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APPA THOUGHT LEADERS

**Campus Space...
An Asset and
a Burden**

Including the Top Facilities Issues

Part 1



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Including the Top Facilities Issues

SECTION I: Executive Summary

Space is both an asset and a burden for colleges and universities. On the one hand, space holds enormous value for institutions; their campuses and buildings are worth, in many cases, hundreds of millions of dollars. Space is the medium in which the institution operates. Online courses have proven that education can be conducted anywhere, but most teaching, learning, and research still takes place on campuses. And while the value of buildings and grounds can be calculated, college and university spaces have a greater intrinsic value in the minds of students, faculty, alumni, staff, and community members. Campus spaces and places, the buildings and grounds, hold memories, retain emotions, and represent the ethos of an institution. They represent that “sense of place” so important to an institution’s community and brand.

On the other hand, building, operating, and maintaining classrooms and laboratories, offices and libraries represent a growing proportion of the annual budget for higher education institutions. Correspondingly, these costs have grown by 20 percent at public research institutions over the past ten years—and 48 percent at private research institutions. At the same time, construction costs for new space have risen by nearly 65 percent since 1997.

Few institutional battles can be as intense as those regarding space. Despite this potential for conflict, higher education leaders are recognizing the value and

cost of their space and are taking steps to better manage it. In this era of constrained budgets, declining state support and increasing tuition fees, institutions are assessing their limited resources and realizing that their space needs an effective management strategy.

But the issues, and opportunities, related to space management and utilization go well beyond an institution’s budget or program requirements. In fact, policies and practices on campus space are overarching, enterprise-wide, and entrenched. APPA is devoting the 2012 Thought Leaders report to the challenges of space. The purpose of the Thought Leaders Series is to assess how higher education issues will shape the campus, and no other issue has such potential to transform the institution than that of the policies related to effective space management and utilization.

Why space management? Why now?

The following beliefs, issues and attitudes are preventing effective space management on many college and university campuses:

Space is expensive. Whether or not faculty and department chairs realize it, space is growing increasingly expensive for colleges and universities. Both new construction and operations costs continue to rise and place an increasing burden on college and university budgets.

Space is in demand. Colleges and universities are scrambling to find enough classrooms, labs and offices, and demand is expected to grow in the next few decades. Some 23 million students will be crowding U.S. colleges and universities by the end of the decade, yet only 6 percent of campus space is classified as classroom.

Space is underutilized. Space wouldn't be a problem at many institutions if it were better used. Space costs money whether it is used or not. Underutilized classrooms are also unsustainable; energy usage can be justified when learning is taking place, but not when a room is sitting empty.

Space is poorly measured. The majority of colleges and universities have metrics in place to measure the types of space on campus and how that space is used, but this data has serious limitations. Most space managers have a hard time keeping track of the quality, functionality and usage of actual space.

Space is poorly managed. Space management policies and governance are often weak, ineffective and highly political. At some institutions, the old model still holds: space is managed at a department level, and departments cling tightly to "their" space, refusing to grant others access to space resources or even acknowledge they exist. As a result, institutions often believe they are short on space when in fact it's being poorly managed.

Space is "free." At the majority of colleges and universities, departments are assigned space without any consideration for its cost, whether in terms of construction, renovation, or maintenance and operations. This attitude makes it difficult for institutions to shift attitudes about space and bring home the realization that space has inherent costs to the institution, no matter who bears the expense.

Space doesn't work. Poor quality space is almost as bad as no space at all. Contemporary interactive teaching methods are often constrained by the lack of flexibility in current classrooms, while research can be hampered by aging campus labs.

Space can't be ignored. In today's higher education environment, space is a pressing issue. Growing

competition and tight financial constraints mean institutions need to maximize every resource available.

Thinking about space in a new way

It's time to develop and promote a new space management vision and enterprise-wide policies about space within the institution. The primary message: **space is an institutional asset.**

This fundamental point has multiple implications. First, space requires strategic thinking. Overcoming the current deadlocks over space will require savvy solutions to long-standing problems. Second, legacy space management systems must be challenged. The old attitudes have to be eliminated. This will require a combination of firmness and sensitivity—while emphasizing the value of space. It's important to remember human beings develop deep feelings about the space they occupy.

Thought Leaders participants considered several best practices for space management and utilization, all of which should be examined and adapted to make better use of space on campus. They include the following:

- Establish metrics to better measure and allocate space.
- Develop effective policies, decision-making processes, and standards.
- Create effective organizational governance structures.
- Implement incentives to encourage smart space management.
- Design spaces that are easy to manage.

Top six space management issues for higher education

Drawing on the discussion of space, participants in the Thought Leaders symposium developed a list of the top critical space management issues along with key strategies to address these issues and a set of critical questions for institutional dialogue.

1. **Align space management to the mission of the institution.** The management of space should align with the priorities of the college or university. Space

decisions that conflict with the overall mission and vision dilute the effectiveness of the institution.

2. **Make space one of the top assets of the institution.** Space should be one of the highest priorities of campus administrators and considered as a factor in critical decision making.
3. **Change the culture of space.** The pervasive attitude that space belongs to an individual or department needs to shift to a culture that promotes sharing resources for the overall good of the institution.
4. **Develop effective policies, processes and organizational structures to manage space.** Many institutions have policies and processes in place intended to manage space, but they lack effectiveness. New systems need enough backing and buy-in to get the job done.
5. **Implement a space inventory system to understand resources and identify needs.** A powerful tool in space management is an up-to-date inventory system with enough power and flexibility to manage critical metrics, interface with other institutional systems and support strategic planning.
6. **Address space utilization by assembling credible data and adopting best practices.** Often colleges and universities have more space available than they realize. Effective metrics and practices can help colleges and universities make the most of their space.

The Thought Leaders process

The issues discussed in the Thought Leaders report are the result of an intensive process that draws on the wisdom and insight of higher education experts from around the U.S. and Canada. At a two-day symposium, higher education experts, administrators, and consultants in facilities management, campus operations, finance, administration, human resources,

student services, and more meet to analyze issues, discuss the effect of these issues on the built environment, and propose strategies to prepare for the future. The yearly Thought Leaders report summarizes the discussions at the symposium as well as provides additional context about major trends. The purpose of the report is both to inform and to prompt discussion.

At campuses worldwide, senior facilities officers use this report as a resource both within their own departments and with their counterparts in space management, IT, finance, HR, student services, and senior administration.

Changing thinking about space

It is unlikely that everyone at a college or university will ever have the space he or she wants. Who doesn't want a bigger office, newer classroom, or better equipped lab? What's important, however, is that the institution have the space it needs. Inadequate or insufficient space interferes with teaching, learning, and research. It hampers achievement of the mission of the institution. At the same time, it is important to acknowledge that some institutions actually suffer from declining populations and, therefore, have excess space to manage. This makes for a much different challenge to sustain campuses in the declining regions.

Ensuring that the campus has the right quantity and type of space to fulfill its mission, therefore, should be the priority of everyone involved in the management of space. We live in an era of constrained resources. Confronting the challenge of space will not be easy, but it is essential to meet the priorities and vision of the institution going forward. Effective management of the existing inventory becomes crucial. The tools, concepts, and practices outlined in this report are an important step toward effective space management.

SECTION II: Space planning, allocation and management in higher education

Why space management? Why now?

Many a provost heaves a sigh when a department chair comes to his or her office to talk about space. The conversation to follow will likely be complex, political, full of minefields and costly to resolve.

The same provost is likely to be having more conversations about space than ever before, and not just with disgruntled department chairs. Stakeholders from state legislators to board members to major donors are asking questions about how institutions use their space. State university systems are conducting major studies about space and developing proposals to transform space management system-wide. Industry experts are highlighting the inefficiency of current space practices while student sustainability groups are pushing to reduce the campus' carbon footprint by improving the productivity of its space.

Following is a survey of the challenges of space for colleges and universities today, a big-picture view of the headaches that imaginary provost is likely to be experiencing.

Space is expensive. Whether or not faculty and department chairs realize it, space is growing increasingly expensive for colleges and universities.

New construction is, of course, the most expensive type of space. According to the 2011 Annual College Construction Report from *College Planning and Management*, the median cost for academic buildings is currently \$339 per square foot, up from just over \$120 per square foot in 1997. Libraries cost an average of \$346 per square foot, and science buildings can be \$500 or more per square foot.

However, the cost to operate existing space is also on the rise. Operations and maintenance expenses at public research institutions has gone up from an average \$1,726 per full-time equivalent (FTE) student in 1999 to \$2,073 per FTE in 2009, an increase of about 20 percent, according to the report "Trends in College Spending: 1999-2009" from the Delta Cost Project. Not surprisingly, expenses were lower and rose less at

community colleges, from \$1,095 per FTE in 1999 to \$1,224 in 2009, an increase of just under 12 percent. Private research institutions, however, saw a massive leap of nearly 48 percent, from \$2,887 in 1999 to \$4,270 per FTE in 2009. These costs include service and maintenance of the physical plant, grounds and building maintenance, utilities, and property insurance. Rising fuel and energy costs play a major role in these increases, and aren't going to go down any time soon.

Finally, space has a cost simply as a result of supply and demand. Many institutions find their campuses hemmed in by neighborhoods or cities. There's no open space left for new facilities. Construction or expansion would require tearing down existing buildings—always difficult on campuses, where every facility, no matter how run down, is beloved by some segment of alumni—buying expensive land, or creating a satellite campus. Beyond the obvious costs of keeping the lights and the heat running, space is never free.

Space is in demand. Colleges and universities are scrambling to find enough classrooms, labs, and offices, and demand is expected to grow in the next few decades. Enrollment in degree-granting institutions increased 43 percent from 1995 to 2009 and is projected to grow a further 13 percent by 2020, according to the National Center for Education Statistics. Some 23 million students will be crowding U.S. colleges and universities by the end of the decade. Yet only 6 percent of campus space is classified as classroom.

Increases in enrollment are likely to vary by institution type. Community colleges saw the greatest increase in enrollment in the past five years. In 2009, 44.5 percent of traditional-age students enrolled at two-year colleges, up from 41.7 percent in 2006. Between 2008 and 2009 alone, enrollment jumped by 8.3 percent, according to the National Student Clearinghouse Research Center. These dramatic increases are not expected to continue—in fact, enrollment at some community colleges was flat or declined slightly in 2010 and 2011—but experts predict enrollment will continue at its new

high as students rely on two-year institutions to reduce their total tuition bill.

Community colleges, therefore, are at the forefront of the space crunch. Classes have been booked in every conceivable space; at LaGuardia Community College in New York, for example, courses have been held in faculty conference rooms, lounges, and computer labs. Northern Virginia Community College has moved courses to trailers and housed night classes in local high schools. Colleges from the District of Columbia to Cincinnati to Las Vegas to Hawaii have leased commercial space for classrooms. Demand remains a problem, however, particularly for labs, which require specialized construction.

Four-year institutions have yet to confront such pressing demands, but as enrollment rises, colleges and universities will be forced to find new classroom and lab space.

Data Point:

Community college and university partner to maximize space utilization

The University of Michigan (U-M) wasn't using enough of its classroom space at night. Nearby Washtenaw Community College (WCC), on the other hand, regularly ran out of classroom space. In 2010, the two institutions realized they could solve each other's problems and began an innovative partnership to share space.

WCC began leasing classrooms from U-M, creating opportunities for students to avoid the crowded WCC campus and giving them exposure to a top university. U-M, meanwhile, keeps its classrooms full, earns some rental income, and better serves the surrounding community.

WCC had considered purchasing property in downtown Ann Arbor, a far more costly plan that was complicated by falling property values in the area. The two-year college wanted to expand in the downtown area, since research indicated many of its students lived within a mile of downtown. "It's a great example of collaboration and cooperation between two schools," says Rick Fitzgerald, U-M spokesperson.

Space is underutilized. Space wouldn't be a problem at many institutions if it were better used. Students and faculty prefer classes in mid-morning, so that's when classrooms are generally jammed. Typically, classroom usage spikes at 9:00, dips slightly at noon, rises again at 2:00 and then drops off precipitously. Friday classroom occupancy is lower overall; as Cheryl Sedgewick, manager of room scheduling at the University of Saskatchewan, noted, "At 3:30 on a Friday afternoon you could shoot a cannon in most universities and it wouldn't be a problem."

Generally these trends hold for all types of institutions other than community colleges. Accustomed to space pressures and meeting the needs of their students, two-year colleges have spread their course offerings across the entire day. Miami Dade College, for example, offers classes from 6:00 a.m. to 11:00 p.m., and Boston's Bunker Hill Community College has classes that begin at midnight.

Underutilization extends to breaks as well. The majority of college campuses operate at reduced levels in the summer, yet every building is wide open, fully lit, and air conditioned.

The implications of underutilized space are considerable. Space costs money whether it is used or not. A vacant classroom still uses power and consumes heat or AC. Pouring money into an empty room is a waste. Underutilized classrooms are also unsustainable; energy usage can be justified when learning is taking place, but not when a room is sitting empty. The Association for the Advancement of Sustainability in Higher Education (AASHE) emphasizes space utilization as a strategy for campus climate action planning, noting:

While new construction is sexy and having a LEED Gold or Platinum building on campus certainly gives you real bragging rights, the reality is that each new building adds to your campus carbon footprint unless it is a zero-energy building or it replaces a building that used more energy. . . . Colleges and universities committed to reducing their carbon footprints need to look at new construction in a new way. They can save energy dollars and reduce carbon emissions by maximizing the utilization of existing space and avoiding new construction.

Data Point:**Higher education pressures itself to build more space than it needs**

“Higher education is making less and less efficient use of campus physical facilities. We gauge our need based on the number of classes we would like to schedule during the most popular time slots. Consequently, there are often pressures to build more classroom facilities to meet a peak demand when a more efficient scheduling matrix could easily accommodate all classes without additional bricks and mortar... [T]he reality is that we are also not fully utilizing our facilities early in the morning, late at night, and Fridays (plus of course Saturdays and Sundays). As all of us look for economies that will not adversely impact the quality of our education, efficient utilization of space should not be left out of the discussion.”

— Herman A. Berliner, Provost and Senior Vice President for Academic Affairs, Hofstra University, “A Broad Education, More Narrowly Defined,” *Inside Higher Ed*, April 11, 2010

Space is poorly measured. The majority of colleges and universities have metrics in place to measure the types of space on campus and how that space is used. The National Center of Education Statistics (NCES) Room Use Codes are widely employed to categorize space, while information from registrars is used to track space usage. Put this data together and, in theory, you have a good sense of who is using what and when.

However, this data has serious limitations. Room codes can be improperly assigned. Some spaces are difficult to measure, particularly those that combine uses. How do you categorize a fine arts space that combines an office and a studio? A research space that is both laboratory, meeting room, and graduate student office?

Furthermore, NCES codes fail to take into account the quality of space. A freshly painted classroom with new furniture, good lighting, and up-to-date technology is going to be far more desirable than an old room with worn floors, scratched desks, and a battered whiteboard, yet both could end up with the same code.

A deeper question is whether spaces meet the current and future needs of the institution as a whole as well as the current and future needs of the academic program housed there. Space metrics often fail to take pedagogy into account. If a department is moving to a teaching method that emphasizes the interaction of small groups instead of lectures, a theater-style classroom is going to be unsuitable to that department.

Measuring usage is also complicated. Classroom schedules only indicate when classes intend to meet. The data can disguise classes that fail to meet, that don't meet regularly, or that meet for irregular times. Looking at non-classroom spaces, usage is even harder to assess. Office space, for example, is often automatically assigned, and usage isn't tracked at all. Some faculty members use their offices all the time and others hardly ever. More sophisticated usage metrics are necessary to get a global view of actual space utilization on campus.

Space is poorly managed. Space management policies—when they exist—are often weak, ineffective, and highly political. At some institutions, the old model still holds: space is managed at a department level. If the English department is bursting at the seams but the modern language department has space to spare, too bad for English.

The final report from the University of Illinois at Urbana-Champaign Space Utilization Project Team put the matter this way:

A major challenge of space management is the pervasive view on campus that space is a commodity to be acquired and protected at all costs. Most of us never want to give up space once we have acquired it, perhaps for fear that we will never get it back or that we may need it someday. It is a natural tendency but one that inevitably leads to the inefficient use of some fraction of our space.

This sense of ownership can become entrenched at some institutions. For example, at an anonymous university included in a study of space management practices as part of a doctoral dissertation, the sense of ownership was so strong that when space planners tried to conduct a space inventory, a faculty member called campus police to have them removed from his office.

As a result of all this hoarded space, institutions believe they are short of space when in fact it's being poorly managed. Creating or strengthening institution-wide policies is often the first step to better managing space. Some colleges have gone to purely centralized systems, where all space is allocated at the university level. Others have adjusted policies to encourage cooperation. For example, at Middle Tennessee State University, departments still control classrooms, but they must fully use the spaces allotted to them and allow other units to borrow classrooms when possible. Fail to make use of assigned space and it will be taken away.

Data Point:

Principles of space management from the Texas State University System

- The Texas State University System (TSUS) Board of Regents has ownership and control of all facilities belonging to or controlled by the university.
- Ultimate responsibility for the assignment or reassignment of space resides with the president upon recommendation of the Campus Facilities Planning Committee, provost, and President's Cabinet.
- Allocation of increased square footage depends on a demonstrated campus-wide need.
- Allocation of space does not imply permanence, but rather a commitment based upon continued program justification and to changing program priorities.
- Space vacated by a physical move, renovation, or new construction is allocated back to the campus. Likewise, space vacated due to a reduction in program size, reduction in workforce, or program elimination is also allocated back to the campus.
- All university space, particularly classrooms and class labs, will be managed to ensure effective and efficient utilization. The university will conduct annual classroom and class lab utilization studies to ensure optimum utilization of these spaces.

Research reveals that even in institutions with established space management policies, the policy is often bypassed or ignored. A formal system to assign and manage space might exist alongside an ad-hoc process based on personal relationships and informal communications. Those who are "in the know" are able to snatch up space as it becomes available; departments with good relationships set up deals to trade or borrow space. This sort of system inevitably disadvantages those out of the loop and eliminates transparency from the space management process.

It's not enough, therefore, to establish a management system. You have to monitor and enforce it. Tom Schaver, founder and CEO of scheduling software provider Ad Astra Information Systems, notes, "You have to build the policy, then build reports that can then enforce the policy, and you need to be diligent about checking up on adherence to the policy on a term-by-term basis."

Space is "free." At the majority of colleges and universities, academic units don't pay for the space they occupy. They are assigned space without any consideration for its cost, whether in terms of construction, renovation, or maintenance and operations. Most of the time departments don't even know how much their space costs the college or university. In recent years as part of efforts to better track and manage energy expenses, some schools have begun metering individual buildings or even rooms, but this is still the exception rather than the rule.

The belief that space is free goes hand in hand with attitudes of entitlement and ownership. When a department or faculty member "owns" certain space at no cost, there's no motivation to give up that space. In fact, the department might as well try to accumulate as much space as possible and won't care if that space is underused. There's no cost to the department if an office or classroom sits empty.

With a few notable exceptions (which will be discussed later), institutions have resisted charging departments for space. Some think charging for space sends the wrong message. The University of Illinois at Urbana-Champaign Space Utilization Project Team stated that charging for space "seemed to reinforce the notion of space as a commodity to be traded." Instead,

the committee embraced the notion that space on campus is a valuable common resource that needs to be distributed without being directly or strictly tied to the financial resources of individual academic units.

Other critics fear that charging for space will reinforce existing inequalities in academic space. Revenue-generating departments with lots of resources—business schools, for example, or biomedical research programs—will settle into luxurious offices while the classics department will end up in a basement. Simple equations where money equals space clearly aren't fair. A business professor might need more than an office and a computer to bring in more money than a huge, sparsely populated biology lab, and both will make more money than the school of education can imagine, but it would be contrary to the mission of the institution to equate space solely with income generation.

Despite these challenges, the belief in free space makes it difficult for institutions to shift attitudes about space and bring home the realization that space has inherent costs, no matter who pays them.

Space doesn't work. Poor quality space is almost as bad as no space at all. Colleges and universities operate in an environment of vast disparity in the quality and functionality of classrooms, labs, and offices. Students can take one class in a gleaming “smart” classroom with new desks, integrated projectors and Wi-Fi and the next in an aging theater with stained carpet, mismatched desks, and an extension cord snaking out the door so the professor can run a PowerPoint presentation.

More than half the buildings on college and university campuses were constructed in the 1960s and 1970s when the Baby Boom generation reached college. The construction of these buildings reflected the then current thinking on pedagogy, which essentially consisted of a professor at the front of the room lecturing to a passive student body. Flexibility wasn't built into those classrooms—it was the farthest thing from anyone's mind. So the chairs don't move and a podium is fixed at the front. Technology has further complicated matters; most students arrive on campus with laptops and expect to use them in class, yet old desks are too narrow to comfortably support computers.

Probably the most frustrating environments are large tiered lecture halls. Try having a small group discussion when no one in the group is on the same tier. Many universities are moving away from large lectures to smaller, more interactive classes, but they find themselves stymied by their own architecture. Three or four small classrooms could take the place of one large lecture hall, if only someone could find money to pay for the renovations.

Older architecture proves an even greater challenge. Campuses with historic buildings can find themselves stuck with beloved spaces that can hardly be used. In rare cases, it actually makes more sense to tear down an old building than to attempt to renovate it. This is most often the case with mid-20th century buildings that were poorly constructed to begin with, operate inefficiently, and lack flexibility in their design. If a building has made it onto a historic register, usually demolition isn't an option. Creative adaptive reuse can

**Data Point:
Who gets what space?**

Different types of institutions use space in different ways, but it's possible to come up with some generalities about space utilization. Here's a look at space usage at a large public research institution:

Office space	23%
Residential space	22%
Institutional support space (Police, IT, etc.)	11%
Research labs	10%
General use (Student unions, auditoriums, clubs)	9%
Special use (Learning labs, computer labs, and other special-use instructional spaces)	9%
Study/library space	7%
Instructional labs	5%
Classrooms	3%
Healthcare (Not counting institutions with hospitals)	1%

— Scott Carlson, “Campus officials seek building efficiencies, one square foot at a time,” *Chronicle of Higher Education*, April 17, 2009

Data Point:

Careful renovation gives new life to architectural gem

Amherst College’s Fayerweather Hall is considered the architectural jewel of the campus, but the building had long been a drain on the campus facilities budget. Constructed in 1894, Fayerweather was designed by the famous architectural firm McKim, Mead and White in the Renaissance Revival style. It began life as a physics and chemistry building, but over the years the sciences moved to newer, more up-to-date facilities and Fayerweather fell into disuse.

Amherst took a look at existing needs and the features of the building and decided to invest \$8 million in a renovation that converted the space to use by the fine arts department. Large lab spaces with generous natural light were a perfect fit for studios and classrooms. This allowed architects to preserve most of the original floor plan.

As well as updating utilities and fire protection services, the renovation also incorporated modern technology and created new flexible studio spaces out of old labs. One advantage of the project is that it allowed the entire fire arts program to be under the same roof for the first time in years. Previously studio arts and art history had been separated by space constraints.

Today, Amherst art majors study in a renovated building that is itself a functional work of art.

give new life to historic structures and allow institutions to reap sustainability benefits (not only by avoiding waste but also by taking advantage of energy-efficient, now-costly building materials such as brick and plaster), but the cost can be almost as high as that of new construction.

Space can’t be ignored. Colleges and universities have been able to coast along with existing space and space policies, sometimes for decades. But no longer. The challenges confronting higher education have ramifications for space and can’t be ignored.

Consider the following major trends and issues in higher education and their implications for space:

- **Financial constraints.** State support for public institutions is in sharp decline, with state revenues remaining painfully low. Total state support for higher education declined 7.6 percent from 2011 to 2012 fiscal years, according to an annual report from the Grapevine Project at Illinois State University and the State Higher Education Executive Officers. At the same time, public pressure to limit tuition increases, reduced donorship and declining endowment values are challenging not-for-profit private institutions. The result is a constrained financial situation for most colleges and universities. In this environment, schools can’t buy their way out of space crunches. They must make better use of what resources they have.
- **Sustainability.** Colleges and universities are at the forefront of sustainability in the United States and Canada. More than 675 institutions have signed the American College & University Presidents Climate Commitment agreeing to make their campuses carbon-neutral, and sustainability programs from recycling drives to major green energy initiatives are underway across the continent. This environment exposes unsustainable space practices and makes their impracticability obvious.
- **Productivity.** Productivity was once the concern of factory managers and office supervisors, but today it is a worry of deans and chancellors. Politicians and public policy leaders are calling on colleges and universities to produce more graduates in order to increase the competitiveness of the North American workforce; this policy generally boils down to an intense focus on degree attainment rates, retention statistics, and time to graduation measures. Yet, as discussed above, at the same time graduation rates are supposed to increase, funding is set to decrease. The only solution will be greater use of existing resources—i.e., improved productivity. As one of the critical resources on campus, space will need to be better utilized to see gains in productivity. That means keeping classrooms filled, offices occupied, and labs humming.

Most of the issues facing higher education today will somehow affect the use of space. Ignoring the problem

won't make it go away—space is going to be at the top of the agenda going forward.

Thinking about space in a new way

Space doesn't have to be a problem. Shift the thinking about space, and it can become a powerful tool for the institution.

So what is the new attitude about space? It boils down to a simple statement:

Space is an institutional asset.

Participants at the Thought Leaders symposium put it this way: every institution has assets and operations essential to its performance. Typically colleges and universities focus on three big areas: budget, personnel, and information technology. But the Big Three should be the Big Four: space, budget, personnel, and IT.

Colleges and universities are thoughtful about the allocation of their endowment investment portfolios. We need to be as thoughtful about our space portfolio.

Data Point:

Managing the cultural challenges of improving space utilization

The University Advisory Board investigated space utilization on campus and, among the top lessons of their study, developed the following four tips for addressing the cultural transformation necessary to making better use of space on campus:

- 1. People will accept less space for better space.** Provosts and space committees from a wide variety of institutions concur on an insight in faculty psychology: academics (and the staff that support them) are often willing to accept refurbished space that results in less square footage but more modern features.
- 2. People will share space with assurances they can get it back when needed.** Deans and department chairs are less likely to hoard space when supported by “right of return” policies guaranteeing that units that voluntarily loan out underutilized office, classroom, or lab space can reclaim it at a later date when demand rises.
- 3. Facilities staff must embrace a proactive, consultative role.** With the proper incentives in place to motivate academics to share space, space planning teams must be prepared to do more than impose standards. They must partner with deans to help adopt utilization best practices

and prioritize space to shed or repurpose to stay within allocation incentive targets.

- 4. Space utilization is a promising area to pilot data-driven resource allocation practices.** An avowed priority at many institutions in the downturn's aftermath is to embrace “data-driven” decision making—evaluating academic requests not just on quality or perceptions of fairness, but on objective measures of need, paired with rewards and penalties for unit-level decisions that affect institutional finances. Beyond cost-avoidance potential, many provosts and chief business officers see space utilization initiatives as a pilot for data-driven decision making that they hope will offer a model for extending into even more politicized trade-off decisions around academic programs, research priorities, and faculty lines.

Despite these challenges, institutions that can assess the usage of their labs can uncover key information, including outdated labs in urgent need of renovation and underutilized labs that can be converted to other uses.

— University Leadership Council. “Maximizing Space Utilization: Measuring, Allocating, and Incentivizing Efficient Use of Facilities.” The Advisory Board Company, 2010.

What does this shift in attitude imply?

- **Space is valuable.** It represents a vast investment, something that is often forgotten when thinking about ongoing costs.
- **Space is essential.** Without classrooms, labs, offices, and libraries, higher education as we know it cannot operate. Yes, classrooms can be virtual and offices remote, but there's no sign yet that the campus as we know it is going away—and you can't conduct cutting-edge biomedical research anywhere but in a physical lab.
- **Space is powerful.** Through smart, effective management, space becomes a tool to accomplish the institution's goals.

Two implications flow from thinking of space as an asset. The first is that space requires strategic thinking. You don't manage one of the most critical assets of your institution through ad-hoc, seat-of-your-pants systems. Would you "muddle through" the budget process and expect to come out in the black? Institutions are already thinking about finances, personnel, and technology in strategic terms. Now they need to apply the same rigorous processes to space.

The second, related implication is that legacy space management systems need to be challenged. In previous decades it didn't matter if departments acted as fiefdoms hoarding space. But this attitude won't work any more. Treating space as an institutional asset means institutional needs trump department-level desires.

While promoting a new attitude about space is critical, it's important to insert a caveat. Human beings develop deep feelings about space—we are a territorial species. Take away the space we love and we'll lash out. Legacy systems need to be challenged with firmness but also with sensitivity. Individuals need to be respected, and heard, and institutions need to understand and accommodate basic human emotions about space.

Best practices for effective space management

With the starting point of space as an institutional asset, participants at the Thought Leaders symposium considered what space management practices will be essential to colleges and universities.

Establish metrics to better measure how space is used. The more data institutions have about space on campus, the better they can manage that space. Colleges and universities often have basic inventories using NCES codes, but that inventory should only be a starting point. As Thought Leaders participants pointed out, NCES inventories are backward-looking: they only describe what has been. Institutions need inventory

Data Point: Developing metrics for interdisciplinary research space

The Fulton School of Engineering at Arizona State University (ASU) confronts a challenge shared by many research institutions today: that of interdisciplinary space. Research often crosses traditional boundaries of discipline and department, yet space inventory systems typically tie space to faculty members and departments.

ASU developed a new system that assigns space to projects rather than faculty members. A number of advantages arise out of this approach. First, the complications of assigning space to multiple faculty and/or departments are eliminated. Second, projects generally have distinct ending points, which allows for space to be assigned for the duration of the project then reallocated when the project winds down. Finally, the system provides an objective method to measure the effectiveness of the use of space, predict future needs and allocate space in an equitable manner.

ASU has found its new space allocation system a powerful tool for promoting interdisciplinary research. As ASU's Ben Huey and JoAnne Valdenegro note in an article for *Planning for Higher Education*:

The emergence and growth of new transdisciplinary research activities that not only connect research from traditional disciplines but also form the unifying theme around which a whole new area may grow depends in part on reducing traditional barriers to space allocation and encouraging the creative efforts of everyone contributing to meet research space needs.

systems that are forward-looking and allow for improved management and planning.

Inventories should also be expanded to include new categories of information. The basic codes can be limiting and fail to account for multi-use spaces. How, for example, do codes differentiate between seminar rooms and conference rooms? What about arts studios that are also offices? Inventories should also account for the quality of space, not just the quantity. Some spaces are more usable than others; there's that classroom where the AC blasts at the students' faces, or the row of offices where the light is terrible, or the lab where the Internet connection never works. Keeping these spaces on the inventory as available when in fact they are highly undesirable masks the true picture of space on campus.

Finally, institutions should track space as many ways as possible. The more types of measurement the better. For example, research space can be tracked by square foot, by student, by faculty member, by productivity (e.g., number of research papers produced per square foot of lab space), and by revenue (e.g., grant dollars received per square foot). You won't know until you have the data what information will prove to be useful.

Develop effective policies, decision-making processes, and standards. Institutions need clear space standards, policies, and processes. Buy-in and enforcement are critical for policies to have any meaning. A policy that is applied inconsistently, repeatedly ignored, or frequently overridden is worse than no policy at all.

Transparency is also critical. Research of space policies and practices at three campuses by graduate student Sandra McCoskrie Blanchette revealed that decisions about space were often unclear to outsiders; people who found themselves "out of the loop" could rarely make sense of how space was allocated. It's almost inevitable in these cases that decisions will seem unfair.

Different institutions will need different amounts of flexibility in their policies. Some colleges and universities prefer hard and fast rules that can be strictly enforced. Others prefer statements of principle that can serve as guides to decision making. The former is more straightforward but can be overly rigid. The latter allows for more flexibility but must be more carefully managed.

Data Point: What would Google do?

Higher education traditionally emphasizes standards and policies when considering space—the exact opposite of the thinking of cutting-edge companies like Google and Pixar. They spend much more thought on interaction, creativity, and a sense of play.

Technology companies often include elements of whimsy in their buildings—Google's Zurich office features slides from floor to floor—but there's a serious point to light-hearted design. For example, when Steve Jobs supervised the construction of Pixar's headquarters, he proposed the entire building only have one set of common spaces. That way everyone in the company—writers, animators, administrators, accountants, and IT staff—would have to come together on a regular basis. Jobs believed this would stimulate creative interchange between individuals who would otherwise have no reason to interact. The best meetings, Jobs believed, were those that happened spontaneously.

No one is proposing we equip classroom buildings with slides, but higher education could learn something from creative corporations. As Steven Turckes noted in an article for *Co.Design*:

Imagine what could happen if the advanced physics student and the photography student had meaningful collisions ...? What would young people see as possible? They might come to understand that the lines between music, math, physics, and art are much blurrier than textbooks make them appear. Schools could be the breeding ground for a new millennium of Renaissance young men and women where creating something trumps memorizing it.

In any case, both policies and guidelines should be based on the overall priorities of the institution. Space policies need to be aligned with the campus master plan, which should be aligned with the institution's mission and vision. Decision-makers should be able to draw a straight line from the long-term priorities of the college or university to choices about scheduling an individual classroom.

Space standards also need to be clear and consistent, but over-insistence on square-feet per student or faculty member can be counter-productive. State university systems in particular have often focused on standards in an attempt to ensure consistency and equity across campuses. But standards say nothing about the quality of space. Standards are good guidelines for planning in terms of how much space is needed in a new building or for new faculty, but they don't tell the whole story.

Create effective organizational structures. Once upon a time, department secretaries assigned space, and that was just fine. At some colleges and universities, they still do. But this sort of ad-hoc allocation perpetuates the bad habits institutions are trying to shake. Best practices call for a more systematic, campus-wide approach.

Different campuses have come up with different solutions to this problem. Some establish institution-wide policies and standards, then allow departments, schools, or colleges to implement them. Others move all decision making about space to a centralized body such as an office of space management. On some campuses, an effective practice is to create a space committee with broad representation and have it serve as an advisory board to staff. On other campuses, committees have become bogged down in politics and only by eliminating the committee have institutions been able to move forward.

No one structure will work for every campus. Instead campus leaders must consider the needs of the institution and implement a structure that can succeed.

Implement incentives to encourage smart space management. Firm policies are important, but they're more stick than carrot. Organizational systems work best when individuals are offered incentives for preferred behaviors. Right now, few institutions reward faculty or departments for using space the "right" way.

The nature of incentives will vary from campus to campus. The most controversial approach has already been touched upon: charging academic units for space. It's a complex issue, yet some institutions have made it work. Stanford University, for example, charges schools for office space. Schools receive a general funds

allocation to cover the space that institutional standards consider appropriate. Then schools are charged annually based on their actual space usage: if they are using space efficiently, their allocation will cover all of their space. Inefficient use will mean the school owes money back to the university. Charges might be accrued if individual faculty member are using more than one office, if the ratio of students to space is too high, or if staff are occupying offices intended for faculty. Schools can reduce their net charge by repurposing office space for other needs, growing within their existing footprint, and subletting or relinquishing space to the provost. Stanford officials note numerous benefits from the program, the best one being a new focus on the cost of space.

Other incentives are also possible. Some institutions offer to renovate classrooms if they are turned over to the general assignable pool. The Center for College Affordability and Productivity suggests a variety of incentives to improve space utilization. Classrooms might be free for use on Friday afternoons, evenings, and weekends, relatively cheap before 9:00 a.m. and after 3:00 p.m., and costly at peak times. Students might even get a discount on their tuition for registering for night or weekend classes. It will take creative thinking to come up with incentives that will work for individual campuses, but space management systems

Data Point:

A market view of academic space

"Typical practice of universities is to allocate office and laboratory space through administrative negotiation, not to regard space as an economic asset that should be priced and budgeted. An academic department or research organization has little or no incentive to admit excess capacity or to give up space unless forced to do so. . . Putting the allocation of space in a more disciplined, market-like framework would make departments and other units behave somewhat more rationally."

—Frederick Balderston, "Organization, Funding, Incentives, and Initiatives for University Research: A University Management Perspective," *The Economics of American Universities*, 1990.

that reward desired behavior will have a greater chance of success.

Design spaces that are easy to manage. Most participants at the Thought Leaders symposium had spaces on their campus that were in need of renovation, in poor quality, or out of sync with current priorities and pedagogy. Institutions can only do so much with the space they have; new construction, on the other hand, presents an opportunity to make smart decisions for the long term.

Generally, the driving force in contemporary academic design is flexibility. Not only has pedagogy changed over the past few decades, it is continuing to change, and no one knows what the typical classroom will look like going forward. The more options within academic buildings, the better. Flexible design decisions might include adding movable partitions that can be used to subdivide spaces, and installing furniture that is easily moved to accommodate a variety of configurations. Above all, single-use spaces should be avoided—that means limiting the number of tiered lecture halls.

On the other hand, built-in flexibility can increase costs. For example, an institution might wish to include shell space that can be expanded into at some future point. Yet often the college or university never finds the funds to expand into that shell space, and the investment is wasted. It would have made more sense to limit flexibility and cut expenses. Smart design requires careful balance of options and costs.

Benefits of improved space management

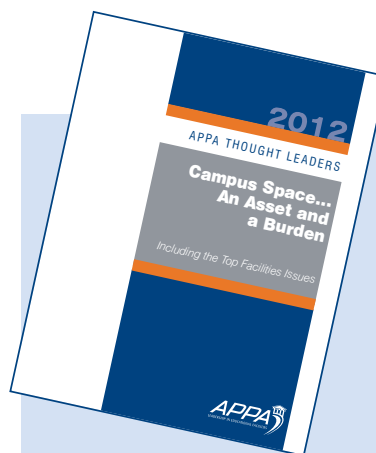
Increased productivity and efficiency. Colleges and universities are confronting unprecedented pressures to maximize their productivity. Improving space management is a critical way to address these pressures and satisfy stakeholders that the institution is making smart use of its resources.

Improved student services. Better use of space has trickle-down effects. Spreading out use of the campus can reduce parking needs, lighten the pressure on support staff, and reduce strains on food services. In general, it allows institutions to better serve their students.

Reduced costs. Classrooms, offices and labs cost money whether they're occupied or not; fill those spaces and not only do those costs become acceptable, they have tuition to cover them. Furthermore, better use of space reduces the need for new space. With the costs of construction rising steadily, any measures to limit building are welcome. The cheapest building is the one you don't have to construct.

Greater equity. Colleges and universities are often accustomed to inequities of space that would be shocking in any other environment. Is it right that the business school is housed in a brand new building that would make many corporate headquarters look shabby while the psychology department is in a run-down, rattle-trap warren of ancient offices and classrooms with mismatched desks? An improved space management system makes the allocation of space fairer and can gradually improve the condition of institutional have-nots.

Improved sustainability. Empty buildings waste energy—no question about it. Pouring heating or air conditioning into a vacant classroom can counteract any number of institutional sustainability initiatives. Colleges and universities seeking to improve their space management practices can use sustainability as a tool to help them advance their cause. Emphasizing sustainability advantages can attract attention to your efforts and help you find key allies.



Look for Part 2 of this series in the November/December 2012 issue of *Facilities Manager*. Download the full report at

www.appa.org/bookstore.