BY GWEN GILLEY, AIA, NCARB, PRINCIPAL
PAUL R. LUND, AIA, LEED AP BD+C, PRINCIPAL
RHONDA MALONE WYSKIEL, RN, MSN, EDAC, LSSGB, PRINCIPAL

BEST PRACTICES IN NURSING AND HEALTH SCIENCES DESIGN



SUMMARY

The healthcare business is rapidly transforming with technological advancements and alternative interdisciplinary care practices. This evolution is having a direct impact on how higher education institutions provide advanced health science pedagogies. From our in-depth conversations with healthcare practice leaders and college and university schools of health sciences, we have identified some critical gaps that higher education institutions need to address to allow their students to rapidly integrate and thrive in professional healthcare environments immediately after graduation. The following list includes best practices for designing for student success today and for future learners of health sciences.



01. INTERDISCIPLINARY COLLABORATION SPACES

To improve patient health outcomes, the healthcare industry is moving toward a more interdisciplinary approach to healthcare delivery, which requires academic facilities that integrate health science and medical programs to provide the skills and practice needed to prepare them for this approach. Successful facility design should address this need by creating spaces where students from different health sciences programs can work together, foster teamwork, and mirror the collaborative nature of modern healthcare.

Interdisciplinary teamwork training is underestimated as it is extremely difficult for new healthcare workers to learn how and when to speak up to other disciplines, especially in the hierarchical healthcare environment. By creating dedicated interdisciplinary collaboration spaces, we can solve some of the communication challenges new healthcare workers face.

Front Range Community College's Healthcare Careers Center co-located all their health science programs under one roof in their new Health Care Careers Center and wanted space to provide interdisciplinary training options between their various health science programs. Our design solution incorporated a central core area that promotes opportunities for communication across the multiple departments, and the ability to provide training with healthcare events that encourage engagement and interaction between the various programs to practice a coordinated approach to healthcare. Front Range Community College uses this core area to stage simulated mass casualty events that allow their EMTs, CNAs, RNs, medical assistants, phlebotomy students, and integrative health medicine students to triage and practice working together in a practical environment.



02.

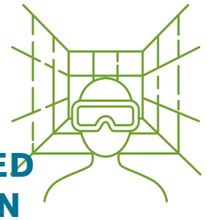
FLEXIBLE IMMERSIVE ENVIRONMENTS

Health sciences facilities increasingly embrace flexible learning and simulation environments that can be easily reconfigured to accommodate different teaching styles and group sizes. This not only provides flexibility but maximizes the utilization of the building, driving down the overall size. Movable walls, modular furniture, a lighting pipe grid, and adaptable technology are critical components of this trend. We use the term “white box” to describe these adaptable spaces.

Creating flexible and adaptable simulation environments for health science simulations is essential. These spaces can accommodate large-scale simulation scenarios, mock ERs, PT/OT scenarios, or behavioral health areas. If the spaces are designed properly to accommodate immersive simulation scenarios, the students can be transformed into any area of the hospital, clinic, home, or clinical setting.

For example, we designed a new health sciences building at Penn State University that accommodated a “white box” simulation environment. In this instance, the space also serves as a lecture hall and informal study area. As the Mont Alto Campus also includes a forestry program, one of their large-scale simulation scenarios is called “Lumberjack Stan.” The scenario centers around a lumberjack that is trapped under a felled tree. The students work to free him, treat him at the scene, and then transport Stan to safety either via an ambulance or a helicopter. This simulation environment is a crucial component of the health sciences curriculum.

03.



SPECIALIZED SIMULATION SPACES

Simulation centers provide opportunities for students to practice what they are learning through hands-on exercises that mimic the clinical environment. These spaces are becoming more realistic and immersive through the use of evolving technology. Virtual reality (VR) and augmented reality (AR) technology are being incorporated into classrooms, labs, and multipurpose environments. This allows students to be immersed in stressful, real-life situations with all of the aspects of visual, auditory, and tactile sensory inputs. This type of technology complements high-fidelity manikins, anatomage tables, and haptic gloves for sensory experiences, and while this cannot fully replicate the professional environment, it increases the student's situational awareness in complex and multi-dimensional situations. These simulations can also include standardized patients (real or simulated) to allow the student to develop soft skills for navigating the patient and their family.

As robotic surgery continues to increase, technology and simulations are being developed to mimic the robotic operating room. Surgeries such as appendectomy, colectomy, and hysterectomy are all commonly performed by robotic surgery. These labs allow the student to work interprofessionally with other students and faculty to simulate this specialized surgical event.





04.

FLEXIBLE HYBRID CLASSROOM

As the demand for remote learning continues to rise, health science facilities must adapt to support both in-person and online education for curricula that don't necessitate hands-on learning with specialized equipment. Flexible hybrid classrooms effectively combine in-person and online learning, creating a more adaptable educational environment. This format allows students to participate in classes physically or remotely, allowing colleges and universities to provide access to in-demand health science programs for students in rural communities, eliminating the need for extensive travel.

Overall, flexible hybrid classrooms offer a promising approach to modern education, fostering resilience and adaptability in learning environments.

Overall, flexible hybrid classrooms offer a promising approach to modern education, fostering resilience and adaptability in learning environments.

KEY FACILITY FEATURES

These classrooms enable real-time access to information and collaborative activities, enhancing engagement for both in-person and remote students.

Utilizing tools like video conferencing, interactive whiteboards, and collaborative platforms ensures effective communication and participation across different learning settings. Virtual learning tools such as Virtual reality and augmented reality goggles or glasses, avatars, and holograms allow simulated realities to improve educational outcomes.

Varied seating arrangements support group work, individual study, and social distancing, making the classroom adaptable to different needs and preferences.

05.

COMMUNITY ENGAGEMENT & OUTREACH

Health sciences facilities are increasingly serving as hubs for community engagement, providing spaces where students, faculty, and local populations can interact. This allows the institution to share its knowledge and expertise with the community through clinics, health fairs, symposiums, and other outreach initiatives. As healthcare delivery models move increasingly toward wellness and prevention, it is vital for health science facilities to provide space for convening with the community to focus on better understanding how to support health disparities and social determinants that lead to high-risk disease. Designing facilities that plan for and encourage this type of community interaction significantly benefits the community and the institution.

For example, HCM designed the renovation and expansion of the School of Nursing at Johns Hopkins University. A major component of the project was the expansion of the Carpenter Center, the School's convening venue. Through stakeholder engagement and planning, the design expanded the Carpenter Center and connected it to a new student hub. When the interconnecting barn door is opened, the convening center expands into the student hub to accommodate large events for the School of Nursing to share knowledge and connect with the wider community.



06.
WELLNESS & WELLBEING FOCUS

Designing with wellness in mind is crucial for students and faculty in healthcare and academic settings. By integrating natural light, green spaces, and areas for relaxation and reflection, we can create environments that support mental and physical well-being. Natural light, for example, helps regulate circadian rhythms, improving sleep quality, mood, and energy levels—essential for those in demanding roles. Green spaces and biophilic elements like indoor plants and living walls provide a connection to nature that can reduce stress and enhance cognitive function, while also promoting physical activity and overall wellness.

In high-pressure environments, healthcare professionals often face traumatic events, leading them to become what's known as "second victims." After a tragic event in the course of delivering care, clinicians and healthcare workers need dedicated spaces where they can step away, reflect, debrief, and recharge. These spaces should be quiet, private, and equipped with resources for emotional support, such as information on counseling services or access to digital mental health tools.

Creating wellness-supportive spaces within training environments is also essential. Scenario planning areas should incorporate spaces for debriefing and mindfulness exercises, enabling healthcare workers to build emotional resilience alongside their technical skills. Flexible design elements like modular furniture and multipurpose rooms can support various wellness activities, ensuring that these spaces meet diverse needs and preferences for relaxation and reflection.

Incorporating sustainable design elements not only contributes to environmental health but also reinforces a sense of purpose and community among students, faculty, and clinicians. By prioritizing wellness-driven design, we can foster environments that sustain and uplift those who are dedicated to serving others.

07.

PATIENT-CENTERED DESIGN

Patient-centered design principles in educational settings, especially in simulation spaces, can significantly enhance the learning experience for students. By focusing on empathy, active listening, and effective communication, students can better prepare for real-world patient interactions. Incorporating diverse patient backgrounds and health issues into the curriculum ensures that students are prepared to meet the needs of a varied patient population, as training in cultural sensitivity helps students appreciate and respect different values and beliefs, which is crucial for effective patient-centered care. This cultural competency training benefits the students and ultimately leads to better patient outcomes in their future practice.

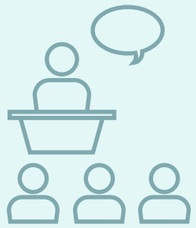
Empathy is hard to teach in an academic setting. “In my nursing career”, says co-author Rhonda Malone Wyskiel, RN, MSN, EDAC, LSSGB, “when I would precept a new nurse, the first question I would ask them would be” ‘Have you ever been a patient in a bed or has the person you love the most in the world ever been a patient in a bed.’ If their answer was no, I knew it would be a much different teaching experience for me to help them learn how to care for a patient than if they could imagine and empathize with that patient in the bed as themselves or their loved one.”

“We hear that new graduates could be better with understanding how to de-escalate patients, families, and other visitors – basically understand how to deal with mental health and disturbing behavior more effectively. We also hear that new graduates have book knowledge but are unable to actually do it – this is why we are moving to competency-based education and simulation/labs, which will help with this.”

Kelly D. Stamp, PhD, NP, RN, CHFN, FAHA, FAAN
Associate Dean of Academic Programs and Associate Professor,
Loretta C. Ford Nurse Practitioner Endowed Professor,
College of Nursing
University of Colorado Anschutz Medical Campus



There are a variety of tools available that provide opportunities for students to practice empathetic patient-centered healthcare delivery:



Feedback Mechanisms

Feedback from standardized patients and debriefing sessions can help students reflect on their interactions and improve their skills.



Virtual Reality (VR)

VR simulations can provide immersive experiences that mimic real-life patient interactions, allowing students to practice skills in a safe environment.



Telehealth Training

Incorporating telehealth scenarios into training helps students prepare for modern healthcare settings, emphasizing patient-centered communication.



Avatars

Create diverse patient avatars representing various demographics, medical conditions, and backgrounds. Have students interact with these avatars in simulated clinical encounters, allowing them to practice communication and empathy.

07. PATIENT-CENTERED DESIGN (CONTINUED)

Implementing patient-centered design principles in educational settings can lead to more compassionate, competent healthcare providers. As research continues to evolve, these principles can be further refined and adapted to meet the needs of both students and patients in a dynamic healthcare landscape.

The CU Anschutz School of Dental Medicine recently opened its new Dental Advanced Simulation Hub (DASH) to provide hands-on experience practicing dental skills for dental students prior to working on patients in the campus dental clinic. The new dental lab includes 42 student simulation stations distributed across eight collaboration pods that contain four or six simulation stations. Each pod represents a virtual multi-dentist dental practice staffed by students who collaborate over the course of the program to create the practice and manage it via a shared website created by the students. This provides a simulated experience of the entire patient/provider experience and gives students experience managing a practice with colleagues, providing another layer of experience to prepare students for their careers. Each student manages their own patients represented by avatars who offer experience working with a complex mixture of social, medical, and dental histories, as well as challenges that develop in response to students' treatment decisions over the course of the program. Each dental simulator and avatar can be customized to represent a range of cultures, skin tones, dialects, and socioeconomic factors to further the experience of working with diverse patients. One of the benefits of this approach to patient care with avatars is that it helps students learn communication skills and build empathy with the patient experience.



08.

DATA-DRIVEN & EVIDENCE-BASED DESIGN

Using data analytics in facility design is helping to optimize space usage, improve operational efficiency, and enhance the learning environment. By analyzing patterns of use and performance, designers can create spaces that better meet the needs of students and faculty. It is vital to have the capability to project and forecast the future growth of learners, and space needs for the facility, just as is necessary when designing a hospital or health system. It is essential for students to capture the opportunities to learn and apply evidence-based design. Foundations and applications of this method are crucial to measuring the physical and psychological effects of the built environment on its users as well as evidenced-based design's relationship between specific healthcare facility design variable categories and participant and organizational outcomes.

One compelling example of evidence-based design (EBD) in healthcare is the implementation of single-patient rooms in hospitals. Research has shown that single-patient rooms contribute to improved patient outcomes, including reduced infection rates, increased patient satisfaction, and enhanced privacy, which supports better rest and recovery.



CONCLUSION

All of the design solutions and best practices shared here point toward one major goal: designing for student success today and for future learners of health sciences. As we strive to put our students in a position to succeed in the workplace and implement facility design that truly addresses their needs, we will see more individual confidence, proficiencies in technology, a lower burnout rate, and, ultimately, a higher level of patient care.

hord | coplan | macht

ARCHITECTURE
LANDSCAPE ARCHITECTURE
INTERIOR DESIGN
PLANNING

www.hcm2.com