center, are interspersed with classroom buildings to allow students to mix and interact throughout the day. A comprehensive plan for future landscaping defines a more formal entry to announce arrival on campus and incorporates native plantings to attract local bird populations.

To date, five new Olson Kundig-designed buildings have been constructed with Chervenell Construction Co. on the university campus, with additional phases planned: a new Petrie Hall classroom and arts building; Rick and Myra Gagnier Hall, home to the IT Help Center; the Gaye and Jim Pigott Dining Commons; the Martha B. Yallup Health Sciences Building, which houses the physician assistant program; and the Violet Lumley Rau Administrative Center, home to student services and the university's largest classroom.

The clean lines and highly structured interior programs of these buildings provide functional spaces for students and staff. Gracious internal proportions and lofted ceilings give classrooms and gathering spaces a feeling of volume, while clerestory windows and skylights capture natural daylight.

"The new Heritage University buildings are essentially civic buildings," said Kundig. "They're designed to be places of pride as well as learning, to showcase the students and their work."

The new buildings create a consistent architectural language for the Heritage University campus, while continuing to break down barriers to access. Gently pitched roofs relate to the local agricultural vernacular. Reclaimed bricks from previous campus buildings, including the original Petrie Hall, are incorporated into the facades of new buildings, connecting Heritage University's past with its future.

A new relationship between the built environment and campus open space helps to create a dedicated quad for the campus. This deliberate series of both built and open space also defines different areas of campus, while strengthening circulation pathways.

### Supporting interaction

Olson Kundig's design of the new buildings emphasizes mixing and exchange. Large areas of transparency maximize daylight and frame exterior views of the learning taking place within. Entries strategically located at the "gaskets" of buildings, where two program spaces collide, foster interaction among student groups. Intermixed academic and administrative buildings continue to weave together different populations and types of programs throughout campus.

"It was vital to the university that the campus support collaboration and interaction among the entire student body and with faculty and staff," said Kundig. "We didn't want to end up with everyone siloed in individual programs, so we've designed every building — both current and planned — to support that interaction and cadence of space."

Iconic architectural moments punctuate and enhance the campus plan, providing focal points that help guide circulation and increase the visibility of the university's wide-ranging campus activities. A large roll-up door allows the new Petrie Hall art space to both influence and respond to the activity of the surrounding campus. At the dining commons, an exterior loggia creates a front porch for student activity; dedicated gathering space spills between indoor and outdoor areas, providing year-round use even during inclement weather.

Construction is paused for the moment. Olson Kundig remains involved with fundraising and cultivation efforts for future expansion in the meantime.

"This project highlights the power of architecture to unite a community and foster access and equity," said Kundig. "Those values are fundamental to Olson Kundig's practice, so we're incredibly proud to work with Heritage University and excited for the next phase."

*Cate O'Toole is a marketing coordinator at Olson Kundig.*

# DESIGNING CLASSROOMS

CONTINUED FROM PAGE 18

on the core principles of STEAM.

Nestled in Tacoma's diverse Hilltop neighborhood, Bates shares a site with a working public broadcasting station. The school at large and the building itself provide a seamless transition from a learning environment to a working studio.

The broadcasting station offers students hands-on opportunities to hone their skills on productions and actively blend the working and learning environment into one. The boundary between when you are learning and when you are practicing a profession is a perforated line that asks for a fluid transition from one to the next.

Interstitial spaces offer opportunistic study settings and chance encounters with fellow students designed to spur collaboration. One moment students may be watching a live broadcast from the catwalk suspended just outside the green screen room, and the next may have a conversation about the intricacies of capturing that moment on film.

These exchanges are possible by strategically organizing adjacent learning and working spaces to instigate thoughtful interchange. The corridor is no longer a simple process of moving through; rather, it provides opportunities to pause, reflect, share or collaborate. Scales of interactions offered up by the diversity an inward reflective moment and outward projective connections.

At the core of the Advanced Technology Center is a working glass-box server room — the literal inner-workings of the school on display as they weave throughout the building. This setting is a glimpse into the profession a student may be preparing themselves for.

By swapping out the typical server closet for a transparent wall, the server goes beyond servicing the building, quietly humming away in a forgotten corner. By revealing this as a test environment of overlapping function, the server room breaks out of the box and becomes an integral part of the hybrid learning/working space.

There are several questions we must continue to ask ourselves when designing a STEAM learning environment to be able to successfully weave the opaque + fixed with the transformable + agile: What it is about the current classroom that is not providing for the needs of the current student in rapidly advancing disciplines? Who is best served by the design process? Who needs to be at the table to raise the right questions and offer the right opportunities?

How do we design spaces that are rigid enough to support academic pursuits balanced by innovation spaces geared towards practical learning? What barriers can we break down so these spaces don't become silos of learning? How do we leverage adjacencies and overlaps to inspire collaboration? What kind of space enables current college students to hone their collaboration skills, immerse themselves in their work and broaden their field to fuel exponential growth?

*Rory Stevens is a project designer and Glenn Myles is a senior project designer, both with McGranahan Architects.*

DAILY JOURNAL OF COMMERCE