Designing a Simulation Lab that’s Right For You

Top Simulation Lab Trends and Considerations
The Top Five Considerations when Designing a New Sim Lab

As the US nursing shortage struggle continues, attracting and preparing future nurses has become paramount to the future of our country’s health care. In an effort to increase enrollment, many nursing schools are looking at innovative ways to attract students. With advances in technology, simulation labs, though not a new concept, are becoming an important tool to help address this issue. However, when adding to or updating a sim lab, there are many factors to consider in order to ensure a wise investment for the future of your institution.

Following are the top considerations Kahler Slater recommends to our clients when planning a new or updating a sim lab.

1 Before All Else: Know Your Technology and Staff

Clients often start the sim lab planning process by simply setting a budget and working to fit all components into that dollar amount. While this seems like the first logical step, it’s important to fully understanding what the project parameters should include before committing to a dollar amount. In order to effectively plan the best sim lab for your institution and the future of your program, it is imperative to acknowledge and plan for future program enhancements or existing constraints by including an analysis of your institution’s technology capabilities and staff expectations before committing to a budget.

The level at which your organization embraces technology will greatly impact planning for a sim lab. In today’s world, the appropriate integration of technology into the learning environment is critical to the learning process. Simulation labs often require sophisticated recording equipment, specialty mannequins, and the appropriate clinical tools and equipment to create a realistic patient care environment. The budget for the equipment for this environment should be based on expectations set by your team to support the learning and teaching processes for your program.
Ultimately, the integration of technology needs to support the teaching preferences of your educators. Some universities or educators find that, while cameras allow for intimate access to the simulation and the students, they can be interpreted as too impersonal and “hands-off”. Therefore, staff and educator considerations should impact the level of technology you incorporate. Identifying and acknowledging these preferences in the early planning stages will greatly improve the budgeting and design processes.

Get Real: What Level of Realism is Required?

Effective translation for students from the learning to the practice environment is paramount when training future health care providers. A highly realistic sim lab experience allows newly trained nurses to go from the learning lab to the hospital setting with a minimized learning curve. Realism allows students to not only experience role play in various health care settings, but practice the role in an environment that includes current technology and incorporates best practices for patient safety and patient interaction.

It is tempting to want the highest level of realism possible for your sim lab. Yet, creating a high level of realism not only requires an adequate budget, but also impacts the amount of space and technology required. There are several levels to explore. At a very basic level, a general skills simulation lab may contain four to eight beds, equipped with medium or low fidelity mannequins. To create a greater level of realism, simulation suites are often designed to accurately replicate actual hospital rooms in order to allow scenarios for role play of real life situations. For example, mock Labor and Delivery, ICU and ED Treatment rooms vary in size and may be equipped to provide enhancements in addition to the simulation technology, such as a bedside table, reclining chair, and even a bathroom to allow future nurses to practice patient transfers. Regardless of level of technology incorporated, it is important to design the new center to allow flexibility for future growth and additional technology integration.

Realistic room layouts for the various health care rooms your curriculum requires could also include patient support elements such as medical gases, monitoring devices and lifts. Headwall configurations vary from practice to practice, and perhaps even from hospital to hospital in your own community. Planning for support
areas that incorporate changing technology, including nurse charting areas, medication rooms and staff workstations should also be considered. Planning for a variety of environments gets students ready for what they will encounter in real world situations.

The question remains, how realistic does your educational environment need to be? The answer might require that you ask yourself a few questions - What are you training students for? What are your future growth plans? Do most of your graduates work at local hospitals which require specialty training? Does your program have a focus on any particular specialty training that differentiates you from your competition? Would a “mock” surgical suite, home health or exam room environment enhance your program and make your graduates more valuable? Are you currently, or are you hoping in the future to offer continuing education courses for local health care providers as an additional source of revenue? Do these students require different resources?

With these questions answered, we recommend prioritizing your wish list. By reviewing your curriculum and your expected growth projections (or desires), you will be able to create a program that will help you determine which level of simulation would best allow you to meet your goals. A general skills lab, complimented by a multi-functional simulation suite to address specific curriculum requirements, may be a place to start and can be designed for future flexibility and expansion.

Case Western Reserve University Francis Payne Bolton School of Nursing is planning to create a immersive virtual environment (also known as a CAVE) to allow for maximum flexibility and innovative teaching methods.
Seeing is Believing: Observation Room Location

As previously noted, understanding your technology expectations or constraints impacts many decisions. Even the most basic simulation labs integrate technology with the use of specialty mannequins, and nearly all incorporate cameras and microphones for student observation and documentation. The level of sophistication in monitoring systems will greatly influence instructor observation requirements. Additionally, when these tools are used, sound and lighting controls must also be considered.

There are a number of typical observation room arrangements: (1) enclosed room at head of bed; (2) enclosed room at the foot of the bed; (3) educator observation station in the room, across the room at the foot of the bed; (4) educator observation remote via web access.

1. University of Wisconsin-Madison’s School of Nursing is designed to locate observation at the head of the bed.
2. Metropolitan Community College provides an enclosed room at the foot of the bed for students and educators to observe.
3. Florida Gulf Coast University opted for observation stations in rooms in order to meet the preferences of their educators.
An enclosed observation room, either at the foot of the bed or over the head, historically is the most common solution and helps to create the most realistic learning environment. These configurations rely more heavily on technology. While the observation station located in the room is also an option, it does not create a realistic care environment and is not normally recognized as the best contemporary teach solution.

Regardless of the location of the observation room, we recommend that the design be flexible for multiple types of observation. This will allow students, who respond to different teaching methodologies, and instructors who have various preferences to be easily accommodated in one environment.

Talk isn’t Cheap: The Importance of Debriefing Rooms

Debriefing rooms are often overlooked when planning for a simulation lab. These spaces are equally important to the educational environment as the simulation rooms. They allow for in-depth learning – a space where instructors and student teams can critique the simulation and review a student’s performance.

It’s important to plan for an adequate number of debrief rooms to support the sim lab environments. While a mock procedure may go very quickly, the debriefing for that simulation typically takes a significantly longer amount of time. Planning for additional debrief rooms, allows for maximal use of costly mock-up room spaces while allowing more spontaneous feedback and teaching opportunities. We recommend that the debrief rooms be located in close proximity to the lab itself for efficiency, and be designed as intimate spaces to allow for engaged learning.

Marquette University’s School of Nursing (Milwaukee, WI) will provide students and teachers with multiple debriefing rooms as a way to quickly and intimately assess and discuss a student’s performance.
Of course, technology integration can also play a big part in debrief room design. It is very important to consider the amount of technology desired for these rooms. Cameras and video playback ability are critical for reviewing student performance. The timing and type of review, including whether instructors review students individually or as teams, during the simulation or after, will impact the sizes and configurations required for these rooms. Some universities have adopted web-based technology to allow students to review their performance outside of the classroom.

**Blessed are the Flexible: Designing for Multiple Uses and Preparing for the Future**

Designing educational environments for flexibility and future needs is a process that must be coordinated. Planning a more flexible environment now can help anticipate change as your infrastructure ages. We have touched upon various opportunities for your simulation environment to provide multiple uses. The opportunity for implementing a continuing education program is one such example. You may also want to consider impacts to planning imposed by future changes to your curriculum and growth plans. As your program grows or the curriculum is expanded, will there be required national testing, or might a research program be desired? The simulation environment should be planned for these types of future change.

When planning flexible space, support space for multiple uses should be included. To plan for core support space, which typically can be built for a much lower cost than the simulation environment, allows for the expensive spaces to be used at their maximum capacity.

Planning for current and future technology trends will ensure your sim lab environment will be a sound investment. While it is important to understand what is available, how much technology
you want to adopt, and how it impacts your curriculum, the actual purchase of technology can be delayed until absolutely necessary to purchase. This allows for the latest versions to be incorporated into your space.

One example of the way in which advances in technology may impact your lab is a requirement for the availability of medical gasses for certain simulation units. This addition to the simulation lab has impacted cost, layout and flexibility for the room. Also, the increase in tether-less simulators impacts the space required for various simulation environments. Similarly, the integration of virtual simulation modules, such as The Cave, will both impact the space required as well as the ability to adapt to future trends.

Space requirements for contemporary sim labs are also impacted by a desire to provide “on stage” and “off stage” entries for simulation patients (SP) and students. This concept can minimize or, in some cases, completely eliminate the crossover of SP’s and students in the simulation environment, providing a much more life-like simulation. SPs are often trained actors, which further enhances the role play for the students.

Finally, considerations for making your simulation environment more realistic and “patient-focused”, will prepare your students to be as successful as they can be as they enter the workforce. As you design your environment for our future caregivers, is important to promote and train for patient-centered care.

Regardless of the level of sophistication and realism required for your program, we suggest you use your simulation lab to showcase and celebrate learning. While educating the next generation of nurses and other caregivers, simulation labs can be used to attract new students, build staff enthusiasm and loyalty, and share your dedication to the future of health care education with alumni and other potential donors.
Kahler Slater partnered with the University of Colorado to create a state-of-the-art medical campus which includes three zones: education, research and clinical care. As planning began, the University decided to implement a new teaching methodology centered on multidisciplinary learning and research.

The Medical Education Building supports learning for the Medical School, School of Nursing, Pharmacy and Physical Therapy programs. The design encourages and facilitates interdisciplinary learning through the shared use of programming spaces and focused curriculum.

The facility also houses the Center for Advanced Professional Excellence (CAPE) where interdisciplinary teams of students work through patient scenarios using human patient simulators and standardized patients. By creating experiences that closely replicate the ways medical professionals interact in the real world, students are able to take a more personalized approach to patient care, improving communication skills and connecting with the people they serve.

The facility includes special learning labs for gross anatomy, cadaver prep and storage, hands-on multi-purpose classrooms, two 200-seat lecture halls, educational support areas and student community spaces. The facility is designed to support “real time” assessment methodologies that reflect new learning environments, improved goals and objectives, and competencies for medical student education. State-of-the-art medical, instrumentation and video equipment is integrated into the facility design. The building features simulated health care environments in which medical, nursing and pharmacy students are observed, evaluated and assessed by faculty members based upon their interaction with actors portraying patients. A Testing and Assessment Center includes 24 exam rooms including three Human Patient Simulators, simulated patient exam rooms and three hospital rooms, all with METI Human Patient Simulators.
Kahler Slater has been working with the leadership of Metropolitan Community College (MCC)-Penn Valley since 2005 to develop a state-of-the-art Health Science Institute. This facility is a hands-on learning environment that houses all of the health sciences programs at MCC, including nursing skills labs, patient centered dental clinic, a health careers human patient simulation lab, health learning resource center, surgical technology suites, radiography labs, energized and non-energized EMT labs, physical therapy labs, occupational therapy labs, a student health clinic and offices and shared spaces to support the new facility.

A 12,000 square foot Human Patient Simulation Center accommodates three METI simulation units. In addition to the simulated ER/ICU and patient room environments, a waiting area for the public, a simulation suite manager’s office, a user group observation/conference room and a control room for the METI unit consoles were provided to support the learning environment.

There is a strong emphasis on peer simulation labs that provide real world conditions and opportunities for problem-based learning. Six fully simulated hospital rooms with METI human patient simulators allow real-time feedback to nursing, radiology, physical and occupational therapy students, and others. Learning is enhanced through direct and remote observation and the resulting dialog between faculty and students.

Kahler Slater worked with local architect Gould Evans on this project.
Top Five Considerations for Sim Lab Design
About Kahler Slater

Founded in 1908, Kahler Slater began as an architecture and interior design firm and has grown to become a global, award-winning team of Experience Designers. Our Academic Health Sciences team helps deans transform learning and teaching experiences for health care students, faculty and patients which requires specialized knowledge due to the rapidly changing nature of health care and higher education. Our insights help colleges and universities attract top students, retain faculty, provide patients with better treatment and more effectively utilize ever-changing technologies. We work with our clients to design hands-on and integrated educational experiences by turning classrooms into simulated hospital, clinic, and laboratory environments. The result is health sciences students who are well prepared to become exceptional health care professionals.
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For further information, please contact Larry Schnuck, AIA at 414-290-3714 or lschnuck@kahlerslater.com