Report from the Recipients of the 2012 Perry Chapman Prize

Research on Learning Space Design: Present State, Future Directions

by Susan Painter, Janice Fournier, Caryn Grape, Phyllis Grummon, Jill Morelli, Susan Whitmer, and Joseph Cevetello

Society for College and University Planning
INTEGRATED PLANNING FOR HIGHER EDUCATION

HIDEO SASAKI FOUNDATION

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ABOUT THE SOCIETY FOR COLLEGE AND UNIVERSITY PLANNING (SCUP)

The Society for College and University Planning is a community of higher education planning professionals that provides its members with the knowledge and resources to establish and achieve institutional planning goals within the context of best practices and emerging trends. For more information, visit www.scup.org.

WHAT IS INTEGRATED PLANNING?

Integrated planning is the linking of vision, priorities, people, and the physical institution in a flexible system of evaluation, decision-making and action. It shapes and guides the entire organization as it evolves over time and within its community.

ABOUT THE HIDEO SASAKI FOUNDATION

The mission of the Hideo Sasaki Foundation is to support inquiry, research, and continuing education in planning and design, with an emphasis on the value of collaboration between disciplines. The Foundation currently sponsors the annual Boston Architectural College Distinguished Visiting Critic (DVC). The DVC conducts an advanced studio for those seeking to study with highly accomplished design practitioners. The Hideo Sasaki Foundation is funded by a trust established by Sasaki Associates, Inc. and family, friends, and colleagues of Hideo Sasaki.

ABOUT THE PERRY CHAPMAN PRIZE

The Hideo Sasaki Foundation, under the auspices of the Society for College and University Planning (SCUP), seeks to honor the intellectual contributions of M. Perry Chapman.

As the 2008 recipient of SCUP's K. C. Parsons Founders' Award for Distinguished Achievement in Higher Education Planning, Chapman was committed to developing and sharing knowledge to advance integrated planning and interdisciplinary collaboration in higher education.

Chapman's influence on campus planning and design spanned more than four decades. He affected colleagues, institutions, firms, and community organizations through his insight, mentoring, writing, and speaking. He raised the standard of planning theory through research and analysis of the relationship between the campus as a place and its impact on learning and community.

In honor of Perry Chapman's passion for developing and sharing knowledge and his commitment to integrated planning and interdisciplinary collaboration a prize of $10,000 will be awarded annually from 2012 through 2016. This prize funds research in the planning and design of institutions of higher education. The prize is intended to further the research, development, and dissemination of emerging knowledge to improve campus environments in support of their institution's mission.

SCUP is grateful to The Hideo Sasaki Foundation for its support of The Perry Chapman Prize. For more information, visit www.scup.org/perrychapman.

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I. INTRODUCTION AND PURPOSE

In the current climate of rapidly rising higher education costs and increasing concern about the need to support stronger retention and graduation rates, focus has turned to emerging pedagogies and the development of new templates for learning spaces. In response, planners, architects, and institutions are seeking to establish a body of knowledge that will guide the design, remodel, and use of new and existing learning spaces. Parallel to this is an increasingly urgent need to evaluate these learning spaces by developing research to determine whether and how they fulfill their purposes.

Across the world, facilities staff, learning specialists, academic researchers, architects, and designers have launched a broad range of investigations to address the questions being raised by the new research on learning space design. These run the gamut from a few rigorously designed, conducted, and analyzed research projects to more anecdotal descriptions of experiments and projects undertaken to test specific classroom configurations. In addition, there are a number of articles that review the existing literature and provide more philosophical approaches for how teaching and learning activities can be effectively housed and deployed.

Although several hundred articles and a number of books on these topics had been written by the fall of 2012, the field is still at an early stage of development. A first step in creating value from this existing body of work is to gather, summarize and evaluate how far the field has come in identifying the elements that will allow us to thoughtfully design learning spaces and evaluate their impact. This was the purpose of the project being reported in this paper: a literature review undertaken by a small group of researchers and campus architects/planners who had applied for and been awarded a grant from the Hideo Sasaki Foundation in honor of Perry Chapman and administered through the Society for College and University Planning.

RESEARCH CONTEXT

The question of how the physical environment affects teaching and learning is rooted in the connections between architecture, design, and psychology. Professionals and laypeople alike may well ask why we don't already understand which factors in the built or natural environment can be used to encourage or produce the specific behaviors, such as collaboration and learning, that are of interest to classroom designers, teachers, and administrators. Why hasn't the cross-disciplinary field of psychology and design *already* yielded those answers?

If you follow the paper trail of the initial, highly optimistic connections made between psychology and architecture/design in the early 1950s–early 1970s, you will clearly see scholars' anticipation that psychology could supply architects and designers with specific information about the way people respond to the physical environment. This body of information could, it was thought, serve almost as a set of specifications that could be used directly in the design process, much as information about necessary light levels is used to design a building's lighting. A number of new journals, conferences, and symposia were launched to provide a home for this new cross-disciplinary field, and a significant amount of scholarly activity was undertaken during the late 1960s through the 1970s. The new discipline of Environmental Psychology was established, and the Environmental Design Research Association (EDRA) came into being.

Over the next 10 years, however, it became clear that psychology research paradigms were not set up to respond to the specific questions posed by the architecture, design, and planning professions and the kind of immediately applicable information these disciplines were seeking was not forthcoming. Aside from standards generated in the field of ergonomics for sizing spaces and furnishings to fit the human body, architects and designers did not receive the fact-based data trove they had hoped for. As a result, the potential connections between these two realms of knowledge were

never solidified, and by the 1980s architects and designers had gone down their own pathways.

For their part, psychologists did not seek to develop their research by taking direction from architecture or any other field; rather, as in other scholarly fields, they pursued the questions they and their field defined as important and relevant. The field of environmental psychology research is largely unknown to most architects, even though a number of architects and designers are members of EDRA and present regularly at its conferences.

Starting in the late 1980s and gaining traction over the past decade, the field of evidence-based design (EBD) has emerged. The term "evidence-based design" is a conscious borrowing from the medical field and its interest in using scientific research as a way to link medical practice with health care outcomes, a practice termed "evidence-based medicine." Architects and designers who use EBD as the basis for their design work started in the area of health care design and have now moved into the K–12 field, with a few incursions into the higher education landscape.

Despite these advances, we do not yet have a body of data on the design of learning spaces that can guide those who must make decisions about the design, construction, and deployment of classrooms, gathering spaces, lounge and study areas, libraries, and, indeed, the campus as a holistic learning space.

GOALS OF THE PROJECT

By turning our focus now to the impacts of learning space design, the planning/design/architecture research community has a new opportunity to bring our disciplines together with social science research for the purpose of addressing the most fundamental concern of the higher education mission: *assessing what helps teachers teach and students learn.*

This project was undertaken to encourage all those involved in the development and evaluation of learning spaces—facility directors, provosts, academic administrators, architects, designers, planners, and university-based researchers—to look seriously at opportunities to measure how their designs, plans, and spaces really affect the teaching-learning equation.

The focus of this research review is three-fold:

- to identify, gather, and catalog research-based information on how the physical design of learning spaces affects the activities and outcomes that occur within these spaces;
- to identify, gather, and catalog research-based information on how the campus as a holistic environment affects learning and the other missions of the institution; and
- to evaluate these existing bodies of research and provide direction for future research.

We anticipate that our report will be used by those who are charged with designing and implementing new classrooms, laboratories, gathering areas, libraries, study spaces, and student lounges. This research review may also have an impact on the kinds of furnishings and equipment being developed by manufacturers seeking to develop furniture-based solutions and on higher education administrators seeking to create the most flexible settings possible.

We are encouraged by the message continually coming from the scholarly community that the most exciting and useful knowledge in any field comes from thoughtfully designed and carefully executed cross-disciplinary research. The research we review in this report begins to move us in that direction.

II. OUR APPROACH

The group that came together to undertake this research consists of seven professionals in the fields of design and higher education. The group includes an educational psychologist at a large research university; a campus architect at a large research university; a planner/design psychologist who serves as director of research for an architecture and planning firm; an assistant professor of clinical education and program manager of campus learning environments at a large private university; a research director at a large furniture manufacturer; a psychologist/educational planner; and an architectural designer at an architecture firm. The team members' affiliations and brief resumes are included in an appendix to this report.

The team began in exploratory mode, using extensive online database searches that included EDUCAUSE, ProQuest, Avery Index, PsychInfo, and ERIC to identify articles, books, dissertations, and reports that address the topic of higher education learning space design. The search criteria were based on how closely a research report related to the topic of learning space design, how rigorous the research was, and whether the research attempted to address learning outcome measurements. A separate search effort targeted materials that addressed the design of the campus as a whole, including both the built and natural environments.

Electronic copies of the research reports were distributed for team members to read and evaluate. On the basis of team evaluations, the reports most closely related to the topic of higher education learning space design and those containing other useful information were then redistributed to the group for a second evaluation. The evaluation form is included in the appendix to this report.

DEFINING LEARNING SPACES

For this project, we gathered, cataloged, and evaluated data related to a broad range of learning spaces, reflecting the current understanding that learning is meant to take place in spaces that include but are not limited to classrooms. Based on the content of these research reports, the wide variety of campus learning spaces were categorized as:

- Formal learning spaces such as classrooms and laboratories (section IV)
- Informal spaces such as libraries, group study spaces, and gathering areas (section V)
- The campus as a whole, including the built and natural environments (section VI)

The report's findings are organized to reflect these three categories, with two additional sections. Section VII summarizes and evaluates literature reviews and papers or books that set out a philosophical framework or approach to the field. Section VIII summarizes what we have learned from our evaluations and identifies gaps in the research to guide those moving forward in this field.

III. DESIGN METHODOLOGIES: STATE OF THE FIELD

EXPERIMENTAL AND QUASI-EXPERIMENTAL DESIGN

Just as spaces, buildings, and campuses are designed, so are research studies. The design of a study—both its methods of transforming a research question into a set of subjects, conditions, and measurements and the way the data are analyzed—is what determines the validity of the study's results and the legitimacy of the researchers' conclusions.

Our original goal was to identify research reports that incorporated what social scientists call experimental or quasi-experimental research designs. We found very few studies that fulfilled the criterion for *experimental* research: studies in which subjects (students or teachers, for example) are randomly assigned to experimental and control conditions. We found more studies that qualified as *quasi-experimental:* research that is conducted experimentally but that must compensate for the lack of random assignment through research design and/or statistical procedures. The few examples of experimental and quasi-experimental studies that do exist are fairly rigorous and provide both a glimpse of what can be accomplished in an experimental design and an inquiry into the opportunities and limitations presented to the ambitious researcher.

The overall shortage of experimental research is understandable in a field that is still in its infancy. In addition, institutional course structures and room assignments are complicating factors that are usually beyond the control of researchers. Course sections are typically ready made in the scheduling office, and researchers do not usually have the opportunity to randomly assign students to a specific classroom or assign classrooms to specific instructors or courses. The limitations of the studies reviewed for this report are mentioned in the discussions below.

CASE-STUDY AND ANECDOTAL STUDIES

Overall, the methodologies used in the lion's share of studies we reviewed tended strongly toward anecdotal or case-study research. Case-study research is qualitative in nature and can provide detailed descriptions of a real-life situation in a real-life context. The studies reviewed for this report frequently involved a multi-method approach in which questionnaires, focus groups, and interviews were gathered from users of the spaces in question. There were many attempts by these researchers to employ rigorous methods, including ethnographic studies with precise behavioral coding protocols that added validity to the research. The findings in these articles should not be dismissed simply because they are not fully experimental in nature. Because the field is at an early stage of development, these more exploratory approaches are a valid way of investigating the experimental conditions, data collection methods, research instruments, and outcome variables that can be used in more rigorous research in the future. These case-study reports are useful in identifying instructors' and students' perceived needs in a range of learning environments, and, when viewed as a whole, the anecdotal studies produce tangible results that shed light on learning outcomes.

CONCEPTUAL ANALYSIS

About a quarter of the research reports we reviewed were in the form of conceptual analysis; the authors developed theoretical frameworks and in other ways reflected on the human-environment interaction aspect of learning space use. In some cases, the authors reviewed past research on both formal and informal learning spaces. These papers generally concluded with prescriptions for further research for other researchers and learning space designers.

IV. FORMAL LEARNING SPACES: WHAT HAVE WE LEARNED?

In addition to the information our investigations yielded about the methods used by researchers, we developed a taxonomy of learning spaces that helps to inform the research results we report. This review is not meant to be an exhaustive catalog of all the research on formal learning spaces, but rather is focused on those studies that are most relevant and most reliable.

DEFINING SPACE

Formal learning environments are learning spaces used for regularly scheduled classes. They can have sloped or flat floors, they can be large or small, and their furnishings may be fixed or loose. We identified five types of formal learning spaces with these general characteristics:

» TRADITIONAL CLASSROOM:
Flat floor plan, forward-facing desks and chairs, podium at front. Clearly visible division of a front and back of the classroom.

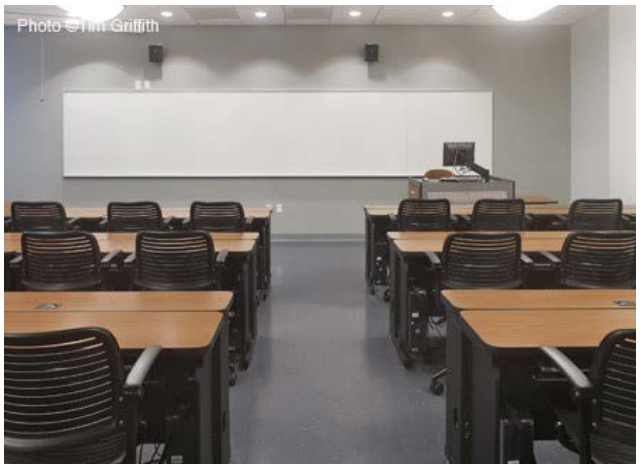

Image © AC Martin

» LECTURE HALL:
Large-capacity auditorium with tiered seating plan, podium at front, clearly visible division of a front and back of the classroom.

Image © AC Martin

» TECHNOLOGY-INFUSED CLASSROOM:
Similar to the layout of the traditional classroom but includes such amenities as computers at the lecture podium, overhead digital projectors, manually or mechanically operated projection screens, and/or video and Internet viewing capabilities; although the technology-infused classroom is the standard classroom at many institutions, it is probably not standard at many colleges and universities.

Image © AC Martin

» LABORATORY:

Spaces equipped with formal/traditional, often fixed lab equipment for use in experimentation, creation, and design that is associated with specific, discipline-based course content. Laboratories may or may not be designed to have a clear division between the front and back or between the instructor's space and the students' space.

Image © AC Martin

» ACTIVE LEARNING CLASSROOM/
NEXT GENERATION LEARNING SPACE:

These learning spaces have been modified from their original or "traditional" status to include easily moveable furniture, readily accessible outlets, ports, computers, mobile whiteboards, projectors, video, Internet, and/or other learning accessories. These classrooms are generally designed with the intention of eliminating the division between the back and front of the classroom and replacing it with a more user-centered design. These classrooms have generally been designed to accommodate diverse pedagogies, to ease the transition between teaching modes, and deliberately engage students in a more interactive learning environment than traditional classrooms. In addition, these spaces are usually designed to facilitate and increase mobility for both instructors and students with the aim of increasing interaction.

Image © AC Martin

RESEARCH RESULTS: FORMAL LEARNING ENVIRONMENTS

The field of higher education is under significant pressure to justify its very existence as a place. Questions that were unthinkable a decade ago are being asked regularly now: "What is the role of a physical place for the higher education student?" "Why do we need a physical environment when learning can take place online?" At the same time, and in response to the needs articulated by business and other sectors that will eventually employ college graduates, educators have embraced new pedagogies that focus on collaboration, team learning, and the use of technology as a classroom teaching tool and a shaper of the classroom environment.

Perhaps as a result of these pressures, or because the assessment of active learning and experimental classroom formats will influence the way many of these spaces are built, the preponderance of research on formal learning environments focuses on active learning classrooms. The shared focus of most research on formal learning environments is the connections among teaching techniques, physical environments, and learning outcomes.

Through a series of case studies and other descriptive reports, it has been generally agreed that active learning techniques used in purpose-built spaces are associated with enhanced learning. (A good, brief review of this literature is included in Brooks 2012.) However, there are only a few high-quality studies to support this conclusion. We reviewed 14 studies that addressed the impact of technology in a flat-floor classroom, student and faculty experiences in active learning classrooms, and/or team-based experiences in technologically enhanced classrooms. Only some of these studies attempted to measure learning outcomes. Two additional papers addressed general classrooms and their qualities (Jessop, Gubby, and Smith 2012; Sanders 2011); both used primarily observational techniques.

BENCHMARK RESEARCH

A series of studies conducted at the University of Minnesota (Brooks 2012; Walker, Brooks, and Baepler 2011; Whiteside, Brooks, and Walker 2010) serves as a benchmark for the state of current research on learning space design. This research used quasi-experimental methods and a rigorous data collection system, along with sophisticated statistical analysis. The results discussed below are all statistically significant, meaning that these results are unlikely to have occurred by chance alone.

These studies compared science students' grades, teacher behavior, and student behavior in two classrooms: a traditional classroom and a flexible, technology-enhanced active learning classroom (ALC). In one of the studies, the researchers observed the same instructor teaching two sections of the same course in the two different classroom types. One notable aspect of the Minnesota studies is that the researchers used students' ACT scores to predict their expected performance in these science courses and then compared this with their actual performance.

The physical environment clearly had an impact on both the teacher and students:

- Students taking a course in an ALC classroom achieved higher grades than students taking the same course in a traditional classroom.
- In the traditional classroom, the teacher was more likely to lecture and there was measurably less class discussion.
- In the ALC classroom, the teacher was more likely to move around the room and more likely to consult with individuals and groups.
- Marker boards were used more in the ALC classroom; there were more of these boards available in the ALC and that they were used more frequently by both students and teachers than in other classrooms.

» ALC classrooms are better accepted by urban students than by rural students and more positively evaluated by first- and second-year students than by juniors and seniors.

The researchers point out that the format of classroom space appears to shape instructor behavior and class activities, which in turn seems to shape student behavior. For example, the ALC room lends itself to group work, which frees up the instructor to leave the podium and consult with students. The concomitant de-emphasis on lecture means there is more class discussion.

The University of Minnesota research does have distinct limitations. Whiteside, Brooks, and Walker (2010) do demonstrate the impact of space on learning outcomes, but their research refers to a single semester of a single course taught by a single instructor. The experimental design of this research needs to be replicated and conducted in other classrooms and at other institutions. For these reasons we should be cautious in our confidence in their conclusions.

CLASSROOM DESIGN, FURNITURE, AND FLEXIBILITY

Given that classroom design has an impact on teaching methods, instructor behaviors, and student activities and in response to institutions' efforts to create classrooms that promote group discussion and active learning, a number of researchers have looked at the ways furniture and room arrangements can assist new pedagogies.

Many of the active learning designs are "in-the-round" rather than instructor- or podium-focused; an instructor's podium might be mobile or placed more in the center of the room. Students are seated at tables that encourage group interaction, which may be round, rectangular, lozenge, or octagonal in shape and which may incorporate screens and other technology. In many cases, students' chairs are wheeled to facilitate movement.

Flexibility appears to be a key feature: instructors want to be able to lecture as well as supervise group work in the same class session. However, even in classrooms that contain loose furniture, Henshaw, Edwards, and Bagley (2011) point out that some instructors may be resistant to rearranging the furniture and that even those who start out the term willing to physically reorganize the classroom may tire of the novelty and accept the traditional arrangement even though it limits their teaching options.

Van Horne et al. (2012) conducted an extensive initiative at the University of Iowa. The university developed a design for a technology-infused learning environment (TILE classroom) to align with emerging teaching strategies. The design was based on the SCALE-UP model of round tables, wheeled chairs, and technology and lighting to support visual media. The rooms accommodate 36 to 72 students, and faculty members must be trained before they are permitted to teach in them.

Based on feedback from 12 instructors and 400 students in science courses and a program of systematic observations in the classrooms, the researchers present a series of results that speak specifically to those who are trying to increase student engagement and promote collaborative learning:

» Students in TILE classrooms received higher grades than students who had previously taken those same courses from the same instructors in traditional classrooms.

» Students credited the classroom format with their increased willingness to participate in class, their increased sense of responsibility in finishing assignments, and their increased desire to work collaboratively.

» Students who perceived that the course material was well-suited to the TILE environment were more interested in taking another course in this type of classroom.

The university's commitment to this new form of classroom is broad. The faculty training programs help faculty adapt their courses to this new environment, and student instructional technology assistants are available to support faculty in the use of these classrooms. Research data, such as the finding that faculty do not always use the technology available in the classrooms, are fed back into the faculty training program. The university has also made those responsible for room scheduling part of the project so that the rooms are used in the most appropriate way.

Henshaw, Edwards, and Bagley (2011) report on an experimental classroom at the University of North Carolina that was designed specifically to promote classroom interaction. This unique classroom was equipped with "swivel desks" that, although fixed to the floor, revolve 360 degrees, making it possible for students to quickly transform a more traditional-seeming classroom into one that makes it easy to form groups. Ten instructors taught undergraduate courses in humanities and social and natural sciences in this classroom.

Based on instructor and student surveys and video recordings of the classes, the results of this series of case studies support the notion that classroom format can positively affect student engagement:

- Both instructors and students reported that the room supported student interaction.
- Students reported that the room arrangements contributed to the quality of their interactions. For example, students mentioned that this classroom arrangement allowed them to get to know their fellow students in ways that sitting in a traditional classroom did not.
- Students said the classroom design contributed to their willingness to ask questions or participate in discussions.
- Instructors reported that the room could be quickly converted into and out of small group discussions.
- Students made suggestions for improving the design, including larger tablets and incorporation of power outlets.

Dane's (2009) study of instructors' perceptions of the Deakin Immersive Learning Environment (DILE) classrooms at Deakin University in Australia also looks at how space shapes pedagogy and instructor behavior. The DILE classroom/studio is arranged in an unusual L-shaped format that includes a boardroom table arrangement, computer stations, standing-height tables, and a lounge area; it is used by multi-media classes. Although the study focuses on instructors' perceptions of the DILE classroom as a teaching environment, Dane makes the particular point that students' perceptions and concerns should occupy a central role in the development of classroom spaces by quoting one of the faculty members who took part in the study:

> Students need to feel comfortable in the space; they need to feel that they own it . . . the ability [to move] things like furniture, and any of the other resources . . . So whilst I have an ideal of how the rooms would be set up, it's irrelevant . . . it is the students who are in control of the way in which the room is set out and I think that's really important . . . (Dane 2009, p. 62)

Dane makes two specific recommendations: institutions should make design decisions based on the pedagogy to be used in the classroom and faculty should be trained to use ACLs and technology-enhanced classrooms to make the best use of institutional resources.

Greg Sanders' (2011) article "What Makes a Good Classroom?" reports a series of observations made over the course of several years at four-year flagship institutions, public four-year institutions, and a community college. He focused particularly on the flexibility of classrooms and the way classroom furniture supports or impedes switching between instructional modes. In one instance, students in classrooms furnished with long rows of straight tables that accommodated eight students each took about three

minutes to change from lecture to group work, while in classrooms equipped with hexagonal or straight tables that accommodated fewer students, the transition time was approximately 30 seconds.

Sanders, an architect, designed a prototype classroom based on his observations that addresses elements such as room size and shape, ceiling height and shape, daylight and views, finishes, acoustical control, electrical supply for student use, furniture and adjustability, connectivity, lighting controls, student arrangement and area requirements, instructor arrangement and area requirements, and technology and media.

The similarity of these studies in their methodology and focus on technology-enhanced classrooms makes it clear that researchers need to look at other types of classrooms. Teaching laboratories, studios, seminar rooms, and auditoriums all could benefit from the type of scrutiny that is offered to active learning classrooms. In addition, an exploration of methodologies that would address the gap in the measurement of outcomes would also benefit the long-term research on educational environments of all kinds.

V. INFORMAL LEARNING SPACES: WHAT HAVE WE LEARNED?

DEFINING SPACE

The research studies reviewed focused on three types of informal learning spaces:

» LIBRARIES:
Within libraries, research has focused on study areas, computer banks, alcoves, lobbies, and unassigned spaces. In many cases these spaces had been modified or deliberately designed to create more interactive, collaborative, and communal learning environments.

Image © AC Martin

» GATHERING SPACES:

Areas of the campus spacious enough to accommodate large groups of individuals interacting informally for academic, social, and personal purposes; often several of these purposes are combined, for example, sharing a pizza while discussing studies and social activities or a group study session involving focused participant interaction. These spaces may include food service areas, student unions, student centers, and outdoor spaces.

Image © AC Martin

» CORRIDORS AND SPACES CREATED WITHIN CORRIDORS:

Transitional areas connecting various learning environments, classrooms, offices, restrooms, and lobbies. At some institutions, alcoves along the walls, unused lobby areas, and spaces in courtyards and plazas may be intentionally furnished to accommodate informal learning activities; others may have minimal furnishings.

Image © AC Martin

We identified a number of papers addressing informal learning spaces; these are primarily anecdotal or ethnographic, employing both quantitative and qualitative methods.

RESEARCH RESULTS: INFORMAL LEARNING ENVIRONMENTS

Most of us are likely to focus on classrooms when thinking about how the environment affects learning, yet a considerable portion of students' learning happens outside of formal spaces. Students intent upon completing group or individual assignments often roam the campus looking for places to work. Particularly in institutions where a preponderance of students live off-campus, the need for on-campus study space is critical. Informal learning spaces may be "found spaces" such as empty classrooms, cafeterias and dining halls, or hallways outside of faculty offices; others are purposefully provided, including libraries, study lounges, group study rooms, furnished alcoves in corridors and public areas, and outdoor spaces such as patios and plazas.

The current demand for informal learning spaces seems to exceed their supply. In Bennett's (2006) essay on library design, "Designing for Uncertainty," one student stated the case poignantly: "At the present moment I feel like I have to go off campus to find a nice environment to study" (p. 24). In an atmosphere in which institutions want to promote engagement and connection, this is clearly an outcome to be avoided.

Connecting student learning outcomes to planning and design is an even greater challenge with informal learning spaces than with formal classrooms. Informal spaces lack even the benefit of having a room scheduling system or a way of predicting who will be in what room and when. Whatever lack of rigor we have found in the body of work on classroom design, we find that it is even more challenging to apply rigorous research designs and data collection methodologies to informal learning spaces.

Research on informal learning spaces focuses primarily on student behaviors: the daily journeys students take as they navigate spaces on campus; the role of technology as a disrupting, enabling, or modifying agent; and the relationships among students, their perceptions, their social experiences, and the physical qualities of informal learning spaces. Researchers used student diaries/logs, interviews, focus groups, and design charrettes as methods of collecting data. Most of the research we report here is in the form of case studies. Despite that, we have uncovered common threads that relate students' perceived needs to their learning outcomes.

LIBRARIES AS INFORMAL LEARNING SPACES

Two studies in particular create a framework for studies of libraries as informal learning spaces. Yale University librarian emeritus Scott Bennett's (2006) study found that 80 percent of collaborative spaces—those designed to bring together information technology, technological staff, and other student support services—exist within libraries. In spite of this, he presents data from 66 universities showing that their libraries were underperforming for 60 percent of their students and 80 percent of their instructors. Bennett points out that collaborative space serves not only the needs of students but also the librarians, the technology, and the library staff. He recommends a mission-based approach to library design, noting that this approach "insists, as its point of departure, that students are before all else learners and that library space design should be primarily concerned not with services but with learning" (p. 18).

The second important study is a comprehensive ethnographic research project conducted at the River Campus Libraries at the University of Rochester. Foster and Gibbons (2007) looked at student work processes related to writing research papers. They gathered information to address questions about why students choose to work at the library, where else they might work, and what aspects of the library facilitated their work. The researchers used mapping exercises, student-gathered photographs, surveys, interviews, and design charrettes. Their findings paint a detailed picture of students' study lives that has implications for institutions that want to make the library relevant to those lives:

» Students are highly scheduled and on the go all of the time. There is no "average" day for a student. Academic, social, recreational, work, volunteer, and personal

activities are all in the mix and each day is different. They eat on the go and carry their belongings with them, although they don't carry their laptops.

» Students' schedules are "offset" from librarians' schedules.

» Students study in the library, at home/in their dorms, and in the computer lab. They use computer technology throughout the day and in multiple locations.

The researchers also reported results from the design charrettes that show student needs and preferences:

» Flexibility: spaces that meet a variety of needs. Students want to move easily among the spaces. Group and individual study areas are important, as are spaces to relax, a café, and computing and media viewing areas.

» Comfort: spaces that provide comfort and have a "family room" atmosphere. This includes easy access to coffee and food, natural light, and an environment with soothing textures, sounds, and great warmth. The space should support sitting, slouching, putting one's feet up, and lying down.

» Technology: technology and tools should be intuitively integrated into the space. This includes high-end technology such as media players, smart boards, and plasma screens as well as low-tech items such as power outlets, staplers, and three-hole punch tools.

» Staff support: Students rarely made distinctions between the types of staff they needed in the library; rather, they expected to interact with a generic staff member who would be able to provide reference assistance, check out materials, answer IT questions, and brew a great latte. There were very few mentions of a reference or information desk. Librarians cannot assume that they know how students do their academic work or what they need.

» Resources: students included library materials in their designs, ranging from academic and reference books to leisure magazines and DVDs.

Radcliffe, Wilson, Powell & Tibbetts (2008; 2009) edited a series of case studies that addressed both libraries and other kinds of campus spaces. With regard to libraries, the authors concluded that despite the existence of online resources, a physical place is still important and students like coming to the library when they have staff support in person and their "own space" in the library. Other needs revealed by these case studies included:

» Flexibility of spaces: the design needs to accommodate different needs at different times of year; spaces can evolve and be repurposed even throughout a single semester.

» Variety of spaces: the library serves as a social learning hub that must balance group collaborative spaces, quiet discussion spaces, silent spaces, individual learning spaces, and social spaces.

» Convenience: students value easy access to water fountains and toilets, the ability to eat and drink in library areas, and multiple access points to the library; these optimize students' time.

» The nature of a learning task dictates how students use space in the library.

» Older students tend to use the library more than younger students.

» Visual elements, such as windows, art exhibits, and color, attract users.

» The presence of other people attracts users.

» Available support services attract users.

SOCIAL LEARNING SPACES

Universities and colleges are building gathering areas dedicated to "social learning." These are designed for group interaction and are distinct from "quiet please" library areas, although they may be located in a library.

A two-part study conducted by the University of Queensland (Matthews, *et al.* 2009, 2010) sought to measure the impact of informal social learning spaces (SLCs) on student engagement as measured by the National Survey of Student Engagement (NSSE). Using correlational analyses (statistical associations that do not suggest a causal direction), the researchers found that students who used informal learning spaces reported higher levels of engagement and that the use of SLCs was related to the social aspects of student engagement. The SLC seems to foster peer-to-peer interaction and student collaboration and is not seen by students as suitable for individual study. The researchers also found that SLCs were perceived as noisy, which discouraged some students from using them.

Whiteside, Brooks, and Walker (2010) at the University of Minnesota examined the extent to which, if at all, formal and informal learning environments shape teaching and learning. Their conclusions, drawn from research on informal learning spaces, show that students select a wide variety of spaces in which to study, including their home or dorm room, the library, coffee shops, and computer labs. They study, on average, nearly two hours per session, mainly in the early evening. Technology is ubiquitously integrated into their study time, and students are reluctant to change their study location, even if the space does not meet their study goals. Like Radcliffe et al. (2009), the researchers found that the type of assignment greatly affects a student's choice of study environment.

Whiteside and her colleagues make a series of recommendations:

» Promote campus study environments before students develop study routines. It is important to introduce students to study spaces during first-year orientation, welcome week, transfer orientation, and any other departmental-, college-, and university-level welcoming sessions or celebrations.

» Realize that students' assignments and their study choices play an important and understated role in the future design and redesign of informal learning spaces. By understanding the curricular tasks assigned to students as well as their study needs and preferences, we may be able to "encourage students to spend more time on campus, increase engagement, and improve retention" (in Whiteside 2010, Concluding Implications and Recommendations).

Crook and Mitchell (2012) identified four types of social connections students make in the course of their campus experience:

» Focused collaboration: occasions of traditional and relatively intense joint problem solving (planned and outcome-oriented)

» Intermittent exchange: when students convene for independent study that permits occasional and improvised to-and-fro questioning and commentary

» Serendipitous encounter: chance meetings with peers in which study-related issues (and perhaps other matters) are discussed briefly and on the fly

» Ambient sociality: in which students identify the importance of simply "being there" as participants in the studying community

Randall and Wilson (2009) focused on a central area in Bond University's main space, and their observations echoed those of Crook and Mitchell (2012). They found that this space was used for five different purposes:

» Group work activity

- Socializing
- Private moments or individual study (relaxing or reading)
- Interaction with staff
- Career development

Randall and Wilson suggest that dedicated on-campus "breakout" spaces are needed to encourage students to stay on campus between classes, leading to more informal learning experiences and greater opportunities for socialization.

CORRIDORS, MOBILITY, AND INCIDENTAL SPACES

A few studies addressed the use of corridors and incidental spaces or the location and use of study spaces on campus. Architects and designers are increasingly making use of "found spaces" in buildings by furnishing them, often with built-in seating and power outlets. Students use such spaces briefly or for longer periods during the time between classes, while waiting for a class to begin, or while waiting to meet with a faculty member. Having the appropriate space available at the appropriate time can encourage students to work on their assignments without having to go across campus to the library or other dedicated study area.

Fournier, Lane, and Lyle (2010) report on a study at the University of Washington on students' study behaviors and desired features of campus study spaces. The study investigated how students were using laptops and other mobile devices on campus, how they were using existing computing centers, and what features were important to students in future study space designs. The researchers used surveys, focus groups, log data from computing centers, and design charrettes. Based on their findings, they made these recommendations:

- Continue to provide general-access workstations and high-end software
- Minimize obstacles to laptop use
- Provide dedicated spaces for quiet individual work
- Establish or enhance spaces for collaborative work and study
- Increase access to printing
- Consider aesthetics and comfort
- Continue to involve students in the design of spaces

The studies of libraries, social learning spaces, and incidental spaces reveal a common thread: the importance of including student voices in the design process associated with the creation of new social learning spaces. The SLCs described by Matthews, Adams, and Gannaway (2009) incorporated student input into the design process, and the other sources cited here refer to the wide range of student uses for, and needs in, every space. Open spaces, natural lighting, and the freedoms not found in more controlled gathering areas like libraries where quiet and calm are expected have been shown to allow students to engage with one another in a manner that is more conducive to the learning experience:

> Social learning spaces can provide students with an outlet to develop social networks with peers that can lead to greater engagement in active and collaborative learning and that facilitates the sharing of knowledge to meet academic challenges. (Matthews, Adams, and Gannaway 2009)

VI. WHAT WE FOUND: CAMPUS DESIGN AND LEARNING OUTCOMES

OVERVIEW

Permanent, physical campuses arose from the need to house tutors and their students in a safe environment. The invention of the printing press allowed the first institutions to move out from under the wings of religious organizations and facilities. Now, many places could house books for scholarly study and research, not just places with monks and scribes. The Protestant Reformation changed the way in which clergy were educated and promoted an informed laity. These cultural and technological changes created the impetus for institutions of higher learning to move beyond their typical locations. However, the "ivory tower" that began with the Universities of Paris, Oxford, and Cambridge laid the groundwork, literally, for the design of higher education campuses for centuries to come (Dober 1996).

Nine colleges were chartered in the colonies between 1636 and 1780, and while they had similar curricula, their physical locations varied. Most grew without much planning, although some strove to emulate the architecture and layout of their European predecessors. As communities grew around these early institutions, the original plans, if there were any, often had to be accommodated. In the mid- to late 1800s, the advent of the Morrill Land-Grant Acts (Association of Public and Land-Grant Universities 2008) and the arrival of the German concept of the university led to a distinct change in the planning and purposes of higher education (Dober 1996). The university concept—a place for research and a multiplicity of disciplines—created one of the first divides in the mission of postsecondary education between the liberal arts and the professions. Further, the applied research advocated in land-grant institutions meant that campus planning no longer applied solely to facilities.

The focus on the agricultural and mechanical arts that accompanied the creation of land-grant institutions meant that the physical campus now contributed significantly to student learning. Working farms, forests, arboretums, greenhouses, gardens, and more became part of not just land-grant institutions, but many others as well (Griffith 1994). The campus landscape has remained a significant place for teaching and learning for students in programs such as natural resources management, sustainability/ecology, agriculture, forestry, and numerous other disciplines. Campuses built to provide such opportunities did not follow the classic designs of the first institutions; instead, open space and "zones" for disciplines became far more common than closely clustered buildings designed to protect students from the lures of the outside world.

The sustainability movement on campuses today has also increased the use of the physical plant as a place that provides teaching and learning opportunities (Barlett and Chase 2004). Leadership in Energy and Environmental Design (LEED®) and other sustainable buildings provide students with the opportunity to understand basic principles of energy and water use. Residence halls provide readings on students' energy utilization, educating them on the consequences of their actions and encouraging them to reduce their usage. In addition, campuses have also embraced the use of land for students to build gardens that help provide the campus with local food and teach organic and sustainable gardening principles.

The post–World-War-II period in the United States saw the advent of professionalism in campus design and planning and an increased sense of how the physical environment could support the purposes of higher education. While campuses may have many of the same stated purposes—for example, Boyer's (1997) knowledge creation, transmission, application, and preservation—or even the same Carnegie Classification, they are all physically different. This has created a fundamental research problem in that there is little ability to conduct controlled or randomized experiments on the potential effects of campus design. Instead, we must postulate that certain broad characteristics of the physical campus can evoke trust, attachment, inquiry, or other human reactions that help contribute to an institution's identity.

While reviewing the history of campus planning and design, it quickly becomes clear that design principles are not generally focused on creating learning outcomes. Rather, the physical layout of the campus tends to focus on safety, security, walkability, and the desire to encourage or create community (Strange and Banning 2001); the first three necessary to accomplish the last. Given these overarching goals for campus plans, the rest of this section considers research related to campus design and (1) student engagement, including recruitment; (2) walkability and landscaping's effects on campus aesthetics and health; and (3) examples of sustainability in campus design as a learning tool.

STUDENT ENGAGEMENT AND RECRUITMENT

RECRUITMENT AND RETENTION

A study by the Carnegie Foundation for the Advancement of Teaching reported by Boyer (1987) indicated that nearly half of the students surveyed said the friendliness of the students they met during a campus visit most affected their choice to enroll in a college. The rest of the paragraph that offered those results is one of the most quoted on the influence of campus design on student matriculation decisions:

> But it was the buildings, the trees, the walkways, the well-kept lawns—that overwhelmingly won out. The appearance of the campus is, by far, the most influential characteristic during campus visits, and we gained the distinct impression that when it comes to recruiting students, the director of buildings and grounds may be more important than the academic dean. (Boyer 1987, p.17)

Subsequent research has refined this somewhat glorious view of the effects of campus design on would-be students. In particular, Reynolds' (2007) study, while limited to four-year schools, provides an updated context for how facilities and open space contribute to recruitment and, possibly, to retention. The data for the study reported here included 13,782 students attending participating US institutions; the survey was completed during spring semester 2005. The demographics of the survey respondents were clearly skewed toward full-time students, with 95 percent reporting as such. However, at the time of the survey, the national rate of full-time students was 62.4 percent (National Center for Education Statistics 2005). The skew toward full-time students may have influenced the conclusions of the survey since it over-sampled the traditional campus population, which is likely to have stronger views on campus design.

Reynolds' survey revealed that the most "essential" or "very important" institutional characteristics that potential students consider are related to the academic quality of the major, preparation for a career, and excellent and accessible professors. The overall quality of campus facilities was ranked sixth and the location of the institution, eighth. An attractive campus was selected as essential or very important by 50.6 percent of the respondents, ranking 14th out of 18 options. Reynolds's findings on the importance of data related to academic quality in students' decision making were reinforced by a recent survey from the United Kingdom (Burrell 2013). The topics about which students most wanted information were the course content of potential majors (77 percent), the academic reputation of an institution (57 percent), the distance from home (57 percent), and the quality of the academic facilities (57 percent). These results mirror those of Reynolds when considering similar questions.

Reynolds proceeded with a finer analysis of those facility categories that respondents rated as extremely or very important in their decision to attend an institution. Again, the most highly ranked facilities were those associated with academic activities, the major, the library, sophisticated technology, and classrooms. Open space was ranked below residence halls, exercise facilities, and the bookstore in its effects on attendance.

Nevertheless, much is made of the first impression that a campus makes on the likelihood of a student choosing a school. Part of this view is based on the relationship between a student actually making a campus visit before enrolling and

the subsequent decision to enroll. A recent study indicated that 70 percent of students choose to attend a college they visited, with most visiting fewer than four schools (Russell 2002). As Strange and Banning (2001, p. 12) note, "From the view of prospective college students, the physical features are often among the most important factors in creating a critical first impression of an institution."

As we look more deeply into the literature, it would seem that the physical campus might also influence a student's decision not to attend an institution. In particular, the lack of cleanliness and maintenance of campus facilities and open spaces is significant in Reynolds' (2007, p. 70) respondents' rejection of an institution. Further, Reynolds (2007, p. 73) notes that "women appear to be more influenced than men by the condition of an institution's facilities." Given the gender imbalance in most US institutions toward women, this would seem to make meeting basic standards a must for student recruitment.

Unfortunately, Reynolds' research indicates that students experience an increasing dissatisfaction with their institution as they move from freshman to senior status, along with a decreasing view of the quality of maintenance. Tempering these findings were ones that found that students with different grade point averages were equally satisfied with campus facilities.

There are few studies on the effects of facilities on retention. A notable one looked at the use of facilities at the University of Maryland using a stratified, random sample of second-semester freshmen (Mallinckrodt and Sedlacek 1987). The sample was 52 percent female and consisted of 100 US White students, 78 US Black students, and 29 international students. The researchers used a 24-item questionnaire to determine the range of campus facility use among the participants. The sample cohort was followed; by the next fall, 80 percent of the 207 students had returned and 75 percent were retained through the spring. The strongest predictor of retention was the use of the library; both the use of academic facilities for studying and research and the number of hours spent in a campus library were related to the retention of students in general for both semesters.

What we know about the influence of facilities and campus design on recruitment and retention comes primarily from surveys of students after they have selected an institution. Most research focuses on four-year institutions, with virtually none on community colleges. The condition of academic facilities is of the greatest importance to students, and they generally remain satisfied with those facilities in their academic major. Students who use academic facilities with greater frequency are also more likely to be retained.

ENGAGEMENT AND COMMUNITY

The rise of interest on campus in increasing student engagement and involvement grew out of research in the 1980s and 1990s by a variety of authors, including Astin (1993), Kuh, Schuh, and Whitt (1991), and Pascarella and Terenzini (1991). The theories on which they based their investigations led them to understand that satisfaction with the educational experience, as well as the ability to benefit from it, relied in part on a student's partaking in specific activities on campus. These activities reflected how frequently students interacted with instructors and faculty, the amount of time they spent studying or using academic resources, and how academically oriented their peers were. It also became clear that informal learning had a vital role to play in student life and that offering more opportunities for chance meetings that lead to dialogue would be of benefit to students, faculty, and staff.

Campus designers and planners quickly understood that they could make spaces that invited interaction and informal learning. Designers have addressed this by working to create campus plans and designs that lead to both social and academic conversations through the placement of buildings, walkways, and amenities (Kenney, Dumont, and Kenney 2005). Much of the discussion in campus design and master planning over the past 50 years has been on achieving both "placemaking" and "placemarking" on campuses.

> Placemaking is the structuring of the overall design, the broader skeleton, the articulated patter, that is, the campus plan . . . Placemarking, in contrast, involves the definition, conceptualization, and orchestration of certain physical attributes which give a campus a visual uniqueness appropriately its own. (Dober 2003, pp. 4–5)

The desire to bring a human scale to campus design paralleled findings on the importance of encouraging those who live and work on campus to engage with one another in activities that advance the institution's mission. As Sensbach (1991, p. 11) noted, "Scale, not style, is the essential element in good campus design." What we find is that the grand scale of buildings, including high-rise residence halls, has begun to return to Jefferson's concept of the campus as an "academical village." This view of the campus as a village, or perhaps a series of villages, places increased emphasis on a number of key design principles that are seen as enhancing student engagement:

- A pedestrian campus environment reinforced by appropriate closeness of buildings (density) and by juxtaposition of activities that complement one another (mixed use)
- Indoor and outdoor social spaces scattered throughout the overall framework of the campus (not just at the campus center)
- Informal settings that provide opportunities for interaction; providing food in multiple locations is clearly a draw
- Integration into the wider community to take advantage of community-based learning resources and to contribute to (and learn to be a responsible part of) the larger community
- Access to technology and digital communications
- Places and opportunities to participate in co-curricular activities (Kenney, Dumont, and Kenney 2005)

A number of studies help to shed light on how these principles have been validated in practice. Let us say first that there are a great number of case studies available on specific campus projects that sought to follow these guidelines. While case studies can be very helpful in understanding specific issues or parameters, they may have limited generalized utility as models for other campuses. Nevertheless, since all campuses are unique, we are not left with many resources beyond studies that research a single campus or associated campuses. Thus, the rest of this section will focus on examples of such research since we know of only one comparative review of multiple campus design elements.

Temple (2009) studied the effects of the design of York University (UK), which was created to encourage encounters among students, staff, and faculty. The university, designed in 1962, has as one of its aims "the encouragement of informal interactions" (Temple 2011, p. 142). While the university enrollment has continued to grow, respondents in Temple's survey and interviews indicated that the original design was still serving its intended purpose. Many reported that it was helpful to have the possibility of "bumping into people" for a variety of reasons both academic and social and for building the generally friendly atmosphere of the campus.

Open space, in particular, has proven to be significant in encouraging interactions that foster professional identity while also allowing for "weak" interdisciplinary ties across the campus. Greene and Penn (1997) conducted a study of the effects of open space on the development of both disciplinary and global ties among the four campuses of the Pontificia Universidad Católica de Chile (PUC). Greene and Penn used spatial structure analysis (i.e., analysis of the configuration of open spaces on each of the four campuses), observations of those spaces, and a survey of reported social interactions to form the basis of their investigations. They found that strong disciplinary ties built in the social, open spaces near academic buildings helped encourage weaker ties (Granovetter 1982) across disciplines and campuses to give students a sense of the integration of the campus globally.

Abu-Ghazzeh (1999) investigated the features of outdoor space that increase the likelihood of impromptu encounters among students, faculty, and staff at the University of Jordan in Amman. He used a variety of methods to test his hypotheses, including forced-choice selection of spaces, behavioral observations of spaces, and interviews to determine what open spaces on campus were preferred and how they were used. Virtually every one of his 140 participants was able to indicate a preferred outdoor space. The common feature of these spaces was that vegetation formed boundaries that allowed participants to feel "away from the academic environment" (Abu-Ghazzeh 1999, p. 795).

Abu-Ghazzeh also discovered differences among staff, students, and faculty in how they viewed various open spaces. For example, the Milk Bar, a long open area that featured food, space for socializing, and a place to relax, was seen as "entertaining" by 80 percent of students but only by 37.5 percent of faculty and staff. His participants appreciated and visited both built spaces—tables and chairs, areas near a building, the Milk Bar—and more natural/rural settings with seclusion, lawns, and wooded areas. The needs of participants for quiet study or encounters with others guided their choice of space. Abu-Ghazzeh advises planners to consider the ways in which users select open spaces based on their needs and to understand that those needs change with increased experience in a university setting.

The research on how campus design encourages engagement is sparse at best. Clearly, however, design affects the number and type of interactions that take place outside of buildings in the common areas of campus open space. Basic research on non-verbal communication, including the importance of proxemics (Hall 1966; Sommer 1969), has led designers to focus on how they can bring people together so that conversations can occur serendipitously. Research reinforces the idea that campus members view and use open space for two primary purposes, to remove themselves from others and to engage in a variety of social interactions. Thus, designers must consider the need for both human commerce and quiet reflection when looking at ways to encourage involvement and community on campus.

LANDSCAPE AND WALKABILITY

Strange and Banning (2001) reviewed research on the aspects of campus space that engender positive responses from users. They identified "the call for community, the call for territory, the call for landscape, and the call for wayfinding" (p. 28). We have talked about the call for community. The call for territory involves a focus on the safety of the campus; that is, do community members have a sense that they can see enough to be safe? How often do they confront places that could hide a predator? Do they perceive avenues of escape? While we are not covering studies related to safety, suffice it to say that a sense of security is an essential ingredient in creating a campus learning environment. As we know, people do not engage in higher-order activities if they do not feel safe and secure. The rest of this section will review research on the effects of landscaping and walkability as two additional facets of campus design that can potentially have an effect on learning.

As Kenney, Dumont, and Kenney (2005, p. 138) note

> A well-ordered landscape structures and reinforces the big idea in the campus plan; defines the campus's outdoor spaces; provides, through pedestrian and vehicular circulation, effective means for movement of people, automobiles, and goods; expresses the institution's roots in its site and region; and expresses the institution's unique culture and identity.

In an effort to find out which aspects of campus design are most significant to students, Eckert (2012) created a valid and reliable survey of students' reactions to features in the outdoor campus environment. After building the survey, Eckert used it to assess the views of students across eight large, regional, public universities in Ohio. Eight thousand students were randomly selected (1,000 per campus) and e-mailed invitations to participate. A total of 1,522 usable

responses were received (about 21 percent of the sample). The survey assessed the importance of a feature or concept (e.g., cleanliness, cohesiveness) as well as students' satisfaction with the attractiveness, amount, and functionality of those items.

The survey included 22 different elements. The elements rated as most important included cleanliness, lighting, walkways, maintenance, parking, and planned design. Interestingly, Eckert reports that students from campuses with more cohesive design indicated that element was more important to them than did students from campuses without such cohesion, who were primarily neutral about that element. Students were largely satisfied with the attractiveness of elements on their campuses, but somewhat less enthusiastic about the amount and functionality of those elements. More importantly, the survey was able to differentiate student satisfaction among campuses with varying quality and amounts of these elements. A campus that is interested in knowing how its students perceive open space and how it might be improved would do well to administer this survey.

Plazas hold a special place in society and on campus. Two studies we noted addressed ways in which research may advance our understanding of how these spaces may be used to promote learning. The first study, by Goldfinger (2009), identifies the ways in which creating a branded space, Democracy Plaza, contributed to civic engagement and civil discourse at Indiana University-Purdue University Indianapolis (IU-PUI). The university designed the space and its policies to provide students with opportunities to become civically engaged through the exchange of ideas. Democracy Plaza contains chalkboards on which members of the university can write about and comment on matters of political and civic importance to the campus. The space is also used for events, speeches, and other forms of activity that create engagement. The space has been "widely acknowledged by students, faculty, and staff across the university … as a space where people have an opportunity to express themselves and take part in robust deliberations about issues of civic concern" (Goldfinger 2009, pp. 75–76).

The second study used a post-occupancy evaluation of a campus open space to assess its effects on studying behavior. Spooner (2008) examined the use of the Memorial Garden at the University of Georgia through a survey and walk-through interviews. A convenience sample of students walking through the garden was used, and 67 surveys and interviews were conducted. Sixty-six percent of the students indicated that they study in the Memorial Garden. Most of these students study individually, as the post-occupancy analysis indicated that the places for sitting, primarily granite benches, did not encourage group work. Overall, Spooner's analysis indicated that the Memorial Garden is successful in providing outdoor space for academic engagement.

Spooner (2011) provides additional insight into the walkability of campus design through his review of 37 master plans to assess how they addressed the need for students to spend only 10 minutes walking between classes. He noted in his review that campus designers are increasingly concerned not only about the time required for that walk, but also about the variety of experiences that may enhance students' perceptions of the campus. Spooner focused his own study on how the perception of time was affected by the variety of visual experiences on six different pathways on the University of Georgia campus. Following the completion of each walk, close to the same number of feet, the 48 students in the study were asked to estimate how much time they thought the walk took and to take a short survey on what they recalled seeing during the walk and whether they perceived it positively or negatively. The results of the research indicated that walks with more positively rated elements (i.e., more visually interesting) were perceived as both shorter and taking less time than walks with more negative ratings. Factors that affected ratings included whether a path was straight or required a turn, at what angle architecture was viewed, and how heavy the traffic was on adjacent streets. Spooner concluded that designers could affect the perception of time and, hence, walkers' sense of accomplishing their goals as quickly as possible.

Well-designed landscaping contributes to a campus's sense of security and the satisfaction of its members. Students often study outside and find that welcoming open spaces are a key part of their academic engagement. Social activities and collaborative learning also take place in open space, but require different design considerations. Places for groups to gather require appropriate furniture and are often enhanced by the availability of food and beverages. While those campuses in milder climates make more use of outdoor spaces for these activities, virtually all campuses have places that promote the use of open space for these purposes.

SUSTAINABILITY

The sustainability movement on campus began in the 1970s with the advent of Earth Day and an increased awareness, by students in particular, that protection of the environment is a critical issue. The grassroots efforts of students faded somewhat until the 1990s and 2000s when climate change became a major scientific and political issue. The creation of the American College & University Presidents' Climate Commitment in 2006 has ushered in an era in which sustainability goals are now part of over 600 campuses' master planning efforts (American College & University Presidents' Climate Commitment n.d.). The movement for sustainability on campus is only likely to increase. In 2008, a survey reported that 13.5 percent of students selected a school based on sustainability concerns (Grummon 2008). Campus designers and master planners now seek LEED® certification so that they can advance their campuses' efforts to be responsible stewards of the environment. In particular, the importance of landscaping in sustainable design is recognized by LEED.

The ways in which campus landscapes are used for teaching were covered briefly in the overview to this section. A focus on environmental education and sustainable practice has expanded the use of open space in some important ways. Aside from providing students with the opportunity to study issues of environmental quality and landscape preservation, the sustainability movement has fostered a change in planners' behavior such that they increasingly include students in design teams for open spaces. Throughout the design profession, the inclusion of students can be seen as providing new opportunities for learning. We know of no studies that directly address the learning outcomes of student inclusion in open space design projects, but case studies reporting on such inclusion can be found (Franz 2004).

It is also clear that numerous campus environmental science programs, such as the National Wildlife Federation's Campus Ecology Network (National Wildlife Federation n.d.), use campus open space, special research areas, and experimental gardens to provide students with course content, which may influence learning outcomes. The website of the Association for the Advancement of Sustainability in Higher Education (n.d.) provides numerous examples of academic practices that engage students in the campus outdoor environment. Given that accreditation activities routinely require the demonstration of student learning outcomes, we hope that researchers will investigate how those outcomes may result from campus design and landscaping. While designers believe that physical resources, in this case the campus ecological landscape, can be profitably integrated with educational programming (Kenney, Dumont, and Kenney 2005), we believe far more research needs to be done in this area for master planners to successfully incorporate specific learning outcomes into their site designs.

VII. THEORETICAL FRAMEWORKS: CREATING PERSPECTIVE IN THE FIELD OF LEARNING SPACE DESIGN RESEARCH

In addition to studies investigating the efficacy of specific types of learning spaces, we reviewed a number of resources that offer conceptual analyses and theoretical frameworks for learning space design and research. The authors of these books and articles argue that too little attention has been paid to research on the connections between space and institutional effectiveness in higher education and that the majority of studies that have been conducted have not been well-conceived. Their analyses integrate findings from a broad range of disciplines and illuminate central issues, dilemmas, and possibilities that emerge in this process. Many raise questions intended to guide more thoughtful and fruitful investigations into the relationships between space and learning, and they caution against simplistic responses to trends in education, pedagogy, and campus building design.

Again, the following discussion is not intended to be exhaustive, but rather to select the analyses that are the most useful and that point to a direction moving forward.

In their book *Educating by Design*, Strange and Banning (2001) conceive of the university environment as a whole and consider how all its dimensions—architectural features, layout, and spatial design, as well as dynamic systems and practices—"shape and influence the behavior of those who pursue its opportunities" (p. xii). They seek answers to very broad but fundamental questions for any postsecondary institution: What makes a college or university successful in attracting, challenging, and retaining students? What are the patterns and design characteristics of supportive educational settings? And, most important for learning spaces research, what are the criteria by which an educational environment can be judged as effective?

Strange and Banning propose that educational environments are most powerful when they offer students three conditions: a sense of security and inclusion, mechanisms for involvement, and an experience of community. In reviewing the literature, the authors identify how environments contribute to or detract from a sense of belonging and safety on campus, for example, through campus design features as well as through territoriality and defensible space, organizational size, and campus culture. Especially relevant may be the chapter on the nature and characteristics of human communities and the implications for the design of educational spaces in regard to how well they include, involve, and grant to students full membership in these settings.

Community and social learning are themes echoed in "First Questions for Designing Higher Education Learning Spaces." In this article, Scott Bennett (2007) argues that "the higher education community has exempted its investments in physical space from the obligation it has otherwise accepted of evaluating outcomes and demonstrating value" (p. 23). To escape what he calls "this trap of good intentions and inaction," Bennett proposes six questions that should be asked before any new construction or renovation begins and persistently throughout the life cycle of a structure; these questions concern planning, programming, design, construction, occupancy, and adaptive reuse. Although Bennett's focus is on the design of informal spaces where students are responsible for their own learning (e.g., group study space, learning commons, computer labs), his questions are worthy of consideration in regard to formal learning spaces as well.

First and foremost, and consistent with the issues raised in this report, Bennett's questions prompt us to think about what brick and mortar buildings can provide that virtual spaces cannot. Bennett argues that it is the social dimension of campus life that provides the rationale for a residential experience, and he quotes John Seely Brown in describing "multiple communities of scholars and practices … broad access to people from different fields, backgrounds, and expectations, as well as opportunities for intensive study" (Bennett 2007, p.21) that combine to create new ideas and knowledge. Citing data from the National Survey of Student Engagement (NSSE) and other studies, Bennett also argues

that space design can help students balance socializing and productive study and can (and should) encourage a re-imagining of professional roles for faculty, librarians, and information technologists as well as students. If we are to shift from an instructional model of "knowledge delivery" to one supporting the co-construction of knowledge as Bennett contends, then spaces should include design elements to help "relax traditional understandings of faculty and student roles and open the door to other possibilities" (p. 21).

Bennett ends his article by encouraging institutions to experiment with learning space design, pointing out that furniture offers a low-cost, potentially powerful approach to the design of learning spaces. "Just as it is important to ask the right questions early in a project," he writes, "so it is essential to experiment early with promising answers, before large sums are invested in 'preconceptions and prejudices' rather than in a 'reliable base' of information" (p. 24).

The perspective Bennett's article presents is equally as relevant today as it was at the time of publication in 2007. Institutions, manufacturers, architects, and designers have, in fact, proceeded with some of the experiments Bennett suggested, and a number of the articles reviewed in the prior sections on formal and informal learning spaces are focused on furniture solutions and a range of new classroom formats.

As suggested by the title of his article "Learning Spaces in Higher Education: An Under-Researched Topic," Paul Temple (2008) is dismayed by the current lack of studies addressing the role of physical space in higher education. As we have attempted to do in this report, Temple sifts the available literature for conclusions that appear well-warranted, highlights areas of research in which claims have been made but for which there is not yet adequate or convincing evidence, and encourages further research in areas that seem to offer the greatest promise.

Temple makes the case that, given the number of studies pointing to the importance of social interaction in student learning and institutional effectiveness as a whole, campus and university building designs should give greater consideration to "the social underpinnings of education." Welcoming and flexible spaces, including informal gathering spaces, "should be seen as part of the support to learning through developing the wider learning landscape" (p. 238).

Temple also points out that the well-supported finding that cleaner, tidier school learning environments lead to better learning outcomes actually complicates studies of new spaces and their impacts. It is unclear, he says, whether it is the "newness" of the new spaces or the cleaner, brighter environment that caused the results the researchers cite or whether some other elements are responsible.

Temple also draws attention to other areas of research—how management of space issues affects students and staff, the role of space in creating more productive learning and research communities, how specific design features may encourage new ideas and creativity—that have received inadequate attention. While he acknowledges the methodological challenges in conducting rigorous studies, Temple unequivocally advocates for more research on the connections between space, learning, and institutional functioning. With greater sensitivity to these interactions, Temple writes, "it seems possible that relatively small improvements may be amply rewarded in learning benefits" (p. 239).

Perhaps the most thorough, and certainly the most recent, analysis is Jos Boys' (2011) T*owards Creative Learning Spaces: Re-thinking the Architecture of Post-Compulsory Education*. Consistent with her colleagues reviewed above, Boys argues that the subject of learning spaces is "worryingly under-theorised" (p. 4). She asserts that seemingly commonsense, simplistic associations between different types of learning and space actually prevent evaluators from recognizing problems in the way they conceive these relationships and keep them from giving careful consideration to methodological issues. For Boys, key questions about what we mean by "space" and how space may be related to learning remain unanswered. In addition, Boys

contends that contemporary debates on the topic of learning spaces tend to ignore both recent shifts in educational theory and practice and current ideas in architectural and cultural theory.

To combat this problem, Boys (2011, p. 9) dives deeply into how thinking about learning and space has been framed from the perspectives of different disciplines and roles:

> . . . for architects, space is the physical setting in which learning takes place. For educational theorists it may either be absent entirely or is predominantly a conceptual space, leading to the use of abstract terminology for describing aspects of learning. To an estates planner, learning spaces are a limited and costly resource that must be effectively distributed. For teachers and students, learning spaces are a set of given physical, virtual, organisational and durational frameworks into which a variety of activities must be fitted.

Over multiple chapters, Boys critically examines both the gaps between common thinking and contemporary theories within each discipline and the problematic intersections across these perspectives. Boys presents a more complex and nuanced understanding of the relationships between learning and space.

While the conceptual analyses presented by these authors may not translate directly into design solutions, they do offer much-needed perspective and, in some cases, practical suggestions for moving forward. Their ideas and frameworks are essential for proceeding beyond simplistic responses to trends in architecture, education, and campus planning; for thoughtfully exploring the complicated relationships between space and institutional effectiveness; for enriching opportunities for collaboration; and for expanding our repertoire of evaluation strategies for judging a space "successful." All of these authors call for action, arguing for deeper, more meaningful ways of examining exactly how design may contribute to better postsecondary education.

VIII. LEARNING SPACE DESIGN RESEARCH: WHAT HAVE WE LEARNED AND WHERE ARE WE GOING?

The field of learning space design research is in the early stages of development. Both the project team and other authors who have had the opportunity for lengthy and exhaustive investigations into the state of this field have identified more gaps and unknowns than reliable research findings. But these gaps certainly can point the way forward for researchers, institutions, architects, and designers.

IMPROVE LEARNING SPACE DESIGN RESEARCH METHODS

The easiest way forward is to improve how learning space design research is conducted so that future studies are consistent with respected social science research methods and analyses. We recommend that researchers develop their research teams to include those from other disciplines who can help them design a replicable study, choose valid and reliable instruments for measuring outcomes, and select and execute appropriate data analyses. Much will be gained by an increase in the amount of thoughtfully designed, carefully executed cross-disciplinary research.

The field of learning space design research relies on quasi-experimental research methods: essentially ways of arranging conditions and measurements to compensate for the fact that the researcher does not usually have the power to randomly assign students, instructors, or courses to specific classrooms or teaching environments. Architects, facilities directors, librarians, and education specialists are not expected to be conversant with these methods, but they need to look for someone who is. For those who want to delve more deeply into the questions of research design, the classic text *Experimental and Quasi-Experimental Designs for Research* by Donald T. Campbell and Julian C. Stanley (1963) is still in print and considered seminal.

Furthermore, most of the literature examined for this report makes little reference to existing commonly agreed-upon

measures. For example, the National Survey of Student Engagement (NSSE) and the Faculty Survey of Student Engagement (FSSE) are widely known studies of engagement that are seldom referenced. In a similar way, common learning outcome instruments such as the ACT, SAT, and even course letter grades are rarely referenced in the existing learning space research.

ESTABLISH AN AGREED-UPON TAXONOMY OF LEARNING SPACE

Currently, learning space research lacks a common lexicon, taxonomy of space types, or even agreement as to what constitutes formal and informal learning environments. Meta-analysis of research is therefore difficult, as is the ability to create reproducible experimental research that can be shared broadly throughout the higher education, architecture, and design communities.

ESTABLISH BROADER RESEARCH TARGETS

Researchers also need to be broad in their choice of research targets. The majority of the research reviewed for this report was in the area of formal learning spaces—classrooms, for the most part. Although some of the studies targeted courses in the humanities and social sciences, the early development of active learning classrooms was focused on providing flexible and appropriate spaces for science and engineering courses and thus many of the studies focus on those fields. Researchers need to look at the wide range of disciplines taught in universities and colleges and the kinds of learning spaces those disciplines need. They should also look at ways to measure the effectiveness of flexible teaching spaces that can be used by multiple disciplines.

CONDUCT LONGITUDINAL RESEARCH

The field of learning space research lacks systematic, longitudinal research. In general, most of the studies reviewed for this report were examples of one-off, highly customized research. We have been unable to identify any research that has sought to determine the interactions between learning space and learning over any time frame longer than a single semester. Thus, the validity and efficacy of the conclusions of this research must be considered with caution, if not suspicion

The field sorely needs studies that use systematic, consistent research methodologies over longer expanses of time (multiple years) at a variety of higher education institutions in a variety of learning spaces. The University of Minnesota ACL classroom research study is one example of this phenomenon. The research on the ACL classroom was carefully conducted, referenced outside measures of student achievement, and seemed to tie learning space design to outcomes. Unfortunately, the lack of replication since the initial study is causes us to wish for the continuation of such research over multiple semesters, with multiple instructors and students and at other institutions.

ESTABLISH MEASURES OF BEHAVIOR

The hallmark and foundation of modern research in both the social and natural sciences is the ability to reproduce results. The test of reproducibility is enforced in fields like drug research, but rare in the field of learning space research. This is ironic, given the large sums spent by institutions in construction, technology, and furnishings for physical campuses. We suggest that establishing the benchmark of reproducibility is an important goal for learning space research. Every study does not need to be done in the exact same way, but an important way to improve our field is to develop consistent, reliable methods for measuring teaching and learning behaviors and to make those measures available to other researchers so that a solid body of evidence can be built.

STRIVE TO ANSWER THE FUNDAMENTAL QUESTIONS: WHAT IS LEARNING AND HOW IS IT EVALUATED?

The biggest challenge for learning space design researchers involves the fundamental question that underlies this report and all of the research reports reviewed in this study: *What is learning and how is it evaluated?* In the course of collecting and reviewing a large body of research and writing, we found that the existing research does not sufficiently address this question.

In research on the impact of the physical environment, the characterization and measurement of the "outcome" (or dependent) variable is critical for creating meaning out of data. In learning space design research, we must confront, at some point, the question of what learning is and how it can be measured. What constitutes "learning"? How do we know if students have learned something? How can we reliably make the connection between learned material and the environment within which it was learned? These questions are epistemological and philosophical as well as pedagogical and methodological. The research that attempts to answer them, however, must be practical, measurable, and reproducible if it is to have any impact or application for learning space design.

In collegial conversations about post-occupancy evaluations and learning-outcome research projects, the evaluation of a true learning outcome has been characterized more than once as "the gold standard." However, few of the projects we reviewed have come close to this standard. Many of the projects do not attempt to directly or indirectly measure a learning outcome. Rather, they present data on frequency of use; faculty evaluation of the efficacy of a space, its arrangements, or its technology; student opinions about the space or its furnishings; or an appraisal of building systems such as lighting and thermal comfort.

In part, this gap is a discrepancy between the overall goal of learning space design research and what researchers are *able* to measure, in a practical sense. Unfortunately, it also reflects a lack of consensus across postsecondary education about how learning outcomes can be meaningfully measured. Above we refer to the need for consistent ways of measuring teaching and learning behaviors. Learning outcomes are not the same thing as learning *behaviors*. Students can pay attention to the teacher or participate in class discussions but those behaviors are only indicators that they may have learned something.

The field has yet to develop a way of conceptualizing learning outcomes. Can these be assessed by tests or examinations; by grades or GPA; by faculty assessment; by students' self-perception; by continuation, retention, or graduation rates; or by some other measureable markers? (See also Straumanis 2012.) As reflected in the research we reviewed, it is clear that the field of learning space design research has not yet reached any conclusions on the question of how to measure learning outcomes. Much work still remains, and it is our hope that this review of the current state of learning space research will encourage researchers to conduct the type of rigorous, systematic, reproducible, and longitudinal inquiries that will yield insight into what works and what does not in higher education learning environments.

It is worth noting that we may be pressured to generate these definitions more quickly than the usual research time frames. With the current economic pressures on higher education; the increasing competition from for-profit institutions, MOOCs, and other online and accessible learning alternatives; and the escalating demand placed on colleges and universities to demonstrate that the costs of students' education are justified by the salaries their degrees will ultimately earn them, we may be called upon to prove the efficacy of our learning spaces much sooner than we had imagined.

MOVING FORWARD

To begin your own research project or to take your research program to the next level, we encourage you to make use of the Society for College and University Planning database where all materials cited in this report are accessible.

We hope to receive feedback from researchers, educators, facility directors, architects, designers, and manufacturers and encourage those interested in learning space design research to join us in a research community that will support and encourage the progress that has already been made in this new field of study.

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APPENDIX A: EVALUATION FORM

Title:

Author(s):

Date of Publication:

Goal of 'Article'/research:

Content:

Visual Material (Note quantity for each):

- Photographs:
- Drawings:
- Diagrams:
- Charts/tables:
- Other:

Type of setting: (e.g., classroom, laboratory, library, study/ gathering areas, etc.):

Location of the research (identify the university or college or other setting):

Reference material: Bibliography/References/None

Research design:

- Comparison study
- Baseline study: pre/post
- Experimental (random assignment)
- Quasi-experimental
- Anecdotal/ Case study
- Conceptual analysis
- Literature review
- Other:

Research methodology/outcome measures:

- Faculty Interviews
- Student Interviews
- Observation (time-series/other)
- Questionnaire
- Survey
- Photo survey
- Focus group
- Experiential task
- Log/diary/journal
- Other:

Brief description of research/study parameters (methodology):

Precedent studies mentioned (if any):

List of external links (if any):

Possible shortcomings in research method or outcomes:

Summary of Findings/Conclusion:

Does this research or document specifically measure teaching/learning outcomes?

Areas of future research needed (if any):

Additional Notes:

APPENDIX B: AUTHOR AFFILIATIONS

JOSEPH CEVETELLO

Director, Learning Environments
University of Southern California

Joseph Cevetello is director of learning environments, information technology services at the University of Southern California (USC). In this role, he directs strategy, vision, and operations for USC's learning environments and provides leadership toward fulfilling the strategic goals for educational technology. He has primary responsibility for a new initiative to build and support learning spaces to enhance learning, teaching, research, and outreach on campus. He received his master's degree and his doctorate from the Harvard Graduate School of Education. His research and teaching interests encompass how online learning technologies affect adult learner and teacher interaction/collaboration and how media influence student perspectives of learning.

JANICE E. FOURNIER

Research Scientist, University of Washington Information Technology
University of Washington-Seattle Campus

Janice Fournier is an educational psychologist with a background in the learning sciences and human development and cognition. Her research focuses on learning in both formal and informal settings. She has worked for over 10 years at the University of Washington (UW), beginning at the Program for Educational Transformation Through Technology (PETTT) and later joining UW information technology. She conducts educational research on teaching and learning with technology as well as user research to inform the design of web applications and campus learning spaces.

CARYN GRAPE

Architectural Designer
Moore Ruble Yudell Architects & Planners

Caryn Grape, a graduate of Keene State College in Keene, New Hampshire, holds a Bachelor of Science in Architecture. In her pursuit of becoming a licensed architect, she is now gaining valuable experience working at Moore Ruble Yudell Architects & Planners in Santa Monica, California. As a veteran presenter at SCUP–47 (SCUP's 47th Annual, International Conference, 2012) she possesses a strong interest in the design and planning of higher education facilities.

JILL MORELLI

Director of Facilities
University of Washington-Seattle Campus

Jill Morelli is a Fellow of the American Institute of Architects and the director of facilities at the University of Washington School of Medicine, a position she has held for six years. Prior to that, she was the university architect at the Ohio State University. In her present position, she manages space for a college-level unit of one million square feet, projects from $5,000 to more than $160 million, and asset management after it is constructed. She handles the teaching and research mission of the school, ranked second in federally funded research in the United States.

SUSAN L. PAINTER

Director, Research Studio & Senior Planner
AC Martin Partners, Inc.

Susan Painter is senior planner and director of research at AC Martin in Los Angeles, California, where she specializes in university campus master plans and campus residential communities. Her current research is a series of behavioral post-occupancy studies on AC Martin's recent education projects. Susan was tenured associate professor of psychology and architecture at Carleton University in Ottawa, Canada for 12 years and instructor in the University of California, Los Angeles interior architecture program for 14 years. She was elected Fellow of the Canadian Psychological Association in 1991 for her distinguished service to the field of psychology. Her design psychology work with Constance Forrest, a doctor of psychology, has been featured on the NBC Today Show, in the Los Angeles Times, and in many books and articles, including in the Handbook of Environmental Psychology. Susan serves as principal researcher for the research on learning space design sponsored by the 2012-13 Perry Chapman Prize.

SUSAN T. WHITMER

Research Lead, Education
Herman Miller, Inc.

Susan Whitmer is a lead researcher in education at Herman Miller, Inc. She has been immersed in research with the company for over 25 years. Whitmer is currently tasked with studying the trends, challenges, and opportunities that will impact the future of the learning experience. She conducts field research and gathers data from students, teachers, and administrators—information Herman Miller uses to inform thought leadership and the development of new education solutions. Whitmer has dedicated much of her life to another of her passions: learning. A voracious student, Whitmer earned a degree in design from Ringling College of Art and Design in Sarasota, Florida, as well as a license in interior design. She has a master of business administration from Brenau University in Gainesville, Georgia and a master of science in accessibility and inclusive design from the University of Salford in the United Kingdom. Whitmer extends her passion for education by sharing her knowledge and expertise at workshops and conferences. She has written numerous white papers and co-authored several articles on learning spaces, including peer-reviewed papers for Open House International and the National Collegiate Inventors and Innovators Alliance 2011 conference.

PHYLLIS GRUMMON

Director of Planning and Education
Society for College and University Planning

Phyllis Grummon has been the Director of Planning and Education for the Society for College and University Planning (SCUP) for ten years. During that time, she launched the SCUP Planning Institute, wrote *Trends to Watch in Higher Education*, supported the growth of the higher education institutional plans database, was on the Editorial Board of *Planning for Higher Education*, as well as contributing to SCUP in many other ways. Prior to joining SCUP, Phyllis Grummon was the Director of University Planning at Michigan State University. She will be retiring from SCUP on June 30, 2013.

Society for College and University Planning
INTEGRATED PLANNING FOR HIGHER EDUCATION

Why INTEGRATED PLANNING?

SCUP PLANNING INSTITUTE

» *REMOVE SILOS* » *WORK COLLABORATIVELY* » *USE RESOURCES WISELY*

You've heard the stories . . .

. . . every budget meeting is a trial because priorities aren't established.

. . . an institution goes on probation because it did not "pass" planning on its accreditation review.

. . . a system opens multiple new buildings on campuses across the state but does not have the funding to operate them.

. . . a new president's leadership falters because his or her staff resists working transparently or collaboratively.

What is INTEGRATED PLANNING?

Integrated planning is the linking of vision, priorities, people, and the physical institution in a flexible system of evaluation, decision-making and action. It shapes and guides the entire organization as it evolves over time and within its community.

Benefits of INTEGRATED PLANNING

ALIGN INSTITUTIONAL PRIORITIES WITH RESOURCES

Three years of using an integrated budget process, one where funding decisions were transparent and clearly tied to strategic goals, brought about "the end of whining" for a Midwestern, regional university.

MAKE ACCREDITATION WORK FOR YOU

The SCUP Planning Institute helped put integrated planning to work at a Southern university and it resulted in a "no concerns or problems" accreditation review.

CONTAIN AND REDUCE COSTS

As part of a comprehensive sustainability effort, integrated planning meets the requirements of the American College and University Presidents Climate Commitment (ACUPCC), and that adds up to savings in utilities for campuses across the country.

Core Competencies for INTEGRATED PLANNING

Senior leaders excel when the people who report to them understand how essential it is to

- » engage the right people
- » in the right conversations
- » at the right time and
- » in the right way.

Integrated planning might not solve every problem on campus, but it is sure to provide a solution to the most important issues. To be effective, and for you as a senior campus leader to be successful, everyone who plans on your campus needs these core competencies:

ENGAGE THE RIGHT PEOPLE: Identify the people who need to be in the room and work with them effectively.

SPEAK THEIR LANGUAGE: Create and use a common planning vocabulary for communicating.

KNOW HOW TO MANAGE A PLANNING PROCESS: Facilitate an integrated planning process and manage change.

PRODUCE A SHARED PLAN: Produce an integrated plan that can be implemented and evaluated.

READ THE PLANNING CONTEXT: Collect and filter relevant information.

GATHER AND DEPLOY RESOURCES: Identify alternative and realistic resource strategies.

SCUP
PLANNING
INSTITUTE

Whether you are new to the field or are an experienced professional, you will find the institute is a concrete way to create an effective network of planning colleagues, learn best practices, and grow in your career.

This intensive, three-step program on integrated planning in higher education is designed to develop the six competencies of integrated planning in participants.

Taken in sequence, the SCUP Planning Institute Steps I, II, & III represent a unique merging of the knowledge of experts in planning with a dedication to using assessment to continuously enhance each workshop's outcomes for participants.

Institute faculty members are drawn from across the country and the world, from all types of institutions. They facilitate learning through engaging exercises, small group work, and analysis of the SCUP Walnut College Case Study.

SCUP PLANNING INSTITUTE *The Steps in Brief*

Attend as a SCUP member and save on registration: www.scup.org/join

STEP I: FOUNDATIONS OF PLANNING IN HIGHER EDUCATION

STEP I is the 30,000-foot view of integrated planning. The aim of this step is to provide participants with a clear understanding of what integrated planning models generally look like, what elements are important in integrated planning, and how the big picture ideas, such as mission, vision, and values, impact integrated planning. It is also an introduction into the vocabulary of planning.

Participants in the initial workshop in the series of three use SCUP's Walnut College Case Study to apply the basic elements of integrated planning. The value of evidence-based planning is emphasized, as is the central place that the academic mission holds in focusing and driving campus decisions.

STEP II: FOCUSED KNOWLEDGE FOR INTEGRATED PLANNING PROCESSES

STEP II takes a look at the process of planning. What does it take to create a plan? What details are involved in fleshing out a plan? What does a planning document look like? And what moves a plan into action? This step expands the vocabulary of each individual discipline into the range of another—academics, facilities, and budget/finance.

The intersection of academic, resource/budget, and facilities planning defines a nexus for learning-specific lessons in integrated planning. The SCUP Walnut College Case Study is the basis for practicing an integrated planning process that results in a plan reflecting the collaboration of all functional areas at Walnut College. In the process of creating the plan, participants will gain a deeper understanding of the needs and issues confronting key functional areas on campus during a planning initiative.

STEP III: INTEGRATED PLANNING—WORKING WITH RELATIONSHIP REALITIES

STEP III begins the process of managing the changes envisioned and set into motion by Steps I and II. It's all about the people—individuals who can stop a process dead in its tracks, or pick it up and run with it. It brings the language of organizational change and psychology into the everyday office where it can inspire, convince, or mediate the cultural, social, and political dynamics that make change a real challenge.

Step III focuses on the cases that campuses bring to the workshop for its active learning component. Through the development of a change profile, each participant creates strategies for moving an integrated planning process forward on campus. Understanding the nature of relationships on campus—up, down, and sideways—and how they affect the planning and change processes can make the difference in achieving the institution's goals.

THE SCUP PLANNING INSTITUTE ON YOUR CAMPUS

Tough economic times require a time-tested approach to strategic planning. The most effective planning comes from an integrated approach that is structured, assessed, and successfully implemented. SCUP now offers members the opportunity to bring the planning institute to your campus with your team!

Bring the institute to your campus and you'll . . .

- Be positioned for accreditation
- Receive a program focused on your institution
- Create an integrated planning process that works for your campus
- Save money on travel and registration

Multiple campuses can collaborate on offering a planning institute to help defray costs. Everyone benefits through using integrated planning processes.

BRING THE BENEFITS OF INTEGRATED PLANNING TO YOUR CAMPUS:

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